Studies on angiosperm diversity and bio-monitoring with resource mapping in Nelliyampathy hills of southern Western Ghats, Kerala, India

Thesis

Submitted to the University of Calicut

In partial fulfillment of the requirement for the degree of

DOCTOR OF PHILOSOPHY

IN

BOTANY

By

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December 2021

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This is to certify that the thesis entitled **'Studies on angiosperm diversity and bio-monitoring with resource mapping in Nelliyampathy hills of southern Western Ghats, Kerala, India'** submitted to the University of Calicut by Ms. Jabeena M. K. in partial fulfillment for the award of the Degree of Doctor of Philosophy in Botany is a bonafide record of the research work carried out by her under the guidance of Dr. Maya C. Nair, Associate Professor and Head of the Department, PG and Research Department of Botany, Govt. Victoria College, Palakkad at this centre. No part of this work has formed the basis for the award of any degree or diploma previously.

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This is to certify that the thesis entitled **'Studies on angiosperm diversity and bio-monitoring with resource mapping in Nelliyampathy hills of southern Western Ghats, Kerala, India'** submitted to the University of Calicut by Ms. Jabeena M. K. in partial fulfillment for the award of the Degree of Doctor of Philosophy in Botany is a bonafide record of the research work carried out by her under my guidance. No part of this work has formed the basis for the award of any degree or diploma previously.

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DECLARATION

I, hereby declare that the thesis entitled ***'Studies on angiosperm diversity and bio-monitoring with resource mapping in Nelliyampathy hills of southern Western Ghats, Kerala, India'*** *submitted by me for the award of the degree of Doctor of Philosophy in Botany under University of Calicut is an original research work carried out by me at Post Graduate and Research Department of Botany, Govt. Victoria College, Palakkad. No part of the work has formed the basis for the award of any other degree or diploma.*

December 2021 **Jabeena M K.**

ACKNOWLEDGEMENTS

I express my sincere gratitude to my Research Guide, ***Dr. Maya C. Nair****, Associate Professor & Head of the Department for providing me an opportunity to start my research career and for her excellent guidance throughout the period of research. I am deeply indebted to her for understanding me and standing with me in my difficult times of research life.*

I would like to thank the ***Principal, Govt. Victoria College, Palakkad*** *and* ***Director, Collegiate Education, Govt. of Kerala*** *for the infrastructural facilities and administrative support throughout the research period.*

I am thankful to the ***Council of Scientific and Industrial Research – Human Resource Development Group*** *for the financial assistance through Junior Research Fellowship and Senior Research Fellowship which aid in successful completion of my research work.*

I am grateful to the ***Department of Forests, Govt. of Kerala*** *for providing necessary permissions and assistance for field explorations in the interior forest areas of Nelliyampathy hills, under Nemmara Forest Division.*

I am really thankful to ***Dr. Prabhukumar K.M.,*** *Senior Scientist, CSIR-National Botanical Research Institute, Lucknow for his constant support and help in identifying novel taxa and confirming identity of doubtful specimens.*

I express my sincere gratitude towards ***Dr. Sunil C.N.,*** *former Professor, S. N. M. College, Maliyankara for his guidance in identifying grasses and sedges and technical assistance in confirming the novelty of grass species.*

I would like to thank ***Dr. Mathew Dan,*** *Senior Scientist, JNTBGRI, Thiruvananthapuram and* ***Mr. Mahesh,*** *field assistant, for assistance in procuring germplasm in connection with confirming the novelty of Glycosmis nelliyampathiensis.*

I take this opportunity to thank ***Dr. K. Narayanan Nair,*** *Senior Principal Scientist & Professor, AcSIR Plant Diversity, Systematics & Herbarium, CSIR-National Botanical Research Institute, Lucknow, for his help in confirming the novelty in the genus Glycosmis.*

I express my sincere gratitude to ***Dr. N. Sasidharan,*** *Former Scientist, KFRI, Peechi for his help in identification of doubtful taxa as well as valuable suggestions regarding the field explorations.*

I express my sincere thanks to ***Dr. Jagadeeshan, Dr. Naveen Kumar N.*** *and* ***Dr. Hareesh V.*** *for their valuable suggestions and field assistance in high ranges of Nelliyampathy.*

I am grateful to the forest watchers, late ***Mr. Divakaran, Mr. Mani, Mr. Shareef, late Mr. Chellaiah, Mr. Guruvaayorappan*** *who accompanied me in various field trips throughout the years.*

I would like to thank the ***teaching and non-teaching staff*** *of the PG and Research Department of Botany, Govt. Victoria College, Palakkad for their encouragement and constant support throughout the period of my studentship at the department.*

I am extremely thankful to my fellow scholars ***Dr. Rekha Vasudevan A., Dr. Sowmya M., Dr. Jisha K., Dr. Aarabhi P., Mrs. Aswani V.J., Mrs. Remya S., Mrs. Muhsina A.A., Mrs. Kanakambika G. and Ms. Athira S.*** *for their support and for innovative ideas and suggestions throughout the research period.*

I felt so blessed to have a wonderful family who were there with me on each and every step of my research career. I would like to thank wholeheartedly my husband, ***Mr. Shareef S.,*** *my brothers* ***Mr. Muhammedshinas V.A.*** *and* ***Mr. Jasir Sha M.K.*** *for accompanying me on field trips, helping me with photo-documentation and designing photoplates. I would also extend my gratitude to my mother and all other family members for their co-operation and support throughout the research career.*

Jabeena M.K.

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PREFACE

In an era where the biodiversity loss is so severe in the tropical belts and which threatens the sustenance of life on earth itself, conservation gains momentum and becomes one of the the prime motto for the survival of life on earth. In order to conserve an area, a thorough exploration along with documentation of floral and faunal wealth at micro-level is essential. Western Ghats, one of the hottest hotspots in the World, lacks localized scientific documentation at micro ecosystem levels. The present study focuses on one of the major hill tracts of southern Western Ghats, Nelliyampathy hills which lies to the south-western side of the Palghat Gap. The study encompasses the diversity of angiosperms, their seasonal bio-monitoring and resource mapping that has been summarized under five chapters in this thesis.

The first chapter deals with an introduction on earlier floristic studies in the country along with a background of the research problem for the present thesis. It also provides the aim and objectives of the study along with the relevance in the current scenario. The second chapter deals with the review on earlier works which includes floristic studies in India, South India, Kerala and protected areas, studies in wetlands, riparian and Myristica swamps, revisionary and monographic studies, studies on endemic plants, taxonomic novelties and resource mapping attempts.

Third chapter provides the details of the study area and the methodologies adopted for achieving the objectives set for the thesis. The fourth chapter deals with the results obtained from the study and is divided into 19 different sections. An artificial key is provided at family, generic as well as species levels. The angiosperm diversity of Nelliyampathy is enumerated according to APG IV. While enumerating taxa, a nomenclature paragraph with the correct name, their citation in Flora of British India, Flora of the Presidency of Madras and Flora of Palghat district, followed by habit, habitat, a brief morphological description, Raukiaer's life form, phytogeographical affinity, endemism, IUCN category, phenology, distribution of taxa in the study area and altitude of distribution of each taxon are provided along with the details of specimens examined. The habitat diversity and vegetation distribution, altitudinal gradients and cross analysis of vegetation, distribution of threatened and endemic taxa along with phytogeographical disposition, distribution of plants with special adaptations, characterization of chasmophytic flora, distribution of wild genetic resources, distribution of medicinal plants, distribution of alien invasive elements, Raunkiaer's life form spectrum analysis, analysis of taxonomic singularity and monotypism, analysis of phenotypic plasticity among the vegetation, floristic additions, extended

distribution and taxonomic novelties from the study area, analysis of vegetation across Palghat Gap, bio-monitoring and shift in vegetation, ethnobotanical studies, Geo-Spatial characterization and vegetation mapping, post flood modifications and bio-resilience and the threats to habitats and biodiversity loss in Nelliyampathy hills were dealt under different sections. All these sections were provided with photographic support data. Photographic support for those taxa included under different sub sections of the results were excluded from systematic enumeration.

The final chapter summarizes the views on the results obtained by correlating the data with documented earlier evidence along with concluding remarks. Along with this, few recommendations were suggested for maintenance of the health of the ecosystem at Nelliyampathy hills. This is followed by Annexures, references used in the thesis and an index to the species.

For the purpose of binding, Chapter IV.1, dealing with the systematic enumeration along with supporting photo plates and index to species were compiled into Part II.

ABSTRACT

The present study focuses on the angiosperm diversity of Nelliyampathy hills which lie on the south-western side of the Palghat Gap. The hill tracts flank an area of 206 sq.km. Even though many novel taxa had been identified and reported from the study area, a holistic study of angiosperm diversity is lacking. In this context, an attempt was hereby made to account the diversity of angiosperms, their habitat diversity, biomonitoring and resource mapping of Nelliyampathy hills. The extensive exploration resulted in the documentation of 1529 taxa under 142 families. Poaceae are the largest family followed by Fabaceae and Rubiaceae. *Cyperus* is the most speciose genera followed by *Crotalaria*, *Ipomoea* and *Impatiens*. Herbaceous taxa predominate the vegetation followed by tree members. Among the forest types, Evergreen forests form the prominent vegetation followed by deciduous forests and grasslands. This was reflected in the elemental composition also, where the evergreen elements account the highest in the study area followed by grassland elements and Moist Deciduous elements.

The median altitude accounts for the highest diversity where the altitudinal zone of 900-1200 m forms the most diverse zone followed by the 600-900 m zone. The study could record 66 IUCN red listed taxa and 308 threatened species. About 25% of the collected taxa were found to be endemic to various geographical regions of the country. Apart from Indo-Pacific affinity, taxa are showing highest affinity towards African and South American kingdoms and least towards Australian. Due to the high wind velocity in Palghat Gap region, the concentration of anemochorous taxa is too high in the study area. Special adaptations like parasitism, semi-parasitism, saprophytism, carnivory, epiphytism and climbing habits could be observed among the vegetation. The frequency of chasmophytic taxa is also high since 36% of the collected taxa are showing chasmophytic nature. Adaptations like extensive root system, rosette or cushion-like habit, scapigerous nature, herbaceous habit, therophytic life-form, succulence, pubescence, subterranean perennating organs, semi-parasitism and carnivory were observed among these chasmophytes. About 25% of the collected taxa shows medicinal property and among them, herbaceous taxa are predominantly used in medicinal ailments. Phanerophytes is the predominant life-form in Nelliyampathy followed by therophytes.

Seven novel taxa could be identified viz., *Glycosmis nelliyampathiensis*, *Tripogon sp.nov., Ischaemum sp.nov., Eugenia sp.nov., Microstegium sp.nov., Fimbristylis sp.nov.* and *Peucedanum sp.nov.* Reinstatement of *Pachystoma hirsuta* (Joseph & Vajravelu) C. S. Kumar

& Manilal from *P. pubescens* Blume and *Rhynchoglossum scabrum* Dalzell from *Rhynchoglossum notonianum* (Wall.) B.L.Burtt. were proposed. Collection of *Crotalaria priestleyoides* Benth. ex Baker is a recollection after a century from Kerala part of southern Western Ghats. Out of the collected taxa, five hundred and eighty-eight taxa were found to be additions to the Flora of Palghat district (Vajravelu, 1990). Among them, 122 were having an extended distribution to Palakkad district.

Forty-three monotypic genera were recorded from Nelliyampathy. Taxonomic singularity at genus level is 0.65 and at family level it is 0.42. Analysis of vegetation across Palghat Gap using PAST software reveals a difference in the species distribution between northern and southern sides of Palghat Gap. One hundred and nineteen taxa with ethnobotanical significance could be recorded from the two tribal colonies of the study area.

Forest cover change analysis between two decades revealed that there is an increase in Evergreen Forest cover, deciduous forest cover and grasslands while the forest plantation areas and barren lands have decreased. Evergreen forests predominate the upper altitudinal zones while deciduous forests predominate the lower altitudinal zones. But NDVI analysis of forest cover in two different decades shows a marked deterioration in the health of the vegetation in Nelliyampathy. Slope-wise zonation depicts that the majority of the study area falls under gentle slope areas and steep slope areas. Majority of the land-slide affected areas mapped are either in the Ghat road or at the monoculture plantation areas. Uprooting of larger trees, opening up of canopy, diminishing of ground flora, heating up of forest floor and phenological shift are the major post-flood habitat modifications observed in Nelliyampathy.

Seventy two alien invasive elements and 88 degraded forest elements were recorded which shows the degrading nature of the forest tracts of Nelliyampathy. Apart from the natural causes like natural calamities, forest fire and invasive species, there is too much of anthropogenic stresses in Nelliyampathy which includes plantations, tourism, plant introduction, agricultural practices, grazing, selective felling and encroachment to forest land, urbanization, habitat fragmentation by constructions, road construction in interior forests, plastic dumping and pesticide application in tea and cardamom etc. This in turn, calls for the need of proper conservation strategies in Nelliyampathy to maintain its natural vegetation.

LIST OF ABBREVIATIONS

APFISN: Asia-Pacific Forest Invasive Species Network
APG: Angiosperm Phylogeny group
ASTER: Advanced Spaceborne Thermal Emission and Reflection Radiometer
BSI: Botanical Survey of India
CAL: Central National Herbarium, India
CALI: Calicut University Herbarium
CATH: Catholicate College Herbarium
CBD: Convention on Biological Diversity
CMPR: Centre for Medicinal Plant Research Herbarium
E: Royal Botanic Garden, Edinburgh
ENVIS: Environmental Information System
ERDAS: Earth Resources Data Analysis System
ETM: Enhanced Thematic Mapper
FCC: False Colour Composite
Fl. Brit. India: Flora of British India
Fl. Palghat Dist.: Flora of Palghat District
Fl. Pres. Madras: Flora of the Presidency of Madras
FSI: Forest Survey of India
GIS: Geographical Information system
GPS: Geographic Position System
GVCH: Govt. Victoria College Herbarium
IPNI: International Plant Names Index
IUCN: International Union for Conservation of Nature and Natural Resources
K: Royal Botanic Gardens Kew
KSBB: Kerala State Biodiversity Board
LULC: Land Use Land Cover
LWG: Herbarium, National Botanical Research Institute, Rana Pratap Marg, Lucknow
MSL: Mean Sea Level
MH: Madras Herbarium
NDVI: Normalized Difference Vegetation Index
NIR: Near Infrared Radiation
OLI: Optical Line Interface
P: Muséum National d'Histoire Naturelle
PAST: Paleontological Statistics
POWO: Plants Of the World Online
QGIS: Quantum Geographical Information system
RET: Rare, Endangered and Threatened taxa
RF: Reserve Forest
USGS: United States Geological Survey
VF: Vested Forest
WHC: World Heritage Centre

LIST OF ANNEXURES

Annexure No.	Title
1	Evergreen elements in Nelliyampathy hills
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1. INTRODUCTION

Biodiversity includes all types of variability among living organisms which manifests at all levels from cells to ecosystems (Pratik, 2015). According to CBD, it is "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (CBD, 1992). Biodiversity is considered in three levels where genetic diversity represents the variation of genes within a species while species diversity refers to the variety of species within a region and ecosystem diversity consists of a variety of habitats, biotic communities and ecological processes in the biosphere (Vermeulen and Koziell, 2002). In practice, ecosystem diversity can only be evaluated on a local or regional basis, rather than on a global scale.

Biodiversity plays an important role in the way ecosystems function and in the services they provide. Its role in mitigating climate change by contributing to long term sequestration of carbon is an inevitable one. Biodiversity of a region indicates its richness in floristic and faunal composition and in this perspective, the documentation of diversity of organisms occurring in a specific region has primary significance. Regulation of biochemical cycles, carbon sequestration, absorption and breakdown of pollutants and waste materials through decomposition, and regulation of climate are some of the major roles played by biodiversity (Rawat and Agarwal, 2015).

Biodiversity is not equally distributed throughout the globe and tropical regions are rich in biodiversity. Because of the warmer climate and high primary productivity, terrestrial biodiversity tends to be highest near the equator and could observe latitudinal gradients in species diversity as well as clustered biodiversity in hotspots (Rawat and Agarwal, 2015). Loss of biodiversity is severe in the tropical belt which threatens the sustenance of life on earth. The major consequences for biodiversity loss include deforestation, forest degradation and habitat fragmentation (Ramesh *et al*., 1997). In order to conserve biodiversity, the first and foremost step is the assessment of diversity of a particular region and this can only be attained through extensive field exploration, identification and documentation of floristic and faunal wealth of the region at micro level.

Floristic diversity documentation deals with the enumeration of plant species growing in a specific region and are considered to be inevitable in understanding phyto-diversity of a region. In order to predict the future impact of climate change on vegetation and ecosystems, a basic knowledge on location-based vegetation documentation is necessary (Singh, 2015).

I.1. Indian Scenario

India is included in the list of top ten species-rich nations in the world with four biodiversity hotspots viz., Eastern Himalaya, Indo-Burma region, the Western Ghats, and the Sundaland. It is also one of the seventeen Mega Biodiversity Nations in the world (Balasubramanian, 2017) and is the eleventh among these nations in respect of the number of endemic vascular plant species (ENVIS, 2019). The forest cover constitutes about 21.71% (7,13,789 km^2) of India's total geographical area (FSI, 2021). The floral wealth of the country is comprised of 47,513 species representing as much as 11.4% of world flora, of which about 28% are endemic. The angiosperm flora comprises 20,141 species, including 4036 endemic as well as 1700 threatened taxa (Arisdason and Lakshminarasimhan, 2016). With only 2.4 per cent of the land area, India already accounts for 7 to 8 percent of the recorded species of the world (Roy and Roy, 2015).

Since the country is blessed with a high level of biodiversity and is prone to a higher percentage of threat, many protected areas were identified throughout to facilitate effective means of conservation. There are 18 biosphere reserves, 88 conservation reserves, 127 community reserves, 104 national parks and 551 wildlife sanctuaries designated for affecting conservation and these together form 1,020,717.74 sq. km of protected regions. Apart from these protected areas, there are 50 Tiger Reserves, 16 Elephant Reserves, 27 Ramsar Wetland Sites, 7 World Heritage Sites and 1 Mixed World Heritage Site in India. It adds up to an area of 82,148.41 sq. km of protected region (ENVIS, 2019).

Gadgil and Meher-Homji (1986) emphasized the importance of the protected areas in conserving biodiversity. According to them, 'it is impossible to conserve the entire range of variations through artificial means and it could only be gained through the conservation of their natural habitats'. The successful maintenance of these protected areas require in-depth knowledge of existing floristic diversity of a region and only an extensive floristic exploration can give the exact floristic composition.

One third of the geographic regions of India including parts of Himalayas, the Western Ghats and the Andaman and Nicobar Islands, continue to be floristically unexplored (ENVIS, 2019). Our existing knowledge base on the floristic diversity in these most vibrant ecosystems is far from the reality and hence, critical floristic and ecological studies are indispensable to document the diverse flora of our natural ecosystems.

I.2. Western Ghats

The Western Ghats is one of the megadiversity centers in India and is also a biodiversity hotspot. Western Ghats is older than the Himalayan Mountain ranges and the

Ghats represent geomorphic features of immense importance with unique biophysical and ecological processes (WHC, 2017). The Ghats constitute a 1600 km long mountain chain which runs parallel to India's western coast and originates from south of Tapti river and runs through six different states of India viz., Gujarat, Maharashtra, Goa, Karnataka, Tamil Nadu and Kerala (Radhakrishnan and Rajmohana, 2012). These mountains cover an area of around 140,000 km² in a 1,600 km long stretch that is interrupted by the 32km Palghat Gap at around 11°N, which forms a natural ingress into the state of Kerala (Molur *et al*., 2011). The historical, geological and floristic diversity of this part of the state has been greatly influenced by this natural mountain pass.

The Western Ghats, often compared to 'oceanic islands' in terms of its phytogeographical characteristics, is one of the richest centres of endemism, and is considered to be one of the most important biogeographic zones of India. Some areas of the Ghats are considered to be active zones of speciation due to varied topography and microclimatic regimes (Shaju, 2010; Balasubramanian, 2017). The Western Ghats consists of Deccan flora along the eastern side and Malabar Coast flora along the western side and this is so because the Ghats acts as a separating barrier between Malabar Coast and the Deccan, two geographical regions of Peninsular India (Anilkumar, 2015).

The variability in precipitation and topographic diversity generates a wide variety of vegetation types ranging from wet evergreen and semi-evergreen forests on the western side at higher elevations to dry deciduous forests on the eastern slopes and lowlands (Reddy *et al*., 2016). The major vegetation types identified are tropical evergreen forests, moist deciduous forests, dry deciduous forests, scrub jungles, sholas, savannas, peat bogs and Myristica swamps (Narayanan, 2009).

Since Western Ghats possess high species diversity in a small area, it stands significant in Indian Flora. In Southern Western Ghats, Nilgiri-Silent Valley and Wayanad-Kodagu regions possess 150 endemic species. Even the Kerala part of Western Ghats itself consists of 4679 taxa of angiosperms with 1637 endemics and about 10% of these endemics are thought to be threatened ones (Narayanan, 2009). According to Sasidharan (2011), Kerala harbours 5094 angiosperm taxa which includes 1697 endemic taxa.

Western Ghats is marked for the high level of biological diversity and endemism and is recognized as one of world's eight hottest hotspots along with Sri Lanka. Western Ghats is blessed with some of the best representatives of non-equatorial tropical evergreen forests in the world (WHC, 2017). Loss of biodiversity is so severe in the tropical regions due to a variety of reasons, the foremost being habitat destruction at an alarming rate.

One of the recent assessments on diversity of angiosperms in Western Ghats estimates about 7995 taxa with 7402 species and 593 infraspecific categories. Among the taxa recorded, 5,588 species are native and 376 are exotics, the latter getting naturalized during the course of time. Of the native species, 2,253 species are endemic to India and 1,273 species are exclusively confined to the Western Ghats. Moreover, 1,438 species are cultivated or grown as ornamentals (Nayar *et al.*, 2014).

The State of Kerala has a complex topography with mountains, valleys, ridges and scarps. The altitude varies from sea level to 2695 m asl. The physiography of the state is highly diversified because of the presence of Western Ghats along the east and Arabian sea along the west (Sasidharan, 2006).

According to Champion and Seth (1968), there are 26 forest types in Kerala. The major ones among them are the west coast tropical evergreen, west coast semi-evergreen, southern moist mixed deciduous, southern dry mixed deciduous, southern montane wet temperate forests, southern subtropical hill forests, southern montane wet temperate grasslands and littoral forests. Bamboo brakes, Cane brakes, Reed brakes, Euphorbiaceous scrub jungles, laterite thorn forests and Myristica swamp forests are some of the edaphic types recognised from the state. Some secondary forests such as secondary evergreen, secondary moist deciduous, secondary dry deciduous, etc were also identified based on forest dynamics (Sasidharan, 2011).

The largest compilation of the flora of the state was carried out by Sasidharan (2011) and he recorded 5,094 taxa of flowering plants which belong to 1,537 genera in 221 families. Among the flowering plants of Kerala, 20 percent are trees and 30 percent of them are Western Ghats endemics (Sasidharan, 2006). Kerala has a relatively higher percentage of protected areas with 6 National Parks, 16 Wildlife Sanctuaries and One Community reserve (ENVIS, 2019).

The forests of Kerala are inhabited by 35 distinct tribal communities which include Malampandararn, Urali, Mala-arayan, Ulladan, Malavedan, Malakuravan, Kanikkaran, Malavedan, etc. Wayanad has the highest tribal concentration with 35.85% of the total tribal population of the State and Idukki comes next with 15.66% of total tribal population. The primitive tribes are those tribal communities with a pre-agriculture stage of development, stagnant population and very low literacy. Cholanaickens, Kattunaickens, Kadars, Kurumbas and Koragars are the primitive tribes of Kerala and they constitute nearly 4.8 % of the total tribal population of the State (Khan, 2002).

I.3. The Palghat Gap and Southern Western Ghats

One of the noteworthy features in the physiography of southern India, is the Palghat Gap which is the major break in the continuity of the hill tracts of Western Ghats (Jacob and Narayanaswami, 1953). The state has been divided into two rainfall regions with respect to the 10^{o} latitude which is the position of Palghat Gap (Simon and Mohankumar, 2004). Hence the surrounding regions of the Gap possess unique species composition compared to any other region in the state.

The rich floristic diversity in the district could be observed in forest tracts of Silent Valley National Park, Attappady valley, Nelliyampathy hills, Parambikulam Tiger reserve and Walayar forest ranges.

Recent molecular studies reveal that the Gap forms a major biogeographic barrier for several species, and it suggests that it is one of the drivers for diversification of various taxa such as the Asian elephant, the lion-tailed macaque, bush frogs and some birds. A subsequent change in Paleo-climatic conditions and gradual formation of the Gap may have resulted in population diversification during the Pleistocene. However, studies on the bush frog, Caecilians and Nilgiri tahr do not highlight the Gap as a significant barrier (Joshi *et al*., 2018).

Vegetation of Palakkad district is unique due to the gap features and the pioneer attempt to document angiosperm vegetation of Palakkad district (Subramanian *et al.,* 1987) enumerated about 757 angiosperm species followed by the detailed documentation done by Vajravelu (1990). This documentation could record 1397 taxa belonging to 732 genera spread over 146 families of flowering plants. The floristic studies in Silent Valley National Park had been studied by Manilal (1988) and that of Parambikulam Wildlife Sanctuary was carried out by Sasidharan (2002). Phyto-sociology of Attappady landscape and species level study of eastern part of the Attappady (Anilkumar, 2015) could record 1670 angiosperm taxa belonging to 818 genera and 160 families. Following this, floristic diversity of Kollengode range forests (Soumya, 2018), angiosperm diversity of Dhoni hills (Rekha, 2019), floristic vegetation of low altitude hillocks (Arabhi, 2019) and documentation of riparian vegetation of Thuthapuzha sub-basin (Jisha, 2019) were carried out. Except these, other floristically richer zones in and around the Palghat Gap region have not been subjected for vegetation analysis and these areas require attention in terms of vegetation health in general and phyto-diversity in particular. With this background, one of the high-altitude zones of the district, the Nelliyampathy hills have been focused for documenting angiosperm diversity and mapping of resources.

I.4. Nelliyampathy hills

Nelliyampathy hills lie on the South-Western side of the Palghat Gap. Nelliyampathy, a serene hill station located between 10º2'N to 10º4'N latitude and 76º3'E to 76º5'E longitudes, comprises varying habitats. The altitude of the region varies from 100m to 1633m from the sea level. The major forest patches of the region are of wet evergreen forest type along with moist mixed deciduous forests, tropical semi-evergreen forests and grassland shola ecosystems. The hills accommodate vast plantations of tea, coffee, rubber, cardamom and orange (Lobo *et al*., 2006; Philip *et al*., 2016).

The hills are a part of Nelliyampathy-Annamalai-Palani hill complex. And forms a central segment of the southern Western Ghats, supporting wet evergreen forests. Evergreen forest of the area is classified as a medium elevation type of the *Cullenia exarillata-Mesua ferrea-Palaquium ellipticum* series. The hill tracts of Nelliyampathy are bordered by Anamalai hills on the east and Parambikulam forest on the south while the western and northern extensions descend down to the Palghat plains (Ramachandran and Swarupanandan, 2013).

I.5. Resource Mapping

Remote Sensing and Geographic Information System is being widely used by ecologists and conservation biologists for conservation planning and natural resource management. The applications of modern remote sensing include the biodiversity assessment, identification of biodiversity rich areas, forest canopy type and change, causes of biodiversity depletion, assessment of deforestation, prediction of species distribution, modelling of species or community responses to environmental and anthropogenic changes (Reddy, 2015).

The distribution mapping of resources helps in understanding various types of habitats in the study area and their distribution, their change over a time period, health of the vegetation, elevation range of the area as well as the usage of land for various purposes. In the present study resource mapping using remote sensing and GIS is incorporated for a better understanding of the forest cover and distribution, vegetation shift and change analysis as well as the health of the vegetation in Nelliyampathy hill tracts.

I.6. Aim of the investigation

The present study aims at extensive exploration in the hill tracts of Nelliyampathy, taxonomic characterization and identification of the floristic elements giving emphasis on habitat specificity and ecosystem traits. The study also focuses on resource mapping to explore the landforms and associated diversity in Nelliyampathy hills and the possibility of

influence of the Palghat Gap in the percentage of endemism, species richness, abundance and distribution of wild genetic resources and medicinal plants.

I.7. Objectives of the study

The major objectives of the study include:

- Exploration and collection of flowering plants in different seasons.
- Taxonomic characterization and identification of floral diversity with reference to diverse ecosystems in the study area.
- Analysis of floristic components with emphasis on dominant plant groups, endemics, rare and threatened plants.
- Seasonal comparison of floristic wealth in the hill tracts
- Ethnobotanical survey with special emphasis on the tribal communities inhabiting the study area
- Resource mapping using GIS.

I.8. Relevance of the study

Extensive exploration and floristic survey in the hill tracts provide better understanding of the vegetation and floristic composition in varying habitats with variable edaphic and climatic settings. The floristic analysis with special emphasis on endemic and threatened plants emphasizes the need for conservation measures in the study area adopting special protection measures. Bio-monitoring of floristic elements in different seasons will assist in assessing the seasonal changes in the vegetation of the study area.

The NDVI analysis planned in the study will assess the health of the vegetation while the Land Use Land Cover classification using GIS can identify the usage of different land forms of the study area. The forest Cover change analysis expects to throw light on the change in each forest type in the last 20 years. In short, resource mapping planned using GIS will draw out data in terms of vegetation types, floral composition, usage of landforms, distribution along altitudinal gradients, change in forest cover and the health of vegetation.

It is expected that the current studies on phyto-diversity of Nelliyampathy hills that lie very near to the south-western side of the Palghat Gap can augment the data requisites on drawing out the influence of Palghat Gap in the floral composition on either ends of the Gap. Moreover, the data generated at this micro level documentation with GIS mapping can be extrapolated into macro level biodiversity documentations at global level.

II. REVIEW OF LITERATURE

The understanding of diversity of plants is essential for conservation and management of ecosystems for a sustainable environment. The present review attempts to document the floristic studies in the country with special emphasis on Kerala.

II.1. Pioneer floristic documentations in India

The beginning of floristic explorations in India can be traced back to the arrival of Europeans. It was Garcia de Orta (1565), who published the first botanical work on the plants of Western Ghats, 'Coloqiuos dos Simples e Drogas da India'. It is a treatise which consists of a series of 57 deliberations on the healing and economic plants of India. It was then followed by 'Tractado de las drogas Y medicinas de las Indias orientales' (Acosta, 1578), dealing with the medicinally significant plants. The prestigious work of Hendrik Adriaan van Rheede (1678–1703), the 'Hortus Indicus Malabaricus', put a landmark on the field of plant sciences in India. The work describes 780 species in 12 different volumes. The major attraction of the work was the illustrations of plant specimens with high artistic quality as well as high scientific precision.

In the pathway of pioneering floristic studies, one of the most important contributions is from Robert Wight, with his 28 publications. It includes two illustrations viz., '*Icones Plantarum Indiae Orientalis'* (1838–1853) which was published in six volumes and *Illustrations of Indian Botany* (1838–1850) published in two volumes. The book *'Prodromus Florae Peninsulae Indiae Orientalis'*, published together with Arnott (1834) accounts for the plants found in Peninsular India.

The important contributions by William Roxburgh include two renowned works, '*Hortus Benghalensis'* (1814) and '*Flora Indica'* (1820-1824). The work 'Flora Indica' consists of detailed study in the Malabar Coast. The contributions by Beddome consist of 'Trees of the Madras Presidency' (1863) and 'The Flora Sylvatica of South India' (1869-1874) that contains the details of major timber trees of South India and Ceylon. His work entitled '*Icones Plantarum Indiae Orientalis*' (1868-1874) consists of illustrations of various Indian plants.

With the help of several workers, Graham (1839) compiled the data on 'A Catalogue of plants growing in Bombay and its vicinity'. Later Dalzell and Gibson (1861), prepared the 'Bombay Flora' by providing a description of the plants of this catalogue.

The first compiled work on the flora of the country was done by Hooker (1872-1897) and this work incorporates phytogeographical aspects of flora dividing the regions into seven

botanical provinces. He had enumerated 10,200 species which belong to 2073 genera under 170 families. Another important work is the Flora of the Presidency of Bombay (Cooke, 1901 - 1908) which covers the regions of Sind, Gujarat, Maharashtra and North Karnataka.

One of the recent estimates on floristics in India (Arisdason and Lakshminarasimhan, 2016) stated that, India harbours 47,513 plant species which includes 20,141 angiosperm taxa. This constitutes 17,527 species, 296 subspecies, 2215 varieties, 33 subvarieties and 70 forma, altogether 20,141 taxa of angiosperms under 2991 genera and 251 families in India, representing approximately 7% of the described species in the world. On a family level, Poaceae accounts for the highest number of taxa with 1291 species belonging to 263 genera followed by Orchidaceae with 1229 species under 184 genera and Leguminosae with 1192 species distributed in 173 genera. *Impatiens* is the largest genus with 205 taxa followed by *Primula* (135 taxa), *Ficus* (132 taxa), *Carex* (117 taxa), *Crotalaria* (104 taxa), *Dendrobium* (100 taxa) and *Habenaria* (100 taxa) (ENVIS, 2019).

II.2. Floristics of South India

Forest Trees of Travancore by Bourdillon (1908) which includes the 582 indigenous tree species of Travancore is one of the pioneer documentations of tree flora in south India. Other important works include The Flowering Plants of Travancore (Rao, 1914), The Flora of The Nilgiri and Pulney hill tops (Fyson, 1915-1920), Flora of Anamalais (Fischer, 1921), Flora of South Indian Hill Stations (Fyson, 1932) and the Vegetation of Nilgiris (Bor, 1938).

One of the best regional flora in South India is the 'Flora of Presidency of Madras' (Gamble and Fischer 1915 - 1936). This work summarizes the floristic diversity of Tamil Nadu, Andhra Pradesh, parts of Odisha, Kerala, Karnataka and the union territory of Lakshadweep.

The rare and threatened plants in South India (Henry, *et al.*, 1979), Flora of Coimbatore (Chandrabose & Nair, 1988), floristic diversity of Karnataka (Sharma, *et al.*, 1984), The Flora of Tamil Nadu-Carnatic (Matthew, 1983) and Red Data Book on Indian Plants (Nayar and Sastry, 1987; 1988; 1990) are some of the important literatures on South Indian Flora. The Flora of Tamil Nadu-Carnatic by Matthew (1983) contains valuable information on the deciduous floristic elements.

II.3. Floristic studies in Kerala

The district flora of Calicut (Manilal and Sivarajan, 1982) constitute the first comprehensive document of vegetation within a political boundary and recorded 983 species. Mohanan (1984) enumerated 1400 taxa belonging to 160 families from Quilon district. He also added a new genus record of *Kunstleria* to the Flora of India. Ramachandran and Nair

(1988) in their work on Flora of Cannanore, recorded 1132 taxa of flowering plants that belong to 658 genera and 157 families. Antony (1989) had listed 1151 species of vascular plants belonging to 731 genera under 184 families from Kottayam district. Following this, Sreekumar and Nair (1991) recorded 269 species of grasses from Kerala coming under 103 genera. Mohanan and Henry (1994) enumerated 1270 species belonging to 710 genera within 163 families from Thiruvananthapuram District while Sasidharan and Sivarajan (1996) listed 1645 species of flowering plants belonging to 703 genera under 129 families from Thrissur Forests.

The Flora of Nilambur (Sivarajan and Mathew, 1997) enumerated 1132 species of flowering plants in 665 genera and 130 families. Sunil (2000) recorded 1111 taxa of flowering plants under 617 genera from Alappuzha District. Later, AnilKumar *et al.*, (2005) enumerated 1249 species under 658 genera belonging to 148 families from Pathanamthitta district. During this period, from the entire state of Kerala, Daniel (2005) enumerated 687 species belonging to 59 families from Ranunculaceae to Connaraceae. Narayanan (2009) listed 2034 species belonging to 903 genera in 171 families from Wayanad district. Following this, a detailed study on the distribution pattern of endemic angiosperm taxa in Kerala (Shaju, 2010), recorded 267 endemic taxa, which are exclusively confined to Kerala state.

Comprehensive account on angiosperms of the state of Kerala (Sasidharan, 2011) summarized 5094 taxa belonging to 1,537 genera in 221 families. It includes 1697 taxa that are endemic to various geographic regions of the country and 490 threatened taxa which fall under various IUCN categories as Extinct, Critically Endangered, Endangered, Vulnerable and Near Threatened. Later, Murthy and Nair (2016), compiled the species belonging to families from Fabaceae to Cornaceae in Kerala.

Jagadeeshan (2018) carried out a floristic documentation of endemic flowering plants of Southern Western Ghats giving emphasis on Kerala part of Western Ghats. He could list 816 endemic taxa from this region and accounted for 337 endemic taxa with a distributional range inside the political boundaries of Kerala. According to this study, Rubiaceae accounts the highest number of endemics with 77 taxa, followed by Balsaminaceae (66 taxa), Melastomataceae (52 taxa), Lauraceae (42 taxa) and Leguminosae, Orchidaceae and Poaceae with 39 taxa each.

Soumya (2018) studied the floristic diversity in the forests of Kollengode range, Palakkad, Kerala and had attempted a resource mapping of this area. The study documented 955 angiosperm taxa under 135 families within a small area of 68 Sq. Km. Three new species

were reported in this documentation viz., *Oldenlandia vasudevanii* Soumya & Maya, *Sonerila nairii* Soumya & Maya and *Sonerila victoriae* Soumya & Maya.

Following this, Jisha (2019) documented vascular diversity of the riparian system of Thuthapuzha sub-basin in Kerala and recorded 648 taxa including 34 Pteridophytes and two Gymnosperms. Using GIS, the vegetation types were mapped and identified nine distinct land use classes along the riparian system, of which 50% of riparian land were used for the cultivation of mixed crops. Later, Rekha (2019) compiled the angiosperm diversity of the Dhoni hills region of the southern Western Ghats and recorded the presence of 668 taxa belonging to 110 families. The study also recorded the presence of *Argostemma sarmentosum* Wall., of Rubiaceae, which is a new record for South India.

Recently, Arabhi (2020) studied the microhabitat and angiosperm diversity in the low altitude hillocks of Palghat Gap region in Kerala. This documentation resulted in 633 angiosperms, including 623 species and 10 infra-specific taxa. This study also shows that Fabaceae forms the dominant family with 89 species which is followed by Poaceae with 43 species. Ten unique microhabitats which are limited by edaphic and climatic factors were identified in rocky hillock systems in which Soil Rich Areas were found to be most speciose microhabitats followed by Tree Cover and Tree Associated areas.

II.4. Studies on protected areas

Protected areas in southern Western Ghats are rich in diversity with higher rate of endemism and enhanced rate of threat category taxa. Many documentation studies have been done with different protected areas as target locations. From Anamudi peak, Shetty and Vivekanandhan (1971) recorded 317 taxa in 233 genera and 101 families. An interesting finding of their study was that the predominant shola elements were of tropical origin while quite a number of species on the shola fringes and the grasslands were of temperate origin.

Floristic documentation from Thenmala Forest Division (Subramaniyan, 1995) recorded 875 species under 524 genera within 132 families. Following this, Balasubramanyan and Induchoodan (1996) reported 761 sacred grove elements from the sacred groves of Kerala. Sasidharan (1997) enumerated 951 taxa of angiosperms from Shenduruny Wildlife Sanctuary that include 310 endemic taxa. Later, from Periyar Tiger Reserve, Sasidharan (1998) recorded 1965 taxa which includes 515 endemic species and 150 threatened taxa. Following this, Sasidharan (1999) reported 965 species of flowering plants from Chinnar Wildlife Sanctuary.

A preliminary study on the flora and vegetation of Aralam Wildlife Sanctuary by Augustine *et al.*, (2010) reported 961 taxa. It was Kumar and Sasidharan (2012) who studied

the angiosperm diversity of the shola forests viz., Mannavan shola, Idlimottai shola, Pambadum shola, Pullaradi shola, Idivara shola, Sholas of Eravikulam National Park and Vellarimala Shola. They could record 669 angiosperm taxa belonging to 369 genera under 111 families. This includes 246 endemics, of which 49 taxa were having new distributional records to Kerala.

From Achankovil forests, Mathew and George (2013) reported 1040 taxa of flowering plants belonging to 130 families. Later, floristic exploration in Aralam Wildlife Sanctuary (Dantas 2017) could record 1018 taxa under 586 genera in 123 families.

II.5. Studies on riparian vegetation, wetlands and *Myristica* swamps

The state of Kerala is endowed with forty-four rivers and the riparian vegetation studies have been attempted for few rivers. Attention to riverine beds of Kerala boomed after the flood in August 2018 and many studies on post flood events were also done in many of the rivers of the state.

From Vazhachal region of Chalakudy river basin, Bachan (2003) recorded 329 flowering plants from 260 genera under 97 families. Documentation of biodiversity potential of the riparian zone of Valapattanam river (Sreedharan, 2005) revealed the biodiversity in and around the river. From a detailed study on the riparian vegetation along the Cauvery River basin, Sunil *et al.*, (2016) enumerated how the anthropogenic pressures within the river basin have seriously affected the structure and composition of floristic elements of the riparian ecosystem. Phyto-sociological analysis of riparian tree species of Alakyam stream recorded a total of 63 species belonging to 37 families (Manoj *et al*., 2012).

The riparian vegetation of the Pamba river was studied by Joby (2012) and reported 545 angiosperms belonging to 119 families, 3 gymnosperms belonging to 3 families and 31 pteridophytes from 16 families. Study on the diversity of riparian plant species along the Meenachil river basin indicated that the riparian vegetation is floristically diverse, with about 441 species (Vincy, 2014). From the lower stretches of Bharathapuzha river, Liji and Paul (2016) enumerated 181 plant species. Following this, the floristic diversity around Thuthapuzha sub-basin was carried out (Jisha, 2019) and that enumerated the presence of 648 taxa in the sub-basin including the tributaries.

Myristica swamps are of rare occurrence in the state and the pioneering studies of this ecosystem includes the studies on the *Myristica swamps* of Kulathupuzha, Anchal and Shendurney in Western Ghats by Varghese and Kumar (1997). Later, Varghese and Menon (1999) studied *Myristica* swamp forests of the entire Southern Western Ghats of Kerala. A

checklist of about 221 taxa belonging to 88 families from *Myristica* swamp forests of Southern Western Ghats was prepared by Roby *et al.* (2014).

Wetlands form one of the major formations in the state and many studies attempted to document the vegetation diversity in major wetlands of the state. Major studies include documentation of aquatic and wetland plants in different ecozones (Joseph, 1991; Rejani, 1991; Janardhanam and Henry, 1992; Sivarajan and Joseph, 1993; Ansari *et al.*, 1994; Vijayan, *et al.*, 2004; Ansari *et al.*, 2009; Ansari, *et al*., 2016) and these elaborated the wetland diversity of the country.

Sabu and Ambat (2007) studied the vascular plants in 11 major wetlands of Kerala and recorded 725 species. From the studies on the kole wetlands of Thrissur, Sujana and Sivaperuman (2008) had recorded 140 species. Recently, Jose (2019) studied the diversity and ecology of wetland vascular plants of Palakkad and recorded 237 species of angiosperms belonging to 136 genera under 62 families along with ten wetland pteridophytes classified under 9 families and ten genera.

II.6. Revisionary and monographic studies

Apart from Floristic studies, revisionary and monographic studies that emphasize a single taxon provide a critical evaluation on the status of the taxon under consideration. Dated back to the 1960s , Saldanha (1963) studied the genus *Striga* Lour. and recorded five species of Striga from the Western part of Peninsular India. Majumdar (1965) who revised Indian Caryophyllaceae had recorded 134 species under 25 genera and also noted that *Silene* is the largest genera in this family. Later, Saldanha (1966) conducted a revision on *Torenia* L. from Western peninsular India and recorded seven species under the genera which includes two taxa with new distributional record to the area.

Mukherjee (1980) in his revisionary studies on Sapindaceae reported 22 species under 15 genera. Nair (1980) revised the genus *Microchloa* R. Br. and provided the ecology of the genus along with the distribution and a new key for separating the two species in this genus viz., *Microcholoa indica* (Linn. F.) P. Beauv. and *Microchloa kunthii* Desv. Subramanyam (1981) studied the genus *Utricularia* in Peninsular India, south of the Vindhya ranges. This study enumerated the distribution of 23 taxa in Peninsular India. Chandrabose and Nair (1981) from their revision on the genus *Polygala* from South India, recorded 15 species and provided an illustration for each taxon. Datta (1982) revised the bulbous Liliaceae and recorded 8 genera under the tribe Lilieae and 3 genera under Seilleae. Sivarajan and Mathew (1983) enumerated 22 species within the genus *Lindernia* in India which includes two new records to the floristic diversity of the Country. Rau and Narayana (1985) reviewed the tribe

Vernonieae in South India and reported 50 species belonging to 5 genera, of which 45 are known to occur in Western Ghats.

It was Tewary and Sarkar (1986) who studied the genus *Vatica* in South India and they could record the ecological features of the two species under this genus. From the revisionary studies on the genus *Adenia* by Rao *et al.,* (1987), it is revealed that there are only three species within this genus in South India. Sivarajan *et al.,* (1987) revised the genus *Spermacoce* in India and an artificial key for the identification of 10 species under this genus along with diagnostic features were provided. They also recorded *Spermacoce assurgens* Ruiz & Pav. which became the first-time record from the Indian mainland and also proposed a new combination, *Spermacoce malabarica* (Sivar. & Manilal) Sivar., R.V.Nair & Kunju. Paul and Nair (1988) revised the family Malvaceae and documented 104 species under 24 genera. Joseph and Sivarajan (1989) could record 19 species of *Rotala* from Peninsular India from their revisionary studies and also, they revealed two new taxa under this genus. The grasses of Kerala were studied by Sreekumar and Nair (1991) and they reported 296 grass species belonging to 103 genera. They proposed 2 new genera and 26 new species of grasses from their study. Sabu (1991) conducted the taxonomic and phylogenetic studies on South Indian Zingiberaceae and recognised 65 species and 2 varieties within 10 genera. Nair (1992) revised the family Rutaceae in India and recorded 28 genera, 79 species, 2 subspecies and 15 varieties occurring as indigenous or naturalized ones in the country and 8 exotic genera with as many species, known only in cultivation. These taxa were treated under 4 sub-families viz. Rutoideae, Flindersioideae, Toddalioideae and Aurantioideae.

Following the studies by Subramanyam (1981), Janarthanan and Henry (1992) studied the genus *Utricularia* in India and reported 35 species with most of them having a distribution in Peninsular India. Sivarajan *et al*., (1992) revised the genus *Psilanthus* and recorded seven species including three new taxa from India. Mangaly and Sabu (1993) revised the genus *Curcuma* in South India and reported seventeen species. Satyanarayana (1993) revised the tribe Cajaneae of the family Fabaceae in India and recorded 16 taxa under the genus *Cajanus*, 7 taxa from the genus *Dunbaria*, 1 species in *Eriosema*, 22 taxa under *Flemingia*, 1 in *Paracalyx* and 27 taxa under *Rhynchosia*. Ansari *et al.* (1994) revised the family Eriocaulaceae in India and recorded 65 species including eight new species and five new names attributing specific status to the infraspecific taxa of earlier workers. Sivarajan and Pradeep (1996) provided a monograph of the family Malvaceae from Southern Peninsular India and recorded 78 species. From the revisionary study on the family Balsaminaceae, Rajalal *et al.,* (1996) recorded 200 species in India of which 90 species have a distribution in

Peninsular India. It was Mathew and Satheesh (1997) who revised the family Podostemaceae in Kerala and recorded 13 species. The family Amaranthaceae was revised by Reddy and Raju (1997) and they reported 51 taxa under 17 genera from South India. The genus *Hedyotis* in the Indian sub-continent was studied by Dutta and Deb (2004) and they reported 74 species under seven sections of the genus. Gangopadhyay and Chakrabarthy (2005) studied the genus *Cryptocarya* in the Indian subcontinent and recorded 15 species of which 10 are endemic.

From the monographic study on Indian *Diospyros* (Singh, 2005), it is confirmed that there are 66 taxa under this genus in our country. Another important work is on the genus *Rhododendron* by Bhattacharyya and Sanjappa (2008) in which they have enumerated the habitat and ecological aspects of eighty species of *Rhododendron* in India. Kabeer and Nair (2009) conducted a study on grasses of Tamil Nadu and recorded 466 grass species which belong to 136 genera. The genus *Atuna* in southern Western Ghats was studied by Sasidharan and Sujanapal (2011) and they rediscovered *Atuna indica* (Bedd.) Kosterm. after a lapse of 150 years apart from type collection. A checklist of *Ficus* species in India was made by Chaudhary *et al.* (2012) and they listed 115 taxa including 89 species and 26 infraspecific taxa. They also noted that among these 115 taxa, only 10 taxa are endemic in nature.

An outstanding revisionary work on the genus *Impatiens* in Western Ghats was carried out by Bhaskar (2012). He recorded 119 taxa under the genus which includes 103 endemic and 90 threatened taxa. From this study, they have proposed 12 new species and 6 new varieties from Western Ghats. Nandikar (2013) conducted a revisionary study on the family Commelinaceae and recorded 91 species under 15 genera. The study also resulted in the rediscovery of *Murdannia striatipetala* Faden, after a lapse of 100 years and a new generic record *Tinantia* to Indian flora. Robi (2014) revised the family Lauraceae in South India and recorded 82 indigenous and 5 cultivated taxa belonging to 13 genera, consisting of one climber and 86 large shrubs or trees from South India. This revisionary study also revealed 10 new taxa.

The genus *Murdannia* in India was studied by Ancy (2014) and reported 26 species including two new species. Nandikar and Gurav (2014) in their study on the genus *Cyanotis* from India recorded thirteen taxa with two new combinations and three taxa with lectotypification. Shahina (2016) studied the family Gentianaceae in South India and recorded nine genera with 35 taxa, and proposed a new genus *Canscorinella* and a new species *Swertia raveendrae* Shahina & Nampy. Balan and Pradeep (2017), reported 12 species in the genus *Smithia* from South India and they have lectotypified 4 species. Janeesha (2017) conducted a

study in the family Gesneriaceae in South India and recorded 24 species and one variety under 7 genera. Tambde (2017) recorded 20 species of Sida under six different sections and proposed two new taxa. Following this, Thoiba (2018) studied the subtribe *Eragrostidinae* in Peninsular India and recorded 69 species and 7 varieties under seven genera. It includes five new species, four new records to India and two rediscovered taxa. Gupta (2019) revised the genus *Rubus* in India and recorded 73 species and 6 varieties. This study also lectotypified 13 names and neotypified one name under this genus.

II.7. Endemism

The concept of endemism dates back to nineteenth century, when A.P. de Candolle coined the term "endemism" for the distribution of an organism in a restricted habitat or geographical area isolated through ecological or temporal barriers (Morrone, 2008; Singh *et al*., 2015). Fragmented habitats, variation in climatic and edaphic conditions within shorter distances leading to the isolation of small species and populations subjected to differentiation can be counted as factors influencing endemism. It is the measurement of uniqueness of the flora and is indicated by the degree of endemism for an area. Consequently, it is important for prioritizing the area for conservation (Werff and Consiglio, 2004).

The taxonomic inventorying on endemic plants in India was initiated by Chatterjee (1939), wherein he included 2045 species of dicotyledons as endemic to British India. According to Cain (1944), a high degree of endemism is widely correlated with age and isolation of an area along with the diversification of its habitats, as these factors influence both evolution and survival. Western Ghats, which is a part of Peninsular India offers a rich centre for endemism at generic and specific levels, though family level endemism is lacking (Nayar, 1996). This report identified 3 megacentres and 25 micro centres of endemic plants in the Indian subcontinent. According to this, about 5725 species of flowering plants are endemic and they represent 33.5% of the flora.

From Western Ghats, a total number of 20 genera and 84 species were enlisted as endemics by Subramanyam and Nayar (1974). A checklist of endemic plants of Peninsular India along with a pattern of their distribution was given by Ahmedullah and Nayar (1986) in which they listed 57 endemic genera from Western Ghats region of Peninsular India.

Kumar *et al*., (2001) analysed the threat status of endemic orchid plants of Western Ghats and accounted for 80 threatened taxa under this category. According to Ramesh and Pascal, Western Ghats harbour a high percentage of endemic tree species (around 63%), which itself shows its relic nature (Rajkumar, 2001).

Other significant contributions on endemism in India and Western Ghats have been conducted by Nayar and Sastry (1987, 1988, 1990), Nayar (1996), Ramesh and Pascal (1997), Gopalan and Henry (2000), Mishra and Singh (2001), Joshi and Janarthanam (2004), Reddy, *et al*., (2007) and, Irwin and Narasimhan (2011).

Reddy *et al*., (2007) conducted a census of endemic flowering plants of Kerala. They collected 344 endemic taxa from Kerala which belongs to 175 genera of 65 families. They could record 7 endemic genera from Kerala viz., *Kanjaram, Haplothismia, Chandrasekharania, Limnopoa, Silentvalleya, Seidenfedeniella* and *Janakia.*

Irwin and Narasimham (2011) carried out a review on the endemic genera of angiosperms in India. This study identified 62 genera, which were thought to be endemic to India, but consequently lost their endemic status since they had distribution on other regions too. According to their studies, there are only 49 endemic genera in India which belong to 22 families with 80 different taxa.

Sashidharan (2011), accounted for 5079 angiosperm taxa from Kerala, among them, 1687 taxa were classified as endemic ones. This study divided these taxa into different categories as 814 strictly endemic to Southern Western Ghats; 272 endemic to Western Ghats; 234 endemic to Peninsular India; 192 endemic to Kerala part of Southern Western Ghats; 70 endemic to India; 105 endemic to South India. In this work they could also account for 2930 angiosperm taxa from Palakkad, out of which 785 species were endemic to various geographical regions of the country. While analyzing at family level, Rubiaceae holds the highest number of endemics with 134 taxa, followed by Poaceae (128 taxa), Orchidaceae (106 taxa), Fabaceae (102 taxa) and Acanthaceae (101 taxa). Irwin and Narasimham (2011) conducted a review on the endemic genera of angiosperms in India. They could trace out 49 endemic genera in India with the distributional range as 40 were confined to Peninsular India, 4 were in Himalayas, 3 in Andaman and Nicobar Islands. The remaining two genera, i.e., *Bentinckia* had a disjunct distribution and *Hardwickia* had a distribution throughout the dry deciduous forests of Peninsular India except Northeast India.

Singh *et al.* (2015), estimated that there are 4303 taxa of endemic angiosperms in India. They pointed out the fact that the southern Western Ghats comprises 62% of the total endemic plants of Western Ghats. Among them, 72% is represented by dicots and Poaceae hold the highest number of endemic taxa (335 taxa) followed by Orchidaceae (274 taxa), Fabaceae (274 taxa) and Rubiaceae (235 taxa). At the generic level, *Impatiens* harbour the highest number (169 taxa) followed by *Fimbristylis* (75 taxa), *Eriocaulon* (69 taxa) and *Strobilanthes* (68 taxa).

According to Arisdason and Lakshminarasimhan (2016), there are 4045 taxa belonging to 975 genera in 155 families which can be considered as strict endemics to the political boundary of India. Among these endemics, dicotyledones dominate with 2984 taxa (74%) under 720 genera in 128 families, whereas monocotyledones are represented by 1061 taxa (26%) belonging to 255 genera under 27 families. According to ENVIS (2019), there are 4303 endemic taxa in India.

Jagadeeshan (2018) documented the endemic flowering plants of Southern Western Ghats in Kerala region and recorded 816 taxa of which 300 taxa are present in Palakkad district.

II.8. Phytogeographical affinity

It was Augustin de Candolle (1838), who made the world-wide system of biogeographic regions on the basis of the distribution of plants and defined 40 areas of endemism, of which 34 lie in continents and 6 in island groups. Based on de Candolle's climatic and physiological criteria, Engler (1882), identified 4 realms namely Arcto-Tertiary Realm, Palaeo Tropical Realm, Neotropical Realm and the Ancient Ocean Realm.

Meher-Homji (1967) in his work, phyto-geography of South Indian hill stations discusses these hill stations to be intra-tropical montane regions. The two types of habitats such as sholas and grasslands were studied and there they found two principal floristic elements viz., tropical and extratropical (i.e., subtropical to temperate).

Takhtajan (1986) defined six kingdoms characterized by endemic families, subfamilies and tribes, with very high generic and species endemism. They are divided into 35 regions. Cox (2001) put forward a new system with five defined phytogeographical kingdoms viz., Holarctic, African, Indo-Pacific, South American and Australian and an undefined Antarctic kingdom. Morrone (2015) identifies nine regions distributed among 3 kingdoms viz., Holarctic kingdom with Nearctic and Palearctic regions, Holotropical kingdom with Neotropical, Ethiopian and Oriental regions, Austral kingdom with Cape, Andean, Australian and Antarctic regions. In addition to these nine regions, 5 transitional zones were also identified such as Mexican transition zone, Saharo-Arabian transition zone, Chinese transition zone, Indo-Malayan transition zone and South American transition zone.

As far as Western Ghats are concerned, Subramanyam and Nayar (1974) divided the whole stretch of Western Ghats into 4 different phytogeographical zones viz., hills from the river Tapti to Goa, hills from the river Kalinadi to Coorg, the Nilgiri, and the last one Anamalai, Palni and Cardamom Hills. Singh *et al*., (2015) modified it into five phytogeographic zones in Western Ghats viz., Malabar Coast and Northern Kodagu, Nilgiri -

Wayanad - Silent Valley Plateau and hills, Palni hills - Anamalai and high range hills, and Agasthyamalai -Thirunelveli - Mahendragiri hills. The target area of present study falls under the Palni hills-Anamalai and high range hills.

II.9. Taxonomic novelties - Contribution from Kerala

Recent floristic expeditions in the state of Kerala resulted in inventorying of taxonomic novelties under different ranks. A total number of 207 taxa had been reported from various districts of Kerala during the last five years ranging between 2015 and 2021. Among the 207 taxa, 33 are from Palakkad district and 13 are from Nelliyampathy hills of southern Western Ghats, the present area of focus in this investigation. Table 1. summarizes the literature regarding inventorying of taxa at different levels. Table 2. comprises the rediscoveries from Kerala while Table 3. lists out new records from Kerala.

Table 1. Taxonomic inventorying (2015-2021)

Sl. No.	Binomial Name	Type locality
1	*Anisochilus shoolamudianus* Sunil & Naveen Kumar (Sunil *et al*, 2015 b)	Shoolamudi, Ernakulam
2	*Christisonia mira* J. Mathew (Mathew & George, 2015 a)	Vellakkaltheri, Kollam
3	*Christisonia tomentosa* J. Mathew & K. V. George (Mathew & George, 2015 b)	Vellakkaltheri, Kollam
4	*Dimeria raviana* Kiran Raj & Sivadasan (Raj *et al*., 2015)	Periyar Tiger Reserve, Idukki
5	*Diospyros udaiyanii* P. S. Udayan (Udayan *et al*., 2015)	Malabar Wildlife Sanctuary, Kozhikode
6	*Eriocaulon biappendiculatum* Manudev, Robi & Nampy (Manudev *et al*., 2015)	Munnar, Idukki
7	*Eriocaulon manoharanii* Sunil & Naveen Kumar (Sunil & Kumar, 2015)	Pettimudi, Ernakulam
8	*Gentiana kurumbae* Anilkumar & Udayan (Anilkumar *et al*., 2015)	Attappady hills, Palakkad
9	*Gymnostachyum warrieranum* K. M. P. Kumar, Balach. & V. B. Sreek. (Kumar *et al*., 2015 a)	Aralam Wildlife Sanctuary. Kannur
10	*Hedychium matthewii* S. Thomas, B. Mani & S. J. Britto (Thomas *et al*., 2015)	Southern Western Ghats, Idukki
11	*Henckelia bracteata* Janeesha & Nampy (Janeesha & Nampy, 2015)	Kurisumala, Kottayam
12	*Impatiens matthewiana* Ramasubbu & Pandurangan (Ramasubbu *et al*., 2015)	Lochart Gap, Idukki
13	*Impatiens neo-modesta* Hareesh, K. M. P. Kumar & Sreekumar (Kumar *et al*., 2015 b)	Nelliyampathy, palakkad
14	*Impatiens sahyadrica* V. B. Sreek., Hareesh, Dantas & Sujanapal (Hareesh *et al*., 2015 a)	Silent Valley, Palakkad
15	*Impatiens sasidharanii* K. M. P. Kumar, Omalsree, Hareesh & V. B. Sreek. (Kumar *et al*., 2015 c)	Nelliyampathy, Palakkad

16	*Impatiens sasidharanii* var. *hirsuta* K. M. P. Kumar, Omalsree, Hareesh & V. B. Sreek. (Kumar *et al*., 2015 c)	Nelliyampathy, Palakkad
17	*Ischaemum kasaragodensis* Dileep & G. G. Nair (Pankaj and Nair, 2015)	Badiyadukka, Kasargod
18	*Justicia sivadasanii* Sunil, K. M. P. Kumar & Naveen Kum. (Sunil *et al*., 2015 a)	Bhoothathankettu, Ernakulam
19	*Litsea udayanii* Robi (Robi *et al*., 2015)	Pampadum Shola National Park, Idukki
20	*Memecylon kurichiarensis* Sivu, Aswathi. P & N. S. Pradeep (Sivu *et al*., 2015)	Kurichiarmala, Wayanad
21	*Oldenlandia dineshii* Sojan & V. Suresh (Jose *et al*., 2015)	Nemmara, Palakkad
22	*Ophiorrhiza sahyadriensis* Hareesh, V. B. Sreek & K. M. P. Kumar (Hareesh *et al*., 2015 c)	Silent Valley, Palakkad
23	*Rotala anamika* Lemiya (Lemiya & Pradeep, 2015)	Parappanangadi, malappuram
24	*Salacia wayanadica* Sujana, Nagaraju, Ratheesh & Anil Kumar (Sujana *et al*., 2015)	Chandanathode, Wayanad
25	*Solanum exarmatum* Anil, Maya, Soumya & Murugan (Anilkumar *et al*., 2015)	Way to Bonaccord-via-Vithura, Thiruvananthapuram
26	*Sonerila balasubramaniamii* Murugesan (Murugesan *et al*., 2015)	Nelliyampathy, Palakkad
27	*Sonerila gadgiliana* Ratheesh & Sivadasan (Narayanan *et al*., 2015)	Banasuramala, Wayanad
28	*Tripogon bimucronatus* Thoiba & Sunil (Thoiba *et al*., 2015)	Nelliyampathy, Palakkad
29	*Tripogon idukkianus* Sunil & Pradeep (Sunil *et al*., 2015 c)	Ramakkalmedu, Idukki
30	*Acmella uliginosa* Sw. var. *pentamera* Reshmi & Rajalakshmi (Reshmi & Rajalakshmi, 2016)	Bhudhanur, Alappuzha
31	*Beilschmiedia jacobii* Robi, Udayan & S. George (Robi *et al*., 2016)	Agasthyamala, Thiruvananthapuram
32	*Blyxa kasaragodensis* Biju, Josekutty & Augustine J. (Biju *et al*., 2016 a)	Kasargod
33	*Ceropegia nampyana* Manudev, Kambale & Pramod (Manudev *et al*., 2016)	Pookkunnu, Kozhikkode
34	*Cinnamomum mathewianum* Remya K.R., E.S.S.Kumar, Radhamany, Valsaladevi et R. Jagad. var. *ponmudianum* Remya Kr., E.S.S.Kumar, Radhamany, et Valsaladevi (Remyakrishnan *et al*., 2016)	Ponmudi, Thiruvananthapuram
35	*Cuscuta krishnae* Udayan & Robi (Udayan *et al*., 2016)	Munnar, Idukki
36	*Dendrobium anilii* P. M. Salim, J. Mathew & Szlach (Salim *et al*., 2016)	Vellarimala, Wayanad
37	*Exacum idukkianum* Geethakumary, Pandurangan, Ravichandran & Deepu (Geethakumari *et al*., 2016 c)	Pambadum Shola, Idukki
38	*Exacum keralense* Geethakum., K. M. P. Kumar, Pandur. & Deepu (Geethakumari *et al*., 2016 b)	Muthikulam, Palakkad
39	*Fimbristylis pokkudaniana* Sunil, Ratheesh & Sivadasan (Sunil *et al*., 2016 c)	Madayipara, Kannur
40	*Habenaria sahyadrica* K. M. P. Kumar, T. K. Nirmesh, V. B. Sreek. & Kumar (Kumar *et al*., 2016 e)	Muthikulam, Palakkad
41	*Impatiens glabrata* K. M. P. Kumar, Hareesh *et* Bhaskar (Kumar *et al*., 2016 a)	Muthikulam, Palakkad
42	*Isachne bhattii* Biju, Josekutty & Augustine J. (Biju *et al*., 2016 b)	Kalliad, Kannur

43	*Isachne edamalayarensis* Sunil, Naveen Kumar & Sivadasan (Sunil *et al*., 2016 b)	Edamalayar, Ernakulam
44	*Isodon purpurescence* Sunil, Naveen Kumar & Ratheesh (Kumar *et al*., 2016 b)	Edamalayar, Ernakulam
45	*Ixora predeepii* Anoop *et* Harikrishnan (Balan & Shanmugham, 2016)	Udumbanchola, Idukki
46	*Justicia gambleana* K. M. P. Kumar, Robi & Hareesh (Kumar *et al*., 2016 e)	Dhoni, Palakkad
47	*Lobelia lammersiana* P. Biju, Josekutty & Augustine (Biju *et al*., 2016 c)	Kasargod
48	*Memecylon lawsonii* Gamble var. *pedicellata* M. Das Das, Sujana, A. Pramanik & D. Maity (Das *et al*., 2016)	Kurichyarmala, Wayanad
49	*Miliusa paithalmalayana* Josekutty (Josekutty *et al*., 2016 b)	Paithalmala, Kannur
50	*Miliusa sahyadrica* G. Rajkumar, M. Alister, A. Nazarudeen & Pandu (Rajkumar *et al*., 2016)	Aryankavu, Kollam
51	*Murdannia nampyana* Joby, Rogi & Nisha (Joby *et al*., 2016)	Kakkanad, Ernakulam
52	*Nymphoides balakrishnanii* Biju, Josekutty, Haneef & Augustine J. (Biju *et al*., 2016 d)	Koovappara, Kasargod
53	*Nymphoides palyii* Biju, Josekutty, Haneef & Augustine J. (Biju *et al*., 2016 e)	Perla, Kasargod
54	*Piper rukshagandhum* J. Mathew (Mathew *et al*., 2016 a)	Kottavasal, Kollam
55	*Phyllanthus balakrishnanii* Sunil, K. M. P. Kumar & Naveen Kum (Sunil *et al*., 2016 a)	Schoolamudi, Ernakulam
56	*Plectranthus anamudianus* Smitha & Sunojk. (Smitha & Sunojkumar, 2016)	Rajamala, Idukki
57	*Seidenfadeniella salimii* J. Mathew, T. K. Hride, V. B. Sreek. & K. Madhus. (Mathew *et al*., 2016 b)	Aranamal, Wayanad
58	*Sida pradeepiana* Tambde and Sardesai (Tambde *et al*., 2016)	Marayur, Idukki
59	*Sonerila malabarica* Robi, Dantas & Sujanapal (Sujanapal *et al*., 2016)	Malabar Wildlife Sanctuary, Kozhikode
60	*Sonerila nairii* Soumya & Maya (Murugan *et al*., 2016)	Nelliyampathy, Palakkad
61	*Sonerila ponmudiana* Deepthikum. and Pandur. (Deepthikumari & Pandurangan, 2016)	Thiruvananthapuram
62	*Strobilanthes agasthyamalana* Sasidh., Dantas & Robi (Sasidharan *et al*., 2016)	Agasthyamala, Thiruvananthapuram
63	*Strobilanthes malabarica* Josekutty, Biju & Augustine J. (Josekutty *et al*, 2016 a)	Paithalmala, Kannur
64	*Symplocos nicolsonii* R. Jagadeesan, A. Gangaprasad, S. P. Mathew, E. S. S. Kumar *et* J. Stephan (Jagadeesan *et al*., 2016)	Mathikettan Shola, Idukki
65	*Tripogon munnarensis* Thoiba & Manudev (Thoiba *et al*., 2016)	Munnar, Idukki
66	*Zingiber sabuanum* K. M. P. Kumar & A. Joe (Kumar *et al*., 2016 c)	Dhoni, Palakkad
67	*Alseodaphne semecarpifolia* Nees var. *malabarica* Robi & Udayan (Robi & Udayan, 2017)	Malabar Wildlife Sanctuary, Kozhikode
68	*Anisochilus petraeus* J. Mathew & Yohannan (Mathew *et al*., 2017 c)	Achankovil, Kollam
69	*Aponogeton wolfgangianus* S. R. Yadav (Yadav, 2017)	Panamaram, Wayanad
70	*Ardisia nayarii* G. Rajkumar, A. Nazarudeen, M. Alister *et* Pandurangan (Rajkumar *et al*., 2017)	Achankovil, Kollam
71	*Arisaema peerumedense* J. Mathew (Mathew and George, 2017)	Peerumedu, Idukki
72	*Artabotrys sahyadricus* Robi, K. M. P. Kumar & Hareesh (Kumar *et al*., 2017 c)	Kuttampuzha, Ernakulam

73	*Arundinella muthikulamensis* Sunil, K. M. P. Kumar & V. P. Thomas (Sunil *et al*., 2017 a)	Muthikulam, Palakkad
74	*Chrysopogon narayanii* Sunil, Ratheesh & Sivadasan (Sunil *et al*., 2017 e)	Madayipara, Kannur
75	*Clematis pettimudiensis* K. M. P. Kumar, Jagadeesan & G. Prasad (Kumar *et al*., 2017 a)	Eravikulam National Park, Idukki
76	*Desmodium helicocarpa* Abdul Kader (Kader, 2017)	Pattikkad, Thrissur
77	*Dimeria kalliyadense* Biju, Josekutty & Augustine J. (Biju *et al*., 2017 a)	Kalliyad, Kannur
78	*Eriocaulon govindiana* Sunil & Ratheesh (Sunil *et al*., 2017 d)	Wayanad Wildlife Sanctuary, Wayanad
79	*Eriocaulon idukkianum* Manudev, Robi & Nampy (Manudev, 2017 a)	Munnar, Idukki
80	*Eriocaulon periyarense* Sunil, Naveen & Remya (Kumar *et al*., 2017)	Vadattupara, Ernakulam
81	*Eriocaulon pradeepii* Anto & Reshma (Anto & Reshma, 2017)	Kayampoovam, Thrissur
82	*Garcinia gamblei* P.S.Shameer, T. Sabu & N. Mohanan (Shameer *et al*., 2017)	Ponmudi, Thiruvananthapuram
83	*Hymenachne panduranganii* Remya J & Geethakum. (Remya & Geethakumari, 2017)	Thirunelli, wayanad
84	*Impatiens brittoi* B. Mani & S. Thomas (Mani & Thomas, 2017)	Adimali, Idukki
85	*Impatiens mankulamensis* K. M. P. Kumar, R. Jagad. & Nagaraj (Kumar *et al*., 2017 b)	Mankulam, Idukki
86	*Impatiens panduranganii* K. M. P. Kumar, R. Jagad. & G. Prasad (Kumar *et al*., 2017 b)	Pettimudi, Idukki
87	*Impatiens stolonifera* Robi & Manudev (Manudev *et al*., 2017 b)	Vagamon, Kottayam
88	*Isachne manilaliana* Sunil, K.M.P. Kumar & Thomas (Kumar *et al*., 2017 d)	Muthikulam, Palakkad
89	*Ischaemum sreenarayanii* Sunil, Nithya and Remya (Sunil *et al*., 2017 c)	Kombazha, Thrissur
90	*Kleinia subrahmanianii* Sunil & Naveen Kumar (Sunil *et al*., 2017 b)	Edamalayar, Ernakulam
91	*Lepidagathis benojiana* Jithin & Jose (Jithin & Jose, 2017)	Kulamavu, Idukki
92	*Liparis sanamalabarica* P. M. Salim (Salim, 2017)	Kattimatton hills, Wayanad
93	*Litsea gorayana* Udayan & Robi (Udayan & Robi, 2017)	Agasthyamala, Thiruvananthapuram
94	*Litsea indoverticillata* Robi & Udayan (Robi *et al*., 2017)	Kakkayam dam, Kozhikkode
95	*Millettia pulchra* (Benth.) Kurz var. *munnarensis* A. P. Balan & S. V. Pradeep (Balan *et al*., 2017 a)	Munnar, Idukki
96	*Nanooravia kayyurense* Shaju, Rajendraprasad, Rijuraj & Ratheesh Narayanan (Shaju *et al*., 2017)	Kayyur, Kasargod
97	*Nymphoides krishnakesara* var. *bispinosa* Biju, Josekutty, Haneef & Augustine J. (Biju *et al*., 2017 b)	Kakkad, Kasargod
98	*Oldenlandia vasudevanii* Soumya & Maya (Soumya *et al*., 2017 b)	Nelliyampathy, Palakkad
99	*Ophiorrhiza jacobii* Hareesh, Salish, G. Joseph & M. Sabu (Hareesh *et al*., 2017)	Kulamavu, Idukki
100	*Pilea victoriae* V. Suresh & Sojan (Jose *et al*., 2017)	Palakkad
101	*Piper canescens* J. Mathew (Mathew *et al*., 2017 a)	Vagamon, Idukki
102	*Piper megacarpum* J. Mathew (Mathew *et al*., 2017 a)	Periyar Tiger Reserve, Idukki

103	*Piper karpuragandham* J. Mathew & Yohannan (Mathew *et al*., 2017 a)	Vellarimala, Kozhikode
104	*Plectranthus petricola* J. Mathew & B. J. Conn (Mathew *et al*., 2017 b)	Chemmanar hills, Idukki
105	*Plectranthus idukkianus* J. Mathew, Yohannan & B. J. Conn (Mathew *et al*., 2017 b)	Panchalimedu, Idukki
106	*Plectranthus saxorum* J. Mathew, Yohannan & B. J. Conn (Mathew *et al*., 2017 b)	Vellarimala, Kozhikode
107	*Rotala kanayensis* Rijuraj, Rajendraprasad, Shaju & Pandurangan (Rijuraj *et al*., 2017)	Kannayi, Kannur
108	*Sonerila janakiana* Ratheesh, Sunil & Sivadasan (Narayanan *et al*., 2017)	Ambukuthi Mala, Wayanad
109	*Sonerila victoriae* Soumya & Maya (Soumya *et al*., 2017 a)	Nelliyampathy, Palakkad
110	*Strobilanthes jomyi* P. Biju, Josekutty, Rekha & J. R. I Wood (Biju *et al*., 2017 c)	Pandy lateritic plateau, Kasargod
111	*Strobilanthes philipmathewiana* J. Mathew & Yohannan (Mathew *et al*., 2017 d)	REC para, Kozhikode
112	*Strobilanthes sainthomiana* Augustine J., Josekutty & Biju (Augustine *et al*., 2017)	Paithalmala, Kannur
113	*Symplocos parvibracteata* J. Stephan, P. W. Fritsch & N. Mohanan (Stephan *et al*., 2017)	Chemunji, Thiruvananthapuram
114	*Thismia sahyadrica* Sujanapal, Robi & Dantas (Sujanapal *et al*., 2017)	Neriamangalam, Idukki
115	*Tylophora balakrishnanii* P. M. Salim & J. Mathew (Salim *et al*., 2017)	Arunamala, Wayanad
116	*Tylophora neglecta* J. Mathew (Salim *et al.*, 2017)	Thooval Mala, Kollam
117	*Vigna sathishiana* Balan & Predeep (Balan *et al*., 2017 b)	Idukki
118	*Ardisia agasthyamalayana* A. Nazarudeen, G. Rajkumar & M. Alister (Ahammed *et al*., 2018)	Agasthyamala, Thiruvananthapuram
119	*Dimeria kalerii* P. Biju, E. J. Josekutty & Augustine Jomy (Biju *et al*., 2018 a)	Karakode, Kasargod
120	*Eugenia kalamii* Shareef, E. S. S. Kumar, Shaju & Prakashkumar (Shareef *et al*., 2018)	Periya, Wayanad
121	*Fimbristylis agasthyamalaensis* Viji & Preetha (Viji & Preetha, 2018)	Ponmudi, Thiruvananthapuram
122	*Impatiens josephia* S. Thomas, B. Mani & S. J. Britto (Mani *et al*., 2018)	Idukki
123	*Impatiens saulierea* B. Mani, S. Thomas & S. J. Britto (Mani *et al*., 2018)	Kakkayam, Kozhikode
124	*Lagenandra cherupuzhica* P. Biju, Josekutty & Augustine (Biju *et al*., 2018 b)	Cherupuzha, Kasargod
125	*Lasianthus agasthyamalayanus* R. Jagad, S. P. Mathew, Gangapr. & E. S. S. Kumar (Jagadeesan *et al*., 2018)	Agasthyamala, Thiruvananthapuram
126	*Leucas dhonimalayensis* Sunojk. & K. P. Vimal (Vimal *et al*., 2018)	Dhoni, Palakkad
127	*Memecylon travancorense* Sivu, N. S. Pradeep, Pandur. & Ratheesh (Sivu *et al*., 2018)	Ponmudi, Thiruvananthapuram
128	*Oberonia muthikulamensis* K. Prasad, K. M. P. Kumar & P. Sudheshna (Prasad *et al*., 2018)	Muthikulam, Palakkad
129	*Parthenocissus renukae* Anto & Pradeep (Anto *et al*., 2018)	Mangad, Thrissur
130	*Peperomia ekakesara* Syam & S. Nampy (Radh & Nampy 2018)	Mathikettan Shola, Idukki

131	*Peperomia emarginatifolia* J. Mathew (Mathew *et al*., 2018 b)	Peechi-Vazhani, Thrissur
132	*Peperomia vellarimalica* J. Mathew & P. M. Salim (Mathew *et al*., 2018 b)	Vellarimala, Kozhikode
133	*Plectranthus sahyadricus* Smitha & Sunojk. (Smitha & Sunojkumar, 2018)	Munnar, Idukki
134	*Rhynchostylis cymifera* Yohannan, J. Mathew & Szlach., (Yohannan *et al*., 2018)	Vaniyampuzha, Malappuram
135	*Sonerila lateritica* Resmi, Manudev & Nampy (Resmi *et al*., 2018)	Kakkoor, Kozhikode
136	*Strobilanthes kannanii* E. J. Josekutty, P. Biju, J. R. I. Wood & J. Augustine (Josekutty *et al*., 2018c)	Paithalmala, Kannur
137	*Strobilanthes orbiculata* S. Thomas, B. Mani & S. J. Brittto (Thomas *et al*., 2018)	Vattavada, Idukki
138	*Symplocos abrahamii* R. Jagadeesan, A. Gangaprasad & S. P. Mathew (Jagadeesan *et al*., 2017)	Eravikulam National Park, Idukki
139	*Utricularia sunilii* Naveen Kum. & K. M. P. Kumar (Kumar *et al.*, 2018)	Nelliyampathy, Palakkad
140	*Amaranthus saradhiana* S. Arya, V. S. A. Kumar, W. K. Vishnu & Rajesh Kumar (Arya *et al*., 2019)	Palode, Thiruvananthapuram
141	*Asystasia gangetica* (L.) T. Anderson var. *krishnae* Dhruvan, Pandur. & Mohanan, (Tandyekkal *et al*., 2019)	Kulathupuzha, Kollam
142	*Arisaema fischeri* Manudev & Nampy (Manudev et al., 2019)	Agasthyamala Biosphere Reserve, Thiruvananthapuram
143	*Arisaema subulatum* Manudev & Nampy (Manudev *et al*., 2019)	Agasthyamala, Thiruvananthapuram
144	*Begonia bachulkarii* Aitawade, Joseph John & S. R. Yadav (Aitwade *et al*., 2019)	Nelliyampathy, Palakkad
145	*Begonia bracteolata* N. Krishna, Pradeep & B. Mani, Edinburgh (Krishna *et al*., 2019)	Karimanal, Idukki
146	*Habenaria agasthyamalaiana* Jalal, Jayanthi & Sureshkumar, (Jalal *et al*., 2019)	Shendurney Wildlife Sanctuary, Kollam
147	*Habenaria keralensis* K. Prasad (Prasad, 2019)	Agasthyarkoodam, Thiruvananthapuram
148	*Hedyotis indirae* K. M. P. Kumar & P. T. Aiswarya (Kumar *et al*., 2019)	Muthikulam, Palakkad
149	*Impatiens eravikulamensis* Hareesh & Salish (Salish *et al*., 2019)	Eravikulam National Park, Idukki
150	*Leucas sahyadriensis* Sunojk. (Sunojkumar, 2019)	Western Ghats, South India
151	*Liparis tortilis* P. M. Salim & J. Mathew (Salim *et al*., 2019)	Aranamala, Wayanad
152	*Memecylon idukkianum* Nampy & Syam Radh (Radh & Nampy, 2019)	Mathikettan Sola, Idukki
153	*Oberonia saint-berchmansii* Kad. V. George & J.Mathew (George *et al*., 2019)	Nedumkandam, Idukki
154	*Phanera murthyi* Vadhyar & J. H. F. Benj, (Vadhyar & Benjamin, 2019)	Malabar Wildlife Sanctuary, Kozhikode
155	*Polycarpaea rangaiahiana* Geethakum., Deepu et Viji, (Geethakumari *et al*., 2019)	Taliparamba, Kannur
156	Rotala baileyana Rogi, Joby, Rameshan, Nisha & I. Antony (Thomas *et al*., 2019)	Kayyur, Kasargod
157	*Sonerila epeduncula* J. Mathew (Mathew *et al*., 2019)	Parunthumpara, Idukki
158	*Strobilanthes carmelensis* Sinj. Thomas, B. Mani, Britto and A. K. Pradeep, (Thomas *et al*., 2019)	Vaduvanchal, Wayanad

159	*Syzygium ponmudianum* A. K. Sreekala, R. Ramasubbu, Divya S. Pillai & Anjana Surendran (Sreekala *et al*., 2019)	Ponmudi hills, Thiruvananthapuram
160	*Themeda palakkadensis* Chorghe, K. Prasad & Lakshmin (Chorghe *et al.*, 2019)	Elivai Malai, Palakkad
161	*Zeylanidium manasiae* R. Krishnan, P. Khanduri & R. Tandon (Krishnan *et al*., 2019)	Thommankuthu Waterfalls, Idukki
162	*Amaranthus rajasekharii* S. Arya, V. S. A. Kumar, W. K. Vishnu & Iamonico (Arya *et al*., 2020 a)	Palode, Thiruvananthapuram
163	*Ceropegia ariyittapparensis* P. Biju, Josekutty & Augustine (Biju *et al*., 2020)	Kasargod
164	*Cryptocarya sheikelmudiyana* A. K. H. Bachan & P. K. Fasila (Fasila *et al*., 2020)	Sheikelmudi, Thrissur
165	*Elatostema agasthyanum* Jeomol & Sunojk. (Jeomol & Sunojkumar, 2020 a)	Agasthyamala, Thiruvananthapuram
166	*Eugenia sphaerocarpa* Vadhyar, Sujana, J. H. F. Benj. & Murthy (Vadhyar *et al.*, 2020)	Malabar Wildlife Sanctuary, Kozhikode
167	*Hedyotis shoolamudianus* Sunil, Naveen Kum. & K. M. P. Kumar (Kumar *et al*., 2020)	Shoolamudi, Ernakulam
168	*Gentiana sasidharanii* K.M.P.Kumar & Sunil (Kumar *et al*., 2020 b)	Idukki
169	*Henckelia wayanadensis* Janeesha & Nampy (Janeesha & Nampy, 2020)	Kaduvakuzhi hill top, Wayanad
170	*Impatiens nidholapathra* Vishnu & Nampy (Vishnu *et al*., 2020)	Mankulam, Idukki
171	*Impatiens grandispora* Nampy & Vishnu (Vishnu *et al*., 2020)	Mankulam, Idukki
172	*Lepidagathis ananthapuramensis* V. S. A. Kumar, P. Biju, Sindu Arya, Josekutty & Augustine (Anilkumar, 2020)	Kasargod
173	*Ludwigia venugopalanii* Sindu Arya, V. Suresh, P. Biju & V. S. A. Kumar (Arya *et al*., 2020 c)	Kasargod
174	*Myristica trobogarii* Govind & M. Dan (Govind *et al*., 2020)	Agasthyamala Biosphere Reserve,Kollam
175	*Peucedanum pradeepianum* K. M. P. Kumar, Hareesh & Balach (Kumar *et al*., 2020 a)	Dhoni hills, Palakkad
176	*Pothos boyceanus* G. Rajkumar, Shaju, Nazarudeen & Prakashk. (Rajkumar *et al*., 2020)	Valara, Idukki
177	*Sonerila sulpheyi* P. M. Salim & J. Mathew (Salim *et al*., 2020)	Wayanad
178	*Strobilanthes scopulicola* A. K. Pradeep, Sinj. Thomas, B. Mani & Britto (Thomas *et al*., 2020)	Meppadi, Wayanad
179	*Utricularia kamarudheenii* V. S. A. Kumar & Sindhu Arya (Arya *et al*., 2020 b)	Kottayam
180	*Asyneuma cupulare* K. V. Divya & Nampy (Divya *et al*., 2021)	Meesappulimala, Idukki
181	*Alternanthera ebracteolata* Sindu Arya & V. S. A. Kumar (Arya & Anilkumar, 2021)	Kasargod
182	*Alternanthera indica* Sindu Arya, V. S. A. Kumar, Sánch. Pino & Iamonico (Arya *et al*., 2021 d)	Thiruvananthapuram
183	*Argostemma quarantena* Balan & Robi (Balan *et al*., 2021)	Vagamon, Idukki
184	*Burmannia munnarensis* Dani & Nampy (Francis *et al*, 2021)	Munnar, Idukki
185	*Cryptocarya muthuvariana* R.Jagad., Sureshkumar, Gangapr. & S. P. Mathew (Jagadeeshan *et al.*, 2021)	Edamalakkudy, Idukki
186	*Dendrobium gopalanii* M.Sulaiman & Murugan (Sulaiman & Murugan, 2021)	Agasthyamala biosphere reserve, Thiruvananthapuram

187	*Elaeocarpus gadgilii* A. M. Maya, V. Suresh & K. M. P. Kumar (Manoharan *et al*., 2021a)	Nelliyampathy, Palakkad
188	*Eriocaulon meenachilense* Anoop & Robi (Anoop & Robi, 2021)	Meenachil, Kottayam
189	*Eugenia pokkudanii* A. M. Maya, K. M. P. Kumar & V. Suresh (Manoharan *et al*., 2021b)	Nelliyampathy, Palakkad
190	*Glycosmis nelliyampathiensis* Jabeena & Maya (Jabeena *et al*., 2021) (Present Study)	Nelliyampathy, Palakkad
191	*Impatiens achudanandanii* Kumar V. S. A., M. G. Govind & Sindhu Arya (Arya *et al*., 2021 b)	Kallar, Thiruvananthapuram
192	*Impatiens danii* M. G. Govind, Sindhu Arya, V. Suresh & Kumar V. S. A. (Arya *et al*., 2021 b)	Munnar, Idukki
193	*Impatiens rakthakesara* M.Vishnu & Nampy (Mohan *et al.*, 2021)	Anamudi, Idukki
194	*Impatiens shailajae* Sindhu Arya & Kumar V. S. A. (Arya *et al*., 2021 b)	Sangili, Thiruvananthapuram
195	*Litsea anamalayana* Robi & Udayan (Robi & Udayan, 2021 a)	Nelliyampathy, Palakkad
196	*Litsea manilaliana* Robi & Udayan (Robi & Udayan, 2021 b)	Wagamon, Idukki
197	*Madhuca balakrishnanii* E. S. S. Kumar, Shailaja & Shareef (Kumar *et al.,* 2021a)	Thodiyoor, Kollam
198	*Neanotis prabhuii* Sunil, Salim & Ratheesh (Sunil *et al.,* 2021)	Chembra, Wayanad
199	*Parasopubia raghavendrae* K.V.Divya & Nampy (Venugopal *et al.,* 2021)	Mathikettan Shola, Idukki
200	*Phyllanthus sanatanadharmae* Mathew & Yohannan (Mathew & Yohannan, 2021)	Vellarimala, Kozhikode
201	*Polycarpaea palakkadensis* V.S.A.Kumar, S.Arya & Suresh (Arya *et al.,* 2021 a)	Malampuzha, Palakkad
202	*Sida keralensis* E. S. S. Kumar, Shailaja, Sreekala, Prathipan & R. Prakashkumar (Kumar *et al.,* 2021)	Thiruvananthapuram
203	*Sonerila kanjilasseriensis* Arunraj, R. Reshma & Vishnupr. (Arunraj *et al*., 2021)	Kanjilasseri, Kozhikode
204	*Sonerila longipedunculata* Resmi & Nampy (Resmi & Nampy, 2021 a)	Banasura, Wayanad
205	*Sonerila stolonifera* Resmi & Nampy (Resmi & Nampy, 2021 b)	Silent Valley National Park, Palakkad
206	*Strobilanthes pradeepiana* Thomas, Britto & Mani (Thomas *et al.,* 2021)	Munnar, Idukki
207	*Symplocos mohananii* J. Stephan, R. Akhil & P. W. Fritsch (Stephan *et al.,* 2021)	Ponmudi, Thiruvananthapuram

Table 2. Rediscoveries from Kerala

Sl. No.	Binomial Name	Locality
1	*Thottea dalzellii* (Hook. f.) Karthik. & Moorthy (Kumar *et al*., 2015)	Wayanad
2	*Henckelia lyrata* (Wight) A. Weber & B. L. Burtt. (Geethakumari *et al*., 2016 a)	Idukki
3	*Phyllanthus macrocalyx* Mull. Arg. (Kumar *et al*., 2016 a)	Ernakulam
4	*Madhuca diplostemon* (C. B. Clarke) P. Royen (Shailajakumari *et al*., 2020)	Thiruvananthapuram
5	*Hedyotis beddomei* Hook. f. (Kumar *et al*., 2018)	Palakkad
6	*Oldenlandia hygrophila* Bremek. (Aswani *et al*., 2020)	Palakkad
7	*Burmannia indica* Jonker (Francis *et al.*, 2021)	Idukki

Table 3. New distributional records for India from Kerala

Sl. No.	Binomial Name	Locality
1	*Commelina africana* L. subsp. *zanzibarica* Faden (Joseph *et al*., 2015)	Malappuram
2	*Ophiorrhiza rugosa* Wall. var. *angustifolia* Ridsdale (Hareesh *et al*., 2015 b)	Wayanad
3	*Salvia misella* Kunth. (SunojKumar & Pradeep, 2015)	Idukki
4	*Macroptilium lathyroides* (L.) Urban (Kumar *et al*., 2016 b)	Wayanad
5	*Peristylus tentaculatus* (Lindl.) J. J. Sm. (Kumar *et al*., 2016 d)	Ernakulam
6	*Asystasia variabilis* (Nees) Trimen (Mathew *et al*., 2017 d)	Idukki
7	*Eragrostis paniciformis* (A. Braun) Steud. (Veldcamp *et al*., 2017)	Idukki
8	*Fimbristylis scabrida* Schumach. (Viji & Preetha, 2017 a)	Pathanamthitta
9	*Fimbristylis vanoverberghii* Kük. (Viji & Preetha, 2017 b)	Thiruvananthapuram
10	*Cinnamomum ovalifolium* Wight (Robi *et al*., 2018)	Thiruvananthapuram
11	*Liparis tschangii* Schltr. (Mathew *et al*., 2018 a)	Wayanad
13	*Eriocaulon tuberiferum* Kulkarni & Desai (Sunil *et al*., 2018)	Palakkad
12	*Iochroma arborescens* (L.) J. M. H. Shaw (Nampy *et al*., 2019)	Idukki
13	*Pilea hyalina* (Jeomol & Sunojkumar, 2020 b)	Idukki
14	*Hanguana anthelminthica* (Blume ex Schult. & Schult. f.) Masam (Balan *et al*., 2020)	Alappuzha
15	*Amaranthus powelii* S. Watson (Aarya *et al*., 2020 c)	Kasaragod

II.10. Ethnobotanical Studies

For better conservation and utilization of biological resources, it is necessary to document the indigenous knowledge through ethnobotanical studies (Shyma and Deviprasad, 2012). The theories, beliefs and the experiences of the indigenous people form the very basis of traditional ethno-medicine (Jennymol and Suganthi, 2017). In Kerala, there are 43 tribal

groups and among them, the most primitive groups are 'Kadars' from Cochin, 'Cholanaikkans' from Nilambur and 'Malamalassars' of Palakkad. In Palakkad there are two major tribal zones, one is Attappady, and the other one is Parambikulam (Remesh, 2015)

Shyma and Deviprasad (2012) studied traditional use of medicinal plants in Mananthavady of Wayanad district and identified 295 medicinal plants belonging to 93 families. Yabesh *et al*., (2014) in their study on the medicinal plants used by traditional healers of Silent Valley had recorded 102 taxa belonging to 53 families distributed in 95 genera. Remesh (2015) studied the different tribal groups of Palakkad district and recorded 8 different tribal groups in the district namely Eravallans, Irulars, Kadars, Kurumbars, Malamalasars, Mudugars, Malasars and Muthugans. Among them Kadars and malamalasars are considered to be primitive groups and they continue their nomadic way of life. The author could record 560 plants belonging to 423 genera and 148 families being used by these people. There were 38 endemic plants among them, 3 endangered, 13 vulnerable taxa and 161 conservation dependent.

Vijayakumar *et al*., (2015) carried out a quantitative ethnomedicinal study of plants used in Nelliyampathy hills. They used the Pearson Correlation Coefficient to calculate the Use Value and Relative Frequency Citation of the collected plants. From their study, they could document 85 taxa which belong to 78 genera and 49 families.

Later, Jennymol and Suganthi (2017) in their studies on the medicinal plants used by the tribes of Attappady documented 51 taxa belonging to 28 families. The most represented family among them were Asteraceae (6 Species) and Lamiaceae (5 species).

II.11. Conservation assessment

The assessment on the distribution and survival status of the taxa are significant while analyzing the regional conservation significance of a specific ecozone or a habitat. Studies in this dimension have contributed much in designating an area as conservation significant.

Sasidharan (2003) stated that there are 495 RET taxa in Kerala including 151 tree species. On evaluating these species using IUCN criteria on threatened species, it included 2 species under the criteria Extinct in the Wild, 26 Critically Endangered taxa, 63 Endangered, 38 Vulnerable and 22 species under the category Low Risk or Near Threatened. Majority of the threatened taxa (121 taxa) were shown to be the members of Evergreen and Semi-evergreen forest ecosystems followed by Shola forests (23 taxa). There was only one representative each from Dry Deciduous (*Cryptocoryne consobrina* Schott.) and Moist Deciduous forests (*Glyptopetalum lawsonii* Gamble).

Puyravaud *et al*., (2003) worked on the Atlas of Endemics of the Western Ghats with focus on the distribution of tree species in the evergreen and semi-evergreen forests formerly done by Ramesh and Pascal (1997), and recorded 352 endemic tree and shrub taxa along with 50 threatened species.

Reddy *et al*., (2007) accounted for 50 threatened taxa from Kerala in their work 'Census of endemic flowering plants of Kerala'. Among this 50 taxa, 5 species were recorded as rare, 4 taxa as vulnerable, 16 endangered and 25 taxa were considered as indeterminate ones.

Sasidharan (2011), recorded 493 threatened taxa within the political boundary of Kerala state, of which 460 are endemics. It includes one Extinct taxon, 82 Critically Endangered, 180 Endangered, 191 Vulnerable, 36 Near Threatened and 3 taxa coming under the Data Deficient category. These threatened plants include 412 dicots and 81 monocots. On analyzing these threatened plants based on habit, herbs account for the highest number (166 taxa) followed by shrubs (142 taxa) and trees (141 taxa). Among these 493 taxa, 215 taxa were present in Palakkad district with 198 endemics. It includes 23 Critically Endangered, 68 Endangered, 101 Vulnerable, 22 Near Threatened ones and one taxon coming under Data Deficient category.

Barik *et al*., (2018) provided a review on the geographic distribution of the threatened taxa of India, their threat status and the actions taken for their conservation. The study could list 2704 threatened plant species which belong to 1031 genera under 217 families. Among them, 2641 taxa were angiosperms and Orchidaceae accounts the highest number of threatened ones with 624 taxa followed by Fabaceae (185), Poaceae (164), Rubiaceae (103), Asteraceae (88), Euphorbiaceae (70), Asclepiadaceae (62) and Acanthaceae (60). A state wise analysis showed that Chhattisgarh (506) had the highest number of threatened taxa followed by Tamil Nadu (431) and Kerala (425).

Conservation assessments of taxa carried out on the basis of IUCN criteria and ENVIS (2019), assessed that there are 416 threatened taxa all over India including 6 Extinct species, 2 species under the category Extinct in the Wild, 80 Critically Endangered, 179 Endangered and 149 Vulnerable taxa.

II.12. Invasive flora

According to the Convention on Biological Diversity (1992), biological invasion of alien species is the second worst threat to biodiversity, with the loss of habitat being the first one. Lowe *et al*., (2000) could list 100 world's worst invasive alien taxa which included 32

plant species. Out of these, one is a gymnosperm (*Pinus pinaster* Aiton) and the rest are angiosperms. Pysek *et al*., (2004) classified the whole plant system to Native and Aliens and the aliens were further classified into cultivated and non-cultivated taxa. Non-cultivated plants were further classified into Casual and Naturalized taxa which include invasive and non-invasive ones.

Reddy *et al*., (2008) listed 173 alien invasive plant species from India, which belong to 117 genera under 44 families. Among them, 74% were from Tropical America, 11% were from Tropical Africa and the remaining percentage were from Afghanistan, Australia, Brazil, East Indies, Europe, Madagascar, Mascarene Islands, Mediterranean, Mexico, Peru, Temperate South America, Trop. West Asia, West Indies and Western Europe.

Sajeev *et al*., (2012) reported 38 alien invasive species from various forests of Kerala and classified them into various categories based on the risk potential such as 10 species as high-risk taxa, 12 as medium risk species, 10 low risk ones and 6 as insignificant taxa. The study pointed out that most of the introductions of these taxa (31 species) into the forests of Kerala was intentional. Sankaran *et al*., (2012) listed and defined these 82 plants in their 'Handbook on invasive plants of Kerala'.

ENVIS (2019), listed a total number of 173 invasive taxa from India with most of them having Tropical American nativity. The family Asteraceae (33 taxa) consists of the highest number of invasives followed by Fabaceae (30 species) and Convolvulaceae (12 taxa).

The National Biodiversity Authority (Sandilyan, 2018) recorded 173 alien invasive species including 54 terrestrial and 8 aquatic invasive alien plant species in India. According to the Kerala State Biodiversity Board (2020), there are 82 invasive plant species in Kerala with one pteridophyte and remaining angiosperms. Among these invasives, family Fabaceae accounts for the highest number with 20 species, followed by Asteraceae (13 taxa), Convolvulaceae (7 taxa) and Solanaceae (6 species). The Asia-Pacific Forest Invasive Species Network (APFISN, 2021) listed 49 Forest Invasive Species from India having a national level distribution and 36 species with a regional distribution.

II.13. Monotypism

The monotypic taxa are significant elements from conservation point of view as it is represented by a single taxon within it (Bora, 2015) and are vulnerable due to environmental threats, ecological substitutions, pathological causes and habitat destruction or over exploitation. Bora (2015) pointed out the fact that most of the monotypic taxa are likely to be

endemic to a region. The study on North-East Indian flora substantiated this and they could document 93 monotypic genera with 70 dicots and 23 monocots.

According to Rana and Ranade (2009), there were 236 monotypic genera of angiosperms in India. Out of them 176 were dicots while 60 were monocots. The family Poaceae (32 taxa) includes the highest number of monotypic genera followed by Leguminosae (15 taxa), Asteraceae (12 taxa) and Rubiaceae (11 taxa). Menispermaceae are the family with the highest proportion of monotypic genera, in terms of proportion of monotypes relative to the total taxa in a family. Herbaceous taxa predominate among these monotypic ones with 150 genera. Monotypic taxa need special conservation because of the fact that their related genomes doesn't exist and they represent species which could be lost forever. They also state that these monotypes have regional specificity and they do not possess wide geographical affiliations. This study states that the monotypism in the case of trees shows the relic nature of that ecosystem.

II.14. Resource Mapping

In an era where forest depletion is increasing drastically, assessing and quantifying the current forest resources status is a prerequisite for forest resource improvement, planning and implementation (Mekonnen *et al.*, 2015). The importance of regional mapping of vegetation relies on the fact that it helps in implementing conservation measures and natural management of resources (Lawson and Johnson, 2006). One of the pioneering attempts of Resource mapping in Western Ghats was by Ramesh and Pascal (1997). Vegetation mapping and analysis of Eravikulam National Park using Remote Sensing technique was carried out by Menon (1997). Suraj *et al*., (1997) carried out a case study in Chimmony Wildlife Sanctuary using Land Cover mapping using Remote Sensing data and found out that Moist Deciduous forests are the predominant forest type of that area. This was followed by Vegetation map analysis in Aralam Wildlife Sanctuary (Menon, 1999) and Neyyar Wildlife Sanctuary (Menon, 2001). The land use-land cover mapping helps in understanding the consequences of overexploitation of resources and to maintain the present natural resources (Kaul and Sopan, 2012). Varghese and Murthy (2006) attempted to use geo informatics as a tool for conservation of RET species of Peppara Wildlife Sanctuary. Giriraj *et al*., (2008) studied the spatial forest cover change patterns in the Kalakad Mundanthurai Tiger Reserve in South Western Ghats using time series remote sensing data from 1970s to 2004. Magesh (2014) had attempted land use-land cover mapping along with temporal analysis of forest cover density and Phyto-diversity analysis of the different forest types of the Parambikulam Tiger Reserve.

Dutta *et al*., (2016) utilized the technique to analyze forest cover changes and the reasons for these changes in the Agasthyamalai Biosphere Reserve in Western Ghats.

The Remote Sensing technology and GIS mapping are useful in forest fire risk analysis also. Such studies have been carried out by Ajin *et al*., (2014) in Peppara Wildlife Sanctuary, Nemmara Forest Division (2015), Thenmala Forest Division (2016 a), Idukki Wildlife Sanctuary (2016 b) and Periyar Tiger Reserve (2016 c).

From the foregoing review, it is evident that a comprehensive floristic account of Nelliyampathy hills of southern Western Ghats giving emphasis at explorative documentation, endemics and threatened elements with vegetation mapping has not yet been attempted, though reports on novel taxa are getting published periodically. The high number of recent plant discoveries from Nelliyampathy itself shows the lack of thorough exploration in this part of Western Ghats. It is in this backdrop, the present investigation is being attempted.

III. MATERIALS AND METHODS

Floristic diversity analysis along with biomonitoring and resource Mapping of Nelliyampathy hills on southwestern side of the Palghat Gap has been envisioned in the present investigation. Following is the summary on the study area and locations focused along with the details of the methodology adopted.

III.1. Study Area

The Nelliyampathy hills constitute one of the major stretches of southern Western Ghats in Nemmara Forest Division under two sections of Kollengode Forest Range viz., Kollengode and Thekkady Sections and three sections of Nelliyampathy Forest Range namely, Nelliyampathy section, Padagiri section and Pothundy section (Varghese, 2015). The area is located between 10º20' and 10º48' North latitudes and 76º30' and 76º55' East longitudes (Mathew *et al*., 1998). The location map of the study area is summarized in Fig. 1.

Topographically the study area is within the main Ghats and these hills lie to the south-western side of the Palghat Gap with a maximum elevation of 1,633 m above MSL. The Eastern and Southern side of the hills merge with Parambikulam tiger reserve. The South-western portions descend to Karappara valley while Northern and Western sides descend into Pothundy and Kalchady areas. All these slopes and portions of the plateau are covered with Reserve forests of Nemmara division (Varghese, 2015).

The tributaries of Chalakudy river originate from these hill ranges (Ramachandran and Swarupanandan, 2013) and the majority of the forests in this region are of the wet evergreen type that are located on the western slopes. Other forest types include moist mixed deciduous forests, tropical semi-evergreen forests and the grassland shola ecosystem (Lobo *et al*., 2006).

III.1.1. Topography

Nelliyampathy forests form a contiguous block along the northern and western slopes of Western Ghats and the terrain is having a rugged nature, with its numerous subsidiary ridges and valleys taking off in different directions with open rocky outcrops and small patches of grasslands on higher elevations (Mathew, 2001).

III.1.2. Rivers and tributaries

Three major rivers such as Karappara river, Pothundy river and Thekkady river have their tributaries originating from the hills. The streamlets such as Chakkalithodu, Maravalli Thodu, Pullaikalthodu and various other small ones originate from the South Western portion of the Nelliyampathy reserve forest and join to form Karappara river which flows towards south and joins the Chalakudy river. Thekkady river which joins the Parambikulam river, in

turn joins with the Chalakudy river, has their origin from the Southeast portion of the Nelliampathy RF and Thekkady VF through various tributaries like Bagapallam river, Vetiar, Pullaikalthodu and other minor streamlets. Pothundy reservoir which is located in the valley of Nelliyampathy hills receives the streamlets such as Meenchadypuzha and Padipuzha from the northern end of Nelliyampathy RF.

III.1.3. Climate and Rainfall

The climatic conditions in the hills are fairly cool at higher elevations and the temperature varies from 8ºC to 32ºC in the high ranges of Nelliyampathy hills. The hill tract receives both Southwest and Northeast monsoons and the average rainfall goes up to 3400 mm. The major portion of rainfall is received from southwest monsoon and is mainly due to the elevation of the hill tract. The precipitation being heaviest on the eastern and southeastern aspects of the hill slopes with active southwest monsoon extending up to August which is followed by the northeast monsoon that generally breaks towards the middle of November. There occurs a pre-monsoon shower which begins by the end of April (Mathew, 2001).

III.1.4. Geology

Geologically, the hill tract is a part of Archean series and the main rock type is biotic gneiss along with granite, khondalites with pegmatites and quartz. The hill tract consists of large extents of rocky blanks with outcrops of sheet rock. The soil condition in the hilltop is fairly good but is often mixed with boulders. Sandy loam soil with rich content of humus, supporting the growth of vegetation, is the prevalent one in the lower slopes (Varghese, 2015).

III.1.5. Tribal Settlements

There are two tribal settlements viz. Cherunelli and Kalchady belong to the Kadar Tribe in the study area. Population strength of Kalchady colony accounts for 139 members from 40 families. In Cherunelli colony, there are 45 members from 11 families. Both these settlements are included within the Reserve Forest of Nelliyampathy range (Varghese, 2015).

III.1.6. Estates and leased out areas in Reserve Forest

In 1905, there were 25 estates in the reserve forest covering an area of 9491.14 ha inside the forest area. They were treated as enclosures within the RF and as their position has been legally settled, these enclosures also have the status of Reserve Forest. As per 2016, there are 54 estates covering an area of 9801.91 ha. Apart from these estate areas, an area of 197.065 ha is leased out for plantation use in the public sector and an area of 545.067 ha. had been resumed by the Forest department (Varghese, 2015). These estates include tea, coffee, cardamom, rubber, orange, pepper and Cinchona.

III.2. Methodology

III.2.1. Exploration and Collection

A systematic floristic exploration in the hill tracts of Nelliyampathy was conducted from June 2017 to May 2021. Several field trips were conducted with 102 field days to different floristic locations of Nelliyampathy hills. Same locations were explored in different seasons in order to assess vegetation change. Geographic information on latitude, longitude and altitude of each site was recorded using GPS, Garmin Montana 680. The major locations explored are summarized in Table 4.

Specimens were collected mostly with their reproductive parts and in the case of trees, small twigs were procured while small herbaceous ones were collected with roots and rhizomes. Details of habit, habitat, ecological features, plant associations, host specificity and adaptive features were recorded in the field book along with phenological data.

III.2.2. Photo-documentation, Illustration and Herbarium preparation

The photographs of each specimen enumerating vegetation type, habitat, plant associations and external morphology were captured from the field itself using NIKON D 810 SLR camera. Micromorphological traits were documented using Leica S8APO stereo zoom microscope and Labomed Luxeo 4D. Botanical illustrations of interesting taxa were made giving emphasis to macro and micromorphological characters.

The specimens were dried and herbarium were prepared as per standard procedures (Bridson and Forman, 1992). The dried specimens were mounted on the herbarium sheets of standard size (42×29 cm) and mounted specimens were deposited in the Herbarium of the PG and Research Department of Botany, Government Victoria College, Palakkad (GVCH). The voucher specimens of interesting and novel taxa were deposited at MH and CALI. Author names were followed as per Brummitt and Powell (1992) and acronyms of herbaria were used according to Index Herbariorum (Thiers, 2011). For nomenclature clarifications Shenzhen code (Turland *et al*., 2018) was followed.

Table 4. Major locations explored in the study area (Plate 1-3)

Sl. No.	Location	Range	Latitude	Longitude
1	Ambalappara	Nelliyampathy Range	10º28'29.9"N	76º37'03.7"E
2	Anakkayam	Nelliyampathy Range	10º27'27.3"N	76º38'31.1"E
3	Ayyappankunnu	Nelliyampathy Range	10º31'58.7"N	76º39'44.4"E
4	Beatrice	Nelliyampathy Range	10º26'42.3"N	76º39'16.6"E
5	Brookeland	Nelliyampathy Range	10º26'47.7"N	76º39'55.0"E
6	Chakkalithodu	Nelliyampathy Range	10º28'17.9"N	76º36'33.5"E
7	Chakkaliyampara	Nelliyampathy Range	10º31'39.5"N	76º40'31.4"E
8	Chandramala	Nelliyampathy Range	10º31'55.0"N	76º42'10.0"E
9	Cheriya Govindamala	Nelliyampathy Range	10º33'11.2"N	76º40'53.4"E
10	Cheriya Manpara	Kollengode Range	10º31'30.9"N	76º42'00.2"E
11	Cherunelli	Nelliyampathy Range	10º31'43.3"N	76º39'32.9"E
12	Greenland	Kollengode Range	10º33'28.7"N	76º43'47.3"E
13	HillTop	Nelliyampathy Range	10º30'31.3"N	76º39'12.8"E
14	Kaikatty	Nelliyampathy Range	10º31'59.7"N	76º40'46.6"E
15	Kalchady	Nelliyampathy Range	10º31'00.0"N	76º36'37.7"E
16	Karadi	Nelliyampathy Range	10º29'00.3"N	76º39'42.6"E
17	Karappara	Nelliyampathy Range	10º27'26.5"N	76º38'35.1"E
18	Karassuri	Kollengode Range	10º31'47.0"N	76º43'53.0"E
19	Karimala	Kollengode Range	10º32'29.9"N	76º44'26.6"E
20	Keshavanpara	Nelliyampathy Range	10º31'23.6"N	76º39'48.6"E
21	Koonampalam	Nelliyampathy Range	10º30'59.7"N	76º40'07.3"E
22	Kosamattam	Kollengode Range	10º32'38.0"N	76º41'30.3"E
23	Kundoorchola	Nelliyampathy Range	10º31'03.2"N	76º37'48.6"E
24	Kurissumala	Nelliyampathy Range	10º35'26.6"N	76º39'39.9"E
25	Lilly	Nelliyampathy Range	10º29'35.5"N	76º40'04.2"E
26	Mangothimala	Nelliyampathy Range	10º29'30.2"N	76º41'54.8"E
27	Manjakkunnu	Nelliyampathy Range	10º26'28.8"N	76º41'28.0"E
28	Mannathypalam	Nelliyampathy Range	10º28'43.8"N	76º40'17.8"E
29	Manpara	Kollengode Range	10º33'30.5"N	76º45'33.8"E
30	Marappalam	Nelliyampathy Range	10º31'14.1"N	76º39'02.0"E
31	Mattumala	Kollengode Range	10º31'47.3"N	76º43'10.2"E
32	Mattumala	Nelliyampathy Range	10º30'04.2"N	76º42'00.8"E
33	Minnampara	Kollengode Range	10º32'14.6"N	76º43'33.2"E
34	Mira Flores	Nelliyampathy Range	10º30'13.4"N	76º41'34.9"E
35	Nellikkulathy	Nelliyampathy Range	10º29'47.1"N	76º39'24.7"E
36	Nooradi	Nelliyampathy Range	10º30'20.9"N	76º40'27.8"E
37	Oliyarmattam	Nelliyampathy Range	10º28'19.9"N	76º37'21.6"E
38	Oothukkuzhi	Nelliyampathy Range	10º32'36.1"N	76º42'02.0"E

39	Padagiri	Nelliyampathy Range	10º29'57.9"N	76º40'40.3"E
40	Pakuthipalam	Nelliyampathy Range	10º27'16.7"N	76º41'08.8"E
41	Pothumala	Kollengode Range	10º30'39.1"N	76º42'43.6"E
42	Pothumala	Nelliyampathy Range	10º26'50.1"N	76º39'23.1"E
43	Pothundy	Nelliyampathy Range	10º32'19.3"N	76º37'20.4"E
44	Pothupara	Nelliyampathy Range	10º30'21.6"N	76º40'41.7"E
45	Pothuvarikkampara	Nelliyampathy Range	10º28'32.0"N	76º37'07.7"E
46	Pulayampara	Kollengode Range	10º32'02.6"N	76º41'41.0"E
47	Pullukaadu	Nelliyampathy Range	10º31'55.0"N	76º40'58.0"E
48	RaviVarma Estate	Nelliyampathy Range	10º32'46.3"N	76º40'59.3"E
49	Seetharkundu	Kollengode Range	10º33'19.4"N	76º42'33.9"E
50	Sooryapara	Nelliyampathy Range	10º30'09.2"N	76º41'31.5"E
51	Thakarappadi	Nelliyampathy Range	10º27'14.2"N	76º42'00.3"E
52	Thoothampara	Nelliyampathy Range	10º27'09.6"N	76º42'25.7"E
53	Thottekkad	Nelliyampathy Range	10º29'46.3"N	76º41'08.4"E
54	Valiya Govindamala	Nelliyampathy Range	10º33'14.2"N	76º40'24.1"E
55	Vazhakkundu	Kollengode Range	10°54'58.0" N	76°42'53.3"E
56	Vellatri	Nelliyampathy Range	10º28'19.6"N	76º37'16.7"E
57	Victoria	Nelliyampathy Range	10º28'06.7"N	76º40'23.0"E

III.2.3. Characterization and identification

A detailed characterization of each specimen was made using Leica S8APO Stereo zoom microscope. The micromorphological traits such as hairiness, glandular structures, pollen morphology, seed structures etc. were studied using Leica DM 1000 LED compound light microscope. A detailed note on the habit, morphological features of root, stem, leaves, inflorescence, floral parts etc. were made for identification.

Identification was carried out using Flora of Presidency of Madras (Gamble and Fischer, 1915-1936), Flora of British India (Hooker, 1872-1897), Flora of Palghat district (Vajravelu, 1990), Flora of Silent Valley (Manilal *et al*., 1988) and Flowering Plants of Kerala (Sasidharan, 2011). Revisionary studies of the genera *Murdannia* Royle (Ancy, 2013), *Osbeckia* L. (Prashob, 2018), *Crotalaria* L. (Ansari, 2008), *Cyanotis* D. Don (Nandikar, 2014), *Smithia* Ait. (Balan and Predeep, 2017) and taxonomic revisions of the families Lauraceae (Robi, 2014) and Gentianaceae (Shahina, 2014) were also utilized for identification. In case of doubtful specimens, various herbaria viz., MH (Madras herbarium), CALI (Calicut University Herbarium) and CMPR (Centre for Medicinal Plant Research, Kottakkal) were consulted along with digital herbaria of K (Kew Herbarium) and P (Paris Herbarium).

III.2.4. Nomenclature and Systematic treatment

The nomenclature of each taxon was determined using online taxonomic databases of IPNI (www.ipni.org), Tropicos (www.tropicos.org) and The Plant List (www.theplantlist.org). The families were arranged according to Angiosperm Phylogeny Group IV (Chase *et al*., 2016) classification and genera with species were arranged in alphabetical order. The Fabaceae members were placed according to the classification of Legume Phylogeny Working Group (Azani *et al*., 2017). The species protologues were sourced from the Biodiversity Heritage Library (2021), Botanicus.org (2021) and from the literature published on new taxa.

The threat status of the taxa was assessed with the help of IUCN red list 2021-1 (www.iucnredlist.org) and the checklist of threatened plants of India (Barik *et al*., 2018). The endemic taxa were identified using the checklists of Ahmedullah and Nayar (1987), Vajravelu and Vivekananthan (1996), Sasidharan (2011) and Jagadeesan (2018). The life form spectrum analysis was done using Raunkiaer (1934) and Ellenberg & Mueller-Dombois (1967). Phytogeographical affinities were analyzed using Cox (2001).

III.3. Biomonitoring

Variations in the floristic composition of the hill tracts were monitored by continuous field exploration in each locality in various seasons, viz. pre-monsoon, monsoon and post-monsoon. The documentation was focused on small herbaceous plants and annual therophytes along with flushing, flowering and fruiting changes in perennial ones. Ephemeral Flush Vegetation, Exposed Rock Surfaces, Rock Crevices and Fissures, Rocky Cliffs and Soil Filled Depressions were targeted since these microhabitats showed variations in their floral composition with the availability of water in different seasons.

III.4. Resource Mapping

Mapping studies using GIS included the preparation of location map of study area, Land Use Land Cover Classification, NDVI analysis, Digital Elevation Model, Forest Cover Change over two decades and distribution mapping of threatened taxa across the study area.

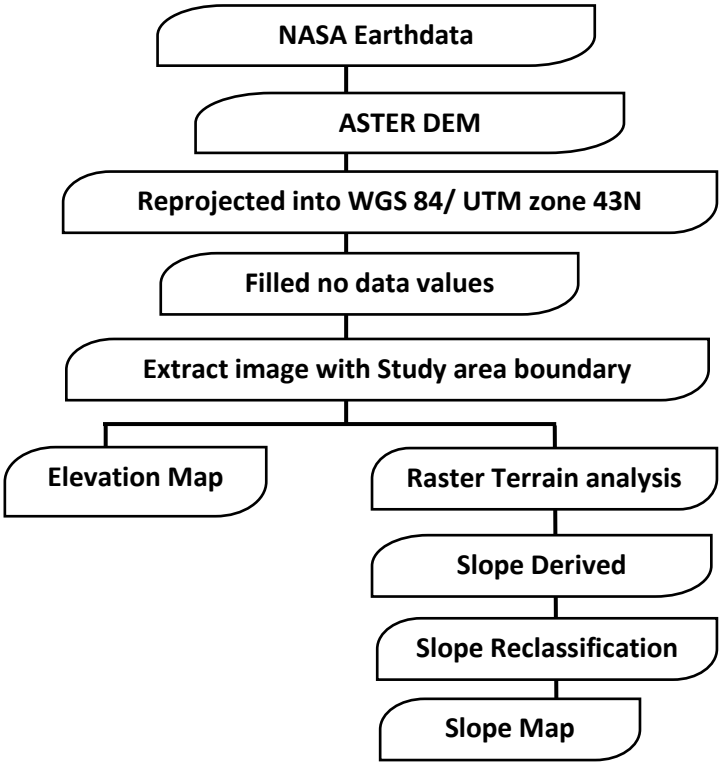
III.4.1. Shape file

The GPS locations marked during field visits and the border points collected from the Department of Forests were plotted on Google Earth. Using these points, a shape file was drawn on Google Earth Pro. Then the shape file with the boundary of the study area was extracted in vector form. Satellite digital data, Landsat 8 OLI (2017) was retrieved in January 2021 from http://earthexplorer.usgs.gov. and the data was corrected radiometrically. The data verified in ERDAS and FCCs (False colour composite) were generated. The forest boundary

was traced from the respective shape file, digitized using QGIS 3.16 and was overlaid on the mosaicked FCC. The output file (FCC) with only the study area is further used for generation of maps.

III.4.2. Terrain Analysis

For generating elevation and slope map, Digital Elevation Model of ASTER was processed and analysed in QGIS 3.16 software. The result was classified into five class ranges with an interval of 300m, according to the lower and higher elevation viz., 100-400m, 400-700m, 700-1000m, 1000-1300m, 1300-1633m. Slope was derived in degrees and then reclassified into three classes; gentle, moderate and steep. The steps included in generating these two maps are summarized in the following flow chart.

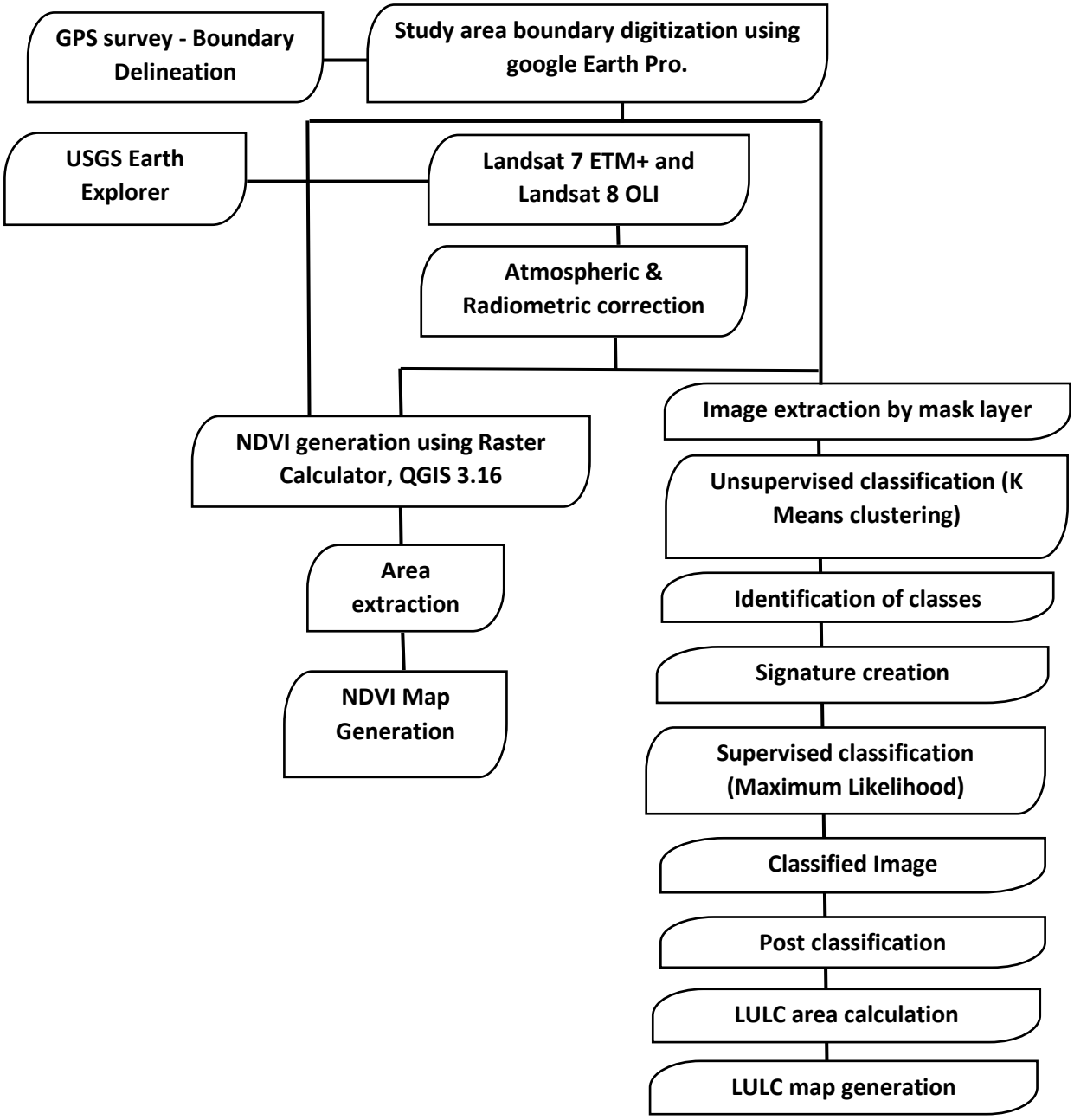


III.4.3. LULC, Forest Cover Change and NDVI analysis

Landsat Imagery was used for both Landuse-Landcover change detection and NDVI, and the data was selected according to the data quality and data availability. Two Landsat imageries such as Landsat 7 ETM+ and Landsat 8 OLI were acquired for the years 2000 and 2020 from USGS Earth Explorer. The Digital Elevation Model of ASTER was also used for terrain analysis like elevation and slope. The software package, QGIS 3.16 and Google Earth Pro were used at various stages of analysis. Both imageries have the same spatial resolution of 30m and require radiometric and atmospheric correction for a better output. Semi-

automatic classification plugin of QGIS 3.16 was used in the Land use - Landcover classification of the area, which includes the pre-processing, unsupervised and supervised classification, post classification and generation of thematic layer.

The NDVI is one of the important indicators of vegetation health. The Near- infrared (NIR) and Red bands of Landsat imageries were used to calculate the NDVI of the study area. The high reflectance near NIR indicates the healthy and dense vegetation and the reflectance near the Red band indicates the sparse vegetation. The NDVI range lies in between -1 to 1 and ranges near to 1 indicates the dense vegetation and near to -1 denotes sparse vegetation. The formula used for NDVI calculation was NDVI = (NIR – RED) / (NIR + RED). The steps followed in this analysis is summarized in the following flow chart:



IV.RESULTS

IV.1. Evolutionary disposition of angiosperm diversity in Nelliyampathy hills

The exploration and documentation of angiosperm diversity in Nelliyampathy hills resulted in the documentation of 1529 taxa which belongs to 142 families. This 1529 taxa includes 1504 species, 9 subspecies and 16 varieties. Species distribution across families was asymmetrical since 36 families were represented by a single species. The collected taxa belongs to 11 Clades, 44 orders and 774 genera and Table 5. summarizes the distribution of taxa according to APG IV.

Table 5. Distribution of taxa according to APG IV

Sl. No.	Clade	Order	Family	Genera	Species	Subspecies	Varieties
1	Basal Angiosperms	1	1	1	2	0	0
2	Magnoliids	4	7	28	60	1	0
3	Monocots	7	13	71	118	0	0
4	Commelinids	3	11	96	250	1	1
5	Eudicots	2	5	12	14	0	0
6	Core Eudicots	1	1	1	2	0	0
7	Superrosids	1	2	2	4	0	0
8	Rosids	12	52	274	536	3	10
9	Superasterids	2	14	36	53	0	1
10	Asterids	7	29	196	376	4	4
11	Campanulids	4	7	57	89	0	0
	Total	44	142	774	1504	9	16

Artificial key to the families

1.Leaf blade usually parallel-veined; seeds with one cotyledon…….……(2)
1.Leaf blade usually reticulately veined; seeds with two cotyledons……..……..(25)
2.Plants aquatic, submerged……...**Hydrocharitaceae**
2.Plant terrestrial…….…….(3)
3.Ovary superior……..……(4)
3.Ovary inferior…….….(15)
4.Flowers in heads or spikelets of solitary flowers in axils of glumaceous bracts……..(5)
4.Flowers not as above…….(7)
5.Inflorescence a depressed or sub-globose heads…….……..**Eriocaulaceae**
5.Inflorescence a spikelet with imbricating glumes……..…...(6)
6.Stem triangular tatleast at the tip; anthers basifixed……..**Cyperaceae**
6.Stem terete; anthers dorsifixed or versatile……..**Poaceae**
7.Habit of the plants are either trees or shrubs…….(8)
7.Habit of the plants are herbs….……(9)
8.Perianth of flowers are in 2 series...……..……..**Arecaceae**
8.Perianth absent……**Pandanaceae**

9.Flowers with perianth ……..……...(10)
9.Flowers without perianth……(14)
10.Inflorescence in a dense head……...…**Xyridaceae**
10.Inflorescence not a bracteate head……..……..(11)
11.Tepals of outer series calycine, inner corolline……...…**Commelinaceae**
11.Tepals of both series corolline……..(12)
12.Stipules modified into tendrils……...**Smilacaceae**
12.Stipules not as above……(13)
13.Fruit a dehiscent capsule……...**Colchicaceae**
13.Fruit an indehiscent berry……..…..**Asparagaceae**
14.Rootstock creeping, not tuberous……...**Acoraceae**
14.Rootstock tuberous…….....**Araceae**
15.Ovary with a single ovule in each cell……..……(16)
15.Ovary with 2 to many ovules in each cell……(17)
16.Androecium with single fertile stamen…….**Marantaceae**
16.Androecium with five fertile stamens…..……**Heliconiaceae**
17.Calyx winged……..….**Burmanniaceae**
17.Calyx not winged……..…(18)
18.Leaves radical……**Hypoxidaceae**
18.Leaves cauline……..(19)
19.Plants climbing……..…**Dioscoreacea**
19.Plants erect……...….(20)
20.Seeds minute; albumen scanty……..**Orchidaceae**
20.Seeds conspicuous; albumen copious……..(21)
21.Flowers regular…….**Amaryllidaceae**
21.Flower irregular……....(22)
22.Perianth with outer series of 3 free segments, inner 3 united into a tube; anther 1-celled……..…….....**Cannaceae**
22.Perianth with both series united, tubular or spathaceous; anthers 2-celled……..…(23)
23.Staminode not petaloid...……..……..**Musaceae**
23.Staminode petaloid……..……..(24)
24.Leafy stem spirally twisted……**Costaceae**
24.Leafy stem not spirally twisted……**Zingiberaceae**
25.Corolla rarely present and calyx often absent, sometimes perianth altogether lacking; flowers more often unisexual than bisexual…….……..(26)
25.Calyx and corolla usually both present; flowers mostly bisexual……...……..(52)
26.Flowers with uniseriate perianth lobes or without perianth……..……(27)
26.Flowers with biseriate perianth lobes..……..(42)
27.Habitat of plant aquatic……..……...…….……(28)
27.Habitat of plant terrestrial or epiphytic……...…….……(29)
28.Plant thalloid…...……..**Podostemaceae**
28.Plant not thalloid……..…**Haloragaceae**
29.Flowers bisexual……...(30)
29.Flowers unisexual, if bisexual, then perianth zero……(34)
30.Ovary 2-4-loculed……**Aristolochiaceae**
30.Ovary 1-loculed..……...(31)
31.Ovule solitary……...**Loranthaceae**
31.Ovule 2 to many……(32)
32.Flowers appearing before the leaves……..**Tetramelaceae**
32.Flowers appearing along with leaves……(33)

33.Inflorescence a compound cyme, sometimes flowers solitary……**Santalaceae**
33.Inflorescence a spike or raceme or panicle……**Combretaceae**
34.Habit of the plant a tree or shrub or climbing……..(35)
34.Habit of the plant herb..……...……(37)
35.Perianth tube narrowed above the ovary……..**Elaeagnaceae**
35.Perianth tube not narrowed above the ovary…….(36)
36.Tepals valvate……..…….**Proteaceae**
36.Teplas imbricate……..…..**Lauraceae**
37.Stipule connate in a tube around the node……...…….**Polygonaceae**
37.Stipule scanty or absent…….(38)
38.Perianth tubular……...**Nyctaginaceae**
38.Perianth connate only at the base…….….(39)
39.Tepals scarious…..……...…**Amaranthaceae**
39.Tepals not scarious……...…….(40)
40.Inflorescence a raceme or panicle…….…**Petiveriaceae**
40.Inflorescence a cyme or fascicle……...…(41)
41.Capsule loculicidal……...……...**Molluginaceae**
41.Capsule circumscissile...…….……**Aizoaceae**
42.Ovary 1-loculed…….....(43)
42.Ovary 2-3-loculed…….....(50)
43.Stipule absent……..….**Myristicaceae**
43.Stipule present……..(44)
44.Perianth absent…….(45)
44.Perianth present……(47)
45.Inflorescence a spike head or panicle……...…**Chloranthaceae**
45.Inflorescence a catkin like spike…….……..(46)
46.Fruit an indehiscent berry…….**Piperaceae**
46.Fruit a 2-4-valved capsule……..**Salicaceae**
47.Filaments inflexed in bud with reversed anthers……..……(48)
47.Filaments not inflexed in bud nor with reversed anthers……..……(49)
48.Ovule pendulous…….**Moraceae**
48.Ovule basal, erect……...…**Urticaceae**
49.Ovary stipitate…….…**Ulmaceae**
49.Ovary sessile……...……..**Cannabaceae**
50.Ovules solitary in each cell……..…….,……**Euphorbiaceae**
50.Ovules 2 in each cell…….……...…….(51)
51.Stamens free, inserted around a broadly lobed or folded disc; stigmas broad, flat……...**Putranjivaceae**
51.Stamens free to united, outside the disc or among the dic lobes; stigmas slender and linear…….….**Phyllanthaceae**
52.Petals fused…….……..(53)
52.Petals free (rarely fused in Cucurbitaceae, Caricaceae etc…...…….……...…(80)
53.Ovary inferior……..……..(54)
53.Ovary superior……..…….(58)
54.Stamens free from the corolla……..**Campanulaceae**
54.Stamens inserted or adnated on the corolla……...(55)
55.Anthers cohering in a tube around the style; ovary 1-loculed…….**Asteraceae**
55.Anthers free; ovary 2 to many loculed……..(56)
56.Stipule conspicuous, interpetiolar……..**Rubiaceae**
56.Stipule absent…….(57)

57.Leaves opposite; stamens 4-5……**Adoxaceae**
57.Leaves alternate; stamens numerous in small groups……..**Symplocaceae**
58.Ovary 1-loculed…….....(59)
58.Ovary 2 to many loculed……...(61)
59.Stamens 2……...**Lentibulariaceae**
59.Stamens as many as petals……(60)
60.Ovule solitary……...**Plumbaginaceae**
60.Ovules 2 to many……..…….….**Primulaceae**
61.Stamens free from the corolla……**Ebenaceae**
61.Stamens inserted on the corolla……..…..(62)
62.Ovary 4-8-carpelled…….**Sapotaceae**
62.Ovary 2-carpelled…….(63)
63.Corolla actinomorphic (sometimes slightly zygomorphic)……..……(64)
63.Corolla strictly zygomorphic……(72)
64.Leaves opposite……(65)
64.Leaves alternate……(70)
65.Stamens two……**Oleaceae**
65.Stamens 4 or more……(66)
66.Habit of the plant a tree……...**Salvadoraceae**
66.Habit of the plant a herb……..…….(67)
67.Corolla lobes 4 (rarely 5)……...……...……..…..(68)
67.Corolla lobes 5-7……..….(69)
68.Leaves united by a stipular line……...……..**Scrophulariaceae**
68.Leaves not united by stipular line……..…...**Gentianaceae**
69.Carpels free; plants with milky sap……...**Apocynaceae**
69.Carpels united; plants without milky sap……...**Loganiaceae**
70.Ovary cells many ovuled……...…...……**Solanaceae**
70.Ovary cells 2-4 ovuled……..(71)
71.Corolla lobes plicate; usually climbing plants……..…**Convolvulaceae**
71.Corolla lobes imbricate or contorted; plants not climbing……..…….**Boraginaceae**
72.Carpels one-ovuled (if 2 ovuled, then ovules collateral)……..(73)
72.Carpels 2 or more ovuled……..(74)
73.Inflorescence branches cymose; stigma bifid……..…….**Lamiaceae**
73.Inflorescence branches racemose; stigma more or less capitate…….…...**Verbenaceae**
74.Ovary 1-loculed…….…..……...(75)
74.Ovary 2-loculed……...……...……(76)
75.Plants parasitic; leaves small, linear or elliptic…..…….……..**Orobanchaceae**
75.Plants non-parasitic; leaves large, variously shaped……..…...**Gesneriaceae**
76.Fruit opening elastically from the apex of 2 loculicidal valves…….……**Acanthaceae**
76.Fruit not opening elastically……..(77)
77.Leaves compound…….……**Bignoniaceae**
77.Leaves simple……...…….(78)
78.Ovules attached 1-seriately on a projecting parietal placenta…….....**Pedaliaceae**
78.Ovules many on the placenta attached to the middle of the septum……..…...(79)
79.Stem tetragonous; leaves opposite; inflorescence terminal or lateral; fruit a septicidal or saxifragal capsule…….**Linderniaceae**
79.Stem angled or terete; leaves alternate, opposite or whorled; inflorescence axillary; fruit a septicidal, loculicidal or circumscissile capsule…….....….**Plantaginaceae**
80.Flowers trimerous…….(81)
80.Flowers not trimerous……...(83)

81.Receptacle elongated……**Magnoliaceae**
81.Receptacle sub-globose, very short……..(82)
82.Carpels numerous……...**Annonaceae**
82.Carpels few……**Menispermaceae**
83.Flowers unisexual……(84)
83.Flowers bisexual or polygamous……..(86)
84.Stigma fimbriate……..**Caricaceae**
84.Stigma not fimbriate……(85)
85.Plants tendrillate……...……..**Cucurbitaceae**
85.Plants not tendrillate……..……**Begoniaceae**
86.Stamens more than 10……...(87)
86.Stamens 3-10……...(103)
87.Flowers epigynous or perigynous……(88)
87.Flowers hypogynous……(90)
88.Leaves opposite……**Myrtaceae**
88.Leaves alternate……(89)
89.Stipule present……**Rosaceae**
89.Stipule absent……..**Lecythidaceae**
90.Sepals free……(91)
90.Sepals connate……(102)
91.Calyx persistent……..……...(92)
91.Calyx not persistent……..……(96)
92.Leaves alternate……(93)
92.Leaves opposite……....(94)
93.Stamens quite free from the petals……..…**Dilleniaceae**
93.Stamens attached to the base of petals……**Theaceae**
94.Plants without resinous juice; flowers 5-merous……..….**Hypericaceae**
94.Plants with resinous juice; flowers 4-merous……...…(95)
95.Style 1 or 2……**Calophyllaceae**
95.Style absent……**Clusiaceae**
96.Plants climbing……..**Ranunculaceae**
96.Plants not climbing……(97)
97.Fruit a berry……...(98)
97.Fruit a drupe or capsule……...(101)
98.Carpels distinct……....**Nymphaeceae**
98.Carpels not distinct……....(99)
99.Ovary stalked……....**Capparaceae**
99.Ovary sessile……..……..(100)
100.Leaf base asymmetrical……..…...**Muntingiaceae**
100.Leaf base symmetrical……**Elaeocarpaceae**
101.Fruits with bristles.……**Bixaceae**
101.Fruit without bristles……**Achariaceae**
102.Stamens connate……....**Malvaceae**
102.Stamens free……**Dipterocarpaceae**
103.Flowers perigynous or epigynous……(104)
103.Flowers hypogynous……(111)
104.Carpel one……..**Fabaceae**
104.Carpels more than one……...(105)
105.Ovules pendulous……..(106)
105.Ovules not pendulous……(109)

106.Flowers umbellate……(107)
106.Flowers not umbellate……...(108)
107.Plant a herb; fruit dry, separating into 2 dehiscent carpels with glandular tubules containing an essential oil……..……..…**Apiaceae**
107.Plant a tree or shrub; fruit fleshy, devoid of glandular tubules…..……**Araliaceae**
108.Calyx 4-10-toothed; petals 4-10, linear; style elongate; stigma capitate…….**Cornaceae**
108.Calyx 4-5-lobed or truncate; petals 4-5, ovate; style short; stigma not capitate……**Nyssaceae**
109.Sepals imbricate……..….**Melastomataceae**
109.Sepals valvate……...(110)
110.Ovary free from the calyx tube……..**Lythraceae**
110.Ovary completely or half adnate to the calyx tube……**Onagraceae**
111.Sepals free…….(112)
111.Sepals connate……...(124)
112.Stem covered with glandular hairs……..…….....**Droseraceae**
112.Stem not covered with glandular hairs……..(113)
113.Plants climbing……..**Passifloraceae**
113.Plants not climbing……(114)
114.Leaves inciso-crenate or lacerate…….....**Brassicaceae**
114.Leaves not as above……..(115)
115.Ovary 1-loculed…….……...(116)
115.Ovary 2 or more loculed…….……..(119)
116.Capsule operculate…….**Portulacaceae**
116.Capsule not operculate……..(117)
117.Flowers irregular……...**Cleomaceae**
117.Flowers regular…….(118)
118.Plant shrubby……....**Berberidaceae**
118.Plant herbaceous……...**Caryophyllaceae**
119.Style single……(120)
119.Style 2-5……(122)
120.Flowers spurred……**Balsaminaceae**
120.Flowers not spurred……..(121)
121.Petals three……...**Polygalaceae**
121.Petals 4-5……..**Sapindaceae**
122.Leaves simple…….**Linaceae**
122.Leaves compound…….(123)
123.Seeds pendulous……...….**Oxalidaceae**
123.Seeds erect……..…**Staphyleaceae**
124.Leaves gland-dotted……...**Rutaceae**
124.Leaves not gland-dotted……(125)
125.Carpels distinct……..(126)
125.Carpels indistinct……...(128)
126.Leaves bearing bulbils……....**Crassulaceae**
126.Leaves without bulbils……..(127)
127.Fruit winged……**Simaroubaceae**
127.Fruit not winged……..**Connaraceae**
128.Leaves crowded at the apex of branchlets…….……**Ancistrocladaceae**
128.Leaves opposite or alternate……..(129)
129.Leaves opposite (sometimes alternate in Celastraceae)……....(130)
129.Leaves alternate…….(131)

130.Fruit a winged samara; flower irregular……..…..**Malpighiaceae**
130.Fruit a drupe or capsule; flower regular……..**Celastraceae**
131.Seeds winged……...**Moringaceae**
131.Seeds not winged……..(132)
132.Stamens more than 5…….(133)
132.Stamens 5 or less……...(135)
133.Filaments connate…….**Meliaceae**
133.Filaments free……(134)
134.Styles 2-5, if 1, it is lateral……...….**Anacardiaceae**
134.Style single, terminal…….....**Burseraceae**
135.Sepals valvate in bud……...……**Rhamnaceae**
135.Sepals imbricate in bud…….…(136)
136.Leaves stipular…….…….(137)
136.Leaves exstipular……..…..……..(138)
137.Stipule single……...…..**Centroplacaceae**
137.Stipules 2…….**Vitaceae**
138.Stamens opposite the petals……..(139)
138.Stamens alternate the petals……..(140)
139.Petals valvate……**Olacaceae**
139.Petals imbricate…….**Sabiaceae**
140.Corolla lobes imbricate……**Pittosporaceae**
140.Corolla lobes valvate……(141)
141.Filaments with short club-shaped hairs on the back…….……...**Stemonuraceae**
141.Filaments glabrous……...…..**Icacinaceae**

IV.1.1. Basal Angiosperms
NYMPHAEALES

NYMPHAEACEAE

Nymphaea L., Sp. Pl. 1: 510 (1753)

1.Flowers white; rhizome erect; anther connectives appendaged…….....***N. nouchali***
1.Flowers red; rhizome irregular; anther connectives not prolonged.……...….***N. rubra***

Nymphaea nouchali Burm. f., Fl. Ind. (N. L. Burman) 120 (1768); *Nymphaea stellata* Willd. Gamble, Fl. Pres. Madras 33 (1915); Vajr., Fl. Palghat Dist. 53 (1990).

Habit: Herb
Habitat: Freshwater ponds and pools
Morphology: Herb; rhizomes erect, producing runners; leaves sub-orbicular, glabrous on both surfaces; flowers emergent, solitary; receptacles glabrous; sepals entire, veined, glabrous; petals 8-28, outer petals similar to sepals, inner smaller and more petaloid; stamens 30-50, outer longer, anthers with a tongue-shaped appendage; gynoecium syncarpous, superior; carpels 11-14; stigmatic surface concave with a minute central core, stigmatic appendages triangular; fruits globose.
Raunkiaer's life-form: Hydrophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pulayampara, 19 August 2017, *Jabeena & Maya 354* (GVCH).

Nymphaea rubra Roxb. ex Salisb., Parad. Lond. i. sub t. 14 (1805).

Habit: Herb
Habitat: Freshwater ponds
Morphology: Rhizomes irregular, stoloniferous; leaves glabrous above, pubescent, prominently nerved and

glaucous beneath; flower solitary, disc fleshy; sepals 4; petals 12-15 in 4 or 5 series gradually turning into petaloid stamens; stamens 30 in 3 or 4 series, outer ones with petaloid filament; ovary superior, carpels 16-20, syncarpous, membranaceous, many-loculed; ovules numerous, ovary topped by a cup-shaped depression of connate pale yellow and furrowed stigmas; fruits globose to sub-globose.
Raunkiaer's life-form: Hydrophyte
Phytogeographical affinity: Holarctic
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3087* (GVCH); Plate 4: Fig. a.

IV.1.2. Magnoliids
PIPERALES

PIPERACEAE

Flowers bisexual; fruit minute……..…….***Peperomia***
Flowers unisexual; fruit fairly large…….....***Piper***

Peperomia Ruiz & Pav., Fl. Peruv. Prodr. 8 (1794)

1.Leaves alternate, membraneous, 7-5 ribbed; nutlets ribbed and reticulate…….....***P. pellucida***
1.Leaves opposite or whorled, coriaceous or fleshy, 3-5 ribbed….....(2)
2.Leaves in whorls of 4; spikes stout; nutlets ovoid and acute……..***P. tetraphylla***
2.Leaves opposite or whorls of 3; spikes slender or stout……(3)
3.Leaves and stem pubescent, 3-5 ribbed; spikes in terminal panicles; nutlets globose, punctate.....***P. blanda***
3.Leaves and stem glabrous or nearly so……....(4)
4.Leaf base obtuse or acute; spikes slender and terminal; nutlets globose-ellipsoid, minutely stipitate, finely verrucate..…….....***P. heyneana***
4.Leaf base cuneate; spike rather stout, axillary and terminal; nutlets ovoid, minutely scaly…..……***P. portulacoides***

Peperomia blanda (Jacq.) Kunth, Nov. Gen. Sp. [H.B.K.] 1: 67 (1816); *Peperomia dindigulensis* Miq., Hook. f., Fl. Brit. India 5: 98 (1886); Gamble, Fl. Pres. Madras 1210 (1925); Vajr., Fl. Palghat Dist. 396 (1990).

Habit: Herb
Habitat: Semi-evergreen and Evergreen forests
Morphology: Erect succulent rhizomatous herb; stem fleshy towards the base; leaves in whorls of 3 or 4 or opposite, palmately 5-nerved, finely pubescent on both surfaces; spikes terminal and in upper axils forming leafy panicles; flowers lax; floral bracts rounded or oblong-ovate, peltate, glandular punctate; nutlets obovoid to orbicular, acute, scaly.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2041* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2098* (GVCH); Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2611* (GVCH).
Peperomia heyneana Miq., Syst. Piperac. (F.A.W. Miquel) 123 (1843); Gamble, Fl. Pres. Madras 1210 (1925); *Peperomia wightiana* Miq., Hook. f., Fl. Brit. India 5: 98 (1886); Gamble, Fl. Pres. Madras 1210 (1925).

Habit: Herb
Habitat: Evergreen forests

Morphology: Perennial herbs; stolons present; petiole usually glabrous; leaves glabrous or finely pubescent when young; spikes terminal, rarely axillary, usually solitary; bracts orbicular, stalk short; filaments slightly longer than anthers; anthers globose; ovary ovoid, oblique, papillate-pilose; stigma glabrous; nutlet ovoid to ovoid-oblong.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1089* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2056* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3412* (GVCH).

Peperomia pellucida (L.) Kunth, Nov. Gen. Sp. [H.B.K.] 1: 64 (1816);Gamble, Fl. Pres. Madras 1210 (1925); Vajr., Fl. Palghat Dist. 396 (1990); *Peperomia exigua* (Blume) Miq., Hook. f., Fl. Brit. India 5: 97 (1886).

Habit: Herb
Habitat: Moist shady localities and degraded forest areas
Morphology: Slender succulent herb; leaves opposite and alternate, ovate-deltoid, obtuse to acute at apex, thin, fleshy, smooth, 5-7 nerved from the base; spikes terminal and leaf-opposed; fruits ribbed and reticulate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 1 October 2017, *Jabeena & Maya 522* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3317* (GVCH); Nooradi, 11 January 2020, *Jabeena & Maya 3607* (GVCH).

Peperomia portulacoides (Lam.) A. Dietr., Sp. Pl., ed. 6. 1: 172 (1831); Hook. f., Fl. Brit. India 5: 98 (1886); Gamble, Fl. Pres. Madras 1210 (1925); Vajr., Fl. Palghat Dist. 396. (1990).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; leaves fleshy, mostly opposite or upper whorled, 3-nerved from base, obovate, obtuse or emarginate at apex, cuneate at base; spike terminal and axillary, rather stout; nuts ovoid, partially embedded in the rachis and minutely scaly.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Nelliyampathy Range, Mattumala, 02 November 2020, *Jabeena & Maya 4223* (GVCH); Plate 4: Fig. b.

Peperomia tetraphylla Hook. & Arn., Bot. Beechey Voy. 97 (1832); Vajr., Fl. Palghat Dist. 397 (1990); *Peperomia reflexa* (L. f.) Dietr., Hook. f., Fl. Brit. India 5:99 (1886); Gamble, Fl. Pres. Madras 1209 (1925).

Habit: Herb
Habitat: Evergreen, Moist Deciduous and Shola forests
Morphology: Succulent herb; branches ascending and spreading, pubescent at nodes; leaves in whorls of 3-4, or opposite, sub-sessile, thick, fleshy, coriaceous, puberulent when young; inflorescence a terminal spike, axis puberulent; bract sub-sessile; stamens 2, minute, sub-sessile; ovary partially immersed in axis; ovoid, acute; drupe ovoid, sticky.
Raunkiaer's life-form: Epiphyte

Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: February – March
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1862* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2624* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3924* (GVCH).

Piper L., Sp. Pl. 1: 28 (1753)

1.Flowers hermaphrodite; spikes 3-7 together in umbels……...***P. umbellatum***
1.Flowers unisexual; spikes solitary…...(2)
2.Flowers subtended by peltate orbicular bracts…….....(3)
2.Flowers subtended by bracts adnate to rachis…….…….....(4)
3.Leaves glabrous, ovate, upper leaves unequally cordate at base, sessile and amplexicaul, lower leaves petiolate and equally cordate……..…***P. longum***
3.Leaves pubescent, especially on nerves beneath, lanceolate, very unequally cordate with incurved auricles at base…….....***P . retrofactum***
4.Bracts forming a short cup under the flowers…….....***P. nigrum***
4.Bracts adnate to the rachis with decurrent free membranous margins, confluent in female spikes…….…...….(5)
5.Leaves membranous, silvery scales present beneath the leaves; male spikes very slender……...…***P. argyrophyllum***
5.Leaves coriaceous, glabrous, spikes rather thick……...***P. wightii***

Piper argyrophyllum Miq., Syst. Piperac. (F.A.W. Miquel) 330; Hook. f., Fl. Brit. India 5:93 (1886); Gamble, Fl. Pres. Madras 1207 (1925).
Habit: Climber
Habitat: Semi-evergreen and Evergreen forests
Morphology: Shrubby; Leaves simple, alternate, oblique, glabrous, basaly 7 nerved; stipule lanceolate; spikes slender, leaf-opposed, drooping; bracts oblong, adnate to the rachis with free margins, ciliate; stamens 2; berry globose; stigma 4, curved.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-February
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 210* (GVCH); Plate 4: Fig. c.

Piper longum L., Sp. Pl. 1: 29 (1753); Hook. f., Fl. Brit. India 5: 83 (1886); Gamble, Fl. Pres. Madras 1205 (1925).

Habit: Shrub
Habitat: Semi-evergreen, Evergreen and Moist Deciduous forests
Morphology: Scandent shrub; leaves simple, alternate, strongly oblique at base, 7-nerved; inflorescence solitary spikes; female spike stout, erect; bracts peltate, orbicular; male spike erect, slender; stamens 2; berry glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-January
Distribution: Common
Altitude: 200-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 28* (GVCH); Kalchady, 01 October 2017, *Jabeena & Maya 520* (GVCH); Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 859* (GVCH).

Piper nigrum L., Sp. Pl. 1: 28 (1753); Hook. f., Fl. Brit. India 5: 90 (1886); Gamble, Fl. Pres. Madras 1206 (1925); Vajr., Fl. Palghat Dist. 398 (1990).

Habit: Climber
Habitat: Evergreen and semi-Evergreen forests; here seen as cultivated
Morphology: Climbers; rooting at nodes; leaves simple, alternate, 5-9 nerved; spikes slender, pendulous; bracts united forming a cup below the flower; stamens 2; drupes globose or sub-globose, smooth.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-March
Distribution: Common
Altitude: 100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 02 July 2019, *Jabeena & Maya 2206* (GVCH); Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2602* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2823* (GVCH).

Piper retrofractum Vahl, Enum. Pl. [Vahl] i. 314. (1804); *Piper hapnium* Buch.-Ham. Ex Hook.f., Hook. f., Fl. Brit. India 5: 86 (1886); Gamble, Fl. Pres. Madras 1206 (1925).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Shrubby; leaves alternate, basally 5-7 nerved, cordate with incurved auricles at base, pubescent; flowers in erect cylindrical spikes; male spikes slender and longer than female; stamens 2; ovary globose; stigmas 3-5, sessile; berries partly sunk in the rachis.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 02 July 2017, *Jabeena & Maya 58* (GVCH); Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 364* (GVCH); Mattumala, 02 April 2018, *Jabeena & Maya 1338* (GVCH); Plate 4: Fig. d.

***Piper umbellatum* L.,** Sp. Pl. 1: 30 (1753); *Lepianthes umbellata* (L.) Rafin., Vajr., Fl. Palghat Dist. 395 (1990); *Piper subpeltatum* Willd., Hook. f., Fl. Brit. India 5: 95 (1886); *Hackeria subpeltata* (Willd.) Kunth, Gamble, Fl. Pres. Madras 1208 (1925).

Habit: Shrub

Habitat: Semi-evergreen and Evergreen forests
Morphology: Erect shrubs with succulent branches; leaves alternate, sparsely pubescent on nerves; nerves palmately radiating from base; petiole sheathing at base; inflorescence pedunculate umbels; bracts pedicelled, peltate; flowers hermaphrodite densely packed; perianth zero, stamens 2-3 at the base of the ovary; ovary free, obovoid, truncate; stigmas 3, sessile; Fruit a trigonous berry.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Not Evaluated

Phenology: June-February

Distribution: Common

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 20 January 2018, *Jabeena & Maya 1225* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1669* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3514* (GVCH); Plate 4: Fig. e.

Piper wightii Miq., London J. Bot. 5: 552 (1846); Hook. f., Fl. Brit. India 5: 94 (1886); Gamble, Fl. Pres. Madras 1207 (1925).

Habit: Climber
Habitat: Evergreen and shola forests
Morphology: Shrubby; leaves coriaceous, 5-7 ribbed or the upper 2 little above it; spike thick, drooping; bracts adnate to the rachis with decurrent free membranous margins; flowers distantly arranged; globose berries rather close.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: July-February
Distribution: Rare
Altitude: 1000-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 29 July 2017, *Jabeena & Maya 134* (GVCH).

ARISTOLOCHIACEAE

Climbing shrub; perianth irregular; capsule septicidaly 6-valved……..….***Aristolochia***

Erect shrub; perianth regular, capsule septicidaly 4-valved……***Thottea***

Aristolochia L., Sp. Pl. [Linnaeus] 2: 960 (1753).

Leaves 5-7 nerved; stamens 12; stigmatic lobes in a cone; capsule obovoid…….……....***A. acuminata***

Leaves 3-5 nerved; stamens 6; stigmatic lobes incurved; capsule globose-pyriform……..…….***A. indica***

Aristolochia acuminata Lam., Encycl. [J. Lamarck & al.] 1(1): 254 (1783); *Aristolochia tagala* Cham., Gamble, Fl. Pres. Madras 1202 (1925); Vajr., Fl. Palghat Dist. 394 (1990); *Aristolochia roxburghiana* Klotzsch, Hook. f., Fl. Brit. India 5: 75 (1886).

Habit: Climber
Habitat: Moist Deciduous and semi-Evergreen forests
Morphology: Stem twiner; leaves alternate, inflorescence an axillary raceme; perianth tube hairy inside; stamens 12 in two series; connective broad; anthers oblong; ovary 6-loculed; ovules numerous; stigmatic lobes in a cone; capsule obovoid, rugose, long-stalked; seeds flattened, broadly winged, glands only in the middle.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: January-June
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4105* (GVCH).

Aristolochia indica L., Sp. Pl. 2: 960 (1753); Hook. f., Fl. Brit. India 5: 75 (1886); Gamble, Fl. Pres. Madras 1202 (1925); Vajr., Fl. Palghat Dist. 394 (1990).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Stems twining; leaves alternate, 3-5-nerved at base; flowers in axillary racemes; perianth tube with a bulbous base, limb linear-oblong; stamens 6; stigmas 6, stigmatic lobes incurved; capsule oblong, 6-valved; seeds flattened, broadly winged, glands only opposite the cotyledons.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July - March
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1636* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 06 July 2019, *Jabeena & Maya 2330* (GVCH); Plate 4: Fig. f.

Thottea Rottb., Nye Saml. Kongel. Danske Vidensk. Selsk. Skr. 2: 529, t. 2 (1783).

Flowers in axillary fascicle; perianth lobes united into a cup; stamens 12; capsule cylindric; seeds rugose……....***T. siliquosa***

Flowers axillary in axillary cyme; perianth lobed to the base; stamens 6-8 with 2-4 staminodes; capsule 4-angled; seeds corrugated……....……***T. sivarajanii***

Thottea siliquosa (Lam.) Ding Hou, Blumea 27(2): 327 (1981); Vajr., Fl. Palghat Dist. 395 (1990); *Bragantia wallichii* R. Br. ex Wight & Arn., Hook. f., Fl. Brit. India 5: 73 (1886); *Apama siliquosa* Lam., Gamble, Fl. Pres. Madras 1200 (1925).

Habit: Shrub
Habitat: Evergreen and semi-Evergreen forests
Morphology: Shrub; leaves simple, alternate, nerves 3-4 pairs from the midrib, apex acute; flowers in axillary bracteate cymes; perianth united into a cup; stamens in 3 groups, the connectives shortly apiculate; ovary inferior, elongate, 4-loculed; style column thick; stigmas 3 or more, linear; ovules numerous, pendulous; fruit elongate, tetragonous, septicidally 4-valved capsule; seeds rugose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3070* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3839* (GVCH); Victoria, 12 October 2020, *Jabeena & Maya 4185* (GVCH); Plate 4: Fig. g.

Thottea sivarajanii E.S.S.Kumar, A.E.S. Khan & Binu, Rheedea 10(2): 117 (2000)

Habit: Shrub
Habitat: Evergreen and semi-Evergreen forests
Morphology: Shrub; leaves strongly 3-nerved from the base; flowers in axillary cyme; perianth lobed to the base; margins strongly reflexed; stamens 6-8 with 2-4 staminoides; ovary pubescent; capsule sharply 4-angled; seeds corrugated.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats (Kerala)
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 500-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Govindamala, 20 November 2020, *Jabeena & Maya 4458* (GVCH).

MAGNOLIALES

MYRISTICACEAE

Anthers attached by their bases stellately to the column formed by the connate filaments; cotyledons divaricate or suberect……....***Knema***

Anthers attached by their back to the colum formed by the connate filaments; cotyledons connate……..***Myristica***

Knema Lour., Fl. Cochinch. 2: 604 (1790)

Knema attenuata (Wall. ex Hook.f. & Thomson) Warb., Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 68: 590 (1897); Vajr., Fl. Palghat Dist. 400 (1990); Gamble, Fl. Pres. Madras 1215 (1925); *Myristica attenuata* Wall. ex Hook. f. & Thoms., Hook. f., Fl. Brit. India 5: 110 (1886).

Habit: Tree
Habitat: Evergreen and semi-Evergreen forests

Morphology: Trees; leaves simple, alternate; flowers in axillary fascicles, unisexual; bracts deciduous; perianth 3-lobed, tomentose; androecium stalked, stamens 8-20; ovary ovoid, 1-loculed, 1-ovuled, hairy; style short, thick, hairy; stigma 2, laciniate on the margin; fruit an ovoid capsule, apiculate, tomentose; seed one; aril laciniate at apex only.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Least Concern
Phenology: December-June
Distribution: Common
Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1282* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1812* (GVCH); Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2101* (GVCH); Plate 4: Fig. h.

Myristica Gronov., Fl. Orient. [Gronovius] 141 (1755)

1.Flowers ovoid; inflorescence a short cyme; peduncle thick; fruit globose; arillus orange-red……..…...***M. beddomei***
1.Flowers urceolate; inflorescence a panicled cyme, peduncle slender; fruit cylindric or pyriform; arillus red or yellow…….……2
2.Perianth puberulous; fruit cylindric; arillus yellow……....….***M . malabarica***
2.Perianth tawny-villous; fruit pyriform; arillus red……..…..***M. fragrans***

Myristica beddomei King, Ann. Roy. Bot. Gard. (Calcutta) 3(3): 291 (1891); *Myristica beddomei* King ssp. *beddomei* Gamble, Fl. Pres. Madras 1214 (1925); *Myristica laurifolia* auct. non Hook. f. & Thoms., Hook. f., Fl. Brit. India 5: 103 (1886); *Myristica laurifolia* var. *lanceolata* Hook. f., Fl. Brit. India 5: 103 (1886); *Myristica contorta* Warb., Gamble, Fl. Pres. Madras 1214 (1925); *Myristica dactyloides* auct. non Gaertn., Vajr., Fl. Palghat Dist. 400 (1990).

Habit: Tree
Habitat: Evergreen and semi-Evergreen forests
Morphology: Tree; leaves simple, alternate, nerves and transverse nervules conspicous; flowers unisexual, ovoid, in short fascicles on thick woody peduncles; perianth rusty tomentose, connate into an urceolate tube with 3 spreading lobes; Staminal column ferrugineous; anthers 7-15, linear-oblong; ovary in female flowers sessile, ovoid-globose, pubescent, 1-loculed, 1-ovuled; stigma oblique, 2-lobed. Fruit globose, the laciniae of the orange-red arillus with ends separated.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-May
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1429* (GVCH).

Myristica fragrans Houtt., Handl. Pl.-Kruidk. 3: 333 (1774); Hook. f., Fl. Brit. India 5: 102 (1886); Gamble, Fl. Pres. Madras 1214 (1925).

Habit: Tree
Habitat: Evergreen forest
Morphology: Trees; leaves exstipulate; petiole glabrous, grooved above; lateral nerves 10-14 pairs, flowers unisexual; male flowers 3-5 in axillary cymes; perianth 3-lobed, villous; stamens 9-12, connate; female flowers few in axillary cymes; ovary superior, ovoid, one loculed, one ovuled; fruit a capsule; aril red, lacinate.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Data Deficient
Phenology: December-August

Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3043* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4251* (GVCH).

Myristica malabarica Lam., Mem. Acad. Sc. Par. 1788 (1791) 162; Hook. f., Fl. Brit. India 5: 103. (1886); Gamble, Fl. Pres. Madras 1213 (1925); Vajr., Fl. Palghat Dist. 401 (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Trees; leaves simple, alternate, nerves about 10 pairs; flowers unisexual, urceolate in dichasioid cymes, peduncles slender; perianth clefted at apex; staminal column stalked, pubescent; anthers 10-15, linear; ovary in female flower sessile, globose, hairy, stigma 2 clefted, glabrous. Fruit cylindrical, pubescent, one seeded; aril yellow.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Vulnerable
Phenology: January - September
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1946* (GVCH).

MAGNOLIACEAE

Magnolia L., Sp. Pl. 1: 535 (1753)

Leaves more than 4 inch long; capsules ovoid to ellipsoid; seeds 3 or 4…….***M.champaca***
Leaves 2-4 inch long; capsules globose; seed one……...…….....***M. nilagirica***
Magnolia champaca (L.) Baill. ex Pierre, Fl. Forest. Cochinch. 1: t. 3 (1880); *Michelia champaca* L., Hook. f., Fl. Brit. India 1: 42. (1872); Gamble, Fl. Pres. Madras 9 (1915); Vajr., Fl. Palghat Dist. 45 (1990).

Habit: Tree
Habitat: Evergreen forests; Here seen as planted
Morphology: Trees; leaves simple, alternate; flowers bisexual, fragrant, solitary; perianth oblanceolate fleshy; stamens numerous; filaments short, flat; carpels many, ovoid-oblong, densely hairy; follicles ovoid, warty; seeds 3-4.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: March-July
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karapara, 06 July 2019, *Jabeena & Maya 2208* (GVCH); Plate 5; Fig. a.

Magnolia nilagirica (Zenker) Figlar, Proc. Internat. Symp. Fam. Magnoliac. 23 (2000); *Michelia nilagirica* Zenk., Hook. f., Fl. Brit. India 1: 44. (1872); Gamble, Fl. Pres. Madras 9 (1915); Vajr., Fl. Palghat Dist. 45 (1990).

Habit: Tree
Habitat: Shola forests; Here seen as planted
Morphology: Trees; leaves simple, alternate, spirally arranged; stipules oblong, deciduous; flowers bisexual, solitary; perianth lobes obovate; stamens numerous, crowded at the base of gynophore; filaments short, flat; carpels many, ovoid, sessile, pubescent; fruit an aggregate of capsules, globose; seed one.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Vulnerable
Phenology: March-August
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Seetharkundu, 11 June 2018, *Jabeena & Maya 1529* (GVCH).

ANNONACEAE

1.Petals imbricate in bud……....***Sageraea***
1.Petals valvate or open in bud……..(2)
2.Habit a Liana…….……(3)
2.Habit as trees or shrubs…….....(4)
3.Peduncle hooked, carpels 1 or 2 ovuled……...…….***Artabotrys***
3.Peduncle not hooked, carpels 2 or 6 ovuled…….***Desmos***
4.Flowers in multi-flowered inflorescence……...(5)
4.Flowers solitary or in one-flowered inflorescence……...……...(6)
5.Anther cells concealed by overlapping connectives…….…***Cyathocalyx***
5.Anther cells not concealed by overlapping connectives…..…....***Orophea***
6.Anthers septate ……...…....***Annona***
6.Anthers not septate ……(7)
7.Ovules 3 to many……...…***Meiogyne***
7.Ovules one or two……..….(8)
8.Torus elongate or cylindrical, inner petals longer than outer ones…..…***Miliusa***
8.Torus convex, inner petals shorter than or equal to outer petals……...……(9)
9.Leaf venation eucamptodromous; insertion of lateral veins to the midrib decurrent; intercostae scalariform-sub-scalariform……..……..……...***Monoon***
9.Leaf venation brochidodromous; insertion of the lateral veins to the midrib not decurrent; intercostae reticulate…..(10)
10.Ovules one per carpel; seeds one per monocarp…….……....***Huberantha***
10.Ovules 2–6 per carpel; seeds 2 or more per monocarp……..***Polyalthia***

Annona L., Sp. Pl. 1: 536 (1753)

Annona squamosa L., Sp. Pl. 1: 537 (1753); Hook. f., Fl. Brit. India 1: 78. (1872); Gamble, Fl. Pres. Madras 20 (1915); Vajr., Fl. Palghat Dist. 49 (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Small trees; leaves simple, alternate; flowers bisexual, greenish yellow, axillary, solitary or clustered; sepals 3, broad ovate; outer petals oblong, thick, inner petals very small; stamens many; carpels many, sub connate, ovoid, pubescent, 1-ovuled; fruit ovoid or sub globose with projecting aereoles.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: South American
IUCN category: Least Concern
Phenology: June-October
Distribution: Rare
Altitude: 200-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 487* (GVCH).

Artabotrys R.Br., Bot. Reg. 5: t. 423. (1820)

Artabotrys zeylanicus Hook. f. & Thomson, Fl. Ind. [Hooker f. & Thomson] i. 128. (1855); Hook. f., Fl. Brit. India 1: 54. (1872); Gamble, Fl. Pres. Madras 14 (1915); Vajr., Fl. Palghat Dist. 46 (1990).

Habit: Climber
Habitat: Semi-evergreen and Evergreen forests
Morphology: Climbing shrub; leaves simple, alternate, shiny; flowers solitary or fascicled on woody, hooked, flattened, leaf-opposed peduncles; sepals broadly ovate, pubescent; petals 6, oblong-lanceolate, tomentose when mature; stamens many, anthers oblong; carpels many, tomentose, ovules 2 in each cell; berries ovoid, mucronate, sessile.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-June
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya*

985 (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2033* (GVCH); Plate 5: Fig. b.

Cyathocalyx Champ. ex Hook.f. & Thomson, Fl. Ind. [Hooker f. & Thomson] i. 126 (1855)

Cyathocalyx zeylanicus Champ. ex Hook.f. & Thomson, Fl. Ind. [Hooker f. & Thomson] i. 127. (1855); Hook. f., Fl. Brit. India 1: 53. (1872); Gamble, Fl. Pres. Madras 13 (1915); Vajr., Fl. Palghat Dist. 46 (1990).

Habit: Tree
Habitat: Evergreen and semi-Evergreen forests
Morphology: Trre; leaves simple, alternate, glabrous, lateral nerves 8-13 pairs; flowers in terminal or leaf-opposed fascicles; sepals combined in to a 3-lobed cup, or nearly free; petals in two whorls of 3 each, valvate; stamens many, cuneate at base, truncate at apex; ovary solitary on a concave torus; stigma large peltate; fruit globose berry.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-June
Distribution: Rare
Altitude: 500-700m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1294* (GVCH).

Desmos Lour., Fl. Cochinch. 1: 352 (1790)

Desmos chinensis Lour., Fl. Cochinch. 1: 352 (1790).

Habit: Climber
Habitat: Semi-Evergreen forests
Morphology: Woody Climber; leaves simple, alternate; lateral nerves 7-12 pairs; flowers leaf-opposed, solitary; sepals ovate, pubescent; outer petals elliptic-lanceolate, inner oblong-lanceolate; receptacle convex; stamens many, oblong; ovary oblong, tomentose; stigma clavate; Fruitlets ovoid, beaked.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-October
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1017* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2105* (GVCH).

Huberantha Chaowasku, Kew Bull. 70(2)-23: 1 (2015)

Huberantha cerasoides (Roxb.) Chaowasku, Kew Bull. 70(2)-23: 2 (2015); *Guatteria cerasoides* (Roxb.) Dunal, Hook. f., Fl. Brit. India 139 (1855); *Polyalthia cerasoides* (Roxb.) Bedd., Gamble, Fl. Pres. Madras 17 (1915); Vajr., Fl. Palghat Dist. 48 (1990).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; leaves simple, alternate; petiole grooved above; lamina glabrous above and pubescent beneath; lateral veins 4-12 pairs; inflorescence solitary or few-flowered axillary fascicle; sepals 3, free; petals 6 in two whorls, stamens numerous, cuneate, anther connectives concealing the anthers; carpels stalked, covered with stiff hairs; ovule 1, basal; fruit an aggregate of 1-seeded berries.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-March
Distribution: Occasional
Altitude: 200-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 030* (GVCH); Kalchady, 09

March 2021, *Jabeena & Maya 5081* (GVCH).

Meiogyne Miq., Ann. Mus. Bot. Lugduno-Batavi 2: 12 (1865)

Meiogyne pannosa (Dalz.) J.Sinclair, in Sarawak Mus. Journ. v. 604 (1951); *Unona pannosa* Dalz., Hook. f., Fl. Brit. India 1: 58. (1872); Gamble, Fl. Pres. Madras 14 (1915).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple, alternate, lanceolate, coriaceous, glabrous, nerves sunk above, raised beneath; flowers sub-sessile, solitary; sepals ovate, connate at base; petals oblong-lanceolate, glabrescent; stamens many; carpels many, sessile or sub-sessile, soft, velvety, globose; stigma capitate; fruitlets fulvous tomentose; seeds 1-3, globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1635* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2064* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 4003* (GVCH).

Miliusa Lesch. ex A.DC., Mém. Soc. Phys. Genève 5: 213 (1832)

Sepals ovate, ciliate; outer petals glabrous; stigma ovoid……..…..…..***M. indica***
Sepals linear-lanceolate, tomentose; outer petals tomentose; stigma capitate……..…***M. tomentosa***

Miliusa indica Lesch. ex A.DC., Mém. Soc. Phys. Genève 5: 213 (-214) (1832); *Miliusa indica var. montana* Gard. ex Hook. f. & Thoms., Hook. f., Fl. Brit. India 1: 86. (1872); *Miliusa montana* Gard. ex Hook. f. & Thoms., Gamble, Fl. Pres. Madras 16 (1915).

Habit: Shrub
Habitat: Shola forest
Morphology: Shrub; leaves ovate, apex acute, base rounded, pubescent only in the nerves beneath; Leaves 6-9 x 3-4 cm, ovate; flowers solitary or paired; sepals ovate, ciliate; torus hairy; stamens many, filaments pubescent; Carpels glabrous, short-stalked.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Common
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 190* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 579* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1881* (GVCH); Plate 5: Fig. c.

Miliusa tomentosa (Roxb.) Finet & Gagnep., Bull. Soc. Bot. France 53(Mem. 4(2)): 153 (1906); Vajr., Fl. Palghat Dist. 47 (1990); *Saccopetalum tomentosum* (Roxb.) Hook. f. & Thoms., Hook. f., Fl. Brit. India 1: 88. (1872); Gamble, Fl. Pres. Madras 22 (1915).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; leaves deciduous, simple, alternate, lateral nerves 8-10 pairs; flowers axillary, solitary or fascicled; sepals 3, valvate, tomentose; petals 6, valvate, in 2 whorls; outer petals small, sepalloid, tomentose; inner petals larger, base saccate; stamens many, anther cells dorsal, contiguous, not concealed by the connective; carpels many; ovules 6 or more; fruit a ring of sub-globose carpels.
Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-May
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 405* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 913* (GVCH); Plate 5: Fig. d.

Monoon Miq., Ann. Mus. Bot. Lugduno-Batavi 2: 15 (1865).

Berry apiculate; stigma capitate; sepals tomentose……..***M. coffeoides***
Berry blunt; stigma slightly bifid; sepals pubescent…….....….***M. fragrans***

Monoon coffeoides (Thw. ex Hook. f. & Thoms.) B. Xue & R. M. K. Saunders, Taxon 61(5): 1030 (2012); *Polyalthia coffeoides* Thw. ex Hook. f. & Thoms., Hook. f., Fl. Brit. India 1: 62. (1872); Gamble, Fl. Pres. Madras 16 (1915); Vajr., Fl. Palghat Dist. 48 (1990).

Habit: Tree
Habitat: Evergreen and semi-Evergreen forests
Morphology: Tree; leaves alternate, gradually attenuating at tip, nerves ascending, 12-16 pairs; flowers solitary, extra axillary or sometimes fascicled on woody tubercles on trunk; sepals 3, suborbicular, tomentose. Petals 6 in 2 whorls, sub-equal; torus convex; stamens many, cuneate, connectives concealing the anthers; carpels many, densely pubescent, oblong, stalked; stigma capitate; ovule one, basal and ascending; fruit an aggregate of berries; seed one.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-August
Distribution: Common
Altitude: 700-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1633* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2088* (GVCH); Pothundy-Kaikatty, 06 July 2019, *Jabeena & Maya 2333* (GVCH).

Monoon fragrans (Dalz.) B.Xue & R.M.K.Saunders, Taxon 61(5): 1031 (2012); *Polyalthia fragrans* (Dalz.) Bedd., Hook. f., Fl. Brit. India 1: 63. (1872); Gamble, Fl. Pres. Madras 16 (1915); Vajr., Fl. Palghat Dist. 48 (1990).

Habit: Tree

Habitat: Evergreen forests and semi-evergreen
Morphology: Trees; leaves simple, alternate, lateral veins 16-21 pairs; flowers in few flowered cymes from the axils of fallen leaves or on tubercles; sepals 3, pubescent; petals 6 in 2 whorls, sub-equal, tomentose; stamens many, connectives concealing the anther cells; carpels many, slightly curved, strigose; stigma broad, slightly bifid; ovules basal and ascending. Fruit aggregate of berries.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: September-January

Distribution: Common

Altitude: 700-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2313* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2742* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3362* (GVCH).

Orophea Blume, Bijdr. Fl. Ned. Ind. 1: 18 (1825).

Flowers axillary or supra-axillary racemes; inner petals pubescent at tip; carpels oblong, densely strigose...***O . erythrocarpa***
Flowers solitary or axillary clusters; inner petals glabrous; carpels globose, glabrous……..……....***O. uniflora***

Orophea erythrocarpa Bedd., Madras J. Lit. Sci. Ser. II. xxii. (1861) 71; Hook. f., Fl. Brit. India 1: 91 (1872); Gamble, Fl. Pres. Madras 24 (1915).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple, alternate; petiole slightly grooved above, leaves pubescent beneath; lateral nerves 6-8 pairs; flowers, bisexual, 3-4 together; sepals 3, tomentose; petals 6; outer petals tomentose outside, glabrous inside; inner clawed, pubescent at tips; nectaries of inner petals free; stamens 12 in 2 rows, outer 6 sterile, connectives slightly apiculate at top; carpels 6, oblong, densely strigose; ovules 2; style short, stigma sessile; fruit aggregate, fruitlets oblong, sessile; seed one.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2211* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4555* (GVCH).

Orophea uniflora Hook.f. & Thomson, Fl. Ind. [Hooker f. & Thomson] i. 110. (1855); Hook. f., Fl. Brit. India 1: 90. (1872); Gamble, Fl. Pres. Madras 24 (1915); Vajr., Fl. Palghat Dist. 47 (1990).

Habit: Shrub
Habitat: Evergreen Forest
Morphology: Shrub; leaves ovate-lanceolate, glabrous, nerves indistinct; flowers solitary or in axillary fascicles; sepals orbicular, ciliate; outer petals ciliate, inner petals glabrous; nectaries oblong; stamens 12, glabrous; ovaries 6, glabrous. Fruitlets globose, glabrous; seed one.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Vulnerable
Phenology: February-August
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2063* (GVCH).

Polyalthia Blume, Fl. Javae Anon., 68 (1830)

Polyalthia longifolia (Sonn.) Thwaites, Enum. Pl. Zeyl. [Thwaites] 398 (1864); Hook. f., Fl. Brit. India 1: 62 (1872); Gamble, Fl. Pres. Madras 16 (1915); Vajr., Fl. Palghat Dist. 49 (1990).

Habit: Tree
Habitat: Evergreen; Here seen as planted
Morphology: Tree; leaves simple, alternate; lateral nerves up to 30 pairs; flowers fascicled on older parts of the branches; sepals 3, free; petals sub-equal, puberulous; stamens many; carpels many, puberulous; ovule one; fruit aggregate of one seeded berries.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-August
Distribution: Occasional
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 800* (GVCH);

Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1565* (GVCH).

Sageraea Dalz., Hooker's J. Bot. Kew Gard. Misc. 3: 207 (1851).

Sageraea laurina Dalz., Hooker's J. Bot. Kew Gard. Misc. 3: 207 (1851); *Sageraea dalzellii* Bedd., Gamble, Fl. Pres. Madras 12 (1915); *Bocagea dalzellii* (Bedd.) Hook. f. & Thoms., Hook. f., Fl. Brit. India 1: 92 (1872)

Habit: Tree
Habitat: Evergreen Forest
Morphology: Trees; leaves simple, alternate; petiole grooved above; lateral nerves 10-15 pairs; flowers in axillary fascicles; sepals 3, connate at base; petals 6, inner petals similar but smaller than the outer; stamens many; carpels 3-6, hairy; stigma capitate; Fruit an aggregate of 1-seed berries.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: March-September
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 06 July 2019, *Jabeena & Maya 2334* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4821* (GVCH).

LAURALES

LAURACEAE

1.Flowers unisexual; bracts with involucres……..…...……....(2)

1.Flowers bisexual; bracts without involucres……..……..…..(4)

2.Flowers 2-merous; perianth lobes 4…….....…….....***Neolitsea***

2.Flowers 3-merous; perianth lobes 6 or 12 or 22…….……..…….……(3)

3.Inflorescence umbel; involucral bracts imbricate…….…….....***Actinodaphne***
3.Inflorescence raceme; involucral bracts decussate…….…...……...***Litsea***
4.Anthers 2-celled……..……(5)
4.Anthers 4-celled……..……(6)
5.Fruit surrounded by enlarged perianth tube…….…...…..***Cryptocarya***
5.Fruit not surrounded by enlarged perianth tube……..…***Beilschmiedia***
6.Leaves opposite or subopposite rarely alternate; fruit enclosed in deep cup……...…***Cinnamomum***
6.Leaves alternate; fruit enclosed in a shallow perianth cup or not in a perianth cup……..…(7)
7.Perianth lobes persistent in fruit……..***Phoebe***
7.Perianth lobes deciduous in fruit……..…...(8)
8.Fruits globose, perianth lobes persistent, reflexed, fruiting pedicels not much thickened, not lenticellate, reddish-brown……..…….***Machilus***
8.Fruits ellipsoid or ovoid, perianth lobes caducous, fruiting pedicels thickened, lenticellate or pustular, greenish-yellow rarely purplish……..…..... ***Alseodaphne***

Actinodaphne Nees, Pl. Asiat. Rar. (Wallich). ii. 68 (1831).

1.Leaves upto 15 cm long, small; fruiting pedicel stout……..……..... ***A. salicina***

1.Leaves upto 26 cm long, large; fruiting pedicel slender……...…….(2)

2.Leaf lamina tomentose beneath; petiole concave above; male flower rufous tomentose; ovary glabrous; fruiting cup is cup-shaped, deep……...…...***A. bourdilloni***

2.Leaf lamina densely rufous villous beneath; petiole flat above; male flowers tawny villous; ovary sparsely villous; fruiting cup is patelliform, shallow…….. ***A. wightiana***

Actinodaphne bourdillonii Gamble, Bull. Misc. Inform. Kew 1925(3): 129 (1925); Gamble, Fl. Pres. Madras 1231 (1925).

Habit: Tree
Habitat: Shola and Evergreen forests
Morphology: Trees; leaves penni-nerved, glabrous above and tomentose beneath, verticillate, in whorls of 7–10; petiole concave above; lateral veins 12–14 pairs; Inflorescences a raceme; male flowers rufous tomentose; stamens 9 in three whorls, outer whorl 3, introrse, 4-locular, eglandular, middle whorl almost same as the outer whorl, inner whorl 3, extrorse with 2 glands at base of the filament; female flowers with 9 staminodes in three whorls; ovary glabrous; style slightly curved, sparsely villous, stigma irregularly lobed, yellow, plumose and peltate; fruiting cup is cup-shaped, deep; fruits berry, sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: March-August
Distribution: Occasional
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1427* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2950* (GVCH).

Actinodaphne salicina Meisn., Prodr. [A. P. de Candolle] 15(1): 212 (1864); Hook. f., Fl. Brit. India 5: 148 (1886); Gamble, Fl. Pres. Madras 1230 (1925).

Habit: Tree
Habitat: Evergreen and shola forests
Morphology: Tree; leaves verticillate, in whorls of 5–8; lateral veins 10–18 pairs, prominent beneath; inflorescence few flowered, sessile fascicle; male flowers tepals 6 in two whorls; stamens 9 in three whorls; outer whorl 3, 4-locular; anthers eglandular; inner whorl 3, with 2 glands at base of the filament; female flowers tepals 6 in two whorls of 3; staminodes 9 in three whorls; ovary ovoid, sparsely villous; stigma peltate; fruit a berry.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: September-March
Distribution: Occasional
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2626* (GVCH); Manpara, 16 February 2020, *Jabeena & Maya 4067* (GVCH).

Actinodaphne wightiana (Kuntze) Noltie, Regnum Veg. 145: 495 (2005); *Actinodaphne hirsuta* Hook. f., Fl. Brit. India 5: 152 (1886); Gamble, Fl. Pres. Madras 1231 (1925); *Actinodaphne malabarica* Balakr., Vajr., Fl. Palghat Dist. 402 (1990).

Habit: Tree
Habitat: Evergreen and semi-Evergreen forests
Morphology: Trees; leaves penni-nerved; leaf lamina densely rufous villous beneath; lateral veins 8–12 pairs; petiole flat above; bracts densely silky brown tomentose; male flowers tawny villous, tepals 6, margin ciliate, stamens 9 in three whorls; outer whorl 3, eglandular; middle whorl almost same as the outer whorl; inner whorl 3, with 2 glands at base of the filament; female flowers densely fulvous tomentose; tepals 6; staminodes 9 in three whorls; ovary sparsely villous; fruiting cup is patelliform; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: August-January
Distribution: Occasional

Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 914* (GVCH); Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1339* (GVCH); Plate 5: Fig. e.

Alseodaphne Nees, Pl. Asiat. Rar. (Wallich). ii. 71 (1831)

Alseodaphne semecarpifolia Nees, Pl. Asiat. Rar. (Wallich). ii. 72; Hook. f., Fl. Brit. India 5: 144 (1886); Gamble, Fl. Pres. Madras 1226 (1925).

Habit: Tree
Habitat: Evergreen and Semi-Evergreen forests
Morphology: Trees; leaves simple, alternate; lateral nerves 6-10 pairs; flowers in axillary panicles; perianth lobes 6, sub-equal, pubescent within, margin ciliate; stamens 9, fertile, in 3 rows; anthers 4-celled, staminodes 3; ovary half inferior, globose; stigma peltate; fruit a berry, ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-August
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 274* (GVCH); Nelliyampathy range, Hilltop, 20 January 2019, *Jabeena & Maya 984* (GVCH).

Beilschmiedia Nees in Wall., Pl. Asiat. Rar. (Wallich). 2: 61, 69 (1831)

Inflorescence a panicle; peduncle glabrous; terminal buds long, glabrous; midrib flattened adaxially, raised and prominent abaxially; lateral veins 8–10 pairs .....***B. wightii***
Inflorescence a pseudo-raceme, peduncle densely pubescent; terminal buds short, pubescent; midrib raised on both surfaces; lateral veins 5-8 pairs……....***B. gemmiflora***

Beilschmiedia gemmiflora (Blume) Kosterm., J. Sci. Res., Indonesia i. 115 (1952), in adnot.; *Beilschmiedia bourdillonii* Brandis, Gamble, Fl. Pres. Madras 1221 (1925).

Habit: Tree
Habitat: Evergreen and semi-Evergreen forests
Morphology: Trees; leaves simple, exstipulate; lateral nerves 5-8 pairs; flowers bisexual; perianth tube short; lobes 6, sub-equal; stamens 9 perfect, in 3 rows, outer 2 series eglandular and third series with 2 glandular filaments; staminodes 3; ovary half inferior, ovoid, pubescent; stigma sub-capitate; fruit berry, pubescent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: January-February
Distribution: Rare
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2131* (GVCH).

Beilschmiedia wightii Benth. & Hook.f., Gen. Pl. [Bentham & Hooker f.] 3(1): 152 (1880); Gamble, Fl. Pres. Madras 1221 (1925).

Habit: Tree
Habitat: Evergreen, semi-evergreen and shola forests
Morphology: Trees; leaf-buds elongate, perulate; scales lanceolate; leaves simple, glabrous; lateral nerves 10-12 pairs, reticulations prominent; panicles axillary as well as terminal; flowers bisexual, ebracteate; peduncle and pedicel slender; perianth lobes 6, sub-equal; stamens 9 perfect in 3 rows, outer 2 series eglandular, third series with 2 glandular filaments;

staminodes 3, stipitate; ovary half inferior, ovoid, glabrous; style slender; stigma subcapitate; fruit a berry ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Near Threatened
Phenology: January-February
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1585* (GVCH).

Cinnamomum Schaeff., Bot. Exped. 74 (1760), nom. cons.

1.Lateral nerves reaching at leaf apex……..…….....***C. malabathrum***
1.Lateral nerves not reaching at leaf apex……...(2)
2.Lateral veins 2; staminodes sagittate.....***C. macrocarpum***
2.Lateral veins 3-6 pairs; staminodes cordate.....***C. verum***

Cinnamomum macrocarpum Hook. f., Fl. Brit. India [J. D. Hooker] 5(13): 133 (1886); Gamble, Fl. Pres. Madras 1225 (1925); Vajr., Fl. Palghat Dist. 402 (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Trees; leaves simple, lateral veins 2, arise above from the base and terminate near the tip of lamina; inflorescence panicles of cyme; flowers densely silvery-sericeous; tepals 6 in 2 whorls, sub-equal, margin ciliate; stamens 9 in 3 whorls; anthers 4-locular; staminodes 3, pilose; ovary ovoid, glabrous; fruits berry, ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Vulnerable
Phenology: February-March
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2022* (GVCH).

Cinnamomum malabathrum (Lam.) J. Presl, Prir. Rostlin 2: 46 (1825); Vajr., Fl. Palghat Dist. 403 (1990); *Cinnamomum iners* sensu Gamble, Fl. Pres. Madras 1224 (1925).

Habit: Tree
Habitat: Evergreen and semi-Evergreen forests
Morphology: Trees; leaves simple, glabrous; 3-ribbed; the side ribs running almost to the apex; inflorescence paniculate cyme; flowers bisexual; tepals 6; stamens 9 in 3 rows, first and second row eglandular, third row glandular; anthers 4-celled; staminodes hastate; ovary ellipsoid; stigma peltate; fruit a berry.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Least Concern
Phenology: March-April
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 143* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3225* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4066* (GVCH); Plate 5: Fig. f.

Cinnamomum verum J. Presl, Prir. Rostlin 2: 37 (1825); *Cinnamomum zeylanicum* Blume, Hook. f., Fl. Brit. India 5: 131 (1886); Gamble, Fl. Pres. Madras 1224 (1925).

Habit: Tree
Habitat: Evergreen and riparian forests; Here it is cultivated

Morphology: Tree; leaves simple, 3-ribbed from base; lateral nerves 3-6 pairs; flowers bisexual, in terminal and axillary; Stamens 9 perfect, first and second rows introrse and eglandular, third row bearing 2 large glands at the base; staminodes 3; ovary half inferior, sessile; fruit a berry, ellipsoid to oblong-ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Rare
Altitude: 600-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 850* (GVCH).

Cryptocarya R.Br., Prodr. Fl. Nov. Holland. 402 (1810), nom. cons

Leaves densely tomentose or villous beneath; petiole tomentose; bracts and bracteoles apparently persistent; fruit basally constricted……....***C. anamalayana***
Leaves sparsely pubescent or glabrous beneath; petiole glabrous; bracts and bracteoles caducous; fruit not basally constricted……...…...***C. wightiana***

Cryptocarya anamalayana Gamble, Bull. Misc. Inform. Kew 1925(3): 126 (1925); Gamble, Fl. Pres. Madras 1218 (1925).

Habit: Tree
Habitat: Evergreen forests
Morphology: Trees; leaves simple, alternate; lateral veins 6–10 pairs, looped towards the margin; flowers bisexual in a paniculate inflorescence; tepals 6 in two whorls; stamens 9 in three whorls; outer whorl glandular; staminodes villous at base; ovary glabrous; stigma capitate; fruit berry, sparsely pubescent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacifiic
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: December-April
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1436* (GVCH).

Cryptocarya wightiana Thwaites, Enum. Pl. Zeyl. [Thwaites] 254 (1861); Hook. f., Fl. Brit. India 5: 120 (1886); *Cryptocarya bourdillonii* Gamble, Gamble, Fl. Pres. Madras 1218 (1925); Vajr., Fl. Palghat Dist. 404 (1990).

Habit: Tree
Habitat: Evergreen and semi-Evergreen forests
Morphology: Trees; leaves alternate, exstipulate; lateral veins 5–12 pairs; inflorescence a panicle; tepals 6 in two whorls; stamens 9 in three whorls; outer whorl eglandular; inner whorl glandular; staminodes ovoid, sub-sessile; ovary glabrous; stigma capitate; fruit a berry, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Vulnerable
Phenology: March-August
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1612* (GVCH).

Litsea Lam., Encycl. [J. Lamarck & al.] 3(2): 574 (1792)

1.Inflorescence solitary umbels or in clusters……..……..(2)
1.Inflorescence racemose umbels…...…5)
2.Leaves tomentose or pubescent beneath……...…***L. bourdillonii***
2.Leaves glabrous……..……..……..(3)
3.Lateral veins 6-7 pairs……...……(4)
3.Lateral veins 10-12 pairs..…***L. laevigata***
4.Flowers 4 in an umbellule; tepals sub-equal; ovary ovate; perianth tube puberulous……....***L. mysorensis***

4.Flowers 4-5 in an umbellule; tepals equal; ovary ellipsoid; perianth tube glabrous…….***L. coriacea***
5.Leaves opposite, not glaucous below ..... ***L. oleoides***
5.Leaves alternate, pale to white glaucous below …….(6)
6. Branchlets and leaves tomentose……...(7)
6. Branchlets and leaves glabrous……..(8)
7.Lateral veins 16 pairs; fruit ovoid, sparsely silky pubescent……***L. floribunda***
7.Lateral veins 10 pairs; fruit ellipsoid, glabrous…….……***L. wightiana***
8.Fruiting pedicel glabrous and angular……..……..***L. stocksii***
8.Fruiting pedicel silky pubescent and terete…….,…..…..***L. glabrata***

Litsea bourdillonii Gamble, Bull. Misc. Inform. Kew 1925(3): 131 (1925); Gamble, Fl. Pres. Madras 1237 (1925).

Habit: Tree
Habitat: Evergreen forests
Morphology: Trees; leaves simple, alternate, exstipulate; lateral veins 12–18 pairs; inflorescence umbels in sessile or sub-sessile clusters; flowers 4–6 in each umbel; tepals 6; stamens 12 in male flowers; anthers 4-locular; first two whorls eglandular, the other two whorls glandular, pistillode rudimentary; ovary in female flowers ovoid; stigma papillose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Near Threatened
Phenology: December-May
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 138* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2949* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3432* (GVCH).

Litsea coriacea (B. Heyne ex Nees) Hook. f., Fl. Brit. India [J. D. Hooker] 5(13): 166 (1886); Gamble, Fl. Pres. Madras 1236 (1925); Vajr., Fl. Palghat Dist. 404 (1990).

Habit: Tree
Habitat: Semi-Evergreen forests
Morphology: Trees; leaves simple, alternate, exstipulate; lateral veins 5–10 pairs, looped towards margin; inflorescence a sessile or sub-sessile umbel; involucral bracts 4, silky pubescent; flowers 4 or 5 in each umbel; tepals 6, silky-pubescent outside; stamens 12 in male flowers, unequal; first two whorls eglandular, third and fourth whorls glandular; pistillode minute or rudimentary; ovary ellipsoid in female flowers; fruit berry, ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Near Threatened
Phenology: December-January
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 681* (GVCH); Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1490* (GVCH).

Litsea floribunda Gamble, Fl. Madras 1238 (1925); *Litsea wightiana* Hook. f., Fl. Brit. India 5: 177 (1886); Vajr., Fl. Palghat Dist. 405 (1990).

Habit: Tree
Habitat: Evergreen, semi-evergreen and shola forests
Morphology: Trees; leaves simple, alternate, exstipulate; lateral veins 11–16 pairs; inflorescence racemose umbels; peduncle of umbels tomentose; flowers 5–8 in each umbel; tepals 6; stamens 12 in male flowers, first two whorls eglandular, third and fourth whorls glandular; glands long-stipitate; pistillode rudimentary; ovary ovoid in female flowers; stigma

discoid, irregularly lobed, papillose; fruit berry, silky-pubescent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Near Threatened
Phenology: December-April
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2740* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3024* (G VCH).

Litsea glabrata (Wall.) Hook.f., Fl. Brit. India [J. D. Hooker] 5(13): 174 (1886); Gamble, Fl. Pres. Madras 1237 (1925); Vajr., Fl. Palghat Dist. 405 (1990).

Habit: Tree
Habitat: Semi-Evergreen forests
Morphology: Trees; leaves simple, alternate, exstipulate; lateral veins 9–12 pairs, inflorescence racemose umbels, silky-appressed hairy; flowers 5–6 in each umbel, silky-pubescent; tepals 6, sub-equal, silky-pubescent outside; stamens 12 in male flowers, in 4 whorls, first two whorls eglandular, the other two whorls glandular; pistillode rudimentary; ovary ovoid in female flowers, stigma discoid, irregularly lobed, papillose; fruit berry, ellipsoid; fruiting pedicels sparsely silky-pubescent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: September-May
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1438* (GVCH).

Litsea laevigata Gamble, Fl. Madras 1236(1925); *Litsea salicifolia* (Roxb. ex Nees) Hook. f., Fl. Brit. India 5: 167 (1886).

Habit: Tree
Habitat: Semi-Evergreen forests
Morphology: Trees; leaves simple, alternate, exstipulate; lateral veins 6–8 pairs, inflorescence sub-sessile 10–12 umbels in a cluster; involucral bracts 4; flowers 5–6 in each umbel, silky-pubescent; tepals 6, sub-equal, silky-pubescent outside; stamens 12 in male flowers, first two whorls eglandular, the other two whorls glandular; pistillode rudimentary; ovary ovoid in female flowers, style glabrous; stigma dilated, papillose; fruit berry, ellipsoid; fruiting pedicels glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Near Threatened
Phenology: July-September
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1789* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 15 January 2019, *Jabeena & Maya 4152* (GVCH).

Litsea mysorensis Gamble, Bull. Misc. Inform. Kew 1925(3): 130 (1925); Gamble, Fl. Pres. Madras 1236 (1925).

Habit: Tree
Habitat: Semi-Evergreen forests
Morphology: Trees; leaves simple, alternate, exstipulate; lateral veins 10–13 pairs, looped towards margin; inflorescence sessile or sub-sessile clusters; involucral bracts 4, densely silky pubescent; flowers 4 in each umbel; tepals 6; perianth tube puberulous; stamens 12 in male flowers, in 4 whorls, first two whorls eglandular, the other two whorls glandular;

pistillode rudimentary; ovary ovate in female flowers; stigma capitate, papillose; fruit berry, ovoid; fruiting pedicels thick and terete.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to South India
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3538* (GVCH).

Litsea oleoides Hook.f., Fl. Brit. India [J. D. Hooker] 5(13): 175 (1886); Gamble, Fl. Pres. Madras 1236 (1925); Vajr., Fl. Palghat Dist. 405 (1990).

Habit: Tree
Habitat: Evergreen and semi-Evergreen forests
Morphology: Tree; leaves coriaceous, glabrous, exstipulate; petiole stout; lateral nerves 8-12 pairs, obscure; inflorescence axillary racemes of umbellules; flowers unisexual; bracts pubescent; perianth lobes complete, pubescent; stamens 9, in 3 rows, all glandular; staminodes 9; ovary half inferior, papillose; berry depressed globose on a short flattened undulate perianth tube.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-April
Distribution: Rare
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1586* (GVCH).

Litsea stocksii (Meisn.) Hook.f., Fl. Brit. India [J. D. Hooker] 5(13): 176 (1886); Gamble, Fl. Pres. Madras 1236 (1925); Vajr., Fl. Palghat Dist. 406 (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Trees; leaves simple, alternate, exstipulate; lateral veins 7–12 pairs, oblique; inflorescence raceme of umbels; involucral bracts 4–6; flowers 4–8 in each umbel; tepals 6, silky tomentose; stamens 9–12 in male flowers, in 3-4 whorls; first two whorls eglandular, the other two whorls glandular; pistillode rudimentary; ovary ovoid in female flowers; stigma irregularly lobed, papillose; fruits berry, ovoid to ellipsoid; fruiting pedicels thick and angular.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: April-June
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1320* (GVCH).

Litsea wightiana (Nees) Wall. ex Hook.f., Fl. Brit. India [J. D. Hooker] 5(pt. 13): 177 (1886); Gamble, Fl. Pres. Madras 1238 (1925).

Habit: Tree
Habitat: Shola forests
Morphology: Trees; leaves simple, alternate, exstipulate; lateral veins 5–10 (sometimes 15) pairs; inflorescence raceme of umbel; involucral bracts 5–8; flowers 5 in each umbel; tepals 6; stamens 12 in male flowers, in 3 whorls, first two whorls eglandular, the third whorl glandular; pistillode absent; ovary ovoid in female flowers; stigma capitate, papillose; fruit berry, ellipsoid; fruiting pedicels angular, stout, sparsely pubescent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated

Phenology: March-July
Distribution: Occasional
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1085* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2391* (GVCH); Plate 5: Fig. g.

Machilus Nees, Pl. Asiat. Rar. (Wallich). 2(8): 70 (1831)

Machilus glaucescens (Nees) Wight, Icon. Pl. Ind. Orient. [Wight] 5(2): 12, t. 1825 (1852); *Machilus macrantha* Nees, Hook. f., Fl. Brit. India 5: 140 (1886); Gamble, Fl. Pres. Madras 1227 (1925); *Persea macrantha* (Nees) Kosterm., Vajr., Fl. Palghat Dist. 407 (1990).

Habit: Tree
Habitat: Evergreen and semi-Evergreen forests
Morphology: Trees; leaves simple, alternate, clustered at the tip of branchlets; lateral veins 6–12 pairs; inflorescence a panicle; flowers bisexual; tepals 6; stamens 9 in 3 whorls; staminodes 3; ovary ovoid, glabrous; stigma discoid; fruit berry, globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-May
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1130* (GVCH); Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1329* (GVCH); Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3084* (GVCH); Plate 5: Fig. h.

Neolitsea (Benth. & Hook.f.) Merr., Philipp. J. Sci. 1(Suppl. 1): 56 (1906), nom. Cons.

Petiole channelled above; intercostae reticulate-areolate; umbels sub-sessile; filaments of anthers glabrous; ovary ovoid…….....……***N. cassia***
Petiole not channelled; intercostae reticulate-scrobiculate; umbels sessile; filaments of anthers villous; ovary globose……..…***N. scrobiculata***

Neolitsea cassia (L.) Kosterm., J. Sci. Res., Indonesia i. 85 (1952); *Litsea zeylanica* Nees, Hook. f., Fl. Brit. India 5: 178 (1886); *Neolitsea zeylanica* (Nees) Merr., Gamble, Fl. Pres. Madras 1239 (1925); Vajr., Fl. Palghat Dist. 406 (1990).

Habit: Tree
Habitat: Shola and Evergreen forests
Morphology: Trees; leaves spirally arranged; 3-ribbed near the base, lateral nerves 1-4 pairs; inflorescence sub-sessile umbels; tepals 4 in two whorls; stamens 6 in two whorls in male flowers; staminodes 6 in two whorls in female flowers; ovary ovoid, glabrous; stigma peltate, papillose; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1325* (GVCH).

Neolitsea scrobiculata Gamble, Fl. Madras 1240 (1925); Vajr., Fl. Palghat Dist. 406 (1990); *Litsea zeylanica* sensu Hook. f., Fl. Brit. India 5: 178 (1886).

Habit: Tree
Habitat: Evergreen and shola forests
Morphology: Trees; leaves simple, densely scrobiculate; 3-ribbed from base; lateral nerves 2-3 pairs; flowers unisexual in sub-sessile umbellules; involucral bracts 4, tepals 4; stamens 6 in 3 whorls in male flowers; anthers 4-celled; pistillode linear;

staminodes 6, in 3 series in female flowers; ovary globose; stigma discoid; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: May-August
Distribution: Common
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 374* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 971* (GVCH); Mattumala, 20 November 2020, *Jabeena & Maya 4232* (GVCH).

Phoebe Nees, Syst. Laur. 98 (1836).

Petiole glabrous; leaves chartaceous; lateral veins 9-15 pairs; peduncle and pedicel glabrous; perianth glabrous outside……***P. lanceolata***

Petiole rusty pubescent when young; leaves coriaceous; lateral veins 6-7; peduncle and pedicel rusty-tomentose; perianth tomentose outside…..…***P. wightii***

Phoebe lanceolata (Nees) Nees, Syst. Laur. 109 (1836); Hook. f., Fl. Brit. India 5: 141 (1886); Gamble, Fl. Pres. Madras 1228 (1925); Vajr., Fl. Palghat Dist. 407 (1990).

Habit: Tree

Habitat: Semi-evergreen and Evergreen forests

Morphology: Trees; leaves simple, alternate, exstipulate, clustered at the tip of branchlets; lateral veins 9–15 pairs; inflorescence a panicle of cyme; flowers bisexual; perianth lobes 6; stamens 9; staminodes 3; ovary globose, pubescent; fruits ovoid or ellipsoid.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Least Concern

Phenology: January-March

Distribution: Common

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1330* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2473* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3947* (GVCH); Plate 6: Fig. a.

Phoebe wightii Meisn., Prodr. [A. P. de Candolle] 15(1): 38 (1864); Gamble, Fl. Pres. Madras 1228 (1925); *Phoebe paniculata* Hook.f., Fl. Brit. India 5: 142 (1886).

Habit: Tree

Habitat: Evergreen and shola forests

Morphology: Trees; leaves simple, alternate, exstipulate, clustered at the tip of branchlets; lateral veins 6–7 pairs, inflorescence a panicle of cyme; flowers bisexual, perianth lobes 6; stamens 9, in 3 whorls; staminodes 3; ovary globose, pubescent; fruits ovoid.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India

IUCN category: Not Evaluated

Phenology: April-May

Distribution: Occasional

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1337* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1631* (GVCH).

CHLORANTHALES

CHLORANTHACEAE

Sarcandra Gardner, Calcutta J. Nat. Hist. vi. (1846) 348.

Sarcandra glabra subsp. ***brachystachys*** (Blume) Verdc., Kew Bull. 40(1): 216 (1985); *Chloranthus brachystachya* sensu Hook. f., Fl. Brit. India 5: 100 (1886); Gamble, Fl. Pres. Madras 1211 (1925); *Sarcandra chloranthoides* Gard., Vajr., Fl. Palghat Dist. 399 (1990).

Habit: Shrub

Habitat: Evergreen and Moist Deciduous forests

Morphology: Perennial shrubs; stem terete, articulate at nodes; leaves simple, opposite, margin coarsely spinous-serrate; stipules forms sheath round the nodes; inflorescence terminal spikes; male flowers borne on side of female flowers; perianth 0; stamens 1 or 3, confluent; ovary 1-ovuled; stigma sessile, truncate; berry ovoid, smooth.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: December-May

Distribution: Occasional

Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2036* (GVCH); Govindamala, 20 November 2020, *Jabeena & Maya 4459* (GVCH); Plate 6: Fig. b.

IV.1.3. Monocots

ACORALES

ACORACEAE

Acorus L., Sp. Pl. 1: 324 (1753)

Acorus calamus L., Sp. Pl. 1: 324 (1753); Hook. f., Fl. Brit. India 6: 555 (1893); Gamble, Fl. Pres. Madras 1577 (1931).

Habit: Herb
Habitat: Marshy areas
Morphology: Perennial herb; rhizomes creeping, spongy inside; leaves linear, base amplexicaul; petioles sheathing; Inflorescence a sessile spadix; fruit berry, angular, 3-loculed.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: April-July
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3093* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3499* (GVCH).

ALISMATALES

ARACEAE

1.Scandent shrubs with adventitious aerial roots…….……..….(2)
1.Erect herbs or shrubs with no adventitious aerial roots……...….(3)
2.Leaves linear to oblong-lanceolate…….***Pothos***
2.Leaves ovate-pinnatifid.….***Epipremnum***
3.Plants epiphytic……..……..(4)
3.Plants terrestrial…….……..(5)
4.Leaves 1-2 from a tuber……..***Remusatia***
4.Leaves usually clustered…...***Anthurium***
5.Leaves compound……..…….(6)

5.Leaves simple…….…….(6)
6.Leaf stalk trisect; leaves 3-partite……...…...…...…..***Amorphophallus***
6.Leaf stalk not trisect; leaflets radially or pedately arranged…….***Arisaema***
7.Plant a stout or robust herb…….….(8)
7.Plant a small slender herb…….....(9)
8.Leaves ovate-cordate……..…..***Colacasia***
8.Leaves ovate-lanceolate to elliptic-oblong……..……...….***Spathiphyllum***
9.Leaves peltate…….***Ariopsis***
9.Leaves not peltate……...……...(10)
10.Spadix exserted from the spathe; ovules 1-2……..……..***Typhonium***
10.Spadix included in the spathe; ovules many……..…....***Theriophonum***

Amorphophallus Blume ex Decne., Nouv. Ann. Mus. Hist. Nat. 3: 366 (1834).

1.Stigma disciform; fruit single seeded…….....***A. commutatus***
1.Stigma 2-3 lobed; fruit 0-3 seeded……..…….***A. paeoniifolius***

Amorphophallus commutatus (Schott) Engl., Monogr. Phan. [A.DC. & C.DC.] 2: 319 (1879); Hook. f., Fl. Brit. India 6: 515 (1893).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herbs; leaves compound; petiole terete; cataphylls 4; spathe differentiated into a basal tube and an upper limb separated by a slight constriction between the two; ovary sub-globose, unilocular stigma inconspicuously 3-lobed; male flowers densely arranged, sessile.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: May-September
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2037* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2402* (GVCH).

Amorphophallus paeoniifolius (Dennst.) Nicolson, Taxon 26: 338 (1977); *Amorphophallus dubius* Blume, Hook. f., Fl. Brit. India 6: 514 (1893); Gamble, Fl. Pres. Madras 1587 (1931).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; corm globose, tubercled; leaves petioled, green with brown patches; lamina 70-120 cm across; lobes to 14 x 5.5 mm, ovate, acuminate, decurrent at base into a wing to the petiole; nerves impressed above. Spathe 38 cm across, campanulate, undulate, dull greenish brown; spadix as long as spathe; appendage obovoid, 20-25 cm across, uneven, rugose, deep pink; flowers on the lower half of the spadix; berry oblong, obovoid, orange-red, glabrous.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: May-June
Distribution: Common
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 019* (GVCH); Kalchady, 01 October 2017, *Jabeena & Maya 525* (GVCH); Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1574* (GVCH).

Anthurium Schott, Wiener Z. Kunst 1829(3): 828 (1829).

Anthurium andraeanum Linden, Ill. Hort. (1877) 43. t. 271.

Habit: Herb

Habitat: Grown as garden plant

Morphology: Rhizomatous herb; leaves simple, glossy, arranged spirally forming a rosette on a very short stem; flowers on

axillary spadix; tepals 4; male flower with 4 stamens, filaments strap-shaped; female flowers with short style; stigma globose; ovary 2-loculed.

Raunkiaer's life-form: Epiphyte

Phytogeographical affinity: South American

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Occasional

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2798* (GVCH); Kollengode range, Seetharkundu, 11 January 2020, *Jabeena & Maya 3727* (GVCH).

Ariopsis J. Graham, Cat. Bomb. Pl. 252 (1839)

Ariopsis peltata Nimmo, Cat. Pl. Bombay [Graham] 252 (1839); Hook. f., Fl. Brit. India 6: 519 (1893); Gamble, Fl. Pres. Madras 1580 (1931); Vajr., Fl. Palghat Dist. 532 (1990).

Habit: Herb
Habitat: On wet rocks in evergreen forests, also in sacred grooves
Morphology: Epiphytic or terrestrial annual herbs; leaves 1 or 2, peltate, orbicular, glabrous; peduncle solitary; spathe cymbiform, tube absent; spike cylindrical; female flowers 5-7, on one side of the spike towards the lower part; ovary ovoid, 1-loculed, ovules many, on parietal placentas; stigma 4-lobed; male flowers sunken in upper fleshy part of spadix; stamens 3; anthers divaricate, pubescent.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-August
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2421* (GVCH).

Arisaema Mart., Flora 14: 459 (1831)

1.Leaves bilaterally symmetrical, pedate……***A. tortuosum***
1.Leaves radially symmetrical, radiate..(2)
2.Spathe limb cucullate…***A. nilamburense***
2.Spathe limb not cucullate……...(3)
3. Spadix appendix cylindric; spathe limb arched over or drooping; male 3-4 androus…….….***A. leschenaultii***
3. Spadix appendix fusiform; spathe limb horizontal or erect; Male 2-7 androus……...……...***A. barnesii***

Arisaema barnesii C.E.C.Fisch., Bull. Misc. Inform. Kew 1933(7): 342 (1933); Gamble, Fl. Pres. Madras 1891(1936); Vajr., Fl. Palghat Dist. 532 (1990).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herb; corm sub-globose; cataphylls 3 or 4; leaf solitary; leaflets 7–9; inflorescence spathe funnel-shaped towards the mouth region; margins of the mouth slightly revolute; female spadix sessile; pistils crowded, sub-globose; stigma papillose; male spadix similar to female; male flowers scattered over or crowded at the base and distant above; 7-8 androus; anthers sessile.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2150* (GVCH).

Arisaema leschenaultii Blume, Rumphia 1: 93 (1836); Hook. f., Fl. Brit. India 6: 504 (1893); Gamble, Fl. Pres. Madras 1585 (1931); Vajr., Fl. Palghat Dist. 532 (1990); *Arisaema pulchrum* N. E. Br., Hook. f., Fl. Brit. India 6:505 (1893); Gamble, Fl. Pres. Madras 1585 (1931).

Habit: Herb
Habitat: Evergreen forests, sholas and grasslands
Morphology: Perennial herbs; corm depressed globose to sub-globose; cataphylls 3 or 4; leaf solitary, rarely 2; leaflets 6–11, sessile; inflorescence held below the leaves; spathe funnel-shaped towards the mouth; margins of the mouth slightly dilated to a revolute-auricular extension, drooping; female spadix sessile; pistils many, sessile, compactly arranged, globose; ovules 3–5; stigma papillate; appendix cylindrical; male spadix sessile, similar to female; male flowers scattered over or crowded at the base and distant above, 3–4-androus; anthers sessile; fruiting spike cylindrical; berries globose, compactly arranged, 3–5-seeded.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 119* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1614* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2057* (GVCH); Plate 6: Fig. c.

Arisaema nilamburense Sivad., Aroideana 6(2): 37 (1983), nom. nov. (1983).

Habit: Herb
Habitat: Evergreen and semi-Evergreen forests
Morphology: Perennial herbs; corm globose-sub-globose; cataphylls 3 or 4, rarely 5; leaf solitary, radiatisect; leaflets sessile, 5–7; lateral veins 15–20 pairs. spathe slightly funnel-shaped towards the mouth region, margins of the mouth dilated; female spadix sessile; pistils many, compactly arranged, sub-globose; ovules 2 or 3, stigma papillate; male spadix stipitate, 2 or 3-androus; fruiting spike cylindrical or conical; berries ovoid, 2 or 3-seeded.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats (Kerala)
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2127* (GVCH).

Arisaema tortuosum (Wall.) Schott., Melet. Bot. 1: 17. (1832); Hook. f., Fl. Brit. India 6: 502 (1893); Gamble, Fl. Pres. Madras 1584 (1931).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herbs; tubers spheroidal; leaves 2-together; leaflets 8-10, sessile; peduncle shorter than the petiole; spathe green; limb ovate, acuminate, with white and purple streaks; tube 4-6 cm long; spadix 12-18 cm long, sigmoidally curved, appendage narrow.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-June
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 254* (GVCH); Mattumala, 21 April 2018,

Jabeena & Maya 1385 (GVCH); Plate 6: Fig. d.

Colocasia Schott, Melet. Bot. 18 (1832)

Colocasia esculenta (L.) Schott, Melet. Bot. 18 (1832); *Colocasia antiquorum* Schott., Hook. f., Fl. Brit. India 6: 523 (1893); Gamble, Fl. Pres. Madras 1580 (1931); Vajr., Fl. Palghat Dist. 533 (1990).

Habit: Herb
Habitat: Near the banks of ponds and streams
Morphology: Tuberous herbs; leaves with 6 pairs of nerves, united to form an intramarginal vein; peduncle solitary or few together; spathe thick, mouth constricted, limb erect; spadix free, appendage cylindric; neutral flowers in between male and female flowers; perianth zero; male flowers above, stamens 6; female flowers below; ovary ovoid, 1-loculed; ovules many on 2-4 parietal placentas. ; fruit an aggregate of berries.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: May-October
Distribution: Common
Altitude: 400-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pulayampara, 19 August 2017, *Jabeena & Maya 351* (GVCH); Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3519* (GVCH); Kollengode range, Cheriya manpara, 16 February 2020, *Jabeena & Maya 4064* (GVCH).

Epipremnum Schott, Bonplandia 5: 45 (1857).

Epipremnum pinnatum (L.) Engl., Pflanzenr. (Engler) IV. 23B (Heft 37): 60 (1908).

Habit: Climber
Habitat: Grown as garden plant
Morphology: Climbing herb; leaves alternate, dimorphic; inflorescence axillary, solitary, erect; spathe sub-cylindrical, acuminate at apex; spadix sessile; fruit berry with 1-2 seeds.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: April-July
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2214* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3719* (GVCH).

Pothos L., Sp. Pl. 2: 968 (1753)
Pothos scandens L., Sp. Pl. 2: 968 (1753); Hook. f., Fl. Brit. India 6: 551 (1893); Gamble, Fl. Pres. Madras 1592 (1931); Vajr., Fl. Palghat Dist. 535 (1990).

Habit: Climber
Habitat: Evergreen forests
Morphology: Climbing herb; stem angled; leaves glabrous; petioles broadly winged; peduncles axillary, solitary; stems unarmed; spadix globose, deflexed, dense-flowered, glabrous; bracts 3-5, orbicular; stamens 6, free; ovary obovoid; stigma 3-toothed; berries oblong.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Occasional
Altitude: 600-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3354* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4109* (GVCH).

Remusatia Schott, Melet. i. 18 (1832)

Remusatia vivipara (Roxb.) Schott, Melet. Bot. 18 (1832); Hook. f., Fl. Brit. India 6:521 (1893); Gamble, Fl. Pres. Madras 1583 (1931); Vajr., Fl. Palghat Dist. 535 (1990).

Habit: Herb
Habitat: Moist deciduous and semi-Evergreen forests
Morphology: Herb; tuber globose; erect bulbiferous slender shoots; leaf nerves prominent; inflorescence solitary; female flowers with globose, 1-loculed ovary; ovules numerous; stigma 3-lobed or discoid; male flowers with 6 united stamens; berries globose, enclosed by the spathe; seeds numerous, elliptic.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Not Evaluated

Phenology: February-April

Distribution: Common

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1401* (GVCH); Seetharkundu, 11 June 2018, *Jabeena & Maya 1544* (GVCH); Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2151* (GVCH).

Spathiphyllum Schott, Melet. Bot. 22 (1832).

Spathiphyllum wallisii Regel, Gartenflora (1877) 323. t. 920; et in Act. Hort. Petrop. v. (1877) 640.

Habit: Herb
Habitat: Grown as garden plant
Morphology: Stemless herb; long petioled leaves; leaves elliptic; leaf nerves prominent; spadix arising from centres of leaf clusters.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 06 July 2019, *Jabeena & Maya 2324* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3734* (GVCH).

Theriophonum Blume, Rumphia 1: 127 (1837).

Theriophonum infaustum N.E.Br., J. Linn. Soc., Bot. 18: 260 (1880); Hook. f., Fl. Brit. India 6: 513 (1893); Gamble, Fl. Pres. Madras 1579 (1931); Vajr., Fl. Palghat Dist. 537. (1990).

Habit: Herb

Habitat: Moist Deciduous forests
Morphology: Herbs; corm globose; leaves radical; petiole slender; spadix axillary, included; male flowers many, stamens 1 or 2, anthers sessile; female flowers few, ovary conical, 1-loculed, ovules few, basal; Neuter flowers filiform; fruit aggregate of berries.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: July-September

Distribution: Rare

Altitude: 900-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2096* (GVCH).

Typhonium Schott, Wiener Z. Kunst 1829(3): 732 (1829).

Typhonium flagelliforme (Roxb. ex G.Lodd.) Blume, Rumphia 1: 134 (1837); Gamble, Fl. Pres. Madras 1578 (1931).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; subterranean stem a sub-globose tuber; leaves simple; limb of spathe narrowly lanceolate, acuminate, not expanded; appendage of spathe shortly stipitate; spadix exerted; male and female flowers widely separated; ovary 1-locular; ovules 1-2, basal; berry ovoid; seeds 1 or 2, globose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: July-September
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 517* (GVCH).

HYDROCHARITACEAE

Blyxa Thouars, Gen. Nov. Madagasc. 4 (1806)

Blyxa echinosperma (C. B. Clarke) Hook. f., Fl. Brit. India 5: 661 (1888); Gamble, Fl. Pres. Madras 1397 (1928); Vajr., Fl. Palghat Dist. 460 (1990).

Habit: Herb
Habitat: Pools and ponds
Morphology: Aquatic herb; leaves flaccid, as broad at the base as in the middle; flowers solitary, bisexual, emergent; spathe tubular; sepals 3, linear; petals 3, opposite to sepals; stamens 3; anthers linear; ovary linear-cylindric, 3-loculed, many-ovuled; stigmas 3, papillose; capsules linear-cylindric; seeds ellipsoid, spinescent with a long tail at each end.
Raunkiaer's life-form: Hydrophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, South American and African
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3168* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2735* (GVCH).

DIOSCOREALES

BURMANNIACEAE

Burmannia L., Sp. Pl. 1: 287 (1753)

Burmannia coelestis D.Don, Prodr. Fl. Nepal. 44. (1825); Hook. f., Fl. Brit. India 5: 665 (1888); Gamble, Fl. Pres. Madras 1399 (1928); Vajr., Fl. Palghat Dist. 462 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; leaves absent; flowers solitary or 2-6 together; calyx tube 3-winged; petals absent; stamens 3, anthers sessile; ovary inferior, 3-loculed, winged; ovules many; style 3-lobed; fruit a winged capsule.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Least Concern

Phenology: October-December

Distribution: Common

Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 810* (GVCH); Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3202* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3989* (GVCH); Plate 6: Fig. e.

DIOSCOREACEAE

Dioscorea L., Sp. Pl. 2: 1032 (1753)

1.Stem twining to the left; capsules reflexed upwards……..……...(2)
1.Stem twining to the right; capsules facing forwards……..….(3)
2.Leaves simple…….……***D. bulbifera***
2.Leaves compound, 3 or 5 foliate……..***D. pentaphylla***
3.Stem 4 or 5 winged……..…..…..***D. alata***
3.Stem not winged…….……...…..(4)
4.Spike solitary or twin; capsule subquadrate; leaves coriaceous……...***D. spicata***
4.Spike 3-6 together; capsule suborbicular; leaves not coriaceous.....***D. oppositifolia***

Dioscorea alata L., Sp. Pl. 2: 1033 (1753); Hook. f., Fl. Brit. India 6: 296 (1892); Gamble, Fl. Pres. Madras 1512 (1928).

Habit: Climber
Habitat: Cultivated
Morphology: Climbing herb; tubers without long stalks; stem twining to right, glabrous, 4-5-winged with scattered broad based prickles; leaves simple, base cordate with a broad sinus; rachis of male spike winged; male spikes sub-verticillate on axillary branches; stamens 6, free; pistillode conical. female spike solitary in axils; flowers sessile, staminodes 6; capsule broadly obcordate; seeds broadly winged.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to India

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Rare

Altitude: 100-300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 492* (GVCH)

Dioscorea bulbifera L., Sp. Pl. 2: 1033 (1753); Hook. f., Fl. Brit. India 6: 296 (1892); Gamble, Fl. Pres. Madras 1511 (1928); Vajr., Fl. Palghat Dist. 507 (1990).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climbing herbs; stem terete, unarmed, twining to left, bearing bulbils in the leaf axil; tubers 1-3, without defined stalk; leaves simple, alternate, male spikes on long pendulous axillary panicles; perianth lobes 6, biseriate; stamens 6, free; female spikes 1-3 together; staminodes 3; ovary triquetrous, 3-locular; ovules 2-per locule; styles 3; stigma 2-fid, reflexed; capsules quadrately oblong, 3-winged; seeds winged at the base only.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: September-October
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 124* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 706* (GVCH); Plate 6: Fig. f.

Dioscorea oppositifolia L., Sp. Pl. 2: 1033 (1753); Hook. f., Fl. Brit. India 6: 292 (1892); Gamble, Fl. Pres. Madras 1512 (1928); Vajr., Fl. Palghat Dist. 508 (1990).

Habit: Climber
Habitat: Moist deciduous, semi-evergreen and Evergreen forests
Morphology: Climbing herb; stem twining to right, glabrous, unarmed, not bulbiferous, not winged; leaves opposite, 3-5 nerved, nerves not prominent; male spikes fascicled; male tepals ovate, obtuse; stamens 6; female flowers distant in solitary or fascicled spikes; capsule suborbicular, glabrous.
Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 554* (GVCH); Nelliyampathy range, 1124m, 20 January 2018, *Jabeena & Maya 968* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2750* (GVCH); Plate 6: Fig. g.

Dioscorea pentaphylla L., Sp. Pl. 2: 1032 (1753); Hook. f., Fl. Brit. India 6: 281 (1892); Gamble, Fl. Pres. Madras 1511 (1928); Vajr., Fl. Palghat Dist. 508 (1990).

Habit: Climber
Habitat: Moist Deciduous forests and degraded forest areas
Morphology: Climbing herb; stem twining to left, armed with prickles, bearing axillary bulbils; leaves 3-5-foliolate, rusty hairy; with bulbils in the axils; male flowers in panicles of racemes; tepals 6; fertile stamens 3; staminodes 3; female spike in 1-3 nate spike on long raceme; ovary oblong, ribbed; stigma capitate; capsule reflexed upwards; 3-winged, glabrous; seeds winged at the base only.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 033* (GVCH); Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 587* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 875* (GVCH).

Dioscorea spicata Roth, Nov. Pl. Sp. 371 (1821); Hook. f., Fl. Brit. India 6: 291 (1892); Gamble, Fl. Pres. Madras 1512 (1828).

Habit: Climber
Habitat: Shola and semi-Evergreen forests
Morphology: Climbing herb; stem twining to right, glabrous, not winged; leaves simple, coriaceous, basally 5-nerved; spikes simple, solitary or twin; perianth lobes 6; stamens 6; pistillode conical; capsules sub-quadrate, apex and base retuse.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1545* (GVCH); Plate 6: Fig. h.

PANDANALES

PANDANACEAE

Pandanus Parkinson, J. Voy. South Seas 46 (1773)

Pandanus furcatus Roxb., Hort. Bengal. 71; Fl. Ind. iii. 744; Hook. f., Fl. Brit. India 6: 484 (1893); Gamble, Fl. Pres. Madras 1570 (1918).

Habit: Shrub
Habitat: Along river banks
Morphology: Shrubs; leaf margins and keel below armed with short forward pointing spinules; reticulations obscure; longitudinal nerves conspicuous; male spathe forms a spinulose triquetrous acumen; ovary 1-loculed; style 2-3 forked, spine-tipped; syncarp subtrigonous-oblong; drupes connate, cylindric.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated

Phenology: December-April
Distribution: Occasional
Altitude: 700-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4121* (GVCH); Nelliyampathy range, Ravi Varma estate, 20 November 2020, *Jabeena & Maya 4353* (GVCH); Plate 7: Fig. a.

LILIALES

COLCHICACEAE

Climbing herb; root tuberous; staminal filaments filiform; anther linear; fruit a septicidal capsule…..……..…..*Gloriosa*

Erect herb; root a tunicate corm; staminal filaments flat; anther oblong; fruit a loculicidal capsule…….....*Iphigenia*

Gloriosa L., Sp. Pl. 1: 305 (1753)

Gloriosa superba L., Sp. Pl. 1: 305 (1753); Hook. f., Fl. Brit. India 6: 358 (1892); Gamble, Fl. Pres. Madras 1519 (1928); Vajr., Fl. Palghat Dist. 510 (1990).

Habit: Climber

Habitat: Semi-evergreen and Moist Deciduous forests

Morphology: Climbing herb; leaves sub-sessile, midrib prominent, tip elongate, spiral, functioning as a tendril; flowers axillary, solitary or in few-flowered racemes; pedicel reflexed near the tip; perianth petaloid, persistent, 6 segments; stamens 6, hypogynous; filaments filiform; anthers versatile; ovary 3-loculed; ovules many; style filiform, deflexed, apex 3-fid; capsule ellipsoid-oblong; seeds sub-globose.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Least Concern

Phenology: July-December

Distribution: Occasional

Altitude: 200-700m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 July 2017, *Jabeena & Maya 325* (GVCH); Kalchady, 01 October 2017, *Jabeena & Maya 493* (GVCH); Plate 7: Fig. b.

Iphigenia Kunth, Enum. Pl. [Kunth] 4: 212 (1843)

Iphigenia indica (L.) Kunth, Enum. Pl. [Kunth] 4: 213 (1843); Hook. f., Fl. Brit. India 6: 357 (1892); Gamble, Fl. Pres. Madras 1528 (1928).

Habit: Herb

Habitat: Deciduous forests and Grassland

Morphology: Herb; root a tunicate corm; leaves few, cauline, narrow; flowers solitary or few corymbose; bracts lanceolate; perianth petaloid, segments 6; stamens 6, hypogynous; filaments short, flat; anthers oblong, versatile; ovary sessile, 3-loculed; ovules many; style absent; stigmas sessile, 3, recurved; capsule obovoid, 3 valved; seeds sub-globose.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific and Australian

IUCN category: Not Evaluated

Phenology: July- September

Distribution: Rare

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4313* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4507* (GVCH); Plate 7: Fig. c.

SMILACACEAE

Smilax L., Sp. Pl. 2: 1028 (1753)

1.Leaves cordate at base; umbels sessile…….....…….***S. aspera***
1.Leaves not cordate at base; umbels on a long peduncle……...……...(2)
2.Stem unarmed; umbels many on an axillary peduncle…...….…....***S. perfoliata***
2.Stem armed; umbels 1-3 on an axillary peduncle……...……..(3)
3.Berry globose……...….***S. wightii***
3.Berry ovoid……...***S. zeylanica***

Smilax aspera L., Sp. Pl. 2: 1028 (1753); Hook. f., Fl. Brit. India 6: 306 (1892); Gamble, Fl. Pres. Madras 1518 (1928).

Habit: Climber
Habitat: Evergreen and shola forests
Morphology: Climbing shrubs; stem armed; leaves 5-9 ribbed; petiole twisted, sometimes armed, hardly sheathed at the very base; tendrils from near the base; umbels sessile on axillary racemes; flowers unisexual; stamens 6 in male; filaments free; anthers linear shorter than filaments; female flowers with 6 staminodes; stigma oblong, recurved; fruit a berry, usually 3 seeded.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Occasional
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 946* (GVCH).

Smilax perfoliata Lour., Fl. Cochinch. 2: 622 (1790); Vajr., Fl. Palghat Dist. 511 (1990); *Smilax prolifera* Roxb., Hook. f., Fl. Brit. India 6: 312 (1892); Gamble, Fl. Pres. Madras 1519 (1928).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climbing shrubs; stem stout, terete, prickly; Leaves basally 3-7 nerved; petiole stout, angled, sheathing portion forming two auricles; umbels many, alternate or verticillate on an axillary peduncle; male flowers with stamens as long as the sepals; female flowers with 6 staminodes, linear; ovary globose; stigma 3, recurved; seeds biconvex.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1950* (GVCH).

Smilax wightii A.DC., Monogr. Phan. [A.DC. & C.DC.] 1: 174 (1878); Hook. f., Fl. Brit. India 6: 310. (1892); Gamble, Fl. Pres. Madras 1519 (1928).

Habit: Climber
Habitat: Moist deciduous and shola forests
Morphology: Climbing shrub; branches stout, terete, armed with prickles; leaves simple, alternate, 5-7 ribbed; petiole sheath narrow and not auricled, flagellate; umbels 1-3 on an axillary peduncle; flowers many; perianth 6-partite, free; berry globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: November-May
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 092* (GVCH); Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2120* (GVCH).

Smilax zeylanica L., Sp. Pl. 2: 1029 (1753); Hook. f., Fl. Brit. India 6: 309 (1892); Gamble, Fl. Pres. Madras 1518 (1928); Vajr., Fl. Palghat Dist. 511 (1990).

Habit: Climber
Habitat: Moist deciduous and Semi-Evergreen forests
Morphology: Climbing shrubs; branches stout, angled, armed; leaves simple, alternate, 3-5-ribbed from base; tendril from either sides of the petiole; umbels axillary, 1-3; flowers unisexual; perianth 6-partite, free; stamens in male flowers 6, free; pistillode 0; ovary in female flowers 3-lobed, 3-loculed; style 3-fid; staminodes 3-6; berry globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-January
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 236* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 903* (GVCH); Seetharkundu, 11 June 2018, *Jabeena & Maya 1521* (GVCH); Plate 7: Fig. d.

ASPARAGALES

ORCHIDACEAE

1.Plants terrestrial……...…...…….(2)
1.Plants epiphytic……..…...…….(13)
2.Leafless plants; saprophytic..***Epipogeum***
2.Leafy plants; autotrophic…….....(3)
3.Plants climbing…….***Vanilla***
3.Plants not climbing……..(4)
4.Flowers without spur or mentum……..……...……(5)
4.Flowers with spur or mentum……...……(8)
5.Leaf single; appearing after the flowers…….……...….***Pachystoma***
5.Leaf 2 or more; appearing with the flowers……...…….……(6)
6.Flowers 1 inch long or longer..***Arundina***
6.Flowers not more than 0.5 inch long...(7)
7.Sepals 5-veined; lip not lobed……..***Crepidium***
7.Sepals 1-veined; lip lobed….***Cheirostylis***
8.Spurs 2…….…….....***Satyrium***
8.Spurs zero or single…….……(9)
9.Scape lateral……...(10)
9.Scape terminal……...(11)
10.Lateral sepals connate with the base of the lip……..…..……***Tainia***
10.Lateral sepals not connate with the lip…….***Eulophia***
11.Lip not lobed…….……***Brachycorythis***
11.Lip lobed…….……...……..(12)
12.Stigma sessile……...….***Pecteilis***
12.Stigma stalked…….….***Habenaria***
13.Leaves equitant……...…***Oberonia***
13.Leaves not equitant…...…...……(14)
14.Lip not spurred……...……..…(15)
14.Lip spurred……...……(26)
15.Flowers with a mentum….***Dendrobium***
15.Flowers without a mentum…….…….(16)
16.Column with a distinct foot…….(17)
16.Column without a distinct foot…...(20)
17.Lip clawed; jointed to the foot…..…(18)
17.Lip sessile; not jointed to the foot...(19)
18.Scape lateral; flowers not panicled……....***Bulbophyllum***
18.Scape terminal; flowers panicled……***Polystachya***
19.Pseudobulbs discoid……...***Porpax***
19.Pseudobulbs not discoid…….....***Pinalia***
20.Bracts imbricating……..***Pholidota***
20.Bracts not imbricate…..……...(21)
21.Lip not lobed……..…….(22)
21.Lip 3-lobed……..(23)
22.Leaves flat…….…….....***Liparis***
22.Leaves terete……..…….***Luisia***
23.Stem elongate; leaves distichous……..***Cottonia***
23.Stem short or zero; leaves basal or from the apex of a pseudobulb…….....24)
24.Flowers panicled……...…...***Sirhookera***
24.Flowers racemed……...……...…(25)
25.Leaf apex entire……..……..***Coelogyne***
25.Leaf apex bilobed..……..***Cymbidium***
26.Spur 2…….……***Diplocentrum***
26.Spur single……...……(27)
27.Foot of column distinct…...…….(28)
27.Foot of column not distinct…….....(29)

28.Leaves oblong; racemes axillary; spur cylindric……...……..***Aerides***
28.Leaves cylindric; racemes extra-axillary; spur conical……...***Papillionanthe***
29.Spur distinct from the base of the lip…..……(30)
29.Spur at the base of the lip……..…….…..….(31)
30.Leaves up to 10 cm long; lip obscurely 3-lobed……..……...***Schoenorchis***
30.Leaves up to 30 cm long; lip entire…….....***Rhynchostylis***
31.Mouth of the spur almost closed by a horizontal plate from the back wall..…(32)
31.Mouth of the spur open……...…….(33)
32.Plant up to 30 cm long; leaves linear; raceme up to 6 cm long; sepals 3-veined……...……...***Cleisostoma***
32.Plant up to 60 cm long; leaves elliptic-oblong; raceme up to 20 cm long; sepals 5-veined…..……..***Trichoglottis***
33.Sepals and petals distinctly narrowed to the base…….***Vanda***
33.Sepals and petals not distinctly narrowed to the base……..…(33)
34.Leaves 2 or 3; leaves oblanceolate; sepals and petals obovate…....***Smithsonia***
34.Leaves more than 3; leaves linear; sepals and petals ovate-lanceolate……...***Acampe***

Acampe Lindl., Fol. Orchid. 4 (Acampe): 1 (1853)

Acampe praemorsa (Roxb.) Blatt. & McCann, J. Bombay Nat. Hist. Soc. 35: 495 (1932); Vajr., Fl. Palghat Dist. 465 (1990); *Saccolabium praemorsum* (Roxb.) Hook.f., Fl. Brit. India 6: 62 (1890); *Acampe wightiana* Lindl., Gamble, Fl. Pres. Madras 1447 (1928);

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Epiphytic herb; stem stout, with vermiform roots from basal nodes; leaves keeled, coriaceous, distichous, strap-shaped, apex unequally bluntly 2-lobed; flowers panicled; bracts scaly; sepals and petals creamy yellow with reddish-brown transverse bands; side lobes of lip small, rounded; midlobe papillose; spur a short rounded sac; anther 2-celled; pollinia 2, globose; capsule ribbed.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Common
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3379* (GVCH); Pulayampara, 19 August 2017, *Jabeena & Maya 356* (GVCH); Plate 7: Fig. e.

Aerides Lour., Fl. Cochinch. 2: 525 (1790)

Lip horizontal or inflexed; sepals obtuse; petals broader……...***A. crispa***
Lip deflexed; sepals suborbicular; petals narro…….……..***A. ringens***

Aerides crispa Lindl., Gen. Sp. Orchid. Pl. 239 (1833); Hook. f., Fl. Brit. India 6: 45 (1890); Gamble, Fl. Pres. Madras 1442 (1928).

Habit: Herb
Habitat: Semi-evergreen and Evergreen forests
Morphology: Epiphytic or lithophytic herbs; stem long, stout; leaves flat, keeled, apex unequally bluntly 2-lobed; petiole sheathing; flowers in a raceme; bracts scaly; petals geniculately incurved at the claw; side lobes oblique; spur strongly incurved.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2126* (GVCH).

Aerides ringens C.E.C.Fisch., in Gamble, Fl. Madras 1442 (1928); *Aerides radicosa* A. Rich., Hook. f., Fl. Brit. India 6: 46 (1890); *Aerides lineare* Hook. f., Fl. Brit. India 6: 47 (1890).

Habit: Herb
Habitat: Moist deciduous and semi-Evergreen forests
Morphology: Epiphytic herb; stem leafy, stout; leaves flat, keeled, apex unequally bilobed; inflorescence a simple or branched lax raceme; bracts minute; sepals suborbicular, 5-veined; petals obtuse, 5-veined; side lobes of lip small; disk with 2 large basal calli; spur cylindrical, incurved.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-July
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 055* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2261* (GVCH).

Arundina Blume, Bijdr. Fl. Ned. Ind. 8: 401 (1825)

Arundina graminifolia (D.Don) Hochr., Bull. New York Bot. Gard. 6: 270 (1910); Gamble, Fl. Pres. Madras 1432 (1928); Vajr., Fl. Palghat Dist. 467 (1990); *Arundina bambusifolia* Lindl., Hook. f., Fl. Brit. India 5: 857 (1890).

Habit: Herb
Habitat: Grasslands
Morphology: Terrestrial herb; stem terete, sheathed; leaves distichous, grass-like; inflorescence a terminal raceme or panicle; sepals free, spreading, many-nerved; petals broader than the sepals; lip sessile on the base of the column and embracing it, bilobed at apex; column narrowly winged; foot 0; anther four celled; pollinia 8 in 2 superposed rows.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 308* (GVCH).

Brachycorythis Lindl., Gen. Sp. Orchid. Pl. 363 (1838)

Leaves elliptic-oblong; lateral sepals 3-veined; petals lanceolate, obliquely acute, 1-2 veined……..…..***B. iantha***
Leaves ovate-lanceolate; lateral sepals 4-veined; petals falcate-linear, acuminate, 3-veined……..……....***B. splendida***

Brachycorythis iantha (Wight) Summerh., Kew Bull. 10(2): 238 (1955); Vajr., Fl. Palghat Dist. 468 (1990); *Habenaria galeandra* Benth., Hook. f., Fl. Brit. India 6: 163 (1890); *Phyllomphax obcordata* (D. Don) Schltr., Gamble, Fl. Pres. Madras 1476 (1928).

Habit: Herb
Habitat: Grasslands
Morphology: Terrestrial erect, unbranched, leafy herb; root tuberous; Leaves 3-nerved; flowers in the axils of sheathing leaves; sepals and petals sub-equal; dorsal sepal 3-veined; lateral sepals falcate, 3-veined; petals entire, 1-2 veined; lip petaloid; spur short, conical; pollinia 2.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: July-August
Distribution: Occasional
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Mattumala, 02 July 2017, *Jabeena & Maya 159* (GVCH).

Brachycorythis splendida Summerh., Kew Bull. 10(2): 240 (1955); *Habenaria iantha* Hook. f., Fl. Brit. India 6: 164 (1890); *Phyllomphax obcordata* (D. Don) Schltr. var. *iantha* (Hook. f.) C.E.C. Fisch., Gamble, Fl. Pres. Madras 1476 (1928).

Habit: Herb
Habitat: Grasslands
Morphology: Terrestrial herb; leaves not plaited; flowers in terminal raceme; bracts foliaceous; dorsal sepal and petals connate to form a hood; dorsal sepal 3-veined; lateral sepals 4-veined; petals falcate-linear, acuminate, 3-veined; lip obcordate, with a triangular apiculus.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Occasional
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 177* (GVCH).

Bulbophyllum Thouars, Hist. Orchid. tabl. esp. 3 sub u. (1822)

1.Psuedobulb sub-globose……..…….(2)

1.Pseudobulb ovoid or conical ovoid….(3)

2.Shoots leafless in flowering……...……...***B. fimbriatum***

2.Shoots leafy in flowering…....***B. stocksii***

3.Lateral petals ovate-triangular, awned……..…….***B. sterile***

3.Lateral petals lanceolate, not awned…(4)

4.Sepals 3-veined……..….***B. tremulum***

4.Sepals 5-veined……...……..***B. fischerii***

Bulbophyllum fimbriatum Rchb.f., Ann. Bot. Syst. (Walpers) 6(2): 260 (1861); *Cirrhopetalum fimbriatum* Lindl., Hook. f., Fl. Brit. India 5: 774 (1890); Gamble, Fl. Pres. Madras 1420 (1928).

Habit: Herb
Habitat: Evergreen and semi-evergreen forest
Morphology: Epiphytic herb; rhizome short; pseudobulb clustered, sub-globose, angular; leafless when flowering; flowers umbelled; dorsal sepals 3-veined, fimbriate along the margins, hooded; lateral sepals 5-veined, cohering; petals lanceolate, acuminate, with long hairs, 1-veined, fimbriate; lip oblong, curved.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: February-March
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1105* (GVCH); Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1415* (GVCH).

Bulbophyllum fischeri Seidenf., Dansk Bot. Ark. 29(1): 202, nom. nov. (1974); Vajr., Fl. Palghat Dist. 468 (1990); *Cirrhopetalum gamblei* Hook. f., Fl. Brit. India 5: 778 (1890); Gamble, Fl. Pres. Madras 1420 (1928).

Habit: Herb
Habitat: Evergreen and shola forests
Morphology: Epiphytic herb; 1-leaved pseudobulb from creeping rhizome; pseudobulb ovoid; flowers 4-8 in an umbel; bracts 5-veined; sepals 5-veined; dorsal sepal puberulus, hooded; lateral sepals cohering throughout, pubescent at base; petals 3-veined; lip fleshy, curved.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated
Phenology: October-November
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 576* (GVCH).

Bulbophyllum sterile (Lam.) Suresh, Interpr. Van Rheede's Hort. Malab. 298 (1988); *Bulbophyllum neilgherrense* Wight, Hook. f., Fl. Brit. India 5: 761 (1890); Gamble, Fl. Pres. Madras 1418 (1928); Vajr., Fl. Palghat Dist. 468 (1990).

Habit: Herb
Habitat: Semi-evergreen and Evergreen forest
Morphology: Epiphytic herb; rhizome stout, creeping, stolon-like; pseudo-bulbs ovoid, faintly 4-angled; leaves single, apical, sessile; inflorescence a lateral raceme, raceme many flowered, erect; bracts hyaline; sepals not cohering together; petals smaller than dorsal sepal; lateral petals awned; lip 3-lobed, spurred at base, jointed on the foot; column short, 2-aristate at the top.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1063* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1698* (GVCH).

Bulbophyllum stocksii (Benth. ex Hook.f.) J.J.Verm., Schuit. & de Vogel, Phytotaxa 166(2): 111 (2014); *Trias stocksii* Benth. ex Hook. f., Fl. Brit. India 5: 781 (1890); Vajr., Fl. Palghat Dist. 494 (1990).

Habit: Herb
Habitat: Evergreen forests
Morphology: Epiphytic herb; pseudobulb sub-globose; rhizome stout; leaves solitary; 2-3 flowers pinkish arises from the base of the pseudobulb; sepals ovate, 7-veined; petals linear, apiculate; column winged; lip puberulus.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Rare
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3285* (GVCH).

Bulbophyllum tremulum Wight, Icon. Pl. Ind. Orient. [Wight] v. t. 1749; Hook. f., Fl. Brit. India 5: 763 (1890); Gamble, Fl. Pres. Madras 1418 (1928); Vajr., Fl. Palghat Dist. 469 (1990).

Habit: Herb
Habitat: Evergreen and semi-Evergreen forests
Morphology: Epiphytic herb; rhizome slender; pseudobulb sub globose; leaves solitary, sessile; scape longer than leaf; inflorescence a slender lax raceme; flowers 6-10; sepals sub-equal, ciliate; sepals 3-veined; petals 1-veined; lip fringed with long hairs, without auricles.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Occasional
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1376* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3886* (GVCH).

Cheirostylis Blume, Bijdr. Fl. Ned. Ind. 8: 413 (1825)

Cheirostylis parvifolia *Lindl*., Edwards's Bot. Reg. 25(Misc.): 19 (1839).

Habit: Herb
Habitat: Semi-evergreen and Evergreen forests
Morphology: Terrestrial herbs; stem erect; rhizome creeping; leaves 3-5, clustered towards apex, glabrous; petiole sheathed; flowers in terminal raceme; sepals connate; petals bi-lobed, 1-veined; lip longer than sepals, lobes with 2–4 irregular sub lobes at the apex; capsule hairy, ribbed.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Rare
Altitude: 1000-1150m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 621* (GVCH).

Cleisostoma Blume, Bijdr. Fl. Ned. Ind. 8: 362 (1825)

Cleisostoma tenuifolium (L.) Garay, Bot. Mus. Leafl. 23(4): 175 (1972); *Sarcanthus peninsularis* Dalz., Hook. f., Fl. Brit. India 6: 67 (1890); Gamble, Fl. Pres. Madras 1447 (1928).

Habit: Herb
Habitat: Semi-evergreen and Evergreen forests
Morphology: Epiphytic herb; stem elongate; leaves keeled; inflorescence an extra-axillary raceme or panicle; sepals sub-equal, 3-veined; petals truncate, 1-veined; lip 3-lobed, adnate to the base of the column; midlobe with 2 fleshy calli; spur funnel-shaped; anther depressed, 2-celled; pollinia 2, bifid.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-August
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2086* (GVCH).

Coelogyne Lindl., Coll. Bot. (Lindley) sub. t. 33 (1821)

Pseudobulb ridged; leaves linear; raceme from rhizome; bracts lanceolate; dorsal sepal 5-veined; petals 3-veined……***C.breviscapa***
Pseudobulb wrinkled; leaves oblong-lanceolate; raceme from middle of the leaves; bracts ovate; dorsal sepal 9-veined; petals 5-veined……....***C.nervosa***

Coelogyne breviscapa Lindl., Fol. Orchid. 5(Coelogyne): 4 (1854); Hook. f., Fl. Brit. India 5: 833 (1890); Gamble, Fl. Pres. Madras 1430 (1928); Vajr., Fl. Palghat Dist. 470 (1990); *Coelogyne angustifolia* Wight, Hook. f., Fl. Brit. India 5: 833 (1890); Gamble, Fl. Pres. Madras 1430 (1928).

Habit: Herb
Habitat: Semi-evergreen and Evergreen forests
Morphology: Herb; pseudobulb ovoid, ridged, with 2 leaves from each pseudobulb; Inflorescence a raceme arising from the rhizome, raceme 4-6 flowered; dorsal sepal and lateral sepals 5-veined; petals 3-veined; lip 3-lobed.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena &*

Maya 1345 (GVCH): Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4118* (GVCH).

Coelogyne nervosa A.Rich., Ann. Sci. Nat., Bot. sér. 2, 15: 16 (1841); Gamble, Fl. Pres. Madras 1430 (1928); *Coelogyne corrugata* Wight, Hook. f., Fl. Brit. India 5: 835 (1890).

Habit: Herb
Habitat: Grasslands, evergreen and shola forests
Morphology: Epiphytic herb; rhizome creeping; pseudobulb crowded, ovoid, wrinkled; leaves 2; petiole channelled; inflorescence a 3-4 flowered raceme; bracts persistent; sepals apiculate, 9-veined; petals 5-veined; lip 3-lobed, sessile at the lip of the column; column winged; pollinia 4.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: June-July
Distribution: Rare
Altitude: 1200-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2153* (GVCH).

Cottonia Wight, Icon. Pl. Ind. Orient. [Wight] v. I. 21. t. 1755 (1852)

Cottonia peduncularis Rchb.f. ex Schiller, Cat. Orch.-Samml. 22 (1857); Vajr., Fl. Palghat Dist. 471 (1990); *Cottonia macrostachya* Wight, Hook. f., Fl. Brit. India 6: 26 (1890); Gamble, Fl. Pres. Madras 1439 (1928).

Habit: Herb
Habitat: Semi-evergreen and Evergreen forests
Morphology: Epiphytic herb; stem leafy; leaves spiral, bilobed at apex; inflorescence a lateral short raceme; sepals sub-equal, 7-veined; petals 3-veined; lip sessile, flat, 2-auricled at base; column short; anther 2-celled; pollinia 2, pyriform.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1446* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4108* (GVCH).

Crepidium Blume, Bijdr. Fl. Ned. Ind. 8: 387 (1825)

Bracts lanceolate, acuminate; flowers purple; sepals ovate or obovate; lip auricled, margins with a sub apical constriction……..……***C. purpureum***
Bracts subulate, deflexed; flowers orange-yellow; sepals linear; lip reniform, pectinate……..…***C. resupinatum***

Crepidium purpureum (Lindl.) Szlach., Fragm. Florist. Geobot. Supp. 3: 131 (1995): (1995); *Microstylis wallichii* sensu Hook. f., Fl. Brit. India 5:686 (1888); Gamble, Fl. Pres. Madras 1407 (1928); *Malaxis acuminata* auct. non D. Don, Vajr., Fl. Palghat Dist. 484 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Terrestrial herbs; tubers present; leaves several, continuous with their sheaths; bracts 1-veined, shorter than the ovary; dorsal and lateral sepals 5-veined; sides of lip produced upwards into an auricle, apex notched.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Common
Altitude: 1000-1150m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2026* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2142* (GVCH); Plate 7: fig. f.

Crepidium resupinatum (G.Forst.) Szlach., Fragm. Florist. Geobot. Supp. 3: 131 (1995); *Microstylis rheedei* (Sw.) Lindl., Hook. f., Fl. Brit. India 5: 690 (1890).

Habit: Herb
Habitat: Semi-evergreen and moist deciduous forests
Morphology: Terrestrial herbs; stem stout, stoloniferous; leaves 3-5, shortly petioled, 5-7 nerved; flowers laxley arranged in a raceme; bracts deflexed; sepals and petals linear; lip reniform, margin pectinate.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Occasional
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 110* (GVCH); Plate 7: Fig. g.

Cymbidium Sw., Nova Acta Regiae Soc. Sci. Upsal. ser. 2, 6: 70 (1799)

Cymbidium aloifolium (L.) Sw., Nova Acta Regiae Soc. Sci. Upsal. 6: 73 (1799); Hook. f., Fl. Brit. India 6: 8 (1890); Gamble, Fl. Pres. Madras 1436 (1928); Vajr., Fl. Palghat Dist. 471 (1990); *Cymbidium pendulum* (Roxb.) Sw. & Lindl., Gamble, Fl. Pres. Madras 1436 (1928).

Habit: Herb
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Epiphytic herb; roots tufted; stem short; leaves coriaceous; scape arises from the side of the stem; inflorescence a lax slender raceme; sepals sub-equal, free, 7-veined; petals sub-equal, 5-veined; lip 3-lobed, sessile at the base of the column; disc with 2 lamellae, broken and continuous near the middle; anther imperfectly 2-celled; pollinia 2.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Occasional
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4827* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5089* (GVCH).

Dendrobium Sw., Nova Acta Regiae Soc. Sci. Upsal. ser. 2, 6: 82 (1799)

1.Flowers fascicled or solitary.....***D. aqueum***
1.Flowers racemed……..……..…...(2)
2.Lip not lobed…...…...…...***D. herbaceum***
2.Lip 3-lobed……..……...(3)
3.Raceme more than 6-flowered……..…...***D. ovatum***
3.Raceme less than 6-flowered……...(4)
4.Inflorescence a terminal raceme……..……..***D. barbatulum***
4.Inflorescence a lateral raceme…….(5)
5.Leaves 2-fid at apex.....***D. jerdonianum***
5.Leaves 2-fid at apex…..…...***D. aphyllum***

Dendrobium aphyllum C.E.C.Fisch., in Gamble, Fl. Madras 1416 (1928); *Dendrobium macrostachyum* Lindl., Hook. f., Fl. Brit. India 5: 735 (1890); Gamble, Fl. Pres. Madras 1416 (1928); Vajr., Fl. Palghat Dist. 474 (1990).

Habit: Herb
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Epiphytic herb; stem elongate, plurinodal, slender, pendulous, leafy below the flowers; leaves arise from

nodes; flowers 2-3 on short axillary peduncles; sepals and petals similar; mentum conical; lip cucullate, pubescent, ciliate, base tubular by the incurving sides.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Least Concern
Phenology: March-April
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1371* (GVCH); Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1410* (GVCH).

Dendrobium aqueum Lindl., Edwards's Bot. Reg. 29 (Misc.): 5 (1843); Hook. f., Fl. Brit. India 5: 739 (1890); Gamble, Fl. Pres. Madras 1417 (1928); Vajr., Fl. Palghat Dist. 471 (1990).

Habit: Herb
Habitat: Evergreen and shola forests
Morphology: Epiphytic herbs; stem elongate, plurinodal, subclavate, compressed, decumbent, leafy throughout; flowers 2-3 from leaf-axils; petals broader than sepals; mentum short; lip faintly 3-lobed, pubescent, incurved.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Rare
Altitude: 1200-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 593* (GVCH).

Dendrobium barbatulum Lindl., Gen. Sp. Orchid. Pl. 84 (1830); Hook. f., Fl. Brit. India 5: 719 (1890); Gamble, Fl. Pres. Madras 1416 (1928); Vajr., Fl. Palghat Dist. 473 (1990).

Habit: Herb
Habitat: Grasslands and Moist Deciduous forests
Morphology: Epiphytic herb; stem elongate, plurinodal, terete; leafless when flowering; flowers in many-flowered raceme; raceme stout, lateral and terminal; bracts scarious; dorsal sepal 5-veined; lateral sepals 5-veined; petals 7-veined; lip flat, 3-lobed; mid lobe bearded at the base with yellow hairs.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Occasional
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4116* (GVCH).

Dendrobium herbaceum Lindl., Edwards's Bot. Reg. 26(Misc.): 69 (1840); Hook. f., Fl. Brit. India 5:719 (1890); Gamble, Fl. Pres. Madras 1416 (1928); Vajr., Fl. Palghat Dist. 473. (1990).

Habit: Herb
Habitat: Moist Deciduous forests, Semi-evergreen and Shola forest
Morphology: Epiphytic herbs; stem elongate, plurinodal, terete; leafless when flowering. leaves narrowly linear; inflorescence a 4-6-flowered terminal raceme; bracts scarious; dorsal sepal 3-veined; lateral falcate, 3-veined. Petals 1-veined; lip oblong; side lobes ovate-orbicular; midlobe entire.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Common
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 207* (GVCH); Mattumala, 02 April 2018,

Jabeena & Maya 1313 (GVCH); Nelliyampathy Range, Hilltop, 20 January 2018, *Jabeena & Maya 1108* (GVCH); Plate 7: Fig. h.

Dendrobium jerdonianum Wight, Icon. Pl. Ind. Orient. [Wight] t. 1644; Hook. f., Fl. Brit. India 5: 734 (1888); *Dendrobium nutans* Lindl., Hook. f., Fl. Brit. India 5: 734 (1890); Gamble, Fl. Pres. Madras 1416 (1928).

Habit: Herb
Habitat: Evergreen forests
Morphology: Epiphytic herb; stem slender below, swollen towards tip; leaves only at the tip of stem, coriaceous, unequally 2-fid at apex; inflorescence a leaf-opposed raceme; peduncle not sheathed; bracts scaly; flowers do not fully open; mentum half as long as the sepals; Lip fleshy, as long as the sepals, 3-lobed; mentum stout.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-March
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3875* (GVCH); Kollengode range, Karassuri, 12 January 2021, *Jabeena & Maya 4734* (GVCH).

Dendrobium ovatum Kraenzl., Pflanzenr. (Engler) Orch.-Dendrob. pars 1, 71 (1910); Vajr., Fl. Palghat Dist. 474 (1990); Gamble, Fl. Pres. Madras 1416 (1928); *Dendrobium chlorops* Lindl., Hook. f., Fl. Brit. India 5: 719 (1890).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Epiphytic herbs; stem elongate, plurinodal, tufted; flowering shoots leafless; racemes many-flowered, lateral and terminal; bracts scarious; lateral sepals oblong-lanceolate; dorsal sepals oblanceolate; petals spathulate; lip flat, 3-lobed; disc with a channelled ridge, pubescent; capsule fusiform.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Rare
Altitude: 600-850m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1161* (GVCH).

Diplocentrum Lindl., Edwards's Bot. Reg. 18: sub t. 1522 (1832).

Stem upto 4 cm long; leaves bilobed at apex; dorsal sepal elliptic; lateral sepals acute; lip 5-veined……...***D. congestum***

Stem 6-8 cm long; leaves mucronate at apex; dorsal sepal oblanceolate; lateral sepals obtuse; lip 7-veine…..***D. recurvum***

Diplocentrum congestum Wight, Icon. Pl. Ind. Orient. [Wight] t. 1682; Hook. f., Fl. Brit. India 6: 78 (1890); Gamble, Fl. Pres. Madras 1449 (1928).

Habit: Herb
Habitat: Moist deciduous and Evergreen forests
Morphology: Epiphytic herb; stem short, leafy; leaves distichous, keeled, bilobed at apex. inflorescence a raceme; sepals 3-veined; dorsal sepal bimucronate at apex; petals 3-veined, similar to sepals; lip 5-veined, with 2 short narrowly conical collateral spurs; epichyle oblong; disc with a median thick fleshy ridge forking near the apex.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Minnampara, 16 April 2018, *Jabeena & Maya 1357* (GVCH).

Diplocentrum recurvum Lindl., Edwards's Bot. Reg. 18: sub t. 1522 (1832); Hook. f., Fl. Brit. India 6: 78 (1890); Gamble, Fl. Pres. Madras 1449 (1928).

Habit: Herb
Habitat: Evergreen and Moist Deciduous forests
Morphology: Epiphytic herb; stem short, leafy; leaves keeled, or subterete, mucronate at apex; inflorescence a branched raceme; sepals 3-veined; dorsal sepal bimucronate; petals 3-veined; lip 7-veined, with 2 very short saccate-oblong, straight, slightly divergent spurs; epichyle lanceolate, truncate; disc naked, thickened at the base.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-June
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1860* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2030* (GVCH).

Epipogium J.G.Gmel. ex Borkh., Tent. Disp. Pl. German. 139 (1792)

Epipogium roseum Lindl., J. Proc. Linn. Soc., Bot. 1: 177 (1857); Vajr., Fl. Palghat Dist. 476 (1990); *Epipogium nutans* Rchb.f., Hook. f., Fl. Brit. India 6: 124 (1890); Gamble, Fl. Pres. Madras 1460 (1928).

Habit: Herb
Habitat: Evergreen forests
Morphology: Saprophytic leafless, terrestrial herbs; root tuberous; stem sheathed; flowers in lax raceme; sepals and petals sub-equal, free; dorsal and lateral sepals 3-veined; lip sessile, spurred; disc with 2 rows of tubercles; spur saccate; column short; foot 0; pollinia 2.

Raunkiaer's life-form: Vascular Saprophyte

Phytogeographical affinity: African, Indo-Pacific, Holartic and Australian

IUCN category: Not Evaluated

Phenology: April-May

Distribution: Occasional

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1857* (GVCH).

Eulophia R.Br., Bot. Reg. 7: ad t. 573 ('578') (1821), nom. et orth. cons.

Eulophia graminea Lindl., Numer. List [Wallich] n. 7372 (1832); Hook. f., Fl. Brit. India 6: 2 (1890); Gamble, Fl. Pres. Madras 1435 (1928).

Habit: Herb
Habitat: Moist deciduous forests
Morphology: Terrestrial herb; pseudobulbs large, emerging above the ground; leaves plicate; scape lateral, erect, exceeding the leaves; inflorescence a lax raceme; flowers spreading; sepals and petals free, spreading, sub-equal; column not produced into foot; labellum 3-lobed; spur cylindric, slightly dilated at apex; ovary glabrous.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: February-May

Distribution: Rare

Altitude: 1000-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1833* (GVCH).

Habenaria Willd., Sp. Pl., ed. 4 [Willdenow] 4(1): 5 (44) (1805).

1.Petals 2-lobed……..(2)
1.Petals entire……..…..……(3)
2.Stem leafy upwards; leaves oblong-lanceolate; spur as long as the ovary……..***H. digitata***
2.Stem leafy near the base; leaves linear; spur much longer than the ovary……....***H. rariflora***
3.Lobes of lip with long filiform tails……...***H. crinifera***
3.Lobes of lip not tailed…….……(4)
4.Lateral lobes of lip broad; mid lobe narrower…….…….(5)
4.Lateral lobes of lip filiform; mid lobe broader……....(6)
5.Stem upto 20 cm high; spur cylindric……..……***H. plantaginea***
5.Stem upto 60 cm high; spur linear, subclavate……..…..…***H. longicornicluata***
6.Bracts cucullate; dorsal sepal obtuse; petals 2-veined……..……***H. barnesii***
6.Bracts not cucullate; dorsal sepal acute; petals 3-veined…….....***H. heyneana***

Habenaria barnesii Summerh. in C.E.C.Fisch., in Gamble, Fl. Madras 1887 (1936).

Habit: Herb
Habitat: Grasslands
Morphology: Terrestrial, erect, leafy, unbranched herb; root tuberous; leaves not plaited; flowers in spikes; bracts foliaceous, almost concealing flowers; dorsal sepal 5-veined; lateral sepals 5-veined; petals 2-veined; lip 3-lobed; spur cylindric, shorter than ovary.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: August-September
Distribution: Rare
Altitude: 1150-1250m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 162* (GVCH).

Habenaria crinifera Lindl., Gen. Sp. Orchid. Pl. 323 (1835); Hook. f., Fl. Brit. India 6: 142 (1890); Gamble, Fl. Pres. Madras 1471 (1928); Vajr., Fl. Palghat Dist. 481 (1990).

Habit: Herb
Habitat: Evergreen forest
Morphology: Terrestrial, leafy, herb; root tuberous; leaves clustered towards base of stem; spike dense-flowered; bracts half as long as the ovary; flowers towards the apex of scape; lip clawed, midlobe 2-lobed; side lobes cuneiform, serrate, apex filiform; midlobe flabelliform, serrate, apex caudate; spur slender, incurved, apex clavate, longer than the beaked ovary.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Occasional
Altitude: 1100-1250m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 26 January 2018, *Jabeena & Maya 157*(GVCH); Plate 8: Fig. a.

Habenaria digitata Lindl., Gen. Sp. Orchid. Pl. 307 (1835); Hook. f., Fl. Brit. India 6: 134 (1890); Gamble, Fl. Pres. Madras 1469 (1928); Vajr., Fl. Palghat Dist. 481 (1990).

Habit: Herb
Habitat: Evergreen forest and Grassland
Morphology: Terrestrial leafy herb; root tuberous; stem stout, leafy; leaves 5-7, sessile, inflorescence a many-flowered raceme; bracts foliaceous, sheathing, as long as the whole flower; petals 2-partite almost to the base; lip 3-partite, linear; spur as long as the ovary, inflated towards apex.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated

Phenology: August-November
Distribution: Occasional
Altitude: 1000-1150m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 603* (GVCH); Plate 8: Fig. b.

Habenaria heyneana Lindl., Gen. Sp. Orchid. Pl. 320 (1835); Hook. f., Fl. Brit. India 6: 148 (1890); Gamble, Fl. Pres. Madras 1471 (1928); Vajr., Fl. Palghat Dist. 481 (1990).

Habit: Herb
Habitat: Grasslands
Morphology:Terrestrial leafy herb; leaves cauline; flowers secund; bracts cucullate, cymbiforming, sheathing the flowers; sepals sub-equal; dorsal and lateral sepals 5-veined; petals as long as sepals, 3-partite, 3-veined; lip 3-lobed; spur sub-clavate, as long as the beakless ovary.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Occasional
Altitude: 1000-1150m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2690*(GVCH).

Habenaria longicorniculata J.Graham, Cat. Pl. Bombay [Graham] 202 (1839); *Habenaria longicalcarata* A.Rich., Hook. f., Fl. Brit. India 6: 141 (1890); Gamble, Fl. Pres. Madras 1470 (1928); Vajr., Fl. Palghat Dist. 482 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Terrestrial leafy herb; leaves sub-radical; scape with large, convolute, acuminate sheaths; bracts sheathing the pedicels; flowers 1-4; lateral sepals obliquely ovate; dorsal sepal concave; petals spathulate, obtuse; lip 3-partite, puberulous; side lobes divaricate; midlobe linear; spur long, slender above, thickened from the middle to the apex.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-August
Distribution: Common
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 564* (GVCH); Karassuri, 26 January 2018, *Jabeena & Maya 2394* (GVCH); Plate 8: Fig. c.

Habenaria plantaginea Lindl., Gen. Sp. Orchid. Pl. 323 (1835); Hook. f., Fl. Brit. India 6: 141 (1890); Gamble, Fl. Pres. Madras 1470 (1928); Vajr., Fl. Palghat Dist. 483 (1990).

Habit: Herb
Habitat: Evergreen and Moist deciduous forests, also in the plains
Morphology: Terrestrial herb; leaves radical; spike lax flowered; bracts half as long as the beaked ovary, not concealing the buds; dorsal sepal 3-veined, hooded; lateral sepals 5-veined; petals entire, 1-veined; lip longer than the lateral sepals, 3-lobed, mid lobe of the lip entire, lobes not tailed; spur cylindric.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-November
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4489* (GVCH).

Habenaria rariflora A.Rich., Ann. Sci. Nat., Bot. sér. 2, 15: 70 (1841); Hook. f., Fl. Brit. India 6: 136 (1890); Gamble, Fl. Pres. Madras 1469 (1928).

Habit: Herb

Habitat: Grassland
Morphology: Terrestrial erect herb; leaves 3 or more, near the base; scape naked; flowers 1 or 2 in terminal raceme; bracts shorter than the ovary; dorsal sepal 5-veined; lateral sepals 5-veined; petals unequally biparted; lip 3-partite; lateral lobes linear; midlobe oblong, obtuse; spur slender, curved, much longer than the ovary.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Rare
Altitude: 1150-1250m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 252* (GVCH).

Liparis Rich., De Orchid. Eur. 21, 30, 38 (1817)

Liparis wightiana Thwaites, Enum. Pl. Zeyl. [Thwaites] 295 (1861); Hook. f., Fl. Brit. India 5: 695 (1890); Gamble, Fl. Pres. Madras 1410 (1928).

Habit: Herb
Habitat: Grassland
Morphology: Terrestrial leafy herb; stem slender, short; leaves 2, membranous, continuous with the sheath; flowers in long racemes; bracts lanceolate, acuminate; dorsal and lateral sepals 3-veined; petals linear, 1-veined; lip with 2 minute calli, margin entire; column minutely winged.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-September
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2372*(GVCH).

Luisia Gaudich., Voy. Uranie, Bot. 426, t. 37 (1829)

Flowers solitary, axillary; petals linear……..……....…***L. tenuifolia***
Flowers in a raceme, extra-axillary; petals oblong……....……...***L. tristis***

Luisia tenuifolia Blume, Rumphia 4: 50 (1849); Gamble, Fl. Pres. Madras 1438 (1928).

Habit: Herb
Habitat: Evergreen forests
Morphology: Epiphytic herb; stem terete, sheathed; leaves elongate, terete, fleshy; flowers on a stout extra axillary rachis; bracts persistent; sepals sub-equal; petals longer than sepals; lip as long as petals, 2-auricled, apex with 2 divergent lobules; column truncate;anther 2-celled; pollinia 2.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Rare
Altitude: 1000-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1662* (GVCH).

Luisia tristis Hook.f., Fl. Brit. India [J. D. Hooker] 6(17): 25 (1890); *Luisia teretifolia* Gaudich., Hook.f., Fl. Brit. India 6: 22 (1890); Gamble, Fl. Pres. Madras 1438 (1928).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Epiphytic herb; stem terete, sheathed, erect; leaves spreading; flowers in condensed extra-axillary racemes; bracts persistent; sepals sub-equal, apex incurved; petals sub-equal; lip quadrate and sub-saccate at the base, trilobed; mid-lobe larger than side lobes; fruit oblong.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated

Phenology: March-August
Distribution: Common
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2389* (GVCH); Nelliyampathy range, Mattumala, 24 September 2019, *Jabeena & Maya 2389* (GVCH).

Oberonia Lindl., Gen. Sp. Orchid. Pl. 15 (1830)

1.Leaves jointed……..…….……...(2)
1.Leaves not jointed...…...***O. brachyphylla***
2.Lateral lobes of lip auricled…..…….(3)
2.Lateral lobes of lip not auricled……...(5)
3.Scape terete……...…….***O. verticillata***
3.Scape flattened…….....(4)
4.Spike with a distinct reflexed sterile tip…….……...…….....***O. brunoniana***
4.Spike without a distinct reflexed sterile tip……....***O. chandrasekharanii***
5.Leaves ensiform……..……(6)
5.Leaves not ensiform.....***O. anamalayana***
6.Midlobe of the lip curving upwards with the lateral lobes……...…..***O. bicornis***
6.Midlobe of the lip not curving upwards with the lateral lobes..….....***O. mucronata***

Oberonia anamalayana J.Joseph, Journ. Ind. Bot. Soc. xlii. 222 (1964).

Habit: Herb
Habitat: Evergreen forests
Morphology: Epiphytic herb; leaves distichous, equitant; scape flattened; flowers in a dense internodal spike; flowers arranged in verticils; petals decurved along margins; lip 3-lobed; midlobe 2-lobuled; lobules orbicular; sinus with a rounded protuberance; disc cushion like.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-March
Distribution: Rare
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3961* (GVCH).

Oberonia bicornis Lindl., Numer. List [Wallich] n. 1949 (1829); Hook. f., Fl. Brit. India 5: 682 (1888).

Habit: Herb
Habitat: Evergreen forests
Morphology: Epiphytic herb; leaves distichous, ensiform, equitant; inflorescence a terminal raceme; raceme spiciform; flowers laxly arranged; lip 3-lobed, side-lobes erect, surrounding the column; mid-lobe curving upwards with the lateral lobes; column short; anther terminal, incumbent; pollinia 4.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1653* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4330* (GVCH).

Oberonia brachyphylla Blatt. & McCann, J. Bombay Nat. Hist. Soc. 35: 257 (1931); Vajr., Fl. Palghat Dist. 486 (1990).

Habit: Herb
Habitat: Evergreen forest
Morphology: Epiphytic herb; leaves distichous, equitant, oblong-ensiform, acuminate; scape terete. flowers in racemes; dorsal sepals ovate, acute; lateral sepals obliquely ovate, subacuminate; petals oblong, obtuse, dentate; lip not toothed, 3-lobed; lateral lobes dentate; midlobe obovate, 2-lobed; lobules oblong,

dentate at apex, sinus without any protuberance; disc concave.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Rare
Altitude: 950-1050m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2390* (GVCH).

Oberonia brunoniana Wight, Icon. Pl. Ind. Orient. [Wight] t. 1622; Hook. f., Fl. Brit. India 5: 681 (1888); Gamble, Fl. Pres. Madras 1406 (1928); Vajr., Fl. Palghat Dist. 486. (1990).

Habit: Herb
Habitat: Evergreen and Semi-evergreen forest
Morphology: Epiphytic herb; leaves distichous, equitant, ensiform; scape flattened, adnated to upper leaf; spike stout with a distinct reflexed sterile tip; flowers sessile, densely imbricated; bracts denticulate; petals linear; lip orbicular with a 2-lobed apical auricles; disc concave.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Occasional
Altitude: 1100-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3993* (GVCH).

Oberonia chandrasekharanii V.J.Nair, V.S.Ramach. & R.Ansari, Blumea 28(2): 361 (1983).

Habit: Herb
Habitat: Evergreen forest
Morphology: Epiphytic herb; leaves distichous, equitant, articulated, ensiform; scape flattened; Spike pendulous; flowers arranged verticillate in the spike; bracts denticulate, gland-dotted; petals linear, truncate and denticulate at apex; lip 3-lobed, papillose, gland dotted; lateral lobes folded upwards, rounded the column by the proximal end; mid lobe with a broad sinus; disc concave.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: December-September
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1326* (GVCH).

Oberonia mucronata (D.Don) Ormerod & Seidenf., in G. Seidenfaden, Contrib. Orchid Fl. Thailand XIII 20 (1997); *Oberonia iridifolia* Rchb. ex Lindl. var. *denticulata* (Wight) Hook. f., Fl. Brit. India 5: 675 (1888); Gamble, Fl. Pres. Madras 1406 (1928); *Oberonia denticulata* Wight, Vajr., Fl. Palghat Dist. 487 (1990).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Epiphytic herb; leaves distichous, equitant, broadly ensiform; spikes slender; flowers sessile, arranged in verticils; sepals equal, entire, petals ovate, denticulate along margins; lip quadrate, 3-lobed, side lobes deeply dentate; midlobe 2-lobuled, lobules dentate.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena*

& Maya 4205 (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3049* (GVCH).

Oberonia verticillata Wight, Icon. Pl. Ind. Orient. [Wight] t. 1626; Hook. f., Fl. Brit. India 5: 677 (1888); Gamble, Fl. Pres. Madras 1405 (1928).

Habit: Herb
Habitat: Evergreen and Shola forest
Morphology: Epiphytic herb; leaves distichous, equitant, narrow ensiform; racemes slender, long; flowers pedicelled, whorled; scape terete; dorsal sepal oblong-ovate, obtuse; lateral sepals obliquely ovate, acute; petals oblong or ovate, obtuse; lip twice as long as the sepals, obcordate with rounded lobes separated by a narrow sinus; side-lobes absent; disc indistinct.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 850-1150m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2688* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3411* (GVCH); Plate 8: Fig. d.

Pachystoma Blume, Bijdr. Fl. Ned. Ind. 8: 376 (1825)

Pachystoma pubescens Blume, Bijdr. Fl. Ned. Ind. 8: 376 (1825); *Pachystoma senile* (Lindl.) Rchb.f., Hook. f., Fl. Brit. India 5: 812 (1890); Gamble, Fl. Pres. Madras 1426 (1928); Vajr., Fl. Palghat Dist. 488 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Terrestrial herb; tuber single; flowering shoot leafless; leaves 1 or 2, linear; scape with many sheaths; flowers in a pendulous raceme; sepals and petals sub-equal; sepals pubescent outside; dorsal sepal 5-veined; lateral sepals 5-veined, adnate to the base of the column; petals 3-5-veined; lip 3-lobed, sessile at the base of the footless column; column clavate upwards; anthers 4 celled; pollinia 8.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-March
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1142* (GVCH).

Papilionanthe Schltr., Orchis 1915, ix. 78 (1915)

Papilionanthe subulata (J.Koenig) Garay, Bot. Mus. Leafl. 23(10): 372 (1974); *Aerides cylindricum* Lindl., Hook. f., Fl. Brit. India 6: 44 (1840); Gamble, Fl. Pres. Madras 1442 (1928); *Papilionanthe subulata* Pradhan, Vajr., Fl. Palghat Dist. 488 (1990).

Habit: Herb
Habitat: Evergreen and Shola forest
Morphology: Epiphytic herbs; stem slender, elongate; leaves terete, acute; racemes extra axillary; peduncle short and stout; sepals obovate-oblong, obtuse at apex, fleshy; petals short; lip 3-lobed, lobes equal; side lobes erect; middle lobes recurved; spur conical, slightly recurved; fruits lightly winged.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-April
Distribution: Common
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2625* (GVCH); Nelliyampathy

range, Mattumala, 17 January 2020, *Jabeena & Maya 3844* (GVCH).

Pecteilis Raf., Fl. Tellur. 2: 37 (1837)

Pecteilis susannae (L.) Raf., Fl. Tellur. 2: 38 (1837); *Habenaria susannae* Hook. f., Fl. Brit. India 6: 137 (1890); *Platanthera susannae* Wight, Gamble, Fl. Pres. Madras 1475 (1928); *Pecteilis gigantea* (J. E. Smith) Rafin., Vajr., Fl. Palghat Dist. 489 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Terrestrial erect, unbranched, leafy herbs; tubers globose; leaves sessile, scattered; flowers in terminal raceme; bracts foliaceous; sepals unequal; dorsal sepal 7-9-veined, forming a hood with narrow petals; lateral sepals 7-9-veined, spreading; petals falcate; lip 3-lobed, spurred; spur long, cylindrical; column short; foot 0; anthers 2 celled; pollinia 2, granular; stigma pulvinate.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-October
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2603* (GVCH).

Pholidota Lindl., in Hook. Exot. Fl. ii. t. 138 (1825)

Pholidota imbricata Hook., Exotic Flora 2 (1825); Gamble, Fl. Pres. Madras 1431 (1928); *Pholidota pallida* sensu Abraham & Vatsala, Vajr., Fl. Palghat Dist. 490 (1990).

Habit: Herb
Habitat: Moist deciduous and Semi-evergreen forest
Morphology: Epiphytic herb with aggregated pseudobulbs; pseudobulbs tetragonous; leaves arise solitary or in pairs from a pseudobulb, 3-nerved; racemes drooping, axillary; bracts distichous, persistent; flowers globose; sepals sub-equal, 3-nerved; petals flat; lip sessile on the base of the column, saccate; 3-lobed; column winged; anthers 2-celled; pollinia 4.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-March
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2522* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3003* (GVCH).

Pinalia Buch.-Ham. ex D.Don, Prodr. Fl. Nepal. 31 (1825)

Pinalia mysorensis Kuntze, Revis. Gen. Pl. 2: 679 (1891); *Eria pubescens* Wight, Hook. f., Fl. Brit. India 5: 793 (1890); Gamble, Fl. Pres. Madras 1425 (1928).

Habit: Herb
Habitat: Semi-evergreen, Evergreen and Shola forests
Morphology: Epiphytic herbs; stemless; pseudobulbs simple, ovoid, swollen, compressed; leaves 1-4 at the apex of pseudobulbs; inflorescence a raceme arising in between the leaves; scape many-flowered, pubescent; sepals lanceolate; dorsal sepals and petals similar, free; lateral sepals connate with the foot of column forming a short mentum; Petals as long as lateral sepals. lip shortly clawed; ovate-subcordate, 3-ridged; column free with elongated foot; pollinia 8.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: August-September
Distribution: Common

Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 091* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4282* (GVCH).

Polystachya Hook., Exot. Fl. 2(10): t. 103 (1824)

Polystachya concreta (Jacq.) Garay & H.R.Sweet, Orquideologia 9(3): 206 (1974); *Polystachya purpurea* Wight, Hook. f., Fl. Brit. India 6: 21 (1890); Gamble, Fl. Pres. Madras 1437 (1928); *Polystachya wightii* Rchb.f., Gamble, Fl. Pres. Madras 1437 (1928); *Polystachya flavescens* (Blume) Smith, Vajr., Fl. Palghat Dist. 490 (1990).

Habit: Herb
Habitat: Semi-Evergreen forests
Morphology: Epiphytic herb; pseudobulb globose; leaves distichous, 3-4 per pseudobulb; scape compressed; inflorescence a terminal raceme; sepals free, 3-veined; petals 1-veined; lip clawed, 3-lobed, jointed on the foot of the column; disc with a longitudinal callus; column short continued into a long foot; pollinia 2, globose.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: July-August
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2039* (GVCH).

Porpax Lindl., Edwards's Bot. Reg. 31(Misc.): 62 (1845)

Flowers solitary; pseudobulbs depressed globose; bracts sub-orbicular; lip as long as lateral sepals……..…..***P. braccata***

Flowers racemed; pseudobulbs depressed ovoid; bracts lanceolate; lip smaller than lateral sepals……..…….....***P. filiformis***

Porpax braccata (Lindl.) Schuit., Y.P.Ng & H.A.Pedersen, Bot. J. Linn. Soc. 186(2): 199 (2018); *Eria braccata* (Lindl.) Lindl., Hook. f., Fl. Brit. India 5:787 (1890); Gamble, Fl. Pres. Madras 1425 (1928); *Eria reticosa* Wight, Hook. f., Fl. Brit. India 5: 787 (1890); Vajr., Fl. Palghat Dist. 477 (1990).

Habit: Herb
Habitat: Evergreen and shola forests
Morphology: Epiphytic herb; stemless; pseudobulbs simple, depressed-globose, enclosed in a net-like sac; leaves 2 per pseudobulb, membranous; scape slender; bract strongly nerved; flowers solitary; dorsal and lateral sepals 7-veined; petals 5-veined; lip as long as lateral sepals, 3-lobed; disc with 2 subapically reaching ridges.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2608* (GVCH).

Porpax filiformis (Wight) Schuit., Y.P.Ng & H.A.Pedersen, Bot. J. Linn. Soc. 186(2): 199 (2018); *Eria dalzellii* Lindl., Hook. f., Fl. Brit. India 5: 789 (1890); Gamble, Fl. Pres. Madras 1425 (1928); Vajr., Fl. Palghat Dist. 477 (1990); *Eria dalzellii* (Hook. ex Dalz.) Lindl. var. *fimbriata* (Dalz.) Hook. f., Fl. Brit. India 5: 789 (1890); Gamble, Fl. Pres. Madras 1425 (1928).

Habit: Herb
Habitat: Evergreen forests
Morphology: Epiphytic herb; pseudobulbs simple, depressed-ovoid; leaves oblanceolate; scape few-flowered; flowers

secund; sepals sub-equal, margins with stalked glands, 3-veined; petals sub-equal; lip falcate panduriform, minutely papillate; disc with 2 thick ridges.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2592* (GVCH).

Rhynchostylis Blume, Bijdr. Fl. Ned. Ind. 7: 285, t. 49 (Rynchostylis) (1825)

Rhynchostylis retusa (L.) Blume, Bijdr. Fl. Ned. Ind. 7: 286 (1825); Hook. f., Fl. Brit. India 6: 32 (1890); Gamble, Fl. Pres. Madras 1440 (1928); Vajr., Fl. Palghat Dist. 492 (1990).

Habit: Herb
Habitat: Moist deciduous forests
Morphology: Epiphytic herb; stems stout, woody. leaves deeply channelled, 2-lobed at apex; inflorescence an axillary raceme; sepals and petals similar; lip entire; disc 2-lobed; spur saccate, parallel to the pedicel; epichyle flat; column short; pollinia 2, globose.

Raunkiaer's life-form: Epiphyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: June-July

Distribution: Occasional

Altitude: 600-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 19 August 2017, *Jabeena & Maya 340* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2117* (GVCH).

Satyrium Sw., Kongl. Vetensk. Acad. Nya Handl. 21: 214 (1800)

Satyrium nepalense D.Don, Prodr. Fl. Nepal. 26. (1825); Gamble, Fl. Pres. Madras 1476 (1928).

Habit: Herb
Habitat: Grassland
Morphology: Terrestrial erect, leafy, unbranched herb; root tuberous; leaves not plaited; flowers in dense terminal raceme; sepals and petals sub-equal, free; dorsal sepal 3-veined; lateral sepals 5-veined; petals 3-veined; lip superior, sessile at the base of the column, erect, hooded, broad, 2-spurred; column erect; foot 0; pollinia 2; caudicle recurved.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-September
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1028* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2386* (GVCH); Plate 8: Fig. e.

Schoenorchis Blume, Bijdragen tot de Flora van Nederlandsch Indie No. 7 (1827)

Schoenorchis smeeana (Rchb.f.) Jalal, Jayanthi & Schuit., Kew Bull. 69(2)-9508: 4 (2014); *Rhynchostylis latifolia* C.E.C. Fisch., Gamble, Fl. Pres. Madras 1440 (1928).

Habit: Herb
Habitat: Evergreen forest
Morphology: Epiphyte herb; stem short, stout, leafy; leaves oblong, flat, slightly keeled; leaf apex sub-equally bluntly 2-lobed; flowers in a raceme; lip obscurely 3-lobed, arched, base spurred;spur pouch-like; column short; pollinia 2.
Raunkiaer's life-form: Epiphyte

Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: May-August
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 16 April 2018, *Jabeena & Maya 1344* (GVCH).

Sirhookera Kuntze, Revis. Gen. Pl. 2: 681 (1891)

Sirhookera lanceolata Kuntze, Revis. Gen. Pl. 2: 681 (1891); *Josephia lanceolata* Wight, Hook. f., Fl. Brit. India 5: 823 (1890); Gamble, Fl. Pres. Madras 1428 (1928).

Habit: Herb
Habitat: Shola, evergreen and semi-Evergreen forests
Morphology: Epiphytic herbs; root stout; stemless; leaves radical, coriaceous; inflorescence a compound raceme; sepals sub-equal, connivent, 3-veined; petals as long as sepals, 1-veined; lip erect, fleshy, 3-lobed; column erect, shortly 2-winged upwards; anther 2-celled; pollinia 4, parallel.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: August-November
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1104* (GVCH).

Smithsonia C.J.Saldanha, J. Bombay Nat. Hist. Soc. 71(1): 73 (1974)

Smithsonia maculata (Dalz.) C.J.Saldanha, J. Bombay Nat. Hist. Soc. 71(1): 74 (1974); *Saccolabium maculatum* (Dalz.) Hook.f., Fl. Brit. India 6: 64. 1890.

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Epiphytic herb; leaves 2 or 3, apex unequally bilobed; racemes lateral. flowers sessile; bracts persistent; sepals and petals obovate, oblong rounded; lip fleshy, 3-lobed; midlobe obscurely 3-lobed, rounded; spur conical.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: June-July
Distribution: Rare
Altitude: 500-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 060* (GVCH).

Tainia Blume, Bijdr. Fl. Ned. Ind. 7: 354 (1825)

Tainia bicornis Rchb.f., Bonplandia 5: 54 (1857); Hook. f., Fl. Brit. India 5: 820 (1890); Gamble, Fl. Pres. Madras 1427 (1928); Vajr., Fl. Palghat Dist. 493 (1990).

Habit: Herb
Habitat: Evergreen forests
Morphology: Terrestrial herbs; 1- leaved pseudobulb; flowers in a few-flowered raceme which arises from the base of pseudobulb; dorsal sepal 3-4 veined; lateral sepals 3-5 veined; petals 3-7 veined; lip adnate only by its base of the slender column, 3-lobed; disc lamellate.
Raunkiaer's life form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1002* (GVCH); Plate 8: Fig. f.

Trichoglottis Blume, Bijdr. Fl. Ned. Ind. 8: 359, pro parte. (1825)

Trichoglottis tenera Rchb.f., Gard. Chron. 1872: 699, in obs. (*Cleisostomatis* sp.) (1872); *Cleisostoma tenerum* (Lindl.) Hook.f., Fl. Brit. India 6: 73 1890; Gamble, Fl. Pres. Madras 1448 (1012). 1928.

Habit: Herb
Habitat: Evergreen and shola forests
Morphology: Epiphytic herb; stem woody, scandent; leaves scattered; flowers on a short, stout, leaf-opposed peduncle; sheaths cupular; bracts cymbiform; dorsal sepal 5-veined; lateral sepals 3-veined; petals smaller than sepals, 5-veined; lip adnate to the base of column, 3-lobed; spur cylindrical; column and foot very short; pollinia 2.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Rare
Altitude: 1200-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1368* (GVCH).

Vanda Jones ex R.Br., Bot. Reg. 6: t. 506 (1820).

Petals tessellated; spur conical……..…...***V. tessellata***

Petals not tessellated; spur cylindrical……...……...***V. testacea***

Vanda tessellata Hook. ex G.Don, Hort. Brit. [Loudon] 372. 1830; Lodd. ex Paxt. Mag. Bot. vii. (1840) 265; Gamble, Fl. Pres. Madras 1445 (1928); *Vanda roxburghii* R.Br., Hook. f., Fl. Brit. India 6: 52 (1890).

Habit: Herb
Habitat: Moist deciduous forests
Morphology: Epiphytic herb; stem scandent; leaves conduplicate, keeled, 2-lobed at apex, flowers 6-10 in an axillary raceme; flowers white outside, inner tessellate with brown spots; sepals spreading; petals shorter than sepals; lip 3-lobed; disc with fleshy ridges; spur straight, conical.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: June-September
Distribution: Occasional
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 082* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3136* (GVCH).

Vanda testacea Rchb.f., Gard. Chron. n.s., 8: 166 (1877); Vajr., Fl. Palghat Dist. 495 (1990); *Aerides wightiana* Lindl., Hook. f., Fl. Brit. India 6: 50 (1890); *Vanda parviflora* Lindl., Hook. f., Fl. Brit. India 6: 50 (1890); Gamble, Fl. Pres. Madras 1444 (1928).

Habit: Herb
Habitat: Moist deciduous forests
Morphology: Epiphytic herb; stem stout; leaves conduplicate, keeled, unequally 2-lobed at apex; scape few-flowered, axillary; sepals spreading, 5-veined; petals spathulate, 5-veined; lip adnate to the foot of the column; spur funnel-shaped; disc 2-ridged; anthers 2-celled; pollinia 2.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Occasional
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1430* (GVCH); Nelliyampathy

range, Kurissumala, 22 June 2019, *Jabeena & Maya 2006* (GVCH).

Vanilla Plum. ex Mill., Gard. Dict., ed. 6. (1752); Juss. Gen. 66 (1789); Sw. in Nov. Act. Soc. Sc. Upsal. 6: 66, t. 5 (1799); et in Schrad. Journ. (1799) II. 208.

Vanilla planifolia Andrews, Bot. Repos. 8: t. 538 (1808).

Habit: Climber
Habitat: Cultivated
Morphology: Climber; leaves alternate, fleshy; flowers in 5-15 flowered axillary racemes; sepals 3; 2 upper petals similar to sepals; lip trumpet-shaped; pollinia 2; stigma concave; fruit a cylindrical capsule.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Endangered
Phenology: December-April
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2744* (GVCH); Pullukaadu, 30-11-2019, *Jabeena & Maya 3037* (GVCH).

HYPOXIDACEAE

Fruit dehiscent; anthers dorsifixed……...***Hypoxis***
Fruit indehiscent; anthers basifixed……..***Curculigo***

Curculigo Gaertn., Fruct. Sem. Pl. i. 63. t. 16 (1788)

1.Ovary produced upwards into a filamentous rostrum; style columnar-filiform; stigmas free or connate……..…***C. orchioides***
1.Ovary not produced upwards into a filamentous rostrum; style subulate; stigma capitate……..……...***C. trichocarpa***

Curculigo orchioides Gaertn., Fruct. Sem. Pl. i. 63. t. 16; Hook. f., Fl. Brit. India 6: 279 (1892); Gamble, Fl. Pres. Madras 1502 (1928); Vajr., Fl. Palghat Dist. 505 (1990).

Habit: Herb
Habitat: Moist Deciduous forests and grasslands
Morphology: Stemless herbs; rootstock tuberous; leaves radical, plicate, base sheathing; flowers in a raceme; perianth superior, 6-partite to the base; stamens 6, filaments filiform; ovary inferior, 3-loculed; ovules many, villous; style columnar-filiform; stigma 3; fruit baccate; seeds sub-globose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-December
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 108* (GVCH); Manpara, 29 July 2017, *Jabeena & Maya 282* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3845* (GVCH).

Curculigo trichocarpa (Wight) Bennet & Raizada, Indian J. Forest. 4(1): 68 (1981); *Curculigo finlaysoniana* (Baker) Wall. ex Hook. f., Fl. Brit. India 6: 279 (1892); *Molineria finlaysoniana* Baker, Gamble, Fl. Pres. Madras 1502 (1928); *Molineria trichocarpa* (Wight) Balakr., Vajr., Fl. Palghat Dist. 505 (1990).

Habit: Herb
Habitat: Evergreen and semi-Evergreen forests
Morphology: Perennial herbs; rootstock tuberous; leaves petioled, plicate; flowers in a raceme; bracts linear; bisexual flowers towards base of racemes; male flowers towards the apex; perianth sessile, pubescent; stamens 6; filaments erect; ovary 3-loculed, pilose; style subulate;

stigma capitate; fruit a berry; seeds globose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-April
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 03 November 2020, *Jabeena & Maya 4467* (GVCH); Plate 8: Fig. g.

Hypoxis L., Syst. ed. X 986 (1759)

Hypoxis aurea Lour., Fl. Cochinch. 1: 200 (1790); Hook. f., Fl. Brit. India 6: 277 (1892); Gamble, Fl. Pres. Madras 1501 (1928).

Habit: Herb
Habitat: Evergreen forests and grasslands
Morphology: Herb; root tuberous; leaves linear, radical, sessile; flowers in few flowered raceme; perianth 6-partite, persistent, pilose; stamens 6; ovary 3-loculed; ovules many, style short, columnar; stigmas 3; capsule 3-vaved; seeds sub-globose, beaked at hilum.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-August
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1472* (GVCH); Nelliyampathy Range, Kurissumala, 22 June 2019, *Jabeena & Maya 2050* (GVCH); Plate 8: Fig. h.

AMARYLLIDACEAE

1.Stamens united by a membranous corona…….……....***Pancratium***
1.Stamens not united by a membranous corona……...……..(2)

2.Flower solitary……...***Zephyranthes***
2.Flower two or more……***Crinum***

Crinum L., Sp. Pl. 1: 291 (1753)

1.Umbels 30-50 flowered; perianth salver-shaped, erect……..……....***C. asiaticum***
1.Umbels 12-16 flowered; perianth funnel-shaped, drooping.....***C. latifolium***

Crinum asiaticum L., Sp. Pl. 1: 292 (1753); Hook. f., Fl. Brit. India 6: 280 (1892); Gamble, Fl. Pres. Madras 1504 (1928).

Habit: Herb
Habitat: Grasslands and moist places in deciduous forests
Morphology: Stout herb; root bulbous, leaves flat, coriaceous, glabrous; flowers in an umbel; umbel upto 50 flowered; bracts hooded; perianth salver-shaped, erect; lobes linear, glabrous, 18-20 nerved; filaments shorter than the perianth lobes; ovary 3-loculed; ovules 1-2.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-July
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4508* (GVCH).

Crinum latifolium L., Sp. Pl. 1: 291 (1753); Hook. f., Fl. Brit. India 6: 283 (1892); Gamble, Fl. Pres. Madras 1504 (1928); Vajr., Fl. Palghat Dist. 504 (1990).

Habit: Herb
Habitat: Rocky areas in grasslands
Morphology: Stout herb; rootstock bulbous; bulb sub-globose; leaves clustered, lorate, widely channelled; sheath closed, membranous; flowers sessile on an umbel; umbel stout, 8-20 flowered; spathe membranous; perianth funnel-shaped,

drooping; stamens 6, filaments much shorter than the perianth lobes; capsule oblong; seeds many.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: March-June
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 442* (GVCH).

Pancratium L., Sp. Pl. 1: 290 (1753)

Pancratium triflorum Roxb., Hort. Bengal. [23]; Fl. Ind. ii. 126; Hook. f., Fl. Brit. India 6: 283 (1892); Gamble, Fl. Pres. Madras 1504 (1928); Vajr., Fl. Palghat Dist. 505 (1990).

Habit: Herb
Habitat: Deciduous forests
Morphology: Herb; rootstock a coated globose bulb; leaves flat, thin, glabrous; umbel 2-8 flowered; spathes 2, membranous; pedicel short; perianth funnel-shaped; lobes 6, linear, reflexed; stamens 6; staminal cup with bifid teeth between the filaments; ovary oblong, 3-loculed; ovules many; style filiform; stigma capitate; capsule sub-globose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 469* (GVCH); Plate 9: Fig. a.

Zephyranthes Herb., Appendix [Herbert]. 36 (1821)

Flowers white; stigma 3-notched……..…....***Z. candida***
Flowers pink; stigma 3-lobed……..…....***Z. minuta***

Zephyranthes candida (Lindl.) Herb., Bot. Mag. 53: t. 2607 (1826).
Habit: Herb
Habitat: Grown as garden plant; Here seen as escape into wild
Morphology: Small herb; bulb ovoid; leaves linear; flowers solitary, terminal; perianth lobes free, with tiny scales near throat; stamens half as long as perianth; style slender; stigma 3-notched; capsule sub-globose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandarmala, 03-11-2019, *Jabeena & Maya 2794* (GVCH); Plate 9: Fig. b.

Zephyranthes minuta D.Dietr., Syn. Pl. [D. Dietrich] ii. 1176.

Habit: Herb
Habitat: Grown as garden plant; Here seen as escape into wild
Morphology: Herb; leaves linear; flowers funnel-shaped; perianth reflexed; stamens diverging, equal; anthers larger than the lobes; style longer than perianth tube; stigma 3-fid.
Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Holarctic and South American

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Mattumala, 15 May 2019, *Jabeena & Maya 1855* (GVCH).

ASPARAGACEAE

1.Ovary superior……..…..……(2)
1.Ovary inferior……..…(5)
2.Leaves minute, bearing axillary tufts of cladodes……....***Asparagus***
2.Leaves well developed…….…(3)
3.Herbs with a distinct above ground leafy stem…….....***Dracaena***
3.Herbs without a distinct above ground stem…….……....(4)
4.Roots tuberous…….……***Chlorophytum***
4.Roots bulbous……..….***Drimia***
5.Plant a large shrub; flowers panicled in a gigantic woody scape…….…….…..***Agave***
5.Plant a small herb; flowers racemed…….…….....***Ophiopogon***

Agave L., Sp. Pl. 1: 323 (1753).

Agave americana L., Sp. Pl. 1: 323 (1753); Gamble, Fl. Pres. Madras 1505 (1931); Vajr., Fl. Palghat Dist. 507 (1990).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; leaf margins toothed, base sheathing; bracts 3-angular; inflorescence umbellate clusters of flowers; flowers funnel-shaped; perianth lobes 6, sub-equal, reflexed; stamens 6, diverging, equal; anthers larger than the lobes; ovary inferior, 3-loculed; style longer than perianth tube; stigma 3-fid; capsule beaked.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American

IUCN category: Least Concern

Phenology: November-March

Distribution: Rare

Altitude: 850-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 016* (GVCH); Keshavanpara, 06 July 2019, *Jabeena & Maya 2154* (GVCH).

Asparagus L., Sp. Pl. 1: 313 (1753)

1.Cladodes flat; apex acuminate; perianth lobes obovate, obtuse…..….***A. gonocladus***
1.Cladodes triquetrous; apex acute; perianth lobes oblong, acute.....***A. racemosus***

Asparagus gonocladus Baker, J. Linn. Soc., Bot. 14: 627 (1875); Hook. f., Fl. Brit. India 6:318 (1892); Gamble, Fl. Pres. Madras 1517 (1928); Vajr., Fl. Palghat Dist. 510 (1990).

Habit: Herb
Habitat: Moist deciduous and Evergreen forests
Morphology: Scandent herb; root tuberous; stem terete, smooth; branchlets angled; spines short; leaves reduced to cladodes; cladodes flat, falcate-ensiform, 2-6 nate, curved, acuminate; flowers in a fascicle of raceme; perianth lobes obovate, obtuse; style short; stigmas 3, curved.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Common
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2140* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2401* (GVCH); Pothumala, 12 October 2019 *Jabeena & Maya 2548* (GVCH).

Asparagus racemosus Willd., Sp. Pl., ed. 4 [Willdenow] 2(1): 152 (1799); Hook. f., Fl. Brit. India 6: 316 (1892); Gamble, Fl. Pres. Madras 1517 (1928).

Habit: Herb
Habitat: All forest types

Morphology: Scandent shrub; root tuberous; stem spinescent, woody; branchlets angular; cladodes triquetrous, 2-6-nate, falcate-divaricate; flowers racemed in axillary cluster; bracts minute, triangular; perianth lobes 6; stamens 6, adnate to the perianth lobes; filaments subulate; ovary globose, 3-loculed; stigma 3, recurved; berry globose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: July-August
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 128* (GVCH).

Chlorophytum Ker Gawl., Bot. Mag. 27: t. 1071 (1807)

1.Inflorescence a remotely scattered raceme……..…....***C. nimmonii***
1.Inflorescence a dense-flowered raceme…….……...…….(2)
2.Leaves narrow-lanceolate, narrowed into a petiole……...……...…….***C. heynei***
2.Leaves linear, not narrowed into a petiole…….…….……...(3)
3.Scape shorter than the leaves; leaves falcate; staminal filaments glabrous……...……***C. malabaricum***
3.Scape as long as or longer than the leaves; leaves not falcate; staminal filaments papillose….....***C .indicum***

Chlorophytum heynei Baker, J. Linn. Soc., Bot. 15: 322 (1876); Gamble, Fl. Pres. Madras 1525 (1928); *Chlorophytum heyneanum* Wall. ex Hook. f., Fl. Brit. India 6: 333 (1892).

Habit: Herb
Habitat: Evergreen, Semi-evergreen and Moist deciduous forests
Morphology: Herb; root tuberous; stem short; leaves linear-lanceolate, clustered; racemes densely-flowered; bracts longer than flowers; pedicel short, jointed near the tip; 5 mm long; ovary obovoid; style slender; stigma terminal; capsule elliptic-oblong, 3-lobed, apex retuse; seeds irregular.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karassuri, 24 September 2019, *Jabeena & Maya 2436* (GVCH).

Chlorophytum indicum (Willd.) Dress, Baileya 9: 43 (1961); *Chlorophytum attenuatum* (Wight) Baker, Hook. f., Fl. Brit. India 6: 335 (1892); Gamble, Fl. Pres. Madras 1526 (1928); Vajr., Fl. Palghat Dist. 510 (1990).

Habit: Herb

Habitat: Grasslands

Morphology: Perennial herbs; roots fleshy tuberous; Leaves not falcate, margins ciliate; scape as long as leaves, naked; racemes terminal; pedicel jointed about the middle; perianth lobes spathulate, 3-5 nerved; stamens 6, basally connate, filaments papillose; ovary sub-globose; stigma 3-fid; capsule obcordate, 3-4 seeded.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats

IUCN category: Not Evaluated

Phenology: September-December

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Mattumala, 04 November 2020, *Jabeena & Maya 4362* (GVCH); Plate 9: Fig. c.

Chlorophytum malabaricum Baker, J. Linn. Soc., Bot. 15: 331 (1876); Hook. f., Fl. Brit. India 6: 335 (1892); Gamble, Fl. Pres. Madras 1526 (1928).

Habit: Herb
Habitat: Evergreen and Shola forests
Morphology: Perennial herb; root tuberous; leaves falcate; scape terminal, shorter than leaves; racemes simple or paniculate, lax; bracteole 3 mm; perianth segments 6, sub-equal, 3-nerved; stamens 6, filaments glabrous, anthers shorter than filaments; ovary 6-lobed; capsule 3-winged, 2-5 seeded.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Occasional
Altitude: 950-1150m
Specimen examined: INDIA, Kerala: Palakkad district, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2136* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2235* (GVCH).

Chlorophytum nimmonii Dalz., Hooker's J. Bot. Kew Gard. Misc. 2: 142 (1850); *Chlorophytum orchidastrum* sensu Hook.f., Fl. Brit. India 6: 336. (1892); Gamble, Fl. Pres. Madras 1526 (1928).

Habit: Herb
Habitat: Evergreen and Moist deciduous forests
Morphology: Perennial herb; root tuberous; leaves glabrous; scape tall, paniculately branched; flowers in distant pairs, arranged in a branched raceme; pedicels jointed at about the middle; perianth segments 6; stamens 6, included; capsule reniform, apex 2-lobed; seeds one in each locule.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Common
Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 July 2017, *Jabeena & Maya 334* (GVCH); Kalchady, 01 October 2017, *Jabeena & Maya 515* (GVCH).

Dracaena Vand., Mant. Pl. 9, 63 (1767)

Dracaena roxburghiana (Schult.f.) Byng & Christenh., Global Fl. 4: 66 (2018); *Sansevieria roxburghiana* Schult. & Schult. f., Hook. f., Fl. Brit. India 6: 271 (1892); Gamble, Fl. Pres. Madras 1520 (1928).

Habit: Herb
Habitat: Dry deciduous forests
Morphology: Stout herb; rootstock stoloniferous; leaves sessile, fleshy, nerves immersed; flowers racemed on a stout scape, 3-5 in a cluster; perianth lobes 6, 1-nerved; stamens 6, attached near the middle of the perianth lobes; filaments filiform; anthers dorsifixed; ovary attached by a broad base, 3-loculed; ovules one in each cell; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-February
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 06 July 2019, *Jabeena & Maya 2323* (GVCH).

Drimia Jacq. ex Willd., Sp. Pl., ed. 4 [Willdenow] 2(1): 165 (1799)

Drimia indica (Roxb.) Jessop, J. S. African Bot. 43(4): 272 (1977); *Urginea*

indica (Roxb.) Kunth, Hook. f., Fl. Brit. India 6: 347 (1892); Gamble, Fl. Pres. Madras 1527 (1928); *Urginea coromandeliana* Hook.f., Fl. Brit. India 6: 347 (1892); Gamble, Fl. Pres. Madras 1527 (1928); *Urginea wightiana* Hook.f., Fl. Brit. India 6: 347 (1892).

Habit: Herb
Habitat: Deciduous forest
Morphology: Scapigerous herbs; bulbs globose-conical; leaves radical with sheathing base; scapes erect, stout, 4-15 flowered; flowers campanulate, bracteate, arranged in a raceme; pedicels drooping; bracts deltoid; perianth 6, sub-equal, free to the base; stamens 6; at the base of the perianth segments, included; anthers versatile, base auricled; ovary sessile, 3-loculed; style filiform; stigma trilobed; capsules ellipsoid; seeds winged.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 26 January 2018, *Jabeena & Maya 4046* (GVCH).

Ophiopogon Ker Gawl., Bot. Mag. 27: ad t. 1063 (1807)

Ophiopogon intermedius D.Don, Prodr. Fl. Nepal. 48. (1825); Hook. f., Fl. Brit. India 6: 269 (1892); Gamble, Fl. Pres. Madras 1499 (1928); Vajr., Fl. Palghat Dist. 503 (1990).

Habit: Herb
Habitat: Shola and Evergreen forests
Morphology: Scapigerous herb; rootstock rhizomatous; leaves radical, clustered, narrowed to the base into a petiole; scape naked; bracts scarious; inflorescence raceme; flowers 4-10; perianth 6, spreading; stamens 6 on the bases of the perianth-segments; filaments free, erect, shorter than tepals; anthers sagittate at base, basifixed; ovary inferior, 3-loculed; stigma 3-toothed; berry globose, glabrous; seeds trigonous.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 198* (GVCH); Nelliyampathy range, Kesavan Para, 06 July 2019, *Jabeena & Maya 2168* (GVCH); Plate 9: Fig. d.

ARECALES

ARECACEAE

1.Plant climbing; fruits covered with scales……..…....***Calamus***
1.Plant erect; fruits not covered with scales……..……..…….…..….(2)
2.Leaves bipinnate; leaflets fan-shaped……..…..……..….***Caryota***
2.Leaves unipinnate; leaflets linear or linear-lanceolate…….…..……...……(3)
3.Lower leaflets transformed into spines……..……...***Phoenix***
3.Lower leaflets not transformed into spines……...……...…...…….(4)
4.Leaflets auricled at base….…….***Arenga***
4.Leaflets not auricled at base……(5)
5.Apex of leaflets acuminate, not premorse…….…..……..***Cocos***
5.Apex of leaflets premorse……...***Areca***

Areca L., Sp. Pl. 2: 1189 (1753)

Areca catechu L., Sp. Pl. 2: 1189 (1753); Hook. f., Fl. Brit. India 6: 405 (1893); Gamble, Fl. Pres. Madras 1555 (1931); Vajr., Fl. Palghat Dist. 525 (1990).

Habit: Tree
Habitat: Cultivated

Morphology: Tree; stem tall, unarmed; leaves in a terminal crown; nerves 2-5, prominent; spadices from the axils of fallen leaves below the crown, branched; plant monoecious; spikes flexuous or straight; spathes boat-like; male flowers numerous on upper parts; female flowers few at the base of the branches; sepals 3, triangular; stamens 6; pistillode 2-fid in male flowers; ovary 1-loculed in female flowers; ovule single, basal, erect; fruit with fibrous mesocarp .
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 500-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3400* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3724* (GVCH).

Arenga Labill., Bull. Sci. Soc. Philom. Paris 2: 162 (1800)

Arenga wightii Griff, Calcutta J. Nat. Hist. v. (1845) 475; Hook. f., Fl. Brit. India 6:422 (1892); Gamble, Fl. Pres. Madras 1557 (1931); Vajr., Fl. Palghat Dist. 526 (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; stem densely clothed with persistent leaf sheaths; spadices much branched, basipetal; leaves pinnatisect; leaflets base auricled; male flowers orbicular, stamens many, free; female flowers sub-globose; tepals 6, biseriate, accrescent; ovary globose, 3-loculed; ovules one in each cell; stigma conic; fruit globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats

IUCN category: Vulnerable

Phenology: July-September

Distribution: Rare

Altitude: 500-600m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 853* (GVCH).

Calamus L., Sp. Pl. 1: 325 (1753)

Leaves clustered on rachis; scales in fruit in 12 rows…….……...***C. thwaitesii***
Leaves not clustered on rachis; scales in fruit in 21 rows……...…..…***C. rotang***

Calamus rotang L., Sp. Pl. 1: 325 (1753); Hook. f., Fl. Brit. India 6: 447 (1892); Gamble, Fl. Pres. Madras 1568 (1931).

Habit: Climber
Habitat: Evergreen forests
Morphology: Scandent shrub, armed with spines; ochrea short, truncate; petiole absent; rachis spiny; leaf pinnatisect; sheath green, spiny, glabrous; spines needle-like; leaflets not fascicled, tip armed with bristles, margins spinulose, median vein ciliate beneath from centre upwards; primary sheath closely sheathing, armed with minute spines; secondary sheaths tapering at the base and expanding into a cup at the upper region; male rachillae recurved, involucrophorum not stalked; involucre cup shaped; fruit ovoid, faintly channeled along the middle.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-May
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4240* (GVCH).

Calamus thwaitesii Becc., Fl. Brit. India [J. D. Hooker] 6(18): 441 (1892); *Calamus*

thwaitesii Becc. var. *canaranus* Becc., Gamble, Fl. Pres. Madras 1567 (1931); Vajr., Fl. Palghat Dist. 528 (1990).

Habit: Climber
Habitat: Evergreen and Semi-evergreen forests
Morphology: Scandent shrub; petioles with flat, black, seriate spines; basal part of rachis channelled above; leaflets in opposite distant groups of 2 or 3 on each side in the basal part; leaf margin ciliate; primary spathes armed with short black tipped prickles; knee and ocrea absent; fruit obovoid, scales in 12 vertical rows, with median grooves.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-January
Distribution: Common
Altitude: 650-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3866* (GVCH); Hilltop, 08 February 2020, *Jabeena & Maya 4013* (GVCH).

Caryota L., Sp. Pl. 2: 1189 (1753)

Caryota urens L., Sp. Pl. 2: 1189 (1753); Hook. f., Fl. Brit. India 6: 422 (1892); Gamble, Fl. Pres. Madras 1560 (1931); Vajr., Fl. Palghat Dist. 529. (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; trunk smooth with prominent annular leaf-scars; leaves bipinnate; leaflets fan-shaped, many ribbed; spadix interfoliar, shortly peduncled, much branched, pendulous; flowers in triads with female flower in the middle; sepals 3, rounded, imbricate; stamens many; ovary 3-loculed, trigonous; ovule 1-per locule; fruit globose, 1-2 seeded.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Least Concern

Phenology: January-April

Distribution: Occasional

Altitude: 900-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 127* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2575* (GVCH).

Cocos L., Sp. Pl. 2: 1188 (1753).

Cocos nucifera L., Sp. Pl. 2: 1188 (1753); Hook. f., Fl. Brit. India 6: 482 (1893); Gamble, Fl. Pres. Madras 1557 (1931); Vajr., Fl. Palghat Dist. 529. (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; annular petiolar scars on the trunk; leaves pinnatisect; leaflets reduplicate; spadices interfoliar, panicled; spathe woody; flowers sub-sessile; male flowers often paired, stamens 6; pistillode short, 3-fid; female flowers 1-3 per branch, basal, globose; ovary 3-loculed; ovule 1 per cell; style short; drupe ovoid or globose, trigonous; pericarp fibrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 19 August 2017, *Jabeena & Maya 339* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3534* (GVCH).

Phoenix L., Sp. Pl. 2: 1188 (1753).

Phoenix loureiroi Kunth, Enum. Pl. [Kunth] 3: 257 (1841); Vajr., Fl. Palghat Dist. 528 (1990).

Habit: Shrub
Habitat: Grasslands
Morphology: Tree; densely covered with leaf sheaths; leaves pinnately compound; lower leaflets transformed into sharp spines; upper ones 4-8 together; spadix axillary, branches spreading; flowers sessile; perianth biseriate, outer smaller, connate, cupular; inner ovate, valvate; stamens 6, free; ovary 3-loculed; ovules solitary, stigma uncinate; drupes obovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Common
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1033* (GVCH); Plate 9: Fig. e.

IV.1.4. Commelinids

COMMELINALES

COMMELINACEAE

1.Flowers enclosed in a spathe or bracteole……..……..……(2)
1.Flowers not enclosed in a spathe or bracteole……...…….(3)
2.Bracteoles in closely imbricating pairs; stamens 6……..……....***Cyanotis***
2.Bracteoles absent; stamens 3……***Commelina***
3.Cymes dense; stamens 6..…….***Floscopa***
3.Cymes lax; stamens 3…….....(4)
4.Flowers regular; ovules 2-many in each cell…….....***Murdannia***
4.Flowers irregular; ovules 2-many in each cell…….……..……..(5)
5.Inflorescence glabrous; staminodes absent……..…..***Dictyospermum***
5.Inflorescence glandular hairy; staminodes 2…...……...…..***Rhopalephora***

Commelina L., Sp. Pl. 1: 40 (1753)

1.Spathe funnel-shaped or cucullate..…(2)
1.Spathe ovate or ovate-lanceolate...…..(4)
2.Mouth of the spathe glabrous or sparsely hairy; spathe cucullate..……..***C. erecta***
2.Mouth of the spathe rufous or glandular hairy; spathe funnel-shaped…..……..(3)
3.Ovary 2-locular…….....***C. benghalensis***
3.Ovary 3-locular……..…....***C. paludosa***
4.Capsule 2-loculed……....…..***C. clavata***
4.Capsule 3-loculed….....…….(5)
5.Flowers yellow; leaf apex acute; capsule globose……..…….....***C. wightii***
5.Flowers blue; leaf apex acuminate; capsule broadly ovoid…...…..***C. longifolia***

Commelina benghalensis L., Sp. Pl. 1: 41 (1753); Hook. f., Fl. Brit. India 6: 370 (1892); Gamble, Fl. Pres. Madras 1539 (1931); Vajr., Fl. Palghat Dist. 516. (1990).

Habit: Herb
Habitat: Deciduous forests
Morphology: Herb; rooting at lower nodes; leaves pubescent, margin ciliate; spathe 1-3 together, funnel-shaped, truncate at apex, auricled on one side, pubescent; septemberals sub-equal; stamens 3; staminodes 2; capsule ellipsoid, 3-loculed, pyriform; seeds 5, closely pitted.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: July-November
Distribution: Common
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 014* (GVCH); Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1280* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2205* (GVCH); Plate 9: Fig. f.

Commelina clavata C.B.Clarke, Commelyn. Cyrtandr. Bengal t. 5 (1874); Hook. f., Fl. Brit. India 6: 371 (1892); Gamble, Fl. Pres. Madras 1539 (1931).

Habit: Herb

Habitat: Moist Deciduous forests
Morphology: Herb; leaf sheaths hirsute at mouth; cymes axillary; spathe broad, base not auricled; outer septemberals cucullate; inner 2, smaller. Petals obovate; filaments hairy; ovary 3-loculed, stigma globose; capsule 2-loculed, constricted at the middle, tip bicuspidate; seeds 4, reticulately pitted.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-June
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 279* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 437* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2789* (GVCH).

Commelina erecta L., Sp. Pl. 1: 41 (1753); Vajr., Fl. Palghat Dist. 516 (1990); *Commelina undulata* R. Br., Hook. f., Fl. Brit. India 6: 373 (1892); Gamble, Fl. Pres. Madras 1539 (1931); *Commelina kurzii* Clarke, Hook. f., Fl. Brit. India 6: 373 (1892); Gamble, Fl. Pres. Madras 1540 (1931).

Habit: Herb
Habitat: Grasslands and Moist Deciduous forests
Morphology: Herb; stem slender, pubescent on one side; leaves sessile, glabrous; spathe shortly peduncled, cucullate, pubescent, setose; cymes few in a spathe, 2-4-flowered; sepals obovate, acute; petals clawed; stamens 3, one anther shorter than others; ovary 3-loculed, 3-ovuled, glabrous; capsule 3-loculed, glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and Australian
IUCN category: Least Concern
Phenology: July-October
Distribution: Occasional
Altitude: 600-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 494* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2775* (GVCH).

Commelina longifolia Lam., Tabl. Encycl. i. 129. (1791); Vajr., Fl. Palghat Dist. 517 (1990); *Commelina salicifolia* Roxb., Hook. f., Fl. Brit. India 6:370 (1892); Gamble, Fl. Pres. Madras 1538 (1931).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; stem slender, decumbent, long internodes; leaves alternate, acuminate at apex; spathe complicate, auricled; branches of cymes equal, 1-2 flowered; flowers polygamous; sepals and petals ovate; capsule broadly ovoid, 3-loculed, posticuous cell of capsule keeled; seeds sub-globose, black powdered with white, a whitish membranous appendage at one end.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 631* (GVCH).

Commelina paludosa Blume, Enum. Pl. Javae 1: 2 (1827); Vajr., Fl. Palghat Dist. 517 (1990); *Commelina obliqua* Buch.-Ham. ex D.Don, Hook. f., Fl. Brit. India 6: 372 (1892); Gamble, Fl. Pres. Madras 1539 (1931).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herb; leaves softly villous, shortly petioled; sheaths mouth bearded with rufous hairs; spathes sessile, funnel-shaped, filled with glutinous fluid;

septemberals unequal; ovary 3-loculed, all the sells 1-ovuled; capsule 3-loculed, trigonous; seeds 3, smooth, free in the cells.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 178* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 870* (GVCH); Plate 9: Fig. g.

Commelina wightii Raizada, Indian Forester 84(8): 479 (1958); Vajr., Fl. Palghat Dist. 517 (1990); *Commelina glabra* (Wight) Clarke, Hook. f., Fl. Brit. India 6: 371 (1892); Gamble, Fl. Pres. Madras 1539 (1931);

Habit: Herb
Habitat: Deciduous forests
Morphology: Annual herb; stem glabrous; leaf sheath short, margin ciliate; peduncle slender, scabrous, pubescent; spathe base deeply cordate, nerves strongly arched, margins ciliate; flowers yellow; sepals ovate; stamens 3; ovary globose, 2-ovuled; capsule globose, 3-loculed, posticuous cell not keeled
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: July-August
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 488* (GVCH).

Cyanotis D.Don, Prodr. Fl. Nepal. 45 (1825)

1.Plant epiphytic; branchlets prostrate……...…..***C. vivipara***
1.Plant terrestrial; branchlets erect…….(2)
2.Herbs with basal rosette leaves……...(3)
2.Herbs without basal rosette leaves…..(6)
3.Root tuberous…...……...….***C. tuberosa***
3.Root not tuberous…..……(4)
4.Plants without cormous base…..***C. pilosa***
4.Plants with cormous base……(5)
5.Leaves upto 8 cm long; style inflated below the apex……..…….***C. thwaitesii***
5.Leaves upto 20 cm long; style not inflated below the apex…….***...arachnoidea***
6.Stem cobwebby; hairs of the staminal filament bicolored…....……***C. fasciculata***
6.Stem not cobwebby; hairs of the staminal filament unicolored……..…(7)
7.Bracteoles longer than the inflorescence, glabrous……..***C. cristata***
7.Bracteoles shorter than the inflorescence, pubescent…….……...(8)
8.Stem and leaf villous; leaves ovate; cymes sessile……...…….***C. villosa***
8.Stem and leaf sparsely hairy; leaves lanceolate; cymes pedicelled.***C.burmannia***

Cyanotis arachnoidea C.B.Clarke, Monogr. Phan. [A.DC. & C.DC.] 3: 250 (1881); Hook. f., Fl. Brit. India 6: 386 (1892); Gamble, Fl. Pres. Madras 1550 (1931); Vajr., Fl. Palghat Dist. 518. (1990).

Habit: Herb
Habitat: Grasslands
Morphology: herb; stem decumbent, densely covered with white-cottony hairs; leaves cottony cobwebby; cymes terminal, sub-sessile, dense; bracts shorter than the cyme, hairy; bracteoles falcate, silky cobwebby; sepals united at the base, densely hairy; corolla lobes triangular; filaments bearded; ovary densely hairy at apex; style bearded; capsule oblong, pilose; seeds narrowly cylindrical, obscure pitted.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Common

Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 284* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 410* (GVCH); Minnampara, 0 December 2019, *Jabeena & Maya 3221* (GVCH).

Cyanotis burmannia Wight, Icon. Pl. Ind. Orient. [Wight] t. 2089; *Cyanotis papilionacea* (L.) Schult. f. var. *burmanniana* (Wight) Clarke Hook. f., Fl. Brit. India 6: 385 (1892).

Habit: Herb
Habitat: Wastelands
Morphology: Annual herb; stem procumbent, pubescent; leaves sparsely hairy on both sides; cymes peduncled terminal and upper axillary; bracts acuminate, bracteole cuneate, ciliate, sepals united at base, margin ciliate; filaments bearded; capsule ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 June 2019, *Jabeena & Maya 2385* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2521* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2940* (GVCH).

Cyanotis cristata (L.) D.Don, Prodr. Fl. Nepal. 46, adnot. (1825); Hook. f., Fl. Brit. India 6: 385. (1892); Gamble, Fl. Pres. Madras 1549 (1931); Vajr., Fl. Palghat Dist. 519 (1990).

Habit: Herb
Habitat: Grasslands, degraded forest areas and wastelands
Morphology: Annual herb; stem with long internodes; leaf margin ciliate; sheath hispid; cymes mostly terminal, recurved, solitary; bract leafy; bracteoles sparsely ciliate on margins; calyx hirsute; filaments bearded; ovary globose, hairy at apex; capsule sub-globose, nearly glabrous; seeds black, trigonous, striate, with 2 large pits on two of their faces.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: July-October
Distribution: Common
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 087* (GVCH); Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 179* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2520* (GVCH); Plate 9: Fig. h.

Cyanotis fasciculata (B.Heyne ex Roth) Schult.f., Syst. Veg., ed. 15 bis [Roemer & Schultes] 7(2): 1152 (1830); Hook. f., Fl. Brit. India 6:387 (1892). Gamble, Fl. Pres. Madras 1550 (1931); Vajr., Fl. Palghat Dist. 520 (1990).

Habit: Herb
Habitat: Evergreen forests
Morphology: Annual herb; stem procumbent, tufted, silky hairy; leaves long-hairy; sheath saccate; cymes axillary, solitary; bracts longer than cyme; bracteoles 2-4 pairs; flowers few, sessile; sepals united at the base, not keeled; corolla campanulate; filaments bearded; style densely hairy; capsule pilose at apex; seeds oblong, faintly rugose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: October-January
Distribution: Occasional
Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 646m, 29 July 2017, *Jabeena &*

Maya 304 (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2615* (GVCH).

Cyanotis pilosa Schult.f., Syst. Veg., ed. 15 bis [Roemer & Schultes] 7(2): 1155 (1830); Hook. f., Fl. Brit. India 6: 387 (1892); Gamble, Fl. Pres. Madras 1549 (1931); Vajr., Fl. Palghat Dist. 520 (1990).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herb; stem decumbent, softly pilose; leaves glabrous above, pilose below, margins ciliate, cauline leaves smaller than radical leaves; sheath pilose; cymes 3-5 in a cluster, sub-corymbose; bracts as long as the cyme; bracteoles ciliate along the margin; calyx lobes pilose; filaments hairy; capsule hirsute at apex; seeds pyramidal, pitted.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Common
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 264* (GVCH); Pulayampara, 19 August 2017, *Jabeena & Maya 352* (GVCH); Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 616* (GVCH).

Cyanotis thwaitesii Hassk., Commelin. Ind. 136 (1870).

Habit: Herb
Habitat: Evergreen forests and margins of grasslands
Morphology: Herbs; stem prostrate; stem, leaves, bracts & bracteoles cottony hairy; cymes terminal; bracteoles curved; flowers densely packed; sepals united at the base, densely hairy; filaments bearded; ovary densely hairy at apex; capsule oblong, hairy; seeds transversally rugose, black.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 412* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2412* (GVCH).

Cyanotis tuberosa (Roxb.) Schult.f., Syst. Veg., ed. 15 bis [Roemer & Schultes] 7(2): 1153 (1830); Hook. f., Fl. Brit. India 7:386 (1892); Gamble, Fl. Pres. Madras 1549 (1931); *Cyanotis concanensis* Hassk., Vajr., Fl. Palghat Dist. 519 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; roots tuberous; stem hirsute at the collar; Leaves silky-villous; cauline leaves smaller than radical leaves; cymes long-peduncled, terminal, umbellate, 2-5 together, curved, hirsute; bracts hairy, shorter than cyme; bracteoles falcate, ciliate; sepals hairy; corolla campanulate; filaments bearded on upper part, inflated at the apex; style bearded and bulged below stigma; capsule ovoid, pilose above; seeds pyramidal, obscurely rugose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Occasional
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 615* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3241* (GVCH).

Cyanotis villosa (Spreng.) Schult.f., Syst. Veg., ed. 15 bis [Roemer & Schultes] 7(2): 1155 (1830); Hook. f., Fl. Brit. India 6: 387 (1892); Gamble, Fl. Pres. Madras 1540 (1931); Vajr., Fl. Palghat Dist. 520 (1990).

Habit: Herb
Habitat: Moist Deciduous, Evergreen and Shola forests
Morphology: Annual herb; stem villous with spreading hairs; leaves all cauline, sessile, villous on both sides, margins ciliate; sheath tubular, thickly villous; cymes terminal and upper axillary, sessile; bracts villous; bracteoles silky villous, ciliate along the margins; sepals free, fulvous pilose, keel ciliate; corolla tube blue with red glands; filaments bearded; style dilated below the stigma; capsule pilose; seeds rugose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 174* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2786* (GVCH); Plate 10: Fig. a.

Cyanotis vivipara Dalz., Hooker's J. Bot. Kew Gard. Misc. 3: 226 (1851); Hook. f., Fl. Brit. India 6: 388 (1892); *Belosynapsis vivipara* (Dalz.) C.E.C. Fisch., Gamble, Fl. Pres. Madras 1551 (1931); Vajr., Fl. Palghat Dist. 515. (1990).

Habit: Herb
Habitat: Evergreen forests
Morphology: Epiphytic herb, sub-scapigerous; stem hirsute; leaves basal and cauline, densely villous below, glabrous above, margins ciliate; sheath tubular, densely hairy; flowering stems numerous, laxly pilose with rufous hairs; inflorescence a 2-4 flowered umbels on capillary pilose peduncle; 2-bracteate; bracteoles absent; sepals villous; Petals 3, connate to the middle; stamens 6; filaments naked; ovary obovate, hairy, 3-loculed, 2-ovules in each cell; capsule 6-seeded, rufous hairy; seeds cylindric, smooth.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Rare
Altitude: 1000-1100
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September2019, *Jabeena & Maya 2466* (GVCH).

Dictyospermum Wight, Icon. Pl. Ind. Orient. [Wight] vi. 29. tt. 2069-71 (1853)

Dictyospermum montanum Wight, Icon. Pl. Ind. Orient. [Wight] vi. t. 2069; *Aneilema montanum* (Wight) Thw., Hook. f., Fl. Brit. India 6:382 (1892); Gamble, Fl. Pres. Madras 1546 (1931); Vajr., Fl. Palghat Dist. 513 (1990).

Habit: Herb
Habitat: Evergreen and Semi-evergreen forests
Morphology: Herb; stem stout; leaves clustered towards the apex of the stem shortly petioled; sheath puberulous, margin ciliate; flowers in terminal lax panicles; bracts leafy, caducous; sepals 3, obovate; petals 3, ovate; fertile stamens 3; ovary 3- loculed; ovule 1 in each cell; fruiting pedicels erect; capsule globose, glabrous; seeds hemispheric, rugose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Common
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 495* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2227* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4259* (GVCH).

Floscopa Lour., Fl. Cochinch. 1: 192 (1790)

Floscopa scandens Lour., Fl. Cochinch. 1: 193 (1790); Hook. f., Fl. Brit. India 6: 390 (1892); Gamble, Fl. Pres. Madras 1551 (1931); Vajr., Fl. Palghat Dist. 521 (1990).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; stem pubescent along one line; leaves scattered, glabrous; sheath tubular, mouth oblique, hairy; flowers in terminal or axillary thyroid panicles; cymes secund, not scorpioid; sepals 3 free, pubescent; petals 3, free, glabrous; stamens 6; filaments free, glabrous; anthers with broad connective. ovary 2-loculed; ovule one in each cell; style simple; capsule broadly ovoid; seeds hemispheric.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: January-April
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1127* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4335* (GVCH).

Murdannia Royle, Ill. Bot. Himal. Mts. [Royle] [11]: 403 (1840)

1.Leaves filiform; staminal filament glabrous……..…...***M. semiteres***
1.Leaves not filiform; staminal filament bearded……..…..(2)
2.Thyrses axillary; 1–7 flowered….....(3)
2.Thyrses terminal or axillary; more than 7 flowered…….…..…(5)
3.Seeds bi-seriate……***M.crocea*** subsp. ***ochracea***
3.Seeds uniseriate……..……(4)
4. Pedicel recurved in fruit; capsule linear-ellipsoid…….…….....…***M. pauciflora***
4.Pedicel erect in fruit; capsule ovoid–ellipsoid…...…….....…..***M. versicolor***
5.Fertile stamens 2; seeds 1–2 per cell...(6)
5.Fertile stamens 3; seeds more than 2 per cell…….…...……..(7)
6.Flowering shoots terminal from the rosette…….…….....***M. gigantea***
6.Flowering shoots lateral from the rosette……..…….…….....***M. simplex***
7.Plants without definite base…….(8)
7.Plants with definite base……..(9)
8.Herb prostrate……..***M. spirata***
8.Herb erect……..…….....***M. zeylanica***
9.Seeds with large mid-ventral pit……...…***M. dimorpha***
9.Seeds without mid-ventral pit……....(10)
10.Leaves oblong to ensiform; petals clawed…….....……***M. japonica***
10.Leaves elliptic to oblong or lanceolate; petals not clawed…….....***M. esculenta***

Murdannia crocea subsp. ***ochracea*** (Dalz.) Faden, Kew Bull. 32(1): 188 (1977); *Aneilema ochraceum* Dalz., Hook. f., Fl. Brit. India 6: 380 (1892); Gamble, Fl. Pres. Madras 1545 (1931);

Habit: Herb

Habitat: Marshy areas

Morphology: Annual herb; rooting at lower nodes; stem villous on one side; leaves sub-amplexicaul, glabrous; flowers axillary, 1-4 together; pedicels jointed below the middle; sepals 3; petals 3, pedicels erect in fruit; capsule oblong, mucronate; seeds 2-seriate in each cell, angular, rugose.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: August-September
Distribution: Occasional
Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 06 July 2019, *Jabeena & Maya 2325* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2968* (GVCH).

Murdannia dimorpha G.Brückn., Nat. Pflanzenfam., ed. 2 [Engler & Prantl] 15a: 173 (1930); *Aneilema dimorpha* Dalz., Hook. f., Fl. Brit. India 6: 377 (1892); Gamble, Fl. Pres. Madras 1545 (1931).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; root fibrous; stem erect, pubescent; leaves glandular hairy below, thinly pubescent above; sheath open, mouth oblique; panicle dichotomously branched, few-flowered; pedicel slender; bracts cucullate; sepals ovate, acute; petals obovate, glabrous; stamens 3, filaments bearded; staminodes 3-lobed, filaments naked; capsule oblong, glabrous; seeds 1-seriate in each cell, sub-conical, pitted.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Common
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 08 November 2017, *Jabeena & Maya 723* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2411* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4332* (GVCH); Plate 10: Fig. b.

Murdannia esculenta (Wall. ex C.B.Clarke) Abeyw., Ceylon J. Sci., Biol. Sci. 2(1): 82 (1959); *Aneilema esculentum* Wall. ex Clarke, Hook. f., Fl. Brit. India 6: 377 (1892); Gamble, Fl. Pres. Madras 1545 (1931).

Habit: Herb
Habitat: Marshy areas
Morphology: Perennial herb; root tuberous; stem erect, sub-solitary; leaves plicate, recurved; mouth of sheath oblique; panicle spreading; perianth 6, stamens 3; filaments bearded with 3-4 hairs; staminodes antipetalous; ovary trilocular, glabrous; style glabrous; stigma papillate capsule oblong; seeds 1-seriate in each cell, subconical, tuberculate.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Least Concern
Phenology: August-December
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 258* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4197* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4299* (GVCH).

Murdannia gigantea (Vahl) G.Bruckn., Nat. Pflanzenfam., ed. 2 [Engler & Prantl] 15a: 173 (1930); *Aneilema gigantea* (Vahl) R. Br., Hook. f., Fl. Brit. India 6: 379 (1892); Gamble, Fl. Pres. Madras 1545 (1931).

Habit: Herb
Habitat: Deciduous forests
Morphology: Perennial herb; root fibrous; leaves cauline and radical, glabrous; sheath glabrous; inflorescence long-peduncled, racemose panicles of 8-20 flowers; bracts broadly ovate; stamens 3; staminodes 3; filaments bearded; ovary ovate, glabrous; style glabrous; stigma papillate; capsule elliptic seeds echinate, 2 per locule, uniseriate.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Not Evaluated

Phenology: April-June

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karassuri, 24 September 2019, *Jabeena & Maya 2399* (GVCH).

Murdannia japonica (Thunb.) Faden, Taxon 26(1): 142 (1977); Vajr., Fl. Palghat Dist. 522 (1990); *Aneilema lineolatum* Kunth, Hook. f., Fl. Brit. India 6: 370 (1892); Gamble, Fl. Pres. Madras 1544 (1931).

Habit: Herb
Habitat: Moist Deciduous, Semi-evergreen and Evergreen forests
Morphology: Perennial herb; roots tuberous; stem smooth; leaves basal and cauline, glabrous, sessile, margins undulate; cauline leaves smaller than radical leaves; panicles stout, terminal, lax, dichotomously branched; flowers 2-3 together, pedicelled; sepals red-glandular; stamens 3, filaments bearded; staminodes 2-lobed, bearded; capsule sub-globose, beaked; seeds trigonous, glandular-pubescent.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Occasional
Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 524* (GVCH); Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 683* (GVCH).

Murdannia pauciflora G.Brückn., Nat. Pflanzenfam., ed. 2 [Engler & Prantl] 15a: 173 (1930); Vajr., Fl. Palghat Dist. 523. (1990); *Aneilema pauciflorum* Wight, Hook. f., Fl. Brit. India 6: 378 (1892); Gamble, Fl. Pres. Madras 1545 (1931).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; rooting at lower nodes, roots fibrous; stem decumbent; leaves sessile, hairy; sheath hairy; flowers 1-4 in axillary and terminal cymes; fertile stamens 3; filaments glabrous; staminodes 3; fruiting pedicel deflexed; capsule oblong-fusiform, sub-trigonous; seeds 4-6 in each cell, 1-seriate, cubical, black, sparsely pitted.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-November
Distribution: Rare
Altitude: 400-600m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4336* (GVCH); Plate 10: Fig. c.

Murdannia semiteres (Dalz.) Santapau, Poona Agr. Coll. Mag. 41(4): 15 (1951); Vajr., Fl. Palghat Dist. 523 (1990); *Dichaespermum paniculatum* (Wall. ex Clarke) Hook. f. & Thoms., Hook.f., Fl. Brit. India 6: 381 (1892); *Aneilema paniculatum* Wall. ex Clarke, Gamble, Fl. Pres. Madras 1546 (1931).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; leaves cauline, filiform, semiterete; inflorescence terminal and axillary, consisting of 2–3 pedunculate or non-pedunculate pseudoumbellate cincinii; flowers bisexual and male; pedicels filiform; bracts minute, ocreate; sepals 3, free, glabrous; petals 3, free; staminal filaments naked; staminodes 3, antipetalous; ovary glabrous; ovules 2-seriate in each cell; capsule elliptic, glabrous, 3-loculed; seeds 2-seriate in each cell.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Least Concern
Phenology: October-December
Distribution: Common
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 670* (GVCH); Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 782* (GVCH);

Chandramala, 03 November 2019, *Jabeena & Maya 2777* (GVCH).

Murdannia simplex (Vahl) Brenan, Kew Bull. 7(2): 186 (1952); *Aneilema sinicum* Ker-Gawl., Hook. f., Fl. Brit. India 6:379 (1892); Gamble, Fl. Pres. Madras 1545 (1931).

Habit: Herb
Habitat: Moist Deciduous forests and Grasslands
Morphology: Perennial herb; root tuberous; stem terete, glabrous; leaves basal and cauline, cauline leaves smaller than radical leaves; sheath long, ciliate; flowers in lax panicle; flowers 5-20 in a cymes; sepals and petals 3, glabrous; stamens 2; staminodes 4; anthers 3-lobed; capsule ellipsoid, beaked; seeds 2 per locule, uniseriate, ellipsoid, rugose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: September-November
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 372* (GVCH); Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 775* (GVCH).

Murdannia spirata G.Brückn., Nat. Pflanzenfam., ed. 2 [Engler & Prantl] 15a: 173 (1930); Vajr., Fl. Palghat Dist. 524 (1990); *Aneilema spiratum* (L.) Sweet, Hook. f., Fl. Brit. India 6: 377 (1892); Gamble, Fl. Pres. Madras 1546 (1931).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; root fibrous; stem decumbent; leaves semi-amplexicaul, apex acute; sheath ciliate at mouth, mouth straight; panicles branched, few-flowered, terminal and from upper axils; pedicel filiform; sepals 3, Petals 3; fertile stamens 3; filaments bearded; staminodes 3, antipetalous; ovary elliptic, glabrous; style glabrous; stigma papillate; ovules 3 in each cell; capsule trigonous, trilocular; seeds 3 in each cell, uniseriate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: August-November
Distribution: Occasional
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2365* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4300* (GVCH).

Murdannia versicolor G.Brückn., Nat. Pflanzenfam., ed. 2 [Engler & Prantl] 15a: 173 (1930); *Aneilema versicolor* Dalz. Hook. f., Fl. Brit. India 6: 378 (1892); Vajr., Fl. Palghat Dist. 514. (1990).

Habit: Herb
Habitat: Semi-evergreen forests
Morphology: Annual herb; rooting from nodes; leaves hispid, clasping the stem, margins ciliate; inflorescence terminal and axillary; flowers bisexual and male; stamens 3; filaments bearded; staminodes 3, antepetalous; ovary obovate, glabrous; style glabrous; stigma papillate; capsule trilocular; seeds 4-6 per locule, uniseriate.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India

IUCN category: Not Evaluated

Phenology: September-November

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4550* (GVCH).

Murdannia zeylanica G.Brückn., Nat. Pflanzenfam., ed. 2 [Engler & Prantl] 15a: 173 (1930); *Aneilema zeylanica* Clarke var. *longiscapa* Clarke, Hook. f., Fl. Brit. India 6:370 (1892); Gamble, Fl. Pres. Madras 1544 (1931).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herb; root fibrous, from lower nodes; leaves all cauline, glabrous; sheath tubular, mouth oblique, ciliate; panicle terminal and axillary, spreading; flowers solitary, bisexual and male, pedicellate; pedicel slender; sepals 3-nerved, glabrous; petals 3, glabrous; stamens 3, filaments bearded; staminodes 3, antherodes trilobed; capsule oblong, beaked; seeds 4-5 per locule, uniseriate.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Occasional
Altitude: 200-600m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 489* (GVCH); Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 699* (GVCH).

Rhopalephora Hassk., Bot. Zeitung (Berlin) 22: 58 (1864)

Rhopalephora scaberrima (Blume) Faden, Phytologia 37(5): 480 (1977); *Aneilema scaberrimum* (Blume) Kunth, Hook. f., Fl. Brit. India 6:382 (1892); Gamble, Fl. Pres. Madras 1546 (1931); Vajr., Fl. Palghat Dist. 514. (1990).

Habit: Herb
Habitat: Semi-evergreen forests
Morphology: Perennial herb; root fibrous; stem stout, puberulous; leaves scattered, hispid above, glabrous below; sheath hispid, mouth long ciliate; panicle terminal, glandular pubescent; bract funnel-shaped, persistent; sepals basally connate; ovary 3-loculed; ovule 1 in each cell; capsule globose, pubescent; seeds plano-convex, glandular, rugose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 709* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2746* (GVCH); Plate 10: Fig. d.

ZINGIBERALES

HELICONIACEAE

Heliconia L., Mant. Pl. Altera 147, 211 (1771)

Inflorescence erect; floral bracts lanceolate……..…..***H. psittacorum***
Inflorescence drooping; floral bracts zigzagged…….....……..…..***H. rostrata***

Heliconia psittacorum L.f., Suppl. Pl. 158 (1782).

Habit: Herb
Habitat: Grown as garden plant
Morphology: Perennial herb; pseudostem emerges from rhizome; leaves simple, alternate, long-petioled; floral bracts lanceolate; flowers clustered, 3-angled; tepals 6, fused tepals; fruits fleshy.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019,

Jabeena & Maya 3390 (GVCH); Plate 10: Fig. e.

Heliconia rostrata Ruiz & Pav., Fl. Peruv. [Ruiz & Pavon] 3: 71, t. 305 (1802).

Habit: Herb
Habitat: Grown as garden plant
Morphology: Perennial herb; leaves simple, alternate, long-stalked; inflorescence drooping; bracts red, pendant, zig-zagged; flower inconspicuous.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: November-May
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Greenland, 11 January 2020, *Jabeena & Maya 3745* (GVCH).

MUSACEAE

Bracts spathaceous; flowers unisexual; style simple; stigma globose……...***Ensete***
Bracts ovate; flowers bisexual; style filiform; stigma lobulate……....***Musa***

Ensete Bruce ex Horan., Prodr. Monogr. Scitam. 40 (1862)

Ensete superbum (Roxb.) Cheesman, Kew Bull. 2(2): 100 (1948); *Musa superba* Roxb., Gamble, Fl. Pres. Madras 1497 (1928).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Herb; leaf sheaths globose formed into a pseudostem; leaves spirally arranged, entire with channelled midrib; lateral nerves many, parallel from midrib; spadix with 3-5 spathes at base; bracts several; flowers many on each bracts, unisexual, female flowers towards the base and male flowers above; septemberals and 2 petals united into a sheath, 5-lobed; third petal forms into a membranous sheath; stamens 5, perfect; filaments free; ovary 3-loculed, inferior; style simple; stigma globose; fruit oblong; seeds sub-globose, black.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2923* (GVCH); Hilltop, 01 January 2020, *Jabeena & Maya 3994* (GVCH); Plate 10: Fig. f.

Musa L., Sp. Pl. 2: 1043 (1753)

Musa* × *paradisiaca L., Sp. Pl. 2: 1043 (1753); Gamble, Fl. Pres. Madras 1495 (1928); *Musa x sapientum* L., Hook. f., Fl. Brit. India 6: 262 (1892); *Musa rosacea* Jacq., Hook. f., Fl. Brit. India 6: 263 (1892); Gamble, Fl. Pres. Madras 1497 (1928).

Habit: Herb
Habitat: Cutivated
Morphology: Herb; stem formed by the imbricate base of petioles; leaves simple, large, with a thick midnerve and pinnately parallel nerves; inflorescence terminal, spicate; bracts spathaceous, large; flowers bisexual; sepals and petals connate; lip free, transparent; fertile stamens 5, staminode 1; ovary inferior, 3-loculed; ovules many, axile; fruit fleshy, oblong.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 200-950m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 528* (GVCH); Oothukkuzhi, 30

November 2019, *Jabeena & Maya 3085* (GVCH).

CANNACEAE

Canna L., Sp. Pl. 1: 1 (1753)

Canna indica L., Sp. Pl. 1: 1 (1753); Hook. f., Fl. Brit. India 6: 260 (1890); *Canna orientalis* Rosc., Gamble, Fl. Pres. Madras 1496 (1928).

Habit: Herb
Habitat: Degraded forest areas
Morphology: Perennial herb; rhizome creeping; leaves penninerved; flowers in a terminal raceme; flowers paired; sepals 3, free, sub-equal, lanceolate; petals 3, united at base; staminodes petaloid; one staminode shorter; ovary 3-loculed; ovules many; style flattened; stigma terminal; fruit a globose 3-loculed capsule.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-July
Distribution: Common
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1221* (GVCH); Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1346* (GVCH); Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3580* (GVCH); Plate 10: Fig. g.

MARANTACEAE

1.Ovary one loculed…….....…...***Maranta***
1.Ovary three loculed…….…..….(2)
2.Stemless herb; anther without an appendage……..…….***Stachyphrynium***
2.Stem tall; anther with a petaloid appendage…….***Indianthus***

Indianthus Suksathan & Borchs., Bot. J. Linn. Soc. 159(3): 393 (2009)

Indianthus virgatus (Roxb.) Suksathan & Borchs., Bot. J. Linn. Soc. 159(3): 393 (2009); *Clinogyne virgata* (Roxb.) Benth., Hook. f., Fl. Brit. India 6: 258 (1892); *Schumannianthus virgatus* (Roxb.) Rolfe, Gamble, Fl. Pres. Madras 1494 (1928); Vajr., Fl. Palghat Dist. 502 (1990).

Habit: Herb
Habitat: Moist Deciduous, Semi-Evergreen and Evergreen forests
Morphology: Herb; to 4 m high; stem dichotomously branching; leaves bifarious; ligule very short; panicle dichotomous, lax-flowered; flowers paired in each bract; corolla tube short; stamens 1; staminal tube elongate; exterior staminodes petalloid; interior staminodes smaller; anther with a petaloid appendage; ovary densely hairy, 3-loculed, solitary in each cell, basal; berry 3-loculed, sub-pyriform, rugose; seeds sub-globose
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-March
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 06 July 2019, *Jabeena & Maya 2322* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2973* (GVCH).

Maranta L., Sp. Pl. 1: 2 (1753)

Maranta arundinacea *L*., Sp. Pl. 1: 2 (1753); Gamble, Fl. Pres. Madras 1495 (1928).

Habit: Herb
Habitat: Cultivated
Morphology: Herbs; leaves alternate, nerves parallel, obliquely diverging from the midrib; leaf-stalk often winged; sheath open; flowers in pairs, on axillary peduncles; bracts prominent; sepals free; corolla tubular, unequally 3-lobed; stamen 1; style stout; capsule loculicidal.
Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Rare
Altitude: 200-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 02 October 2017, *Jabeena & Maya 535* (GVCH); Plate 10: Fig. h.

Stachyphrynium K.Schum., Pflanzenr. (Engler) Marant. 45 (1902)

Stachyphrynium spicatum K.Schum., Pflanzenr. (Engler) Marant. 46 (1902); Gamble, Fl. Pres. Madras 1494 (1928); Vajr., Fl. Palghat Dist. 502. (1990).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Herb; rootstock creeping; leaves radical; petioles sheathing; spike sessile or shortly peduncled, arise directly from the rootstock; flowers 3-8, sessile; sepals narrow; corolla tube longer than sepals; stamen 1, petalloid; anther cells adnate on the margin; staminodes clawed; ovary 3-loculed; one ovule in each cell; capsule ovoid; seeds 2-3, wrinkled.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Least Concern
Phenology: March-May
Distribution: Occasional
Altitude: 850-1050m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3553* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4248* (GVCH).

COSTACEAE

Cheilocostus C.D.Specht, Taxon 55(1): 159 (157; fig. 1) (2006)

Cheilocostus speciosus (J.Koenig) C.D.Specht, Taxon 55(1): 159 (2006); *Costus speciosus* (Koenig) J.E. Smith, Hook. f., Fl. Brit. India 6: 249 (1892); Gamble, Fl. Pres. Madras 1490 (1928); Vajr., Fl. Palghat Dist. 498 (1990).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Herb; rhizome tuberous; leaves spirally arranged; ligule truncate, densely hairy; inflorescence a dense globose terminal spike; bracts with a sub-apical protuberance; calyx 3-lobed, funnel shaped; corolla white, lobes sub-equal; stamen with a broad filament forming an oblong petaloid process; ovary globose, 3-lobed, 3-loculed; ovules many; style filiform; stigma crescent-shaped, margin ciliate; capsule globose; seeds sub-globose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category : Least Concern
Phenology: July-October
Distribution: Occasional
Altitude: 200-600 m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 26 January 2018, *Jabeena & Maya 330* (GVCH); Kalchady, 08 November 2017, *Jabeena & Maya 728* (GVCH); Plate 11: Fig. a.

ZINGIBERACEAE

1.Flowers in racemes or panicles .....(2)
1.Flowers in spike.....(3)
2.Inflorescence terminal on leafy stem.....***Alpinia***
2.Inflorescence lateral arising directly from the rhizome.....***Elettaria***
3.Bracts pouched, basally connate……***Curcuma***
3.Bracts not as above .....(4)
4.Spike terminal on leafy stem .....(5)
4.Spike lateral from the rhizome .....(7)
5.Ovary unilocular with parietal placentation .....***Globba***

5.Ovary trilocular with axile placentation.....(6)
6.Inflorescence enclosed by the leaf sheath; flowers few and exerted .....***Boesenbergia***
6.Inflorescence not enclosed in the leaf sheath; flowers many with distinct imbricating bracts……..... ***Hedychium***
7.Anther connective produced into long tail at apex.....***Zingiber***
7.Anther connective broad crest-like .....(8)
8.Fruit echinate; anther crest semilunar……...***Meistera***
8.Fruit smooth or winged, not echinate; anther crest truncate……...***Amomum***

Alpinia Roxb., Asiat. Res. 11: 350 (1810)

Alpinia malaccensis (Burm.f.) Roscoe, Trans. Linn. Soc. London 8: 345 (1807); Hook. f., Fl. Brit. India 6: 255 (1820); Gamble, Fl. Pres. Madras 1493 (1928); Vajr., Fl. Palghat Dist. 497. (1990).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; leaves shortly petioled, margins densely villous; ligule coriaceous; sheaths shortly pubescent; inflorescence a simple raceme; rachis fulvous hairy; bracts petaloid; bracteoles membranous, covering the buds, slightly pubescent at apex; calyx pubescent at the apex, shortly 3-lobed; corolla glabrous; lateral staminodes subulate; anther of equal length or longer, thecae parallel, connective not prolonged into a crest; epigynous glands free from each other. ovary 3-loculed, densely pubescent; capsules globose, shortly pubescent.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Data Deficient
Phenology: April-November
Distribution: Occasional
Altitude: 1000-1100 m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Manpara, 01 December 2018, *Jabeena & Maya 1598* (GVCH); Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 537* (GVCH).

Amomum Roxb., Pl. Coromandel 3(4): 75 (1820)

Leaf lamina silky pubescent below; leaf apex acuminate; ligule bilobed……..……..***A. hypoleucum***
Leaf lamina glabrous on both sides; leaf apex acute; ligule entire...***A.pterocarpum***

Amomum hypoleucum Thwaites, Enum. Pl. Zeyl. [Thwaites] 318 (1861); Hook. f., Fl. Brit. India 6: 240 (1892); Gamble, Fl. Pres. Madras 1487 (1928).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herb; rhizomes slender; leaves long-petioled, silky pubescent below; ligule short, bilobed, glabrous; spikes 1-3 flowered; bracts membraneous, glabrous; bracteoles longer than bracts, tubular, glabrous; calyx 3-lobed, glabrous; corolla equal or slightly longer than calyx, lobes equal, glabrous; lip orbicular, clawed, hairy near throat; lateral staminodes reduced to two small, teeth like projections; anther crest truncate; ovary 3-loculed; capsule globose, smooth.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: June-October

Distribution: Common

Altitude: 1000-1200 m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1006* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1597* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4235* (GVCH).

Amomum pterocarpum Thwaites, Enum. Pl. Zeyl. [Thwaites] 317 (1861); Hook. f., Fl. Brit. India 6: 241 (1892); *Amomum microstephanum* Baker, Hook.f., Fl. Brit. India 6: 239 (1892); Gamble, Fl. Pres. Madras 1487 (1928); Vajr., Fl. Palghat Dist. 497 (1990).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Herb; leaves silky-tomentose beneath, usually clustered towards the apex; ligule linear; bracts glabrous; spike many flowered; flowers solitary in each bract; lip obovate; anther crest orbicular; ovary glabrous; capsule 9-ribbed, echinate, glabrous.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-October
Distribution: Occasional
Altitude: 600-1000 m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2137* (GVCH); Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2538* (GVCH).

Boesenbergia Kuntze, Revis. Gen. Pl. 2: 685 (1891)

Boesenbergia pulcherrima Kuntze, Revis. Gen. Pl. 2: 685 (1891); Vajr., Fl. Palghat Dist. 498 (1990); *Gastrochilus pulcherrimus* Wall., Hook. f., Fl. Brit. India 6: 217 (1890).

Habit: Herb
Habitat: Evergreen and Semi-evergreen forests
Morphology: Herbs; leaves scattered, tomentose beneath; sheath saccate; inflorescence a terminal one-sided spike; bracteoles tubular, deeply cleft to the base; flowers solitary in each bract; calyx tube truncate; corolla lobes equal; lateral staminodes obovate; anthers parallel, not crested; ovary 3-loculed, oblong; ovules few; style filiform; capsule oblong.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Least Concern
Phenology: July-October
Distribution: Occasional
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 490* (GVCH); Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1324* (GVCH); Plate 11: Fig. b.

Curcuma L., Sp. Pl. 1: 2 (1753)

1.Inflorescence both lateral and terminal ……..….(2)
1.Inflorescence either terminal or lateral……..…...(4)
2.Pseudostem upto 15 cm tall……..…..***C. neilgherrensis***
2.Pseudostem more than 30 cm tall.....(3)
3.Flowers up to 2 in each bract; capsule hairy; seeds oblong……..***C. decipiens***
3.Flowers up to 4 in each bract; capsule glabrous; seeds ovoid...***C. pseudomontana***
4.Inflorescence terminal.....(5)
4.Inflorescence lateral.....***C. aromatica***
5.Leaves glabrous.....(6)
5.Leaves pubescent below …….....(7)
6.Rhizome orange coloure……***C. vamana***
6.Rhizome yellow coloured.....***C. montana***
7.Sessile tubers absent; anther lobes without a spur.....***C. aurantiaca***
7. Sessile tubers many, branched; anther lobes with a spur.....***C. longa***

Curcuma aromatica Salisb., Parad. Lond. t. 96; Hook. f., Fl. Brit. India 6:216 (1890); Gamble, Fl. Pres. Madras 1483 (1928).

Habit: Herb
Habitat: Degraded forests and plantations
Morphology: Herb; rhizome orange yellow inside; root fibres not ending in small tubers; petiole as long as leaves; ligule

membranous, obtuse; spike lateral; crown purplish blue; bracts orbicular, recurved, tomentose; calyx lobes obtuse; corolla lobes glabrous; anthers tailed; lip shallowly 3-lobed.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: May-June
Distribution: Occasional
Altitude: 200-1000 m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 08 November 2017, *Jabeena & Maya 733* (GVCH); Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1481* (GVCH).

Curcuma aurantiaca Zijp, Recueil Trav. Bot. Néerl. 12: 345 (1915).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Herb; rhizome yellow inside; roots tubers fusiform; petiole minutely pubescent; spike rising from the centre of a previously formed tuft of leaves; peduncle pubescent; spike pubescent, with a distinct coma; coma bracts longer than the fertile ones; fertile bracts broadly rounded, tip recurved; calyx 3-lobed at apex, pubescent; corolla lobes unequal; labellum 3-lobed; staminal filament broad; anther thecae parallel, connective broad, hooded at apex, glandular hairs on the back; epigynous glands two, cylindrical; ovary pubescent; fruit slightly trigonal, pubescent.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Data Deficient
Phenology: August-November
Distribution: Rare
Altitude: 400-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 802* (GVCH).

Curcuma decipiens Dalz., Hooker's J. Bot. Kew Gard. Misc. 2: 144 (1850); Hook. f., Fl. Brit. India 6: 215 (1890); Gamble, Fl. Pres. Madras 1483 (1928).
Habit: Herb
Habitat: Rocky hill slopes
Morphology: Perennial herb; rhizome pale yellow-white; leaves distichous, glabrous; petiole as long as the lamina; ligule short; inflorescence both lateral and central; coma bracts many, lower green with purple tip, upper deep purple-pink; fertile bracts recurved, green with purple-pink tips; bracteoles triangular, pubescent; flowers 1-2 in each bract; calyx tip shortly 3-lobed; corolla tube funnel-shaped, lobes unequal; tip of labellum slightly 3-lobed; anther-thecae parallel, spurred; epigynous glands 2; ovary 3-loculed, densely pubescent; stigma bilobed; capsule ovoid, hairy.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: April-October
Distribution: Common
Altitude: 600-1200 m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 562* (GVCH); Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2698* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4289* (GVCH); Plate 11: Fig. c.

Curcuma longa L., Sp. Pl. 1: 2 (1753); Hook. f., Fl. Brit. India 6: 214 (1890); Gamble, Fl. Pres. Madras 1483 (1928).

Habit: Herb
Habitat: Cultivated
Morphology: Herbs; rootstock large; tubers sessile, yellow inside, aromatic; leaves distichous, pubescent towards the

extreme tip; ligule short; spike rising from the centre of a previously formed tuft of leaves; coma bracts spreading; tip of fertile bracts recurved; flowers 2 in lower bracts and one in upper bracts; flower length equaling the bracts; calyx minutely 3-lobed at the tip; corolla glabrous; lobes unequal; labellum trilobed; lateral staminodes linear, tip incurved; anther-thecae spurred; epigynous glands 2; ovary 3-loculed; stigma bilipped.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Data Deficient
Phenology: September-October
Distribution: Occasional
Altitude: 200-900 m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 486* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3091* (GVCH).

Curcuma montana Roxb., Pl. Coromandel 2(2): 28 (1800); Hook. f., Fl. Brit. India 6: 214 (1890); Gamble, Fl. Pres. Madras 1483 (1928).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; tubers sessile, not aromatic; petiole as long as lamina; sheath keeled, glabrous; ligule membranous, glabrous; spike arising from the centre of a previously formed tuft of leaves; bracts thinly pubescent; calyx lobes truncate, glabrous; corolla lobes unequal; lip deeply divided; staminodes entire; anther spurred; ovary pubescent.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: September-October
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2568* (GVCH).

Curcuma neilgherrensis Wight, Icon. Pl. Ind. Orient. [Wight] t. 2006; Hook. f., Fl. Brit. India 6: 210 (1892); Gamble, Fl. Pres. Madras 1482 (1928).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; root fibers terminating in small tubers; leaves shortly petioled, sparsely pubescent beneath; ligule small; flowering spike lateral; spike dense; fertile bracts 6-15, margin wavy, densely pubescent; bracteoles triangular; flowers longer than bracts; calyx 3- lobbed, densely pubescent; corolla lobes unequal, pubescent; labellum with a median cleft; anthers spurred; ovary 3-loculed.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: April-October
Distribution: Occasional
Altitude: 1000-1200 m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1074* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2046* (GVCH).

Curcuma pseudomontana J.Graham, Cat. Pl. Bomb. 210; Gamble, Fl. Pres. Madras 1483 (1928); Vajr., Fl. Palghat Dist. 499 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; rootstock small with almond like tubers, white inside, aromatic; leaves 3-5, glabrous; flowering spikes rising from the centre of previously formed tuft of leaves; fertile bracts green with a pink tip, glabrous; flowers 2-4 in each fertile bract; capsules 3-loculed, smooth; seeds ovoid.
Flowering: June-September.
Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Vulnerable
Phenology: July-August
Distribution: Common
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 239* (GVCH); Nelliyampathy range, Kurissumlaa, 22 June 2019, *Jabeena & Maya 2043* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4323* (GVCH).

Curcuma vamana M.Sabu & Mangaly, J. Econ. Taxon. Bot. 10 (2): 307 (1988).

Habit: Herb
Habitat: Evergreen, semi-evergreen and moist deciduous forests
Morphology: Herb; rhizome conical, leaves 4-5; lamina glabrous; ligule small; inflorescence from the centre of the tuft of leaves; spike condensed; distinct coma absent; bracts 4-8; flowers 2-4 in each bract; flowers shorter than the bracts; calyx 3-lobed, persistent; labellum hairy at middle; anther thecae parallel, beaked glandular hairy; ovary tricarpellary, syncarpous, glabrous; style filiform; fruit obovoid.
Flowering: July-October
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Critically Endangered
Phenology: July-August
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2650* (GVCH).

Elettaria Maton, Trans. Linn. Soc. London 10: 250 (1811)

Elettaria cardamomum (L.) Maton, Trans. Linn. Soc. London 10(2): 254, t. 5 (1811); Hook. f., Fl. Brit. India 6: 251 (1892); Gamble, Fl. Pres. Madras 1491 1928); Vajr., Fl. Palghat Dist. 499. (1990).

Habit: Herb
Habitat: Cultivated
Morphology: Perennial herbs; leaves distichous; flowers in flexuous panicle arising directly from the rhizome; bracts 2-7 flowered; calyx tubular; corolla tube equal to the calyx; stamen 1; anther cells shortly spurred; staminodes short; ovary 3-loculed; stigma funnel shaped; capsule ellipsoid; seeds angular, aromatic.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: September-February
Distribution: Common
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 566* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3010* (GVCH); Victoria, 12 October 2020, *Jabeena & Maya 4177* (GVCH); Plate 11: Fig. d.

Globba L., Mant. Pl. Altera 143, 170-171 (1771).

Anthers with a bifid wing; bracts persistent……..……...…..***G. marantina***
Anthers not winged; bracts deciduous……...…..***G. sessiliflora***

Globba marantina L., Mant. Pl. Altera 170 (1771); Hook. f., Fl. Brit. India 6: 206 (1890); *Globba bulbifera* Roxb., Hook. f., Fl. Brit. India 6: 206 (1890); Gamble, Fl. Pres. Madras 1481 (1928); Vajr., Fl. Palghat Dist. 500 (1990).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Perennial herb; leaves bifarious, sessile, glabrous; spike simple, terminal, with bulbils in the lower axils;

flowers solitary in each bract; calyx funnel shaped, 3-lobed, covered with globose glands; corolla tube slender, thrice as long as the calyx; lip as long as the corolla, deeply bifid; stamen 1, anthers broadly winged; lateral staminodes oblong; ovary 1-loculed; stigma turbinate; capsule oblong, glabrous.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: July-September
Distribution: Occasional
Altitude: 200-400 m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 508* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3316* (GVCH); Plate 11: Fig. e.

Globba sessiliflora Sims, Bot. Mag. 35: t. 1428 (1811); *Globba ophioglossa* Wight, Hook. f., Fl. Brit. India 6: 202 (1890); Gamble, Fl. Pres. Madras 1480 (1928); Vajr., Fl. Palghat Dist. 500 (1990).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herb; root tubers elongated; leaves shortly petioled, pubescent beneath; ligule membranous, bifid, pubescent; inflorescence terminal panicle; bracts 3-nerved, glabrous, deciduous; calyx 3-lobed, corolla tube pubescent; lobes unequal, labellum longer than the corolla lobes; anther thecae without appendages, connective slightly projecting to form a hood at the tip; style exserted from the anther lobes; stigma hairy; ovary smooth, 1-loculed; fruit globose to ovoid.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Least Concern
Phenology: July-September
Distribution: Common
Altitude: 200-1000 m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 059* (GVCH); Kalchady, 01 October 2017, *Jabeena & Maya 507* (GVCH); Hilltop, 20 January 2018, *Jabeena & Maya 950* (GVCH).

Hedychium J.Koenig, Observ. Bot. (Retzius) 3: 73 (1783)

1.Bracts imbricate....……..***H. coronarium***
1.Bracts non-imbricate and convolute…(2)
2.Stamen upto 1.5 cm long; filament L-shaped……...…….……..***H. spicatum***
2.Stamen upto 0.5 cm long; filament straight or arching…….....***H. venustum***

Hedychium coronarium J.Koenig, Observ. Bot. (Retzius) 3: 73. (1783); Hook. f., Fl. Brit. India 6: 225 (1892); Gamble, Fl. Pres. Madras 1485 (1928).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaves appressed silky below; ligule large, acuminate; spike densely flowered; bracts glabrous, 3-4 flowered; calyx cylindric, shorter than bracts, glabrous; corolla glabrous; stamen shorter than lip; staminodes oblong.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Data Deficient

Phenology: October-December

Distribution: Common

Altitude: 400-900 m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3554* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3146* (GVCH); Mannathyppalam, 12 October 2020, *Jabeena & Maya 4176* (GVCH).

Hedychium spicatum Sm., in Rees, Cyclop. xvii. n. 8; *Hedychium spicatum* Ham. ex J.E. Smith var. *acuminatum* (Rosc.) Wall. Hook. f., Fl. Brit. India 6: 227 (1892); *Hedychium spicatum* var. *khasianum* Clarke ex Baker in Hook. f., Fl. Brit. India 6: 227 (1892).

Habit: Herb
Habitat: Shola forests
Morphology: Perennial herb; rhizome tuberous; leaves distichous, glabrous; inflorescence a terminal spike; bracts convolute around the calyx; flower 1-3 in each bract; bracteoles smaller than the bracts; flowers longer than the bracts; calyx tubular; corolla lobes equal; labellum deeply lobed, base clawed; stamen shorter than the labellum; anther straight or curved; ovary trilocular, glabrous; fruit globose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Rare
Altitude: 1000-1100 m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 04 November 2020, *Jabeena & Maya 4359* (GVCH); Plate 11: Fig. f.

Hedychium venustum Wight, Icon. Pl. Ind. Orient. [Wight] t. 2012; Hook. f., Fl. Brit. India 6: 226 (1892); Gamble, Fl. Pres. Madras 1485 (1928).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; stem densely clustered; leaves glandular above, sparsely hairy below; ligule short; spike terminal; bracts glabrous, 1-flowered; calyx twice as long as calyx, glabrous; corolla lobes slender; lip acuminate, glabrous; staminodes narrow; anthers divaricate at apex, as long as the lip; ovary 3-loculed, glabrous.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 400-1000 m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1248* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2432* (GVCH).

Meistera Giseke, Prael. Ord. Nat. Pl. 199, 205 (1792) (1792)

1.Rhizome non-stoloniferous…….
M. cannicarpa
1.Rhizome stoloniferous……..…….(2)
2.Ligule upto 45 mm long, membranous…….....***M. masticatorium***
2.Ligule upto 7 mm long, coriaceous….(3)
3.Bracteoles 2-lobed, 2-horned; fruit rugose to muricate…..……...***M. sahyadrica***
3.Bracteoles 2-3 lobed, horns absent; fruit echinate.……...***M. acuminata***

Meistera acuminata (Thwaites) Škorničk. & M.F.Newman, Taxon 67(1): 26 (2018); *Amomum muricatum* Bedd., Gamble, Fl. Pres. Madras 1487 (1928).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herbs; leaves shortly petioled, glabrous; ligule truncate; spike shortly peduncled, many flowered; floral bracts 2-3 lobed, ciliate; flowers densely packed; calyx lobes obtuse, cuspidate; corolla lobes unequal; lip deeply 3-lobed; anther crest lunate; capsule globose, sides echinate.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: April-July
Distribution: Rare

Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1922* (GVCH).

Meistera cannicarpa (Wight) Škorničk. & M.F.Newman, Taxon 67(1): 26 (2018); *Amomum cannicarpum* (Wight) Benth. ex Baker, Hook.f., Fl. Brit. India 240 (1892); Gamble, Fl. Pres. Madras 1487 (1928); Vajr., Fl. Palghat Dist. 497 (1990).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herb; rootstock horizontal; leaves shortly petioled, glabrous; ligule orbicular; spike dense flowered; peduncles stout, covered with imbricating bracts; margins of bracts villous; bracteoles tubular; flowers 1-2 in each bract; calyx lobes obtuse; corolla lobes equal, glabrous; ovary glabrous, muricate; capsule globose, densely echinate.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Occasional
Altitude: 1000-1200 m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 201* (GVCH); Nelliyampathy range, Mattumala 19 November 2020, *Jabeena & Maya 4374* (GVCH).

Meistera masticatorium (Thwaites) Škorničk. & M. F. Newman, Taxon 67(1): 26 (2018); *Amomum masticatorium* Thw., Hook. f., Fl. Brit. India 6: 238 (1892).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herb; rhizome creeping; leaves shortly petioled; inflorescence globose; peduncle flexuous, decumbent; margins of bract ciliate; bracteoles tubular, bilobed, glabrous; calyx tubular, trilobed; corolla tube not exceeding the calyx; lateral staminodes linear; anther-thecae pubescent at base and apex; anther crested; epigynous glands usually united; ovary pubescent; capsule globose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: March-July
Distribution: Common
Altitude: 1000-1200 m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 918* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1596* (GVCH); Nelliyampathy range, Mattumala, 19 November 2020, *Jabeena & Maya 4379* (GVCH).

Meistera sahyadrica (V. P. Thomas & M. Sabu) Škorničk. & M. F. Newman, Taxon 67(1): 27 (2018).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herb; rhizome stoloniferous, leaf sheaths ciliate on margins, leaves 6-7 per leafy shoot; petiole glabrous; ligule coriaceous; inflorescence radical; margins of bracts margin ciliate; bracteole tubular, 2-lobed, 2-horned; calyx tubular, apex with 3 mucronate teeth; corolla tube densely pubescent externally, glabrous internally except near mouth; labellum 3-lobed; lateral staminodes flattened; stamen shorter than labellum; anther crested; ovary 3-loculed, densely pubescent; stigma cup-shaped; epigynous glands 2; capsule globose, rugose to muricate.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: February-July
Distribution: Occasional
Altitude: 1000-1200 m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1007* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1595* (GVCH).

Zingiber Mill., Gard. Dict. Abr., ed. 4. 3: [1545] (1754)

1.Peduncle absent or short, to 6 cm long, produced from the rhizome . . . ……. .(2)
1.Peduncle more than 10 cm long, erect ……(4)
2.Leaves linear; upto 6 cm wide…….....***Z. wightianum***
2.Leaves broader; more than 6 cm wide……(3)
3.Rhizome purplish-lilac within; ligule upto 0.5 cm long...….……***Z. nimmonii***
3.Rhizome cream; ligule upto 3 cm long…...……...…….…***Z .sabuanum***
4.Ligule membranous, 1.0-3.5 cm long…….(5)
4.Ligule coriaceous, upto 0.4 cm long…(6)
5.Spike cylindrical; ligule deeply bilobed...…….…...***Z. anamalayanum***
5.Spike ovoid to oblong; ligule entire……..…….***Z. zerumbet***
6.Spike ovoid; labellum purplish……..…….***Z. officinale***
6.Spike cylindrical; labellum yellowish-white…….……..….***Z. neesanum***

Zingiber anamalayanum Sujanapal & Sasidh., Nordic J. Bot. 28(3): 289 (2010)

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herbs; rhizome aromatic; leaves sessile; ligules deeply bi-lobed; inflorescences arising directly from the rhizome; spike cylindrical; bracts 1-flowered; bracteoles bi-lobed apically; calyx tubular, apex bi-lobed, split halfway on one side; corolla 3-lobed, lobes unequal; labellum 3-lobed, glabrous; staminal filament flattened; anther oblong, glabrous, appendage re-curved; ovary 3-loculed, pubescent; style filiform, channelled through anther and connective; stigma with an apical circular aperture surrounded by stiff hairs; epigynous glands 2; fruit with persistent calyx; seeds black, glabrous.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: May-November
Distribution: Occasional
Altitude: 800-1000 m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 441* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4314* (GVCH); Plate 11: Fig. g.

Zingiber neesanum (J.Graham) Ramamoorthy, Fl. Hassan Dist. [Saldanha & Nicolson] 769 (1976); *Zingiber macrostachyum* Dalz., Hook. f., Fl. Brit. India 6: 247 (1892); Gamble, Fl. Pres. Madras 1490 (1928)

Habit: Herb
Habitat: Moist Deciduous, Semi-evergreen and Evergreen forests
Morphology: Herb; leaves sessile, pubescent beneath; ligule ovate; spike cylindric; sheathing scales large; floral bracts obtuse; flowers solitary in each bract; calyx glabrous; corolla lobes unequal, glabrous; lip 3-lobed; ovary glabrous; capsule ellipsoid, smooth, 3-valved.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Occasional
Altitude: 900-1500 m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena*

& Maya 1741 (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2604* (GVCH).

Zingiber nimmonii Dalz., Hooker's J. Bot. Kew Gard. Misc. 4: 341 (1852); Hook. f., Fl. Brit. India 6: 244 (1892); Gamble, Fl. Pres. Madras 1489 (1928); *Zingiber cernuum* Dalz,. Hook. f., Fl. Brit. India 6: 245 (1892).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Perennial herb; rhizome purplish-lilac inside, aromatic; leaves sub-sessile, pubescent beneath; ligule bifid, coriaceous; inflorescence a spike produced directly from the rhizome; spike ovate or sub-globose, sub-sessile; flowers solitary in each bract; calyx tubular, unilaterally split, membraneous; corolla lobes 3, sub-equal; labellum 3-lobed; anther sessile; stigma slightly projecting from the anther-crest; capsule trigonous.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Least Concern
Phenology: July-October
Distribution: Occasional
Altitude: 700-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1677* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4340* (GVCH).

Zingiber officinale Roscoe, Trans. Linn. Soc. London 8: 348 (1807); Hook. f., Fl. Brit. India 6: 246 (1892); Gamble, Fl. Pres. Madras 1489 (1928).

Habit: Herb
Habitat: Cultivated
Morphology: Perennial herb; leaves linear, sessile, glabrous; spikes oblong-cylindric; peduncles erect, slender; sheathing scales glabrous; spike obovoid; bracts obovate; flowers few; corolla tube small; labellum 3-lobed; fruit 3-valved.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Data Deficient
Phenology: September-December
Distribution: Common
Altitude: 700-1000 m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4127* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4343* (GVCH).

Zingiber sabuanum K.M.Prabhukumar & A.Joe, Phytotaxa 247(1): 92 (2016).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herb; rhizome stoloniferous; root tubers fusiform; leaves sub-sessile, glabrous; ligule apex bilobed; inflorescence one to three, radical; spikes with 10–20 fertile bracts; flowers solitary in each fertile bract; bracteoles sparsely pubescent; calyx tubular with a unilateral split; labellum with numerous glandular hairs; lateral staminodes obovate, apex bifid; anther crested, glabrous; style filiform, glabrous; stigma cup like; ovary 3-loculed, cylindrical, densely pubescent; fruits cylindrical without any ridges.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Kerala

IUCN category: Not Evaluated

Phenology: May-November

Distribution: Rare

Altitude: 700-800 m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Ravi Varma estate, 20 November 2020, *Jabeena & Maya 4354* (GVCH).

Zingiber wightianum Thwaites, Enum. Pl. Zeyl. [Thwaites] 315 (1861); Hook. f., Fl. Brit. India 6: 244 (1892); Gamble, Fl. Pres. Madras 1489 (1928).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; leaves shortly petioled, pubescent beneath; ligule bifid, membraneous; spike sub-globose, shortly peduncled; bracteoles shorter than bracts; calyx 3-toothed, unilaterally split, sparsely pubescent; corolla tube pubescent, lobes almost equal; labellum 3-lobed; staminodes acute; stamens shorter than lip, sessile; ovary trilocular.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: September-October

Distribution: Occasional

Altitude: 1000-1200 m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 130* (GVCH); Manpara, 29 July 2017, *Jabeena & Maya 200* (GVCH); Plate 11: Fig. h.

Zingiber zerumbet (L.) Sm., Exot. Bot. 2: 105 (t. 112) (1806); Hook. f., Fl. Brit. India 6:247 (1892); Gamble, Fl. Pres. Madras 1490 (1928).

Habit: Herb
Habitat: Evergreen forests
Morphology: Perennial herb; leaves sessile, pubescent below; spikes oblong; sheathing scales obtuse; spikes ovoid or oblong; bracts broadly ovate, rounded, margin membranous; calyx 3-lobed, labellum shorter than the corolla lobes, 3-lobed; capsule oblong; seeds globose.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Data Deficient
Phenology: July-November
Distribution: Occasional
Altitude: 600-900 m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 876* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1183* (GVCH).

POALES

XYRIDACEAE

Xyris L., Sp. Pl. 1: 42 (1753)

Xyris pauciflora Willd., Phytogr. i. 2. t. 1; Hook. f., Fl. Brit. India 6: 365 (1892); Gamble, Fl. Pres. Madras 1532 (1928).

Habit: Herb

Habitat: Moist Deciduous forests and marshy areas

Morphology: Slender herb; leaves linear, minutely papillose; scape terete, not distinctly ribbed, papillose; inflorescence head globose; bracts orbicular, mucronate; sepals 3, median one broad, laterals curved, keeled, hyaline; petals 3; stamens 3, shorter than petals; anthers sagittate; staminodes 3; ovary 1-loculed; capsule oblong; seeds ellipsoid, ribbed.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific and Australian

IUCN category: Least Concern

Phenology: August-October

Distribution: Rare

Altitude: 900-1000 m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2738* (GVCH); Plate 12: Fig. a.

ERIOCAULACEAE

Eriocaulon L., Sp. Pl. 1: 87 (1753)

1.Sepals 2 in male flowers…..…….(2)
1.Sepals 3 in male flowers……..(3)
2.Sepals free……..…..…***E. eurypeplon***
2.Sepals united at the base..…***E. thwaitesii***
3.One of the male petal longer & extruded beyond the floral bract…....***E.longicuspis***
3.Male petals equal or sub-equal, none of them extruded beyond the floral bract…(4)
4.Floral bracts glabrous……..…..…(5)
4.Floral bracts hairy……(6)
5.Sheaths upto 3 cm long; head hemispherical, white or straw coloured……..…...***E. truncatum***
5.Sheaths 6-7 cm long; head ovoid, pale black or grey……..…***E.nepalense* var. *luzulifolium***
6.Leaves not rosulate or pectinate……..…***E. xeranthemum***
6.Leaves rosulate or pectinate……....(7)
7.Peduncle upto 4 cm long; head obovoid; involucral bracts obtuse.....***E. palghatense***
7.Peduncle upto 12 cm long; head globose; involucral bracts acute…....***E. pectinatum***

Eriocaulon eurypeplon Körn., Linnaea 27(6): 685 (1856); Hook. f., Fl. Brit. India 6: 585 (1893); *Eriocaulon vanheurckii* Muell.-Arg. Gamble, Fl. Pres. Madras 1619 (1931).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; stemless and without root-stock; leaves rosulate, glabrous; peduncles glabrous, acutely 4-5 ribbed; sheath as long as the peduncle; heads globose or hemispherical; involucral bracts erect or spreading, semicircular, chartaceous; floral bracts closely imbricate, cuneate; sepals 2, free, conduplicate, keeled, minutely hairy towards apex, black; petals 3, hyaline, minute, papillose, sparsely pubescent with black gland in each; anthers 6 in male flowers, black; ovary sessile in female flowers, ovoid or globose; style 3-fid; seeds oblong-ellipsoid.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India

IUCN category: Least Concern

Phenology: July-December

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 479* (GVCH).

Eriocaulon longicuspis Hook.f., Fl. Brit. India [J. D. Hooker] 6(19): 573 (1893); *Eriocaulon longicuspis* Hook.f. var. *polycephalum* (Hook. f.) Fyson, Gamble, Fl. Pres. Madras 1618 (1921).

Habit: Herb
Habitat: Swampy areas
Morphology: Perennial herb; leaves linear-ensiform, glabrous; peduncle 6-ribbed, glabrous; sheath as long as leaves; head depressed-globose; receptacle convex, shortly villous; involucral bracts scarious, glabrous; floral bracts cuneate; male sepals 3, free, apex hairy, anthers black; female sepals 3, narrow; petals 3, pilose with a small black apical gland; appendages on seeds short,cells of seed coat transversely elongated.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Least Concern

Phenology: May-December

Distribution: Occasional

Altitude: 1000-1200 m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January2018, *Jabeena & Maya 1003* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1645* (GVCH).

Eriocaulon nepalense* var. *luzulifolium (Mart.) Praj. & J. Parn., Kew Bull. 67(4): 664 (2012).

Habit: Herb
Habitat: Waterlogged areas in evergreen forests
Morphology: Herb; root stock conical; leaves rosulate, glabrous; sheaths glabrous, margin entire, limb apex split into 2-3 lobes; peduncles 6-ribbed; heads ovoid; receptacle ovoid, pilose; involucral bracts glabrous; floral bracts hoary towards tip, black; sepals connate at base, upper portion 3-lobed, hoary towards tip, black; petals 3; anthers 6 in male flowers, globose, black; ovary sub-sessile in female flowers, ovoid; stigma 3-fid; seeds ellipsoid, cells of seed coat transversely elongated, aligned in vertical rows.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1644* (GVCH).

Eriocaulon palghatense R. Ansari & N. P. Balakr., Fam. Eriocaulac. in India 111 (1994) (1994).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; rootstock absent; leaves rosulate, linear, glabrous. peduncles flexuous, glabrous; sheaths glabrous; limb entire; head obovoid; receptacle glabrous; involucral bracts chartaceous, glabrous; floral bracts sparsely hairy towards apex; sepals in male flowers connate into a spathe, hoary towards apex; petals 3, hoary, with a black gland; anthers 6, globose, black; Female flowers: sessile or pedicelled; sepals in female flowers free, sub-equal, petals 3, free, sub-equal, not clawed, hyaline pubescent, with a minute black gland; ovary sub-sessile; style 3-fid; seeds oblong-ellipsoid; cells of seed coat transversely elongated, aligned in vertical rows.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Rare
Altitude: 1000-1400 m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2637* (GVCH).

Eriocaulon pectinatum Ruhland, Pflanzenr. (Engler) Eriocaul. 85 (1903); Gamble, Fl. Pres. Madras 1620 (1931).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves densely rosulate, pectinate, glabrous; peduncle solitary; sheath lax, as long as leaves; head sub-globose; involucral bracts conspicuous, glabrous; floral bracts keeled, hairy at apex; male sepals united into a split sheath, densely hairy at apex, truncate, black; petals hairy, with a black apical gland; anthers black; female sepals densely hairy at apex, black; petals hairy at apex, ciliate, with an apical gland; seeds ovoid, not ornamental; epidermal cells transversely elongate.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Vulnerable
Phenology: August-October
Distribution: Rare
Altitude: 1000-1200 m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4272* (GVCH).

Eriocaulon thwaitesii Körn., Linnaea 27(5): 627 (1856); Hook. f., Fl. Brit. India 583 (1893); Gamble, Fl. Pres. Madras 1620 (1931).

Habit: Herb
Habitat: Moist and marshy areas
Morphology: Herb; leaves linear-ensiform, glabrous; peduncles shallowly 5-ribbed; sheath as long as leaves; heads globose; receptacle pilose; involucral bracts oblong, rounded to truncate at apex; floral bracts concave, apex white hairy; male sepals 2-3, united at the base, glabrous; petals equal, hairy, glandular; female sepals 2, keeled; petals 3, filiform with an apical tuft of long hairs, eglandular; seeds oblong, with longitudinal rows of white papillae.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: July-September
Distribution: Common
Altitude: 1000-1200 m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1004* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2239* (GVCH).

Eriocaulon truncatum Buch.-Ham. ex Mart., Pl. Asiat. Rar. (Wallich). iii. 29; Hook. f., Fl. Brit. India 6: 578 (1893); Gamble, Fl. Pres. Madras 1619 (1931); Vajr., Fl. Palghat Dist. 539 (1990).

Habit: Herb
Habitat: Marshy Grasslands
Morphology: Herb; leaves ensiform; peduncles many, shallowly 5-8 ribbed; sheaths shorter than the leaves; heads hemispherical; receptacles narrowly conical, glabrous or pilose; involucral bracts truncate, scarious; floral bracts sub-hyaline; male sepals connate into a spathe, 2-lobed, hoary towards apex, black; petals 3, sub-equal, hairy, with an apical black gland; anthers 6, oblong, black; female sepals 2-3, free, hyaline, glabrous; petals 3, free, sub-equal with an apical black gland; ovary sessile, ovoid; style 3-fid; cells of seed coat rectangular, vertically elongated; appendages ribbon-like bands.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: July-September
Distribution: Occasional
Altitude: 1000-1100 m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 480* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2456* (GVCH).

Eriocaulon xeranthemum Mart., Pl. Asiat. Rar. (Wallich). 3(10): 29 (1832); Hook. f., Fl. Brit. India 6:584 (1893); Gamble, Fl. Pres. Madras 1620 (1931).

Habit: Herb
Habitat: Marshy areas
Morphology: Annual herb; leaves rosulate; peduncles several, striate; sheaths lax; heads hemispherical, few flowered; receptacles convex, glabrous; involucral bracts erect or spreading, scarious; floral bracts truncate, hyaline; male sepals cuneate, connate into a spathe, 3-lobed with truncate lobes, papillose hairy; petals 3, sub-equal, minute, glabrous, with an apical black gland; anthers 6, globose, black; female flowers sessile; sepals 3, free, unequal; petals 3, sub-equal, hyaline, barbate, with an apical black gland; ovary ovoid; style 3-fid; seeds narrowly oblong with longitudinal rows of white papillae; cells of seed-coat transversely elongated; appendages setiform, 2-4 from the transverse radial walls.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: July-September
Distribution: Common
Altitude: 900-1200 m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena &*

Maya 129 (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2238* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2732* (GVCH); Plate 12: Fig b.

CYPERACEAE

1.Flowers unisexual…….....….....***Scleria***
1.Flowers bisexual…….....……..(2)
2.Leaves reduced to bladeless sheaths....(3)
2.Leaves well developed….....……(4)
3.Inflorescence terminal; style articulated with the ovary…….....…***Elaeocharis***
3.Inflorescence pseudo-lateral; style not articulated……..….***Schoenoplectiella***
4.Glumes distichous……..…....***Cyperus***
4.Glumes spirally arranged (basal ones sometimes distichous)……..……..(5)
5.Hypogynous bristles present…...***Fuirena***
5.Hypogynous bristles absent……....(6)
6.Style fimbriate hairy, base conical……..***Fimbristylis***
6.Style glabrous at mouth, base depressed-globose……...……...***Bulbostylis***

Bulbostylis Kunth, Enum. Pl. [Kunth] 2: 205 (1837)

Inflorescence a globose head; nut smooth……...***B. barbata***

Inflorescence umbelled; nut transversely wrinkled……..…….....***B. densa***

Bulbostylis barbata (Rottb.) C.B. Clarke, Fl. Brit. India [J. D. Hooker] 6(19): 651 (1893); *Bulbostylis barbata* (Rottb.) Kunth ex Clarke ssp. *barbata*, Gamble, Fl. Pres. Madras 1662 (1931); Vajr., Fl. Palghat Dist. 540 (1990).

Habit: Herb
Habitat: Near banks of streams
Morphology: Annual herb; stem striate; leaves filiform; sheath pilose; inflorescence a terminal head; bracts 1-3, shorter than head; spikelets sessile; glumes spiral, laterally compressed, strongly keeled, keel scabrid, margins ciliolate; stamen 1-3; style linear; nut obtusely trigonous, straw-coloured.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 200-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2135* (GVCH); Pothundy-Kaikatty, 26 August 2019, *Jabeena & Maya 2361* (GVCH); Plate 12: Fig. c.

Bulbostylis densa (Wall.) Hand.-Mazz., Vegetationsbilder xx. Heft 7, p. [16] (1930), in obs; *Bulbostylis capillaris* (L.) Kunth var. *trifida* (Nees) Clarke, Hook. f., Fl. Brit. India 6: 652 (1893); Gamble, Fl. Pres. Madras 1662 (1931); *Scirpus densus* Wall. ex Roxb., Hook. f., Fl. Brit. India 1: 231 (1820).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; stem slender, glabrous; leaves capillary, glabrous; sheaths acuminate, hairy; spikelets umbelled with 3 spikelets, the central one sub-sessile, lateral pedicelled; bracts 2-3, setaceous; glumes spiral, compressed, glabrous; stamen 1; nut obovoid, trigonous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and Australian
IUCN category: Least Concern
Phenology: September-December
Distribution: Common
Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2104* (GVCH); Kesavan Para, 06 July 2019, *Jabeena & Maya 2170* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4274* (GVCH).

Cyperus L., Sp. Pl. 1: 44 (1753)

1.Hypogynous bristles present……..…..(2)
1.Hypogynous bristles absent…….....(3)
2.Bristles hyaline……...***C. neochinensis***
2.Bristles setaceous…..……...***C. albescens***
3.Rachilla deciduous…..……(4)
3.Rachilla persistent…..…….(8)
4.Stigmas two……..……...(5)
4.Stigmas three…….……..(7)
5.Keels of nut bearing glume serrulate or spinulose……..……..***C. brevifolius***
5.Keels of nut bearing glume not serrulate nor spinulose……....……..…(6)
6.Stamens three……...…..***C. mindorensis***
6.Stamens two…..…….....***C . richardtii***
7.Base of stem thickened by turgid sheaths……..…….....***C. dubius***
7.Base of stem not thickened by sheaths……..…..***C. cyperinus***
8.Nut biconvex; stigmas two……..(9)
8.Nut trigonous; stigmas three……..(15)
9.Nut with longitudinally oblong epidermal cells…….....……(10)
9.Nut with isodiametric epidermal cells……...……(11)
10.Spikelets 2.5 mm broad; glumes reddish-brown to blackish-brown.....***C .malabaricus***
10.Spikelets 2 mm broad; glumes stramineus…..……...…..***C. substramineus***
11.Glumes persistently mucronate; anthers 0.2 mm long…….…..….....***C. pumilus***
11.Glumes muticous or at most mucronulate; anthers 0.5 mm or long...(12)
12.Spikelets linear-lanceolate, 1.5-2 mm wide…….……....***C. polystachyos***
12.Spikelets linear-oblong to oblong-lanceolate, 2-3 mm wide……...(13)
13.Stems 2.5-4 mm thick; leaves slightly overtopping the stem, 4-8 mm wide……...…….....***C. puncticulatus***
13.Stems 1-2 mm thick; leaves shorter than stem, 1-2 mm wide…...……(14)
14.Leaves glabrous; glumes 1.2 mm wide……..……...…..***C. flavidus***
14.Leaves scabrous at margins and mid veins below; glumes 2.5 mm wide……...…...…..***C. flavescens***
15.Spikelets digitate or clustered, not spicate or racemose….……..(16)
15.Spikelets distinctly spicate or racemose…….……..(21)
16.Glumes aristate or awned or mucronate……...……..(17)
16.Glumes at most minutely mucronulate……..(18)
17.Inflorescence compound or decompound; rays many; stamens 2-3; nuts ellipsoid…....……...…..***C. diffusus***
17.Inflorescence often reduced to a hemispherical head; rays 1-3; stamens one; nuts oblong-obovate...***C. maderaspatanus***
18.Glumes less than 0.6 mm long; apex rounded…...…….....***C. difformis***
18.Glumes more than 1 mm long; apex obtuse or acute…..……(19)
19.Rachilla winged on either side of the nut……....***C. zollingeri***
19.Rachilla not conspicuously winged……..(20)
20.Rhizome present, creeping; nut pale brown……...……...***C. haspan***
20.Rhizome absent; nut white……..…...***C. tenuispica***
21.Rachilla of spikelets distinctly 2-winged opposite the nuts….***C. tenuiculmis***
21.Rachilla of spikelets not or hardly winged……..(22)
22.Glumes cuspidate or aristate……..……...***C. compressus***
22.Glumes not cuspidate nor aristate…(23)
23.Glumes gibbous towards the rachilla; rhizome absent……..***C. iria***
23.Glumes not gibbous; rhizome present……...…..***C. distans***

Cyperus albescens (Steud.) Larridon & Govaerts, Kew Bull. 71(2)-30: 1 (2016); *Lipocarpha argentea* (Vahl) R. Br., Hook. f., Fl. Brit. India 6: 667 (1893); Gamble, Fl. Pres. Madras 1670 (1931); *Lipocarpha chinensis* (Osbeck) Kern, Vajr., Fl. Palghat Dist. 553 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; rhizome short, vertical; leaves rigid, from the base of the

stem only; bracts 3, unequal; spikelets broadly ovoid, aggregated in heads of 3-10; glumes spathulate-oblanceolate, apex acute; stamens 2; stigma 2; nut 1.2 x 0.4 mm, plano-convex or biconvex.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Occasional
Altitude: 1200-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 131* (GVCH); Manpara, 29 July 2017, *Jabeena & Maya 228* (GVCH).

Cyperus brevifolius (Rottb.) Endl. ex Hassk., Cat. Hort. Bot. Bogor. (Hasskarl) 24 (1844); *Kyllinga brevifolia* Rottb. var. brevifolia Hook. f., Fl. Brit. India 6: 588 (1893); Gamble, Fl. Pres. Madras 1624 (1931).

Habit: Herb
Habitat: Marshy areas
Morphology: Perennial herb; rhizome elongate, covered with brown scales; culms triquetrous; leaves basal, linear; sheaths membranous; head solitary, globose, greenish; bracts 3-4, leafy, unequal; spikelets oblong; glumes 4, distichous, basal 2 sterile, 3rd glume fertile, 4th glume sterile; stamens 1-2; stigmas 2; nut oblong, biconvex.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: July-November
Distribution: Common
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 047* (GVCH); Kalchady, 08 November 2017, *Jabeena & Maya 730* (GVCH); Keshavanpara, 21 November 2017, *Jabeena & Maya 740* (GVCH).

Cyperus compressus L., Sp. Pl. 1: 46 (1753); Hook. f., Fl. Brit. India 6: 605 (1893); Gamble, Fl. Pres. Madras 1640 (1931); Vajr., Fl. Palghat Dist. 543 (1990).

Habit: Herb
Habitat: Along banks of streams
Morphology: Annual herb; stem tufted; leaves basal, linear, acuminate; sheaths upto 6 cm long; spikelets 4-9, racemose, rachilla not winged; bracts 2-5, leafy; glumes plicate, imbricate; stamens 3; stigmas 3; nut trigonous, obovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4077* (GVCH); Nelliyampathy range, Pothupara, 11 January 2020, *Jabeena & Maya 3675* (GVCH).

Cyperus cyperinus (Retz.) Valck.Sur., Cyperus 154, t. 6 (1898); *Mariscus cyperinus* (Retz.) Vahl, Hook. f., Fl. Brit. India 6: 621 (1893); Gamble, Fl. Pres. Madras 1644 (1931); Vajr., Fl. Palghat Dist. 554 (1990); *Mariscus pictus* Nees, Hook. f., Fl. Brit. India 6:621 (1893); Gamble, Fl. Pres. Madras 1645 (1931).

Habit: Herb
Habitat: Degraded Moist Deciduous forests
Morphology: Perennial herb; rhizome nodulose; base of stem not thickened by sheaths; culms triquetrous; leaves basal, scabrid on margins; spikelets erect, 2-4 flowered, subulate; bracts 4-8; glumes distichous, obtuse; stamens 3; anthers linear; stigmas 3; nuts oblong, trigonous, slightly curved.
Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: June-August
Distribution: Common
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 064* (GVCH); Keshavanpara, 21 November 2017, *Jabeena & Maya 739* (GVCH).

Cyperus difformis L., Cent. Pl. II. 6 (1756); Hook. f., Fl. Brit. India 6: 599 (1893); Gamble, Fl. Pres. Madras 1640 (1931); Vajr., Fl. Palghat Dist. 544 (1990).

Habit: Herb
Habitat: Marshy areas
Morphology: Annual herb; stem tufted; leaves flaccid; umbel compound with 3-10 rays, spikelets linear, obtuse; bracts 2-3; glumes orbicular, apex rounded; stamens 1-2; stigmas 3; nut sub-equally trigonous, nearly as long as the glumes.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, South American and Australian
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothupara, 11 January 2020, *Jabeena & Maya 3658* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2780* (GVCH).

Cyperus diffusus Vahl, Enum. Pl. [Vahl] ii. 321. (1805); Hook. f., Fl. Brit. India 6: 603 (1894); Gamble, Fl. Pres. Madras 1639 (1931); *Cyperus pubisquama* Steud., Hook. f., Fl. Brit. India 6: 604 (1893); Gamble, Fl. Pres. Madras 1639 (1931); Vajr., Fl. Palghat Dist. 547 (1990).

Habit: Herb
Habitat: Marshy areas of evergreen forests
Morphology: Perennial herb; rhizome short, covered with brown scales; culms trigonous; leaves basal, linear, prominently 3-nerved; umbel decompound, rays many, spikelets 3-9 together, sessile, flattened, 25-30 flowered; bracts 5-9; glumes closely imbricating, strongly keeled; stamens 2-3; stigmas 3; nut ellipsoid, trigonous.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: December-August
Distribution: Common
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 083* (GVCH); Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 368* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 856* (GVCH).

Cyperus distans L. f., Suppl. Pl. 103 (1782); Hook. f., Fl. Brit. India 6: 607 (1894); Gamble, Fl. Pres. Madras 1640 (1931); Vajr., Fl. Palghat Dist. 544 (1990); *Cyperus nutans* sensu Clarke, Hook. f., Fl. Brit. India 6: 607 (1893).

Habit: Herb
Habitat: Along banks of streams
Morphology: Perennial herb; rhizome stoloniferous; culms 1-3 together; leaves few, basal, scabrid on margins; umbel compound, spike lax, bearing 8-20 spikelets, spikelets spreading, subterete; bracts 4-6; rachilla flexuous, winged; glumes conduplicate, diverging in fruits; stamens 3; anthers oblong; stigmas 3; nut oblong, trigonous.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: October-November
Distribution: Common
Altitude: 200-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 044* (GVCH); Kollengode range, Pulayampara, 19 August 2017, *Jabeena & Maya 349* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2224* (GVCH).

Cyperus dubius Rottb., Descr. Icon. Rar. Pl. 20. t. 4. f. 5. (1773); *Mariscus dubius* (Rottb.) Kukenth. ex C.E.C. Fisch., Gamble, Fl. Pres. Madras 1644 (1931); Vajr., Fl. Palghat Dist. 554. (1990).

Habit: Herb
Habitat: Deciduous forests
Morphology: Perennial herb; base of stem thickened by turgid sheaths; culms triquetrous, base bulbous; leaves basal, linear, head solitary, ovoid, dense; bracts 3-5; spikelets ovoid; glumes 4-9; stamens 3; anthers oblong; stigma 3; nuts oblong, trigonous.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: August-December
Distribution: Common
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 084* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2016* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2102* (GVCH); Plate 12: Fig. d.

Cyperus flavescens L., Sp. Pl. 1: 46 (1753); *Pycreus flavescens* (L.) Rchb.f., Hook. f., Fl. Brit. India 6: 589 (1893).
Habit: Herb
Habitat: Wetlands
Morphology: Herb; stem trigonous; leaves shorter than stem; inflorescence a globose cluster of spikes; bracts 2-3; spikes compressed, with up to 40 glumes; rachis quadrangular, not winged; glumes cymbiform; stamens 2; nut globose or ellipsoid, stipitate, compressed.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Least Concern
Phenology: October-November
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 485* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1750* (GVCH); Nelliyampathy range, Karappara, *Jabeena & Maya 2246* (GVCH); Plate 12: Fig. e.

Cyperus flavidus Retz., Observ. Bot. (Retzius) v. 13. (1788); *Pycreus capillaris* (Koenig ex Roxb.) Nees ex Clarke, Hook. f., Fl. Brit. India 6: 591 (1893); *Pycreus globosus* (All.) Rchb., Gamble, Fl. Pres. Madras 1627 (1931); *Pycreus flavidus* (Retz.) Koyama, Vajr., Fl. Palghat Dist. 556 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; stem tufted; leaves filiform, glabrous; umbel simple, rays 3-5, rays spreading; bracts 2-4; spikelets compressed, 2-50 flowered; rachilla straight, not winged; glumes 30-40 in a spikelets, 3-5-nerved; keel curved; nut biconvex, distinctly cuspidate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: April-May
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 222* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2018* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2111* (GVCH).

Cyperus haspan L., Sp. Pl. 1: 45 (1753); Hook. f., Fl. Brit. India 6: 600 (1893); Gamble, Fl. Pres. Madras 1640 (1931).

Habit: Herb
Habitat: Along banks of streams
Morphology: Perennial herb; rhizome slender, creeping; culms triquetrous; leaves 1-3; inflorescence umbellate, rays 4-10; bracts 2-3; spikelets compressed; glumes plicate; stamens 2-3; anther connectives bristly at top; stigmas 3; nut trigonous obovoid, smooth.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 11 January 2020, *Jabeena & Maya 3584* (GVCH); Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3708* (GVCH).

Cyperus iria L., Sp. Pl. 1: 45 (1753); Hook. f., Fl. Brit. India 6: 606 (1893); Gamble, Fl. Pres. Madras 1640 (1931); Vajr., Fl. Palghat Dist. 545 (1990); *Cyperus iria* L. var. *paniciformis* Clarke, Hook. f., Fl. Brit. India 6: 607 (1893).

Habit: Herb
Habitat: Degraded Moist Deciduous forests
Morphology: Annual herb; stem triquetrous; leaves few, basal; umbels decopound, rays many, branches spicate; bracts 3-5; spikelets linear-oblong, bearing 6-10 florets; glumes distant, plicate, keeled; stamens 2-3; stigmas 3; nut obovoid, trigonous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African, Holarctic and South American
IUCN category: Least Concern
Phenology: November-December
Distribution: Common
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 267* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 387* (GVCH).

Cyperus maderaspatanus Willd., Sp. Pl., ed. 4 [Willdenow] 1(1): 278 (1797); *Mariscus squarrosus* Clarke, Hook. f., Fl. Brit. India 6: 623 (1893); Gamble, Fl. Pres. Madras 1645 (1931); Vajr., Fl. Palghat Dist. 555 (1990).

Habit: Herb
Habitat: Degraded deciduous forests
Morphology: Annual herb; root fibrous; stem tufted, capillary; leaves filiform; umbel simple, rays 1-3; bracts 2-4; spikes sub-globose, with 6-20 lax spikelets; spikelets compressed, 6-26 flowered; glumes distichous; basal 2 glumes empty; stamen 1; stigma 3-fid; nut narrowly oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: November-December
Distribution: Common
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 377* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 882* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2941* (GVCH).

Cyperus malabaricus (C.B.Clarke) T.Cooke, Fl. Bombay 2: 856 (1908).

Habit: Herb
Habitat: Wetlands
Morphology: Annual herb; stem trigonous, glabrous; leaves linear; inflorescence simple; bracts 3; spikelets upto 20 flowered; rachilla wingless; glumes

distichous, keeled; stamens 2; anthers linear; stigmas shorter than the style; nut ovoid, slightly compressed.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: August-September
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, *Jabeena & Maya 2195* (GVCH); Plate 12: Fig. f.

Cyperus mindorensis (Steud.) Huygh, Phytotaxa 166(1): 39 (2014); *Kyllinga monocephala* Rottb., Hook. f., Fl. Brit. India 6: 588 (1893); Gamble, Fl. Pres. Madras 1624 (1931); *Kyllinga nemoralis* (J. R & G. Forst.) Dandy ex Hutch., Vajr., Fl. Palghat Dist. 552 (1990).

Habit: Herb
Habitat: Degraded forests and Grasslands
Morphology: Perennial herb; rhizome elongate, clothed with oblong brown scales; stem spaced, triquetrous; leaves; head solitary, ovoid; bracts 3-4, exceeding the inflorescence; spikelets ovate-elliptic; glumes distichous; upper glume ovate; lower 2 glumes empty; stamens 3; stigmas 2; nut suborbicular.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Common
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 011* (GVCH); Kalchady, 08 November 2017, *Jabeena & Maya 721* (GVCH); Keshavanpara, 21 November 2017, *Jabeena & Maya 776* (GVCH); Plate 12: Fig. g.

Cyperus neochinensis (Tang & F.T.Wang) Bauters, Phytotaxa 166(1): 21 (2014); *Scirpus squarrosus* L., Hook. f., Fl. Brit. India 6: 663 (1893); Gamble, Fl. Pres. Madras 1666 (1931).

Habit: Herb
Habitat: Marshy areas in Grasslands
Morphology: Annual herb; stem and leaves filiform; inflorescence a pseudolateral head with 1-3 spikelets; bracts 0-2, filiform; spikelets 2-7, sessile, squarrose, obtuse; bristles zero; glumes obovate, 3-5-nerved, awned; stamens 1 or 2; style minute, 3-fid; stigmas recurved; nut obovate, trigonous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-December
Distribution: Occasional
Altitude: 1000-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 288* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 640* (GVCH).

Cyperus polystachyos Rottb., Descr. Pl. Rar. 21 (1772); *Pycreus polystachyos* (Rottb.) P. Beauv., var. *polystachyos* Hook. f., Fl. Brit. India 6: 592. (1893); Vajr., Fl. Palghat Dist. 557 (1990); *Pycreus odoratus* Urban, Gamble, Fl. Pres. Madras 1627 (1931).

Habit: Herb
Habitat: Marshy areas in Grasslands
Morphology: Annual herb; stem with leaves only at the base; leaves linear; umbel simple, rays 2-7; bracts 3-5; spikelets linear, compressed, 10-50 flowered; rachilla not winged; glumes ovate, keeled; stamens 2; stigmas 2; nut oblong, apex subtruncate, minutely apiculate.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern

Phenology: Throughout the year
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 011* (GVCH); Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 203* (GVCH).

Cyperus pumilus L., Cent. Pl. II. 6 (1756); *Pycreus pumilus* (L.) Nees, Hook. f., Fl. Brit. India 6: 591 (1893); Gamble, Fl. Pres. Madras 1627 (1931); Vajr., Fl. Palghat Dist. 557. (1990); *Pycreus nitens* (Retz.) Nees, Hook. f., Fl. Brit. India 6: 591 (1893).

Habit: Herb
Habitat: Marshy areas
Morphology: Annual herb; stem slender, triquetrous; leaves filiform; heads of sessile spikelets umbelled with 2-6 rays; bracts 3-5; spikelets compressed; glumes 8-25 pairs, basal ones empty; stamens 2; stigmas 2, longer than the style; nut ellipsoid, apiculate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Occasional
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 121* (GVCH); Manpara, 29 July 2017, *Jabeena & Maya 212* (GVCH).

Cyperus puncticulatus Vahl, Enum. Pl. [Vahl] ii. 348 (1805); *Pycreus puncticulatus (Vahl) Nees*, Hook. f., Fl. Brit. India 6: 593 (1893); Gamble, Fl. Pres. Madras 1628 (1931).

Habit: Herb
Habitat: Marshy areas in Grasslands
Morphology: Annual herbs; stem solitary, triquetrous; leaves linear, flaccid; umbel compound, primary rays 4-10, rays closely embraced by a 2-lobed sheath; bracts 3-5; bracteoles few, filiform; spikelets racemed; glumes distichous, whitish-hyaline, basal ones empty; stamens 2; nut obovoid, biconvex, truncate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: November-January
Distribution: Occasional
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3211* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2008* (GVCH).

Cyperus richardii Steud., Syn. Pl. Glumac. 2(7): 8 (1854); *Kyllinga triceps* Rottb., Hook. f., Fl. Brit. India 6: 587 (1893); Gamble, Fl. Pres. Madras 1623 (1931); Vajr., Fl. Palghat Dist. 553 (1990).

Habit: Herb
Habitat: Marshy areas
Morphology: Perennial herb; rhizome short; stem triquetrous, thickened at the base; leaves linear; bracts 3-4, linear; head 1-3 together; spikelets oblong, 1-flowered; glumes 4, basal 2 glumes empty; stamens 2; stigmas 2; nuts oblong, apiculate.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: August-December
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 007* (GVCH); Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 362* (GVCH); Mattumala, 15 May 2019 *Jabeena & Maya 1949* (GVCH); Plate 12: Fig. h.

Cyperus substramineus Kük., Pflanzenr. (Engler) Cyperac.-Scirp.-Cyp. 10 (1935), in obs; *Pycreus stramineus* Clarke, Hook. f., Fl. Brit. India 6: 589 (1893); Gamble, Fl. Pres. Madras 1627 (1931); Vajr., Fl. Palghat Dist. 557 (1990).
Habit: Herb
Habitat: Marshy places
Morphology: Annual herb; stem tufted; leaves filiform; bracts 1-2, subtending the spikelets; spikelets compressed; glumes 7-40 pairs, distichous, ovate, keeled; stamens 2; stigmas 2; nuts elliptic, epidermal cells longitudinally oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mnapara, 29 July 2017, *Jabeena & Maya 227* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3846* (GVCH).

Cyperus tenuiculmis Boeckeler, Linnaea 36(3): 286 (1870); Vajr., Fl. Palghat Dist. 548 (1990); *Cyperus zollingeri* sensu Clarke, Hook. f., Fl. Brit. India 6: 612 (1893); Gamble, Fl. Pres. Madras 1641 (1931)

Habit: Herb
Habitat: Swampy areas
Morphology: Perennial herb; rhizome not stoloniferous; stem solitary, trigonous, ribbed; leaves as long as stem; umbel compound; involucral rays 3; primary rays 3-5; spikelets 2-10, spicate or racemose, at right angles to rachis, 10-15 flowered; rachilla winged; glumes imbricate, ovate, keel 3-nerved; stamens 3; nut ellipsoid, triquetrous.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: September-October
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3857* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4506* (GVCH).

Cyperus tenuispica Steud., Syn. Pl. Glumac. 2(7): 11 (1854); Gamble, Fl. Pres. Madras 1640 (1931); Vajr., Fl. Palghat Dist. 548 (1990); *Cyperus flavidus* Clarke, Hook. f., Fl. Brit. India 6: 600 (1893).

Habit: Herb
Habitat: Along streams and marshy areas
Morphology: Annual herb; rhizome absent; stem triquetrous; leaves basal, linear; umbel compound; bracts 1-3, the longest upto 12 cm long; primary rays 5-12; spikelets digitate, linear-oblong; glumes mucronate; stamens 1-2; stigmas 3; nut obovate, trigonous.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 310* (GVCH); Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4466* (GVCH); Plate 13: Fig. a.

Cyperus zollingeri Steud., Syn. Pl. Glumac. 2(7): 17 (1854).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Annual herb; stem triquetrous; leaves linear; umbel compound; bracts 3-5, unequal; rays 4-6; spikelets oblong; rachis winged; glumes ovate, obtuse, margin hyaline; nut obovate, smooth.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, African and Australian

IUCN category: Least Concern

Phenology: August-September

Distribution: Common

Altitude: 900-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 891* (GVCH); Seetharkundu, 11 June 2018, *Jabeena & Maya 1564* (GVCH).

Eleocharis R.Br., Prodr. Fl. Nov. Holland. 224 (1810)

Eleocharis dulcis (Burm.f.) Trin. ex Hensch., Vita Rumphii 186 (1833); *Eleocharis plantaginea* (Retz.) Roem. & Schult., Hook. f., Fl. Brit. India 6: 620 (1893); Gamble, Fl. Pres. Madras 1647 (1931).

Habit: Herb
Habitat: Marshy areas
Morphology: Perennial herb; rhizome stoloniferous; stem robust, terete, transversely septate; leaves reduced to bladeless sheaths; inflorescence a solitary spikelet; spikelet cylindric, terete; rachilla wingless; glumes spiral, ovate; bristles 7, as long as nut; stamens 3; anthers linear; stigma 2-3; nut obovate.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: September-October
Distribution: Occasional
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3108* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3521* (GVCH).

Fimbristylis Vahl, Enum. Pl. [Vahl] 2: 285 (1805)

1.Glumes distichous…….....***F. narayanii***
1.Glumes spiral…….……..(2)
2.Style bifid……(3)
2.Style trifid……(4)
3.Spikelets clustered, all sessile……...***F. argentea***
3.Spikelets solitary, majority peduncled……..…..…***F. dichotoma***
4.Rhizome absent……(5)
4.Rhizome present..…...…….(6)
5.Culms 5-angled; leaves upto 25 cm long; bracts 3-6…….....…..……..***F. sp.nov.***
5.Culms compressed; leaves upto 6 cm long; bracts 2……....***F. microcarya***
6.Leaves bladeless...…..…....***F. salbundia***
6.Leaf blade linear-lanceolate or filiform……(7)
7.Culms 5-angular; leaves linear-lanceolate; nutlets sub-trigonous……..***F. tuckeri***
7.Culms semi-terete or 3-sided; leaves filiform; nutlets trigonous…….***F.cinnamometorum***

Fimbristylis argentea Vahl, Enum. Pl. [Vahl] ii. 294. (1805); Hook. f., Fl. Brit. India 6: 640 (1893); Gamble, Fl. Pres. Madras 1659 (1931).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; stem slender, trigonous, glabrous; leaves basal, linear, glabrous; ligule absent; inflorescence a terminal head of spikelets; bracts 3-5; spikelets sessile; rachilla winged; glumes spiral, ovate,3-nerved; stamen 1; anthers oblong; style thickened at base; stigma 2; nut obovoid, shortly stalked.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: November-December
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Minnampara, 09 December 2019, *Jabeena & Maya 3212* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1582* (GVCH).

Fimbristylis cinnamometorum (Vahl) Kunth, Enum. Pl. [Kunth] 2: 229 (1837); *Fimbristylis cyperoides* R. Br., Hook. f., Fl. Brit. India 6: 650 (1893); *Fimbristylis cyperoides* R. Br. var. *cinnamometorum* (Vahl) Clarke, Hook. f., Fl. Brit. India 6: 650 (1893); Gamble, Fl. Pres. Madras 1659 (1931).

Habit: Herb
Habitat: Grassy slopes
Morphology: Perennial herb; rhizome short, woody; stem slender, obtusely angled; leaves many, filiform; sheath membranous; umbel decompound; bracts 2-4, filiform; primary rays 3-10; spikelets solitary, 3-6 x 1-1.5 mm, oblong to lanceolate, acute, sessile or pedicellate, reddish-brown; glumes distichous, lanceolate, acuminate, basal ones empty; stamens 3; anthers linear; style thickened at base; stigmas 3; nuts obovoid, minutely stalked.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-October
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 577* (GVCH).

Fimbristylis dichotoma (L.) Vahl, Enum. Pl. [Vahl] 2: 287 (1805); *Fimbristylis dichotoma* (L.) Vahl, ssp. *dichotoma* Gamble, Fl. Pres. Madras 1658 (1931); Vajr., Fl. Palghat Dist. 550 (1990); *Fimbristylis diphylla* (Retz.) Vahl, Hook. f., Fl. Brit. India 6: 636 (1823).

Habit: Herb
Habitat: Degraded deciduous forests
Morphology: Perennial herb; stem slender, caespitose; leaves filiform; umbels decompound; bracts 3-7, filiform; primary rays 3-5; secondary rays 3; spikelet solitary, ovoid; rachilla winged; glumes elliptic, membranous; stamen 1; anther linear; style 2-fid; stigmas ciliate; nut obovoid, smooth.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: March-December
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 273* (GVCH); Pothumala, 15 October 2017, *abeena & Maya 620* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4273* (GVCH).

Fimbristylis microcarya F.Muell., Fragm. (Mueller) 1(8): 200 (1859); *Fimbristylis complanata* var. *microcarya* (Muller) Clarke, Hook. f., Fl. Brit. India 6: 646 (1893).

Habit: Herb
Habitat: Sides of rivers and grassy areas
Morphology: Annual herb; stem slender, glabrous; leaves basal; ligule a dense fringe of short hairs; inflorescence compound; bracts 2, suberect, shorter than the inflorescence; spikelets ovoid; rachilla winged; glumes spiral, ovate, 3-nerved; stamens 2-3; anther oblong; style triquetrous, thickened at base; stigmas 3; nut obovoid, trigonous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, holarctic and Australian
IUCN category: Least Concern
Phenology: July-September
Distribution: Common
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Manpara, 29 July 2017, *Jabeena & Maya 195* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 378* (GVCH); Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4484* (GVCH); Plate 13: Fig. b.

Fimbristylis narayanii C. E. C. Fisch., Bull. Misc. Inform. Kew 1931(1): 46 (1931); Gamble, Fl. Pres. Madras 1660 (1931); Vajr., Fl. Palghat Dist. 551 (1990).

Habit: Herb
Habitat: Along river banks
Morphology: Annual herb; rhizome absent; stem slender, tufted, quadrangular; leaves basal, capillary; inflorescence simple bearing 2-5 spikelets; bracts one to each ray; spikelets solitary; glumes distichous, basal glumes empty; stamens 2; stigmas 3; nuts obovoid, trigonous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Occasional
Altitude: 300-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 1200m, 01 February 2020, *Jabeena & Maya 3980* (GVCH); Mattumala, 1070m, 02 November 2020, *Jabeena & Maya 4271* (GVCH); Plate 13: Fig. c.

Fimbristylis salbundia Kunth, Enum. Pl. [Kunth] 2: 230 (1837); *Fimbristylis pentaptera* (Nees) Kunth, Hook. f., Fl. Brit. India 6:645 (1893); Gamble, Fl. Pres. Madras 1659 (1931).
Habit: Herb
Habitat: Marshy areas in grasslands
Morphology: Perennial herb; rhizome short, creeping; stem thickened at base, 5-angled, grooved, hairy; leaves bladeless; umbels compound, rays 3-10; bracts and bracteoles hoary-pubescent; spikelets elliptic, terete; flowers upto 60; glumes membranous; stamens 3; style 3-fid; nut obovoid, trigonous.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-November
Distribution: Rare
Altitude: 1200-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Govindamala, 20 November 2020, *Jabeena & Maya 4477* (GVCH).

Fimbristylis sp. nov. Jabeena & Maya

Habit: Herb
Habitat: Grasslands
Morphology: Annual tufted herbs with fibrous roots; rhizomes absent; culms erect, glabrous, 5-angled, leaved at base; leaves about half the length of culm; blades glabrous except scaberulous margins towards apex; ligule none; corymbs simple to compound, loosely bearing 5–15 spikelets; involucral bracts 3–6, setaceous, shorter than the corymbs, scaberulous, acuminate at apex; rays 2–4 in number, 3–5-angled; spikelets solitary, ovoid to ellipsoid, acute at apex, terete, contorted, pale yellowish-brown, 8–16-flowered; rachilla broadly winged; glumes spiral, broadly ovate, keeled on the back, mucronate at apex, 1–nerved, sides pale yellow to pale brown; stamens 3; anthers oblong, yellow; ovary sub-globose; style ciliate, bulbously thickened at the base; stigmas 3, shorter than the style, ciliate; nut sub-globosly obovoid, obtusely trigonous, verruculose, pale brown; epidermal cells transversely oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: June-November
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4474* (GVCH).

Fimbristylis tuckeri Viji, Pandur. & Deepu, Kew Bull. 71(3)-38: 1 (2016).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; rhizome short creeping; stem angled; leaves basal, as long as culm; sheath glabrous; ligule absent; umbel decompound; primary rays bearing 35–40 spikelets; secondary rays bearing 5–15 spikelets; spikelets ovate; glumes sharply keeled; stamens 3; anthers linear; style trigonous; stigmas 3; nut obovate, shortly stipitate.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Rare
Altitude: 1200-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1059* (GVCH).

Fuirena Rottb., Descr. Icon. Rar. Pl. 70. t. 19 (1773)

Fuirena ciliaris (L.) Roxb., Fl. Ind. (Carey & Wallich ed.) 1: 184 (1820); *Fuirena glomerata* Lam., Hook. f., Fl. Brit. India 6: 666 (1893); Gamble, Fl. Pres. Madras 1669 (1931).

Habit: Herb
Habitat: Marshy areas in Grasslands
Morphology: Annual herb; rhizome absent; stem slender, pubescent; leaves linear, pubescent; ligules hairy; inflorescence a cluster of 4-10 ovoid spikelets; bracts leafy; spikelets squarrose, pubescent; glumes puberulous, the awn and the midrib setose; bristles 6, the 3 outer short, setiform, hispidulous, 3 inner quadrate, strongly 3-ribbed; stamens 3; stigmas 3, papillose; nuts obovoid, shortly stalked.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: January-March
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2765* (GVCH).

Schoenoplectiella Lye, Lidia 6(1): 20 (2003)

Schoenoplectiella mucronata (L.) J.Jung & H.K.Choi, J. Pl. Biol. 53(3): 230 (2010); *Scirpus mucronatus* L., Hook. f., Fl. Brit. India 6: 657 (1893); Gamble, Fl. Pres. Madras 1666 (1931); *Schoenoplectus mucronatus* (L.) Palla, Vajr., Fl. Palghat Dist. 558 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; rhizome short; stem robust, triquetrous; spikelets oblong, 10-25 in a cluster below the acute apex of the stem; glumes ovate, apiculate; bristles 5-8, hispid; style 3-fid, puberulous; nut obovate, apiculate, subtrigonous.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: October-December
Distribution: Common
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pulayampara, 19 August 2017, *Jabeena & Maya 353* (GVCH); Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 898* (GVCH); Nelliyampathy range, Koonampalam, 14 December 2019, *Jabeena & Maya 3474* (GVCH); Plate 13: Fig. d.

Scleria P.J.Bergius, Kongl. Vetensk. Acad. Handl. 26: 142 (-144) (1765)

1.Rhizome absent…...……....***S. parvula***
1.Rhizome present…...……...(2)
2.Disc absent..……..***S. lithosperma***
2.Disc 3-lobed……...***S. oblata***

Scleria lithosperma (L.) Sw., Prodr. [O. P. Swartz] 18 (1788); Hook. f., Fl. Brit. India 6: 685 (1894); Gamble, Fl. Pres. Madras 1677 (1934); Vajr., Fl. Palghat Dist. 558 (1990).

Habit: Herb
Habitat: Degraded forest areas
Morphology: Perennial herb; rhizome woody, short; stem trigonous, smooth; leaves as long as the stem; sheath not winged, hairy at the mouth; spikelets in small clusters on a filiform rachis; primary bracts leafy; secondary bracts setaceous; bracts and bracteoles capillary; glumes ovate; stamen 1; nut 2-3 x 2 mm, ellipsoid, obtusely trigonous; disk reduced to a narrow ring.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Occasional
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 July 2017, *Jabeena & Maya 333* (GVCH); Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 880* (GVCH).

Scleria oblata S. T. Blake ex J. Kern, Reinwardtia 6: 73; S. T. Blake in Blumea, xi. 169, 219 (1961); *Scleria levis* sensu Thw., Hook. f., Fl. Brit. India 6: 694 (1893); Gamble, Fl. Pres. Madras 1678 (1931).

Habit: Herb
Habitat: Marshy areas in Grasslands
Morphology: Perennial herb; rhizome short, creeping; stem stout, trigonous; leaves linear; sheath trigonous, mouth truncate with a very short arched ligule; panicles axillary as well as terminal, shortly exerted from sheath; primary bracts leafy; secondary bracts setaceous; spikelets unisexual; male spikelets oblong; female spikelets ovoid; glumes 3-4, 1-nerved; stamens 3; stigmas 3; nuts oblately spherical, smooth, polished; disk 3-lobed.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: October-December
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3956* (GVCH).

Scleria parvula Steud., Syn. Pl. Glumac. 2(8-9): 174 (1855); *Scleria tessellata* Boeck., Hook. f., Fl. Brit. India 6: 686 (1893); Gamble, Fl. Pres. Madras 1677 (1931).

Habit: Herb
Habitat: Deciduous forests
Morphology: Annual herb; rhizome short; stem slender, tufted; leaves hairy; panicle sparingly branched, glabrous, 3-winged; bracts leafy; female spikelets ovate; male spikelets oblong; glumes 3, shortly aristate; stamens 2, free; nut tessellate in vertical lines; disc 3-lobed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: May-October
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3012* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3155* (GVCH).

POACEAE

1.Woody, arborescent or shrubby plants……...(2)
1.Annual or perennial herb……..…..(5)
2.Lower nodes with branches…….....(3)
2.Lower nodes without branches…...….(4)
3.Spikelets in globose congested heads…….……***Dendrocalamus***
3.Spikelets not in globose head…….....***Bambusa***
4.Stamens six…...…..…***Pseudoxytanthera***
4.Stamens more than sixteen….***Ochlandra***
5.Spikelets unisexual……...***Coix***
5.Spikelets bisexual……(6)
6.Stamens six……***Oryza***
6.Stamens 1-3…….(7)
7.Spikelets strictly 2-flowered……(8)
7.Spikelets 1 to many flowered…...….(46)
8.Spikelets awned……...……(9)
8.Spikelets awnless……...……....(34)
9.Inflorescence a panicle……...…...(10)
9.Inflorescence digitate or sub-digitate raceme……..……(18)
10.Spikelets solitary……..…….***Melinis***
10.Spikelets 2-many……...……..(11)
11.Spikelets in groups of three…….....(12)
11.Spikelets paired……(14)
12.Inflorescence covered with silky hairs……..……..***Spodiopogon***
12.Inflorescence not covered with silky hairs……..……(13)
13.Panicles interrupted by spathe……...***Apluda***
13.Panicles not interrupted by spathe…….***Chrysopogon***
14.Inflorescence covered with silky hairs……...……...***Saccharum***
14.Inflorescence not covered with silky hairs……..(15)
15.Panicles of paired racemes, one sessile, one pedicelled……...***Cymbopogon***
15.Panicles not as above……...(16)
16.Inflorescence interrupted by spathe……..……***Themeda***
16.Inflorescence not interrupted by spathe……(17)
17.Spikelets one sessile and the other pedicelled…….....***Capillepidium***
17.Spikelets both pedicelled...***Echinochloa***
18.Spikelets solitary…...……...(19)
18.Spikelets paired or fascicled…...….(20)
19.Stamens two……...……...***Dimeria***
19.Stamens three…...…***Pseudechinolaena***
20.Raceme solitary...……(21)
20.Raceme 2 to many…...……....(26)
21.Upper lemma of sessile spikelets awnless…….……***Rottboellia***
21.Upper lemma of sessile spikelets awned or aristate……..……(22)
22.Lower spikelets of racemes awnless…….……..***Heteropogon***
22.Lower spikelets of racemes awned……(23)
23.Upper glume awned...…***Pogonatherum***
23.Upper glume awnless……...……(24)
24.Upper lemma awnless…...***Glyphochloa***
24.Upper lemma awned……...…….(25)
25.Rachis, internodes & pedicels with a translucent groove…….……***Euclasta***
25.Rachis, internodes & pedicels without a translucent groove…….…***Dichanthium***
26.Racemes 2 on each peduncle……...(27)
26.Racemes more than 2 on each peduncle……....(29)
27.Lower glumes of sessile spikelets truncate at apex……....***Apocopis***
27.Lower glume of sessile spikelets acute or acuminate at apex……..…..……..(28)
28.Flowers ternate……....……...***Polytrias***
28.Flowers not ternate…….....***Ischaemum***
29.Spikelets dissimilar……..(30)
29.Spikelets similar……..…(31)
30.Lower glumes of sessile spikelets pitted……...……...***Bothriochloa***
30.Lower glumes of sessile spikelets not pitted…….…***Arthraxon***
31.Both sessile and pedicelled spikelets present…….……***Microstegium***
31.All spikelets pedicelled……(32)
32.Upper lemma epaleate……....***Pseudopogonatherum***
32.Upper lemma paleate…….....(33)
33.Racemes more than 8 cm long; arranged digitally.....***Alloteropsis***
33.Raceme to 5 cm long; arranged on a central axis.....***Oplismenus***
34.Lower glume absent or reduced to a minute scale……..(35)
34.Lower glume well developed……..(38)

35.Spikelets binate……(36)
35.Spikelets solitary…….....(37)
36.Upper glume 5-nerved……...***Eriochloa***
36.Upper glume faintly 3-nerved……...***Digitaria***
37.Lower glume absent……...***Axonopus***
37.Lower glume a minute scale……***Paspalum***
38.Spikelets subtended by bristles...***Setaria***
38.Spikelets not subtended by bristles……...(39)
39.Inflorescence racemose……(40)
39.Inflorescence paniculate…...……..(41)
40.Lower lemma epaleate….***Hackelochloa***
40.Lower lemma paleate……..***Urochloa***
41.Panicle contracted, cylindrical…….(42)
41.Panicle lax, not cylindrical……..(43)
42.Spikelets subtended by an involucre……..***Cenchrus***
42.Spikelets not subtended by an involucre…..……..***Sacciolepis***
43.Spikelets gibbous and laterally compressed…...…….***Cyrtococcum***
43.Spikelets not gibbous and laterally compressed…….……..(44)
44.Ligule a glabrous membrane……....***Ottochloa***
44.Ligule a fringed membrane or a fringe of hairs……..(45)
45.Lemma coarsely transversely rugose…….***Megathyrsus***
45.Lemma smooth or finely transversely rugose…….……..***Panicum***
46.Leaves tessellately nerved...***Centotheca***
46.Leaves not tessellately nerved…….(47)
47.Spikelets awned…...……....(48)
47.Spikelets awnless……(55)
48.Spikelets with one floret……..(49)
48.Spikelets with 2 or more florets…...(51)
49.Awns of the spikelets trifid…...***Aristida***
49.Awns of the spikelets simple……...(50)
50.Inflorescence a panicle.….....***Garnotia***
50.Inflorescence a solitary raceme……..***Perotis***
51.Spikelets with 3-7 fertile florets……...***Tripogon***
51.Spikelets with one fertile floret…...(52)
52.Inflorescence of 3-15 digitate racemes, upper lemma empty or reduced…….....(53)
52.Inflorescence a panicle or of racemes arranged on a central axis; upper lemma developed…….....(54)
53.Upper lemma empty or reduced……....***Chloris***
53.Upper lemma developed……...***Enteropogon***
54.Leaf base amplexicaule; panicle much contracted, spiciform..……...***Jansenella***
54.Leaf base not amplexicaule; panicles lax or slightly contracted…….***Arundinella***
55.Inflorescence a raceme or spike…...(56)
55.Inflorescence a panicle…...…….(59)
56.Spikelets with one floret…..…***Cynodon***
56.Spikelets with 2 or more florets…...(57)
57.Upper glumes aristate...***Dactyloctenium***
57.Upper glumes not aristate……..….(58)
58.Inflorescence a digitate or sub-digitate spike……...……...***Eleusine***
58.Inflorescence a single raceme……....***Eragrostiella***
59.Spikelets with one floret…….....***Cynodon***
59.Spikelets with 2 or more florets…...(60)
60.Glumes equal to or longer than the spikelets…..……....***Isachne***
60.Glumes shorter than the spikelets…(61)
61.Palea not keeled……...…..***Zenkeria***
61.Palea 2-keeled……....(62)
62.Lower glumes 3 nerved…….....***Arundo***
62.Lower glumes 1-nerved……...(63)
63.Upper glumes 1-nerved…....***Leptochloa***
63.Upper glumes 3-5-nerved…..***Eragrostis***

Alloteropsis J.Presl, Reliq. Haenk. 1(4-5): 343, t. 47 . Gen. dub. (1830)

Alloteropsis cimicina Stapf, Fl. Trop. Afr. [Oliver et al.] 9(3): 487 (1919); Gamble, Fl. Pres. Madras 1766 (1934); *Axonopus cimicinus* (L.) P. Beauv., Hook. f., Fl. Brit. India 7: 64 (1896).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Annual herb; culms decumbent; leaves lanceolate, margins ciliate; sheath fimbriate; racemes compound, spiciform, digitate or whorled; spikelets 2-flowered, articulated on a pedicel; glumes unequal; lower glume 3-nerved; upper glume 5-nerved; lower

florets male; upper florets bisexual. lemma unequal; lodicules 2; stamens 3; ovary oblong; styles 2, free.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Common
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 July 2017, *Jabeena & Maya 332* (GVCH); Nelliyampathy range, Kalchady, 08 November 2017, *Jabeena & Maya 724* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1667* (GVCH).

Apluda L., Sp. Pl. 1: 82 (1753)

Apluda mutica L., Sp. Pl. 1: 82 (1753); Gamble, Fl. Pres. Madras 1750 (1934); *Apluda varia* Hack., Hook. f., Fl. Brit. India 7: 150 (1896); *Apluda varia* Hack. ssp. *aristata* (L.) Hack., Hook. f., Fl. Brit. India 7: 151 (1896); Vajr., Fl. Palghat Dist. 563 (1990); *Apluda aristata* L., Gamble, Fl. Pres. Madras 1750 (1934).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Perennial herbs; nodes glabrous; leaves linear-lanceolate; ligule membranous; panicles compound, leafy; spikelets in three at the tips of branchlets, 1 sessile, 2 pedicelled; bract boat-shaped; sessile spikelets awned; glumes equal; lower glume convolute; upper glume keeled; lemma hyaline, paleate; palea 2-keeled, 2-nerved; lodicules 2; stamens 3; ovary oblong; stigma feathery.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1749* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1869* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3011* (GVCH).

Apocopis Nees, Proc. Linn. Soc. London 1(11): 93 (1841)

Upper glume bifid at apex; anthers yellow……...…….***A. mangalorensis***
Upper glume acute at apex; anthers reddish……..…...…….***A. cochinchinensis***

Apocopis cochinchinensis A.Camus, Bull. Mus. Natl. Hist. Nat. 1919, xxv. 286 (1919).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Annual herb; culms tufted; nodes glabrous; leaves lanceolate, margin ciliate; ligule membranous; racemes solitary or paired; basal spikelets very shortly awned and upper ones awned; shortly awned spikelets with 2 florets; lower glume 5-nerved, ciliate; upper glume 3-nerved; palea with inflexed margins; awned spikelets with 2 florets; lower glume 7-nerved; upper glume 3-nerved, 2-keeled; palea hyaline; stamens 2; ovary oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Occasional
Altitude: 500-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3303* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1683* (GVCH).

Apocopis mangalorensis (Hochst. *ex* Steud.) Henrard, Blumea iv. 523 (1941).

Habit: Herb
Habitat: Moist Deciduous forests and Grasslands
Morphology: Annual herb; culms decumbent; leaves lanceolate; sheath covered with tubercled hairs; ligules membranous; racemes paired; spikelets awned; lower glume ciliolate towards upper half; upper glume bifid and ciliolate at apex; lower floret sterile; upper floret bisexual; lower lemma and palea hyaline; upper lemma awned; stamens 2.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Common
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3129* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3312* (GVCH); Koonampalam, 14 December 2019, *Jabeena & Maya 3475* (GVCH).

Aristida L., Sp. Pl. 1: 82 (1753)

Aristida setacea Retz., Observ. Bot. (Retzius) iv. 22. (1786); Hook. f., Fl. Brit. India 7: 225 (1896); Gamble, Fl. Pres. Madras 1809 (1934).

Habit: Herb
Habitat: Moist Deciduous forests and Grasslands
Morphology: Perennial herb. culms erect; nodes glabrous; leaves linear-lanceolate; ligules fimbriate; panicles contracted, branches erect, straight, main axis terete, axils glabrous; spikelets all alike; lower and upper glumes aristate, 1-nerved; lemma convolute, 3-awned; palea hyaline; lodicules 2; stamens 3; ovary linear.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 300-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3025* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3546* (GVCH).

Arthraxon P. Beauv., Ess. Agrostogr. 111 (1812)

1.Lower glume of sessile spikelet 2-cuspidate……...……..…….***A. lancifolius***
1.Lower glume of sessile spikelet entire or minutely 2-toothed……..……..……..(2)
2.Palea well developed..……..***A. castratus***
2.Palea absent…….……(3)
3.Upper glume ciliate……...…..***A. nudus***
3.Upper glume eciliate...…..….***A. hispidus***

Arthraxon castratus Nayaran. ex Bor, Fl. Assam v. 376 (1940); *Arthraxon rudis* (Steud.) Hochst., Hook. f., Fl. Brit. India 7: 144 (1896); Gamble, Fl. Pres. Madras 1728 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; nodes glabrous; leaves linear-lanceolate, margins ciliate; sheaths compressed; racemes branched, joints pilose; glumes unequal; lower glume 7-nerved, 2-keeled, not keeled, margins not inflexed; upper glume 3-nerved, 1-keeled; lemma ciliate; palea notched at apex.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 164* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 549* (GVCH).

Arthraxon hispidus (Thunb.) Makino, Bot. Mag. (Tokyo) 26: 214 (1912); *Arthraxon ciliaris* P. Beauv., Hook. f., Fl. Brit. India 7: 146 (1896); *Arthraxon quartinianus* (A. Rich.) Nash, Gamble, Fl. Pres. Madras 1728 (1934).

Habit: Herb
Habitat: Moist Deciduous forests and Grasslands
Morphology: Annual herb; culms decumbent; nodes pubescent; leaf ovate-lanceolate; ligule fimbriate; sheath keeled; racemes sub-digitate; spikelets paired; sessile spikelets laterally compressed, awned; lower glume 5-7 nerved; upper glume 3-nerved; florets 2; lower lemma glabrous; upper lemma hyaline, awned; column twisted; lower and upper palea absent; lodicules 2; stamens 2; ovary oblong-elliptic; stigma plumose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-March
Distribution: Common
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 229* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 941* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3832* (GVCH).

Arthraxon lancifolius Hochst., Flora 39: 188 (1856); Gamble, Fl. Pres. Madras 1729 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; culms straggling; nodes hairy; leaves puberulous; ligule a row of hairs; racemes 2; lower glume of sessile spikelet lanceolate, bifid; upper glume aristate; lemma awned.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 04 November 2020, *Jabeena & Maya 4367* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4093* (GVCH).

Arthraxon nudus Hochst., Flora 39: 188 (1856); Vajr., Fl. Palghat Dist. 564 (1990); *Arthraxon ciliaris* sensu Hook. f., Fl. Brit. India 7: 145 (1896); *Arthraxon hispidus* C.E.C. Fisch., Gamble, Fl. Pres. Madras 1728 (1934).

Habit: Herb
Habitat: Moist Deciduous and Evergreen forests
Morphology: Annual herb; culms geniculate; nodes hairy; leaves lanceolate, margin ciliate; sheath hairy; ligule membranous; racemes 3-6, glabrous; pedicel linear, flat; lower glume 7-9 nerved, nerves hispid; upper glume hispid at apex, margins ciliate; lodicules 2; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 888* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2916* (GVCH).

Arundinella Raddi, Agrostogr. Bras. [Raddi] 37, t. 1 (1823)

1.Spikelets not awned…..…..***A. leptochloa***
1.Spikelets awned…...…..……..(2)
2.Upper lemma with seta on either sides of the awn…….……...(3)
2.Upper lemma without seta……..……(4)
3.Plant annual; ligule a fimbriate membrane……...…..***A. setosa***

3.Plant perennial; ligule a row of hairs…...……..***A. mesophylla***
4.Leaves glabrous; panicle congested……..…...***A. ciliata***
4.Leaves densely hairy; panicle effuse……..……....***A. pumila***

Arundinella ciliata Nees ex Miq., in Verh. Nederl. Inst. III. iv. (1851) 30; Vajr., Fl. Palghat Dist. 564 (1990); *Arundinella agrostoides* sensu Hook. f., Fl. Brit. India 7: 71 (1896); *Arundinella holcoides* sensu Gamble, Fl. Pres. Madras 1801 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; nodes hairy; leaves ovate-lanceolate, glabrous; sheath covered with bulbous based hairs; ligule fimbriate; panicle compact, ovoid; spikelets crowded; glumes equal, 5-nerved, nerves scabrid; upper lemma scaberulous, 3-nerved, awned; lower lemma hyaline; lodicules 2; stamens 3; styles 2.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Common
Altitude: 800-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 166* (GVCH); Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 646* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3949* (GVCH); Plate 13: Fig. e.

Arundinella leptochloa Hook.f., Fl. Brit. India [J. D. Hooker] 7(21): 76 (1896); Gamble, Fl. Pres. Madras 1802 (1934); Vajr., Fl. Palghat Dist. 565 (1990); *Arundinella lawsonii* Hook.f., Fl. Brit. India 7:76 (1896); Gamble, Fl. Pres. Madras 1801 (1934).

Habit: Herb
Habitat: Grasslands and Degraded forests
Morphology: Perennial herb; rootstock hairy; nodes glabrous; leaves linear, pilose; sheaths covered with tubercle-based hairy; ligule membranous; spikelets elliptic-lanceolate; lower glume 3-nerved, nerves scabrid; upper glume 5-nerved; lower florets male; upper florets bisexual; lower lemma 5-nerved; palea hyaline; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Common
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 650* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 974* (GVCH); Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1347* (GVCH).

Arundinella mesophylla Nees ex Steud., Syn. Pl. Glumac. 1(2): 115 (1854); Hook. f., Fl. Brit. India 7: 69 (1896); Gamble, Fl. Pres. Madras 1801 (1934); Vajr., Fl. Palghat Dist. 565 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; nodes glabrous; leaves ovate-lanceolate; sheath ciliate on margins; panicle branched, covered with bulbous based hairs; spikelets mostly sessile, bifariously imbricate in spikes; glumes similar, bristly; lower glume 3-nerved; upper glume 5-nerved; upper lemma awned, hairy at the base, bearing two apical setae.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to South India
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Common
Altitude: 800-1400
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena &*

Maya 663 (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 983* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3858* (GVCH).

Arundinella pumila Steud., Syn. Pl. Glumac. 1(2): 114 (1854); Gamble, Fl. Pres. Madras 1801 (1934); Vajr., Fl. Palghat Dist. 565 (1990); *Arundinella tenella* Nees ex Steud., Hook. f., Fl. Brit. India 7: 71 (1896).

Habit: Herb
Habitat: Grasslands and open areas
Morphology: Annual herb; culms erect; nodes hairy; leaves linear, densely hairy; sheath covered with bulbous based hairs; ligule fimbriate; panicle branched, hairy; spikelets glabrous; glumes equal, smooth; upper lemma devoid of setae, scaberulous, awned.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Rare
Altitude: 1200-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3242* (GVCH).

Arundinella setosa Trin., Gram. Panic. [Trinius] 65 (1826); Hook. f., Fl. Brit. India 7: 70 (1896); Gamble, Fl. Pres. Madras 1801 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; nodes glabrous; leaves lanceolate, densely hairy; sheath hairy; ligule fimbriate; panicle branched, scabrid; spikelets glabrous; upper lemma awned, hairy at the base, bearing two apical setae; palea 2-keeled; lodicules 2; stamens 3; styles 2.
Raunkiaer's lifeform: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: May-December
Distribution: Rare
Altitude: 800-1000
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1690* (GVCH).

Arundo L., Sp. Pl. 1: 81 (1753)

Arundo donax L., Sp. Pl. 1: 81 (1753); Hook. f., Fl. Brit. India 7: 302 (1896); Gamble, Fl. Pres. Madras 1805 (1934); Vajr., Fl. Palghat Dist. 566 (1990).

Habit: Herb
Habitat: Along banks of streams
Morphology: Perennial herb; rhizome creeping; culms erect; leaves ensiform, amplexicaul, glabrous; panicle decompound; spikelets laterally compressed, 2-8 flowered; rhachilla articulated at the base and between lemmas; glumes 2, sub-equal, keeled, 3-nerved; lemma 3-nerved, long silky hairy on the back below the middle; palea hyaline, 2 nerved; lodicule 2; stamens 3; style 2.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: August-December
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 11 January 2020, *Jabeena & Maya 3592* (GVCH).

Axonopus P.Beauv., Ess. Agrostogr. 12 (1812)

Axonopus compressus (Sw.) P. Beauv., Ess. Agrostogr. 12 (1812) (1812).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Perennial herb; culms stoloniferous; nodes hairy; leaves

lanceolate, margins ciliate; sheaths keeled; ligule fimbriate; racemes 2-6, binate, digitate; rachis trigonous; spikelets shortly pedicelled; lower glume absent; upper glume 5-7-nerved; lower lemma 5-nerved; upper lemma bearded at apex; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 380* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 649* (GVCH); Nelliyampathy range, Mattumala, 19 November 2020, *Jabeena & Maya 4378* (GVCH).

Bambusa Schreb., Gen. Pl., ed. 8[a]. 236 (1789)

Bambusa bambos (L.) Voss, Vilm. Blumengärtn., ed. 3. 1: 1189 (1895); *Bambusa arundinacea* (Retz.) Willd., Hook. f., Fl. Brit. India 7: 395 (1896); Gamble, Fl. Pres. Madras 1859 (1934); Vajr., Fl. Palghat Dist. 566 (1990).

Habit: Herb
Habitat: Deciduous forests
Morphology: Shrub; rhizome stoloniferous; branches armed at the nodes with 2-3 recurved spines; culm sheaths triangular, blade felted with hairs within; leaf sheaths glabrous; ligule entire; petiole short; panicle compound with the spikelets in heads; spikelets terete; glumes mucronate; lemma glabrous; palea 2-keeled, ciliate; stamens 6; style 1; stigmas 3.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: July-February

Distribution: Occasional

Altitude: 100-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3330* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5066* (GVCH).

Bothriochloa Kuntze, Revis. Gen. Pl. 2: 762 (1891)

Leaves hairy; lower glume densely hairy below the middle……...……..***B. pertusa***

Leaves glabrous; lower glume glabrous……..……..…...***B. insculpta***

Bothriochloa insculpta (Hochst. ex A.Rich.) A.Camus, Ann. Soc. Linn. Lyon sér. 2, 76: 165 (1931); *Andropogon pertusus* (L.) Willd. var. *insculptus* (Hochst. ex A. Rich.) Hack. Hook. f., Fl. Brit. India 7: 174 (1896); *Amphilophis insculpta* (Hochst. ex A. Rich.) Stapf., Gamble, Fl. Pres. Madras 1732 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; rhizome stoloniferous; culms tufted; nodes hairy; leaves mostly cauline, elongate, glabrous; sheath keeled; ligule membranous; raceme peduncled, 2-8; callus hairy; lower glume glabrous, pitted; upper glume hyaline; lower lemma awned; lodicules 2; stamens 3; style 2.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and Australian
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Occasional
Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1355* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4114* (GVCH).

Bothriochloa pertusa (L.) A.Camus, Annales de la Soci?t? Linn?enne de Lyon ser. 2, 76 (1931); *Amphilophis pertusa* (L.) Nash ex Stapf, Gamble, Fl. Pres. Madras 1731 (1934); *Andropogon pertusus* (L.) Willd., Hook. f., Fl. Brit. India 7: 173 (1896).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; culms tufted, creeping at the base; node hairy; leaves aggregated near the base, hairy; sheath keeled; ligule membranous; racemes digitate, pilose; sessile spikelets elliptic-lanceolate; lower glume with a median pit; lower lemma epaleate; upper lemma epaleate, awned; stamens 3; ovary oblong; pedicelled spikelet elliptic; glumes equal; lower floret similar to that of sessile spikelets; upper floret male or empty.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: August-February
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karimala, 20 October 2019, *Jabeena & Maya 2716* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3797* (GVCH).

Capillipedium Stapf, Fl. Trop. Afr. [Oliver et al.] 9(1): 169 (1917)

Capillipedium assimile (Steud.) A.Camus, Fl. Indo-Chine [P.H. Lecomte et al.] 7: 314 (1922); *Andropogon assimilis* Steud., Hook. f., Fl. Brit. India 7: 179 (1896); *Capillipedium glaucopsis* Stapf., Gamble, Fl. Pres. Madras 1730 (1934).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Annual herb; culms stiff, erect; nodes hairy; leaves scabrid; sheath keeled, glabrous; ligule membranous; panicles branched, lax; sessile spikelets oblong; lower glume 5-nerved, ciliate; upper glume 3-nerved; lower floret sterile, upper bisexual; upper lemma awned; palea absent; stamens 3; styles 2; stigma plumose; pedicelled spikelets elliptic; lower glume 8-nerved; upper glume hyaline.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1688* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4208* (GVCH).

Cenchrus L., Sp. Pl. 2: 1049 (1753)

Cenchrus pedicellatus (Trin.) Morrone, Ann. Bot. (Oxford) n.s., 106(1): 128 (2010); *Pennisetum pedicellatum* Trin., Hook. f., Fl. Brit. India 7: 86 (1896); Gamble, Fl. Pres. Madras 1792 (1934); Vajr., Fl. Palghat Dist. 585 (1990).

Habit: Herb
Habitat: Waste places
Morphology: Annual herb; culms tufted, stout; nodes glabrous; leaves linear-lanceolate; sheath keeled; ligules fimbriate; panicles linear, slender; rachis angled, flexuous, puberulous; involucre sessile, spirally arranged at short intervals enclosing 1-5 spikelets; inner bristles densely villous; lower glume hyaline, villous; upper glume puberulous; upper floret bisexual; lower lemma 3-lobed at apex; palea hyaline; stamens 3; upper lemma coriaceous; palea 2-keeled; stamens 3; ovary oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern

Phenology: September-December

Distribution: Occasional

Altitude: 100-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 715* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4488* (GVCH).

Centotheca Desv., Nouv. Bull. Sci. Soc. Philom. Paris 2: 189 (1810)

Centotheca lappacea Desv., in Nouv. Bull. Soc. Philom. ii. (1810) 189; Hook. f., Fl. Brit. India 7: 332 (1896); Gamble, Fl. Pres. Madras 1848 (1934); Vajr., Fl. Palghat Dist. 567 (1990).

Habit: Herb
Habitat: Deciduous and Semi-evergreen forests
Morphology: Perennial herb; culms tufted; nodes glabrous; leaves with transverse veins; sheath ciliate; ligules membranous; panicles sub-simple, lax, branches spiciform, pedicels capillary; spikelets secund, laterally compressed, 2-3-flowered; glumes 2, persistent, unequal; lemmas 5-7-nerved; palea 2-keeled; lodicules 0; stamens 2-3; style 2, free.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific, Holarctic and African

IUCN category: Not Evaluated

Phenology: October-February

Distribution: Common

Altitude: 800-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1695* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1882* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3016* (GVCH).

Chloris Sw., Prodr. [O. P. Swartz] 25 (1788)

Chloris barbata Sw., Fl. Ind. Occid. 1: 200 (1797); Hook. f., Fl. Brit. India 7: 292 (1896); Gamble, Fl. Pres. Madras 1838 (1934).

Habit: Herb
Habitat: Degraded forests
Morphology: Annual herb; culms tufted, glabrous; nodes glabrous; leaves flat; sheath keeled; ligule membranous; spikes umbelled, rachis scaberulous; spikelets 2-seriate, 2-3-flowered; lower glume keeled; upper glume hyaline; lemma sparsely hairy, ciliate, awned, awn scabrid; palea hyaline; callus ciliate; stamens 3; grains trigonous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: March-December
Distribution: Occasional
Altitude: 800-1200
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2972* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3494* (GVCH).

Chrysopogon Trin., Fund. Agrost. (Trinius) 187 (1820)

1.Spikelets in pairs……..…..***C. zizanoides***
1.Spikelets in three at the end of branches.…….(2)
2.Pedicels of spikelets and leaves glabrous…..……...***C. aciculatus***
2.Pedicels of spikelets and leaves hairy……....(3)
3.Pedicels less than half as long as sessile spikelets…..……..…...***C. hackelii***
3.Pedicels half as long as the sessile spikelets or longer……..……(4)
4.Glumes not aristate nor awned……..…..***C. nodulibarbis***
4.Glumes aristate or awned……(5)

5.Leaf blade 10-20 cm long; leaf base semi-amplexicaule…...……...….***C. asper***
5.Leaf blade upto 50 cm long; leaf base not amplexicaule…....***C. purushothamanii***

Chrysopogon aciculatus Trin., Fund. Agrost. (Trinius) 188 (1820); Gamble, Fl. Pres. Madras 1738 (1934); Vajr., Fl. Palghat Dist. 568 (1990); *Andropogon aciculatus* Retz., Hook. f., Fl. Brit. India 7: 188 (1896).

Habit: Herb
Habitat: Degraded Moist Deciduous forests
Morphology: Perennial herb; rootstock creeping; nodes glabrous; leaves mostly basal, glabrous; sheath keeled; ligules membranous; panicle branched; pedicel half as long as the sessile spikelet, glabrous; sessile spikelets aristate; lower glume apex bifid; upper glume 3-nerved; lower lemma 2-keeled, ciliate; upper lemma aristate; palea hyaline; stamens 3; pedicelled spikelets linear-lanceolate; glumes chartaceous; lower lemma hyaline; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Not Evaluated
Phenology: June-October
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3154* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3520* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3783* (GVCH).

Chrysopogon asper B.Heyne ex Blatt. & McCann, in Sci. Monogr. Imp. Counc. Agric. Research No. 5 (Bombay Grasses) 68 (1935); Gamble, Fl. Pres. Madras 1738 (1934); *Andropogon asper* Heyne ex Hook. f., Fl. Brit. India 7: 189 (1896).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; culms stout; nodes glabrous; leaves conspicuously distichous; sheath keeled; ligule fimbriate; panicle branched, lax; pedicel half as long as or longer than sessile spikelet, rufous-hairy; sessile spikelets oblong; upper glume awned; lower lemma hyaline, epaleate; upper lemma awned; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1029* (GVCH); Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1365* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1646* (GVCH); Plate 13: Fig. f.

Chrysopogon hackelii (Hook.f.) C.E.C.Fisch., in Gamble, Fl. Madras 1739 (1934); Vajr., Fl. Palghat Dist. 568 (1990); *Andropogon hackelii* Hook. f., Fl. Brit. India 7: 194 (1896).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; nodes glabrous; leaves glabrous, not distichous; sheath silky at base, margins silky ciliate; panicle branched, branches spreading; pedicel less than half as long as the sessile spikelets; lower glume glabrous, aristate; lower lemma hyaline, ciliate; upper lemma awned; pedicelled spikelets awnless.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Common
Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1037* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4262* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4501* (GVCH).

Chrysopogon nodulibarbis (Hochst.) Henrard, Blumea iv. 534 (1941), in obs; *Andropogon zeylanicus* Nees ex Steud., Hook. f., Fl. Brit. India 7: 192 (1896); *Chrysopogon zeylanicus* (Nees ex Steud.) Thw., Gamble, Fl. Pres. Madras 1739 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; nodes glabrous; leaves densely imbricate at the base; sheath keeled; ligule fimbriate; panicle branched, lax; pedicel as half as long or longer than sessile spikelet, rufous hairy; lower glume with two lines of bristles on dorsal side; upper glume aristate, bristles absent; upper lemma 1-nerved, awned; pedicelled spikelets glumes unequal, awnless.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-February
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1649* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3271* (GVCH).

Chrysopogon purushothamanii Ravi, N.Mohanan & Kiran Raj, Rheedea 10(2): 94 (2000).

Habit: Herb
Habitat: Rocky hills
Morphology: Perennial herb; rootstock creeping; culms erect, glabrous; leaves distichous; sheath keeled, glabrous; ligule fimbriate; panicle branched, branches filiform; sessile spikelet hairy; lower glume ciliate; upper glume awned, ciliate, awn scaberulous; lower lemma hyaline, ciliate; upper lemma hyaline, notched at the apex, awned; pedicelled spikelet elliptic; lower glume 9- nerved, ciliate; upper glume 3-nerved; lower lemma 3-nerved, notched at apex; upper lemma hyaline, 3-nerved; lodicules 2; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4376* (GVCH).

Chrysopogon zizanioides (L.) Roberty, Bull. Inst. Franç. Afrique Noire, A. 22: 106 (1960); *Andropogon squarrosus* sensu Hook.f., Fl. Brit. India 7: 186 (1896); *Vetiveria zizanioides* (L.) Nash, Gamble, Fl. Pres. Madras 1733 (1934).

Habit: Herb
Habitat: Banks of rivers
Morphology: Perennial herb; rootstock with spongy aromatic roots; culms tufted; nodes glabrous; leaves distichous, conduplicate, glabrous; sheath keeled; ligule membranous; panicles a compound racemes, joints and pedicels glabrous; spikelets in pairs, dissimilar; sessile spikelets with glabrous callus; lower glume muriculate; upper lemma entire; palea hyaline; stamens 3; ovary elliptic; pedicelled spikelets lanceolate; glumes coriaceous; lower floret empty; upper floret male; lower lemma elliptic; upper lemma lanceolate; palea oblong; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-December

Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Karappara, 06 July 2019, *Jabeena & Maya 2203* (GVCH); Mannathypalam, 12 October 2020, *Jabeena & Maya 4175* (GVCH).

Coix L., Sp. Pl. 2: 972 (1753)

Coix lacryma-jobi L., Sp. Pl. 2: 972 (1753); Hook. f., Fl. Brit. India 7: 100 (1896); Gamble, Fl. Pres. Madras 1705 (1934); Vajr., Fl. Palghat Dist. 569 (1990).

Habit: Herb
Habitat: Marshy areas
Morphology: Annual herbs; culms tufted; nodes glabrous; leaves linear; sheath glabrous; ligule membranous; spikes axillary and terminal; male spikelets 2 or 3, exerted from the mouth of cupule; lower glume 2-keeled, winged; lower lemma hyaline; palea 2-keeled; stamens 3; upper lemma hyaline; palea hyalin; female spikelets globose; lower glume acute; upper glume ovate; caryopsis sub-globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: African
IUCN category: Not Evaluated
Phenology: July-March
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3146* (GVCH).

Cymbopogon Spreng., Pl. Min. Cogn. Pug. 2: 14 (1815)

1.Fertile spikelets awnless……..***C. citratus***
1.Fertile spikelets awned……..…..(2)
2.Lower glume of fertile spikelets deeply channelled…..……...***C. martinii***
2.Lower glume of fertile spikelets not channelled……...***C. flexuosus***

Cymbopogon citratus Stapf, Bull. Misc. Inform. Kew 1906(8): 322, 357 (1906); Gamble, Fl. Pres. Madras 1756 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; leaves aromatic, linear; lateral nerves 4-6 pairs; ligules truncate; sheath glabrous; panicles lax; spikelets awnless; callus shortly hairy; glumes sub-equal; lower glume 2-keeled; upper glume 1-keeled; lemma hyaline; palea absent; lodicules 2; stamens 3; styles 2, free.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1805* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3248* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4294* (GVCH); Plate 13: Fig. g.

Cymbopogon flexuosus (Nees ex Steud.) Will.Watson, Bot. Himalayan Distr. N. W. Prov. 392 (1882); Gamble, Fl. Pres. Madras 1756 (1934); Vajr., Fl. Palghat Dist. 569 (1990); *Andropogon nardus* L. var. *flexuosus* (Nees ex Steud.) Hack., Hook. f., Fl. Brit. India 7: 207 (1896).

Habit: Herb
Habitat: Deciduous forests and Grasslands
Morphology: Perennial herb; culms tufted; nodes glabrous; leaves flat; sheaths glabrous; ligule membranous; panicle branched, branches flexuous; racemes paired; spikelets paired, one sessile, other pedicelled; lower glume keeled; upper glume ciliate; lower floret sterile; upper floret bisexual; lower lemma epaleate; upper lemma bifid, awned; stamens 3; ovary oblong; caryopsis elliptic; pedicelled spikelets lanceolate; pedicels densely villous; lower glume ovate-lanceolate; upper glume elliptic-lanceolate; lower

floret male; upper floret wanting; lower lemma elliptic-lanceolate; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1247* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1654* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1752* (GVCH).

Cymbopogon martini (Roxb.) Will. Watson, Gaz. N.-W. Prov. India 10: 392 (1882); Gamble, Fl. Pres. Madras 1756 (1934); *Andropogon schoenanthus* L. var. *martinii* (Roxb.) Hook.f., Fl. Brit. India 7: 204 (1896).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; rootstock stout; leaves linear-lanceolate, amplexicaul; panicle erect, turning reddish when mature; the lowermost pedicle of sessile racemes swollen and connate to the rachis; pedicels ciliate along margins; sessile spikelet oblong, 4-4.5 mm long; lower glume deeply channelled, the channel in lower half very narrow, corresponding to a rib on the inner side; upper lemma deeply bifid, awned; lodicules 2; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1354* (GVCH).

Cynodon Rich., Syn. Pl. [Persoon] 1: 85 (1805)

Cynodon dactylon (L.) Pers., Syn. Pl. [Persoon] 1: 85 (1805); Hook. f., Fl. Brit. India 7: 288 (1896); Gamble, Fl. Pres. Madras 1835 (1934); Vajr., Fl. Palghat Dist. 570 (1990).

Habit: Herb
Habitat: Wastelands
Morphology: Perennial herb; leaves flat, glaucous; sheath keeled; ligule fimbriate; spike terminal, digitate, one-sided; spikelets sessile, laterally compressed, alternately 2-seriate, imbricate, not jointed at the base, one-flowered; rhachilla disarticulating at the base; glumes 2, keeled, 1-nerved; lemma broader than glume, 3-nerved, keel ciliate, awnless; palea 2-keeled, containing a bisexual floret; stamens 3; ovary oblong; caryopsis linear.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American
IUCN category: Not Evaluated
Phenology: March-October
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3014* (GVCH); Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 075* (GVCH).

Cyrtococcum Stapf, Fl. Trop. Afr. [Oliver et al.] 9(1): 15, in clavi (1917)

1.Sheath glabrous along margins; panicles drooping……..….***C. longipes***
1.Sheath ciliate along one margins; panicles erect……..(2)
2.Panicle lax, effuse..…..……...***C. patens***
2.Panicles contracted……..(3)
3.Nodes bearded…....……....***C. trigonum***
3.Nodes glabrous..…...…...***C. oxyphyllum***

Cyrtococcum longipes A.Camus, Bull. Mus. Natl. Hist. Nat. 1921, xxvii. 118 (1921); Gamble, Fl. Pres. Madras 1786 (1934); *Panicum longipes* Wight & Arn. ex Hook. f., Fl. Brit. India 7: 58 (1896).

Habit: Herb
Habitat: Deciduous and Evergreen forests
Morphology: Perennial herb; culms robust, trailing; nodes glabrous; leaves narrow, glabrous; sheath keeled, glabrous; ligule membranous; panicle fastigately branched, branches filiform, smooth; spikelets 2 x 1 mm; pedicel longer than spikelets; glumes sub-equal, keeled; lower lemma cuspidate, epaleate; upper lemma semi-ovate with an apical callus, 3-nerved; upper palea 2-nerved, lodicules 2; stamens 3; styles 2, free.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Rare
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1027* (GVCH).

Cyrtococcum oxyphyllum Stapf, Hooker's Icon. Pl. 31: sub t. 3096 (1922); Gamble, Fl. Pres. Madras 1786 (1934); *Panicum pilipes* Nees & Arn. ex Buese, Hook. f., Fl. Brit. India 7: 57 (1896).

Habit: Herb
Habitat: Deciduous, Semi-evergreen and Evergreen forests
Morphology: Perennial herb; culms stout, erect from a creeping base; nodes glabrous; leaves lanceolate; sheath keeled, ciliate; ligule membranous; panicle branched; pedicels shorter than spikelets; spikelets glabrous; glumes sub-equal; lower lemma epaleate; upper lemma 3-nerved; palea 2-nerved; lodicules 2; stamens 3; styles 2, free.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: August-March
Distribution: Common
Altitude: 300-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 385* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 648* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1687* (GVCH).

Cyrtococcum patens (L.) A. Camus, Bull. Mus. Natl. Hist. Nat. 27: 118 (1921); Gamble, Fl. Pres. Madras 1786 (1934); *Cyrtococcum radicans* (Retz.) Stapf., Gamble, Fl. Pres. Madras 1786 (1934).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Annual herb; culms slender, erect from a creeping base; leaves ovate-lanceolate; sheath villous; ligule ovate; panicles effuse, simply branched; pedicels longer than spikelets; glumes keeled, hispidulous; lower floret empty, upper floret bisexual; lower lemma obtuse, 5-nerved; upper lemma deltoid with an apical callus; palea 2-keeled; stamens 3.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: May-June

Distribution: Common

Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1704* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1890* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2055* (GVCH).

Cyrtococcum trigonum A.Camus, Bull. Mus. Natl. Hist. Nat. 1921, xxvii. 118; Gamble, Fl. Pres. Madras 1785 (1934); *Panicum trigonum* Retz., Hook. f., Fl. Brit. India 7: 56 (1896).

Habit: Herb
Habitat: Wastelands and all types of forests
Morphology: Annual herb; culms slender, creeping and branching below; leaves elliptic-lanceolate; sheath villous; ligule membranous; panicles simply branched; spikelets few, hispid; pedicels shorter than spikelets; lower glume 3-nerved; upper glume 3-nerved; lower floret empty; upper floret bisexual; lower lemma 5-7-nerved; upper lemma deltoid; palea 2-keeled; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-October
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2245* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2433* (GVCH).

Dactyloctenium Willd., Enum. Pl. [Willdenow] 2: 1029 (1809)

Dactyloctenium aegyptium (L.) Willd., Enum. Pl. [Willdenow] 1029 (1809); Gamble, Fl. Pres. Madras 1840 (1934).

Habit: Herb
Habitat: Marshy areas and open lands
Morphology: Annual herb; culms creeping; nodes glabrous; leaves linear, ciliate; sheath keeled; ligule fimbriate; spikes in a terminal umbel; spikelets sessile, laterally compressed, densely imbricate in 2 rows; rachis disarticulating above the lower glume; glumes 1-keeled, 1-nerved; lower glume persistent; lemmas 3-5, 1-keeled, 3-nerved, aristate; palea 2-keeled; lodicules 2; stamens 3; styles 2, free.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2764* (GVCH); Pullukaadu, 30-11-2019, *Jabeena & Maya 3058* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3187* (GVCH); Plate 13: Fig. h.

Dendrocalamus Nees, Linnaea 9(4): 476 (1835)

Dendrocalamus strictus Nees, Linnaea 9(4): 476 (1835); Hook. f., Fl. Brit. India 7: 404 (1897); Gamble, Fl. Pres. Madras 1858 (1934).

Habit: Shrub
Habitat: Deciduous forests
Morphology: Perennial shrub; culms erect from a densely branched rootstock, unarmed; culm sheath auricled; leaves without transverse veins, spinescent; ligule dentate; panicle compound; spikelets in globose head in long spikes; glumes 2-3; lemmas similar; palea 2-cleft; stamens 6, filaments free; ovary depressed, hairy above.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: December-January

Distribution: Rare

Altitude: 600-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2764* (GVCH).

Dichanthium P. Willemet, Ann. Bot. (Usteri) 18: 11 (-12) (1796)

1.Upper lemma reduced to the hyaline stipitiform base of the awn.....***D. foulkesii***
1.Upper lemma not reduced, bifid, awned from the sinus…….……(2)
2.Culm nodes patently hairy; lower glume 13-nerved…….……***D. annulatum***
2.Culm nodes glabrous; lower glume 7-9-nerved…….....***D. caricosum***

Dichanthium annulatum Stapf, Fl. Trop. Afr. [Oliver et al.] 9(1): 178 (1917); Gamble, Fl. Pres. Madras 1741 (1934); Vajr., Fl. Palghat Dist. 570 (1990); *Andropogon annulatus* Forssk., Hook. f., Fl. Brit. India 7: 196 (1896).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; culms leafy, glabrous below the inflorescence; nodes patently hairy; leaves linear-lanceolate; sheath keeled; ligule membranous; inflorescence spiciform racemes, peduncle glabrous; sessile spikelets glabrous; lower glume 13-nerved; upper glume 1-nerved; lower lemma epaleate, awned; upper lemma reduced to an awn; pedicels of pedicelled spikelets ciliate; lower glume ciliate; upper glume hyaline; lodicules 2; stamens 3; styles 2, free.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: June-December
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1114* (GVCH); Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3219* (GVCH).

Dichanthium caricosum (L.) A.Camus, Bull. Mus. Natl. Hist. Nat. 27: 549 (1921); Gamble, Fl. Pres. Madras 1741 (1934); *Andropogon caricosus* L., Hook. f., Fl. Brit. India 7: 196 (1896).

Habit: Herb
Habitat: Dry Grasslands
Morphology: Perennial herb; culms usually erect; nodes glabrous; leaves narrow; ligules membranous; racemes 1-3; sessile spikelets obovate; callus hairy; lower glume 7-9 nerved, ciliate; upper glume keeled; lower lemma hyaline, glabrous; upper lemma awned; stamens 3; pedicelled spikelets unawned; lower glume 13-15 nerved; upper glume 3-nerved, ciliate.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-May
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1730* (GVCH); Nelliyampathy range, Keshavanpara, 06 July 2019, *Jabeena & Maya 2159* (GVCH).

Dichanthium foulkesii (Hook.f.) S.K.Jain & Deshp., Bull. Bot. Surv. India 20(1-4): 134 (1979); *Andropogon foulkesii* Hook. f., Fl. Brit. India 7: 174 (1896); *Amphilophis foulkesii* (Hook.f.) C.E.C. Fisch., Gamble, Fl. Pres. Madras 1732 (1934).

Habit: Herb
Habitat: High altitude Grasslands
Morphology: Perennial herb; culms slender; nodes glabrous; leaves involute, glabrous; primary axis of the racemes short, branches undivided, rachis ciliate; sessile spikelets lanceolate; lower glume 5-nerved, glabrous; upper glume 3-nerved; lower lemma epaleate; upper lemma awned; lemmas of pedicelled lemmas awnless.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: September-February
Distribution: Occasional
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1657* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3951* (GVCH).

Digitaria Haller, Hist. Stirp. Helv. 2: 244 (1768)

1.Upper glume with 2 longitudinal patches of long hairs…….....***D. bicornis***
1.Upper glume glabrous……..……..(2)
2.Lower glume well developed, upto 2 mm long…….……..……....***D. radicosa***
2.Lower glume absent or a minute scale……....(3)
3.Racemes over 5 cm long; lower glume a minute scale……...…..***D. ciliaris***
3.Racemes upto 5 cm long; lower glume absent….……(4)
4.Racemes 2; leaves upto 5 cm long…….……...…***D. longiflora***
4.Racemes 3-10; leaves upto 15 cm long…….…….....***D. setigera***

Digitaria bicornis (Lam.) Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 2: 470 (1817); *Paspalum heteranthum* Hook. f., Fl. Brit. India 7: 16 (1896).

Habit: Herb
Habitat: Deciduous forests
Morphology: Annual herb; culms erect; nodes glabrous; leaves linear-lanceolate; ligules membranous; racemes 2-4, rachis winged; spikelets binate, heteromorphous, sessile ones glabrous, pedicelled ones pectinate, pubescent; lower glume scaly; upper glume silky pubescent; lower lemma 7-nerved; upper lemma crustaceous; palea 2-keeled; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: March-September
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1702* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3078* (GVCH).

Digitaria ciliaris (Retz.) Koeler, Descr. Gram. [Koeler] 27 (1802); Vajr., Fl. Palghat Dist. 571 (1990); *Paspalum sanguinale* (L.) Lam. var. *rottleri* Hook. f., Fl. Brit. India 7: 15. (1896); *Digitaria marginata* Link, Gamble, Fl. Pres. Madras 1764 (1934).

Habit: Herb
Habitat: Moist Deciduous forests and Grasslands
Morphology: Annual herb; culms tufted from a geniculate, rooting base; nodes glabrous; leaves narrow; ligules membranous; racemes 3-7, rachis winged; spikelets binate; lower glume triangular; upper glume 3-nerved. lower lemma 7-nerved; upper lemma crustaceous; palea 2-keeled, 2-nerved; stamens 3.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Not Evaluated

Phenology: July-November

Distribution: Common

Altitude: 800-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 935* (GVCH); Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1889* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2044* (GVCH).

Digitaria longiflora (Retz.) Pers., Syn. Pl. [Persoon] 1: 85 (1805); Gamble, Fl. Pres. Madras 1765 (1934); *Paspalum longiflorum* Retz., Hook. f., Fl. Brit. India 7: 17 (1896).

Habit: Herb
Habitat: Grasslands and open areas
Morphology: Annual herb; culms arising singly or in fascicles from a long creeping and rooting base; nodes glabrous; leaves elliptic-lanceolate; sheaths keeled; ligules membranous; racemes 2-3, digitate, slender, rachis winged; spikelets solitary, elliptic-oblong, appressed, sub-imbricate; lower glume absent; upper glume 5-9-nerved; barren lemma 7-nerved, appressed-pubescent; palea 2-keeled, 2-nerved; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Common
Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3015* (GVCH); Mattumala, 04 November 2020, *Jabeena & Maya 4371* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4512* (GVCH).

Digitaria radicosa (J.Presl) Miq., Fl. Ned. Ind. iii. 437 (1857); *Paspalum sanguinale* (L.) Lam. var. *debile* Hook.f., Fl. Brit. India 7: 16 (1896).

Habit: Herb
Habitat: Waste places and river banks
Morphology: Annuals herb; culms slender; nodes glabrous; leaves narrow; sheaths keeled; ligules membranous; racemes 2-3, rachis winged; spikelets binate; lower glume triangular; upper glume 3-nerved; lower lemma chartaceous; upper lemma crustaceous; palea 2-keeled, 2-nerved; stamens 3; ovary linear.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific and Australian

IUCN category: Not Evaluated

Phenology: December-March

Distribution: Common

Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothupara, 11 January 2020, *Jabeena & Maya 3671* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3753* (GVCH); Nelliyampathy range, Victoria, 12 October 2020, *Jabeena & Maya 4186* (GVCH).

Digitaria setigera Roth in Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 2: 474 (1817); *Paspalum sanguinale* (L.) Lam. var. *extensum* Hook. f., Fl. Brit. India 7: 17 (1896).

Habit: Herb
Habitat: Degraded deciduous forests and grasslands, also in wastelands
Morphology: Annual herb; node glabrous; leaves linear, sheath keeled; ligule ovate; inflorescence a digitate raceme; rachis winged; lower glume absent; upper glume chartaceous; lower lemma pubescent; upper lemma glabrous; palea 2-keeled, 2-nerved; stamens 3; ovary oblong.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated

Phenology: May-June

Distribution: Rare

Altitude: 1000-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3853* (GVCH).

Dimeria R.Br., Prodr. Fl. Nov. Holland. 204 (1810)

1.Nodes glabrous…....***D. kanjirapallilana***
1.Nodes bearded…...……..(2)
2.Upper glumes distinctly winged……..……...***D. bialata***
2.Upper glumes not winged……(3)
3.Rachis flat…..……..***D. deccanensis***
3.Rachis trigonous.....……***D. ornithopoda***

Dimeria bialata C.E.C.Fisch., Bull. Misc. Inform. Kew 1933(7): 351 (1933); Gamble, Fl. Pres. Madras 1713 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Annuals herb; culms erect; nodes bearded; leaves lanceolate, tubercle-based hairy; sheaths keeled; ligule fimbriate; racemes 2, rachis flat; spikelets oblong; lower glume keeled; upper glume distinctly winged, wing corky; lower lemma 1-nerved; upper lemma notched, 1-nerved, awned; awn geniculate; stamens 2; ovary oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to South India
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2666* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3258* (GVCH).

Dimeria deccanensis Bor, Kew Bull. 7(4): 578 (1953).

Habit: Herb
Habitat: Rocky Grasslands
Morphology: Annual herb; culms tufted; nodes hairy; leaves linear-lanceolate, glabrous; sheath keeled; ligule membranous; racemes 2, rachis flat; callus hairy; lower glume keeled; upper glume keeled, wingless or winged; lower lemma hyaline, awned; styles basely united.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity:
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3236* (GVCH).

Dimeria kanjirapallilana Jacob, J. Bombay Nat. Hist. Soc. 47: 48 (kanijirapallilana), t. 1 (1947).

Habit: Herb
Habitat: High altitude Grasslands
Morphology: Annual herb; culms tufted; node glabrous; leaves linear-lanceolate, bulbous based hairy; sheath keeled; ligule membranous; racemes 2, rachis zig-zag, sparsely ciliate; calyx hairy; lower glume scabrid; upper glume narrowly winged along the keel.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4491* (GVCH).

Dimeria ornithopoda Trin., Fund. Agrost. (Trinius) 167 (1820); Hook. f., Fl. Brit. India 7: 104 (1896); Gamble, Fl. Pres. Madras 1713 (1934); Vajr., Fl. Palghat Dist. 571 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; culms slender; nodes bearded; leaves narrow; ligule

membranous; racemes 2, rachis flat; spikelets lanceolate; lower glume linear-lanceolate; upper glume lanceolate; lower lemma ciliate at apex; upper lemma notched, awned, hyaline; stamens 2.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to South India
IUCN category: Least Concern
Phenology: August-December
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1586* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2054* (GVCH).

Echinochloa P.Beauv., Ess. Agrostogr. 53. I. 11 (1812) (1812)

Echinochloa colona (L.) Link, Hort. Berol. [Link] 2: 209 (1833); Gamble, Fl. Pres. Madras 1776 (1934); Vajr., Fl. Palghat Dist. 572 (1990).

Habit: Herb
Habitat: Marshy areas
Morphology: Annual herb; culms erect; nodes glabrous; leaves linear-lanceolate; sheath keeled; ligules absent; panicles spiciform; racemes 4-10, simple, distant; spikelets ovoid; lower glume 5-nerved; upper glume chartaceous; lower lemma 7-nerved; palea 2-keeled; upper lemma ovate-elliptic; palea 2-keeled; stamens 3; ovary oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4822* (GVCH).

Eleusine Gaertn., Fruct. Sem. Pl. 1: 7 (1788)

Eleusine indica (L.) Gaertn., De fructibus et seminibus plantarum 1 (1788); Hook. f., Fl. Brit. India 7: 293 (1896); Gamble, Fl. Pres. Madras 1839 (1934); Vajr., Fl. Palghat Dist. 572 (1990).
Habit: Herb
Habitat: Open areas
Morphology: Annual herb; culms erect; nodes glabrous; leaves narrow; sheath keeled; ligule membranous; spikes umbelled in one whorl, rachis glabrous; spikelets ovate, 3-6-flowered; glumes entire; lower glume keeled, 3-nerved; upper glume keeled, 5-nerved; lemmas 3-nerved; palea 2-keeled, 2-nerved; stamens 3; ovary elliptic; caryopsis sub-globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2948* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3137* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3565* (GVCH).

Enteropogon Nees, Nat. Syst. Bot. (Lindley), ed. 2. 448 (1836)

Enteropogon dolichostachyus (Lag.) Keng, Clav. Gen. Sp. Gram. Prim. Sin. 197 (1957); *Enteropogon monostachyos* (Vahl) Schum. ex Engl., Gamble, Fl. Pres. Madras 1834 (1934); *Enteropogon melicoides* (Koenig ex Rottl.) Nees, Hook. f., Fl. Brit. India 7: 284 (1896).

Habit: Herb
Habitat: Deciduous forests
Morphology: Perennial herb; culms erect, tufted; leaves narrow; sheath puberulus; ligules a tuft of hairs; spikes slender, 1-3,

rachis trigonous; spikelets sessile, solitary, not jointed at the base, 1-3 flowered; rhachilla jointed at the base; glumes persistent, hyaline, 1-nerved; lemma bifid at apex, awned; palea 2-toothed, 2-keeled; lodicules 2; stamens 3; styles 2, free.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 786* (GVCH).

Eragrostiella Bor, Indian Forester 66: 269; et in Fl. Assam, v. 105 (1940)

Eragrostiella bifaria (Vahl) Bor, Indian Forester 66: 270, in obs.; et in Fl. Assam, v. 107 (1940). In obs. (1940); Vajr., Fl. Palghat Dist. 573 (1990); *Eragrostis bifaria* (Vahl) Wight ex Steud., Hook. f., Fl. Brit. India 7: 325 (1896); Gamble, Fl. Pres. Madras 1828 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; culms tufted; nodes glabrous; leaves narrow, convolute; ligule membranous; raceme solitary; spikelets compressed; glumes sub-equal, 1-nerved, lower one acuminate; lemmas 3-nerved, keeled, keel winged; palea 2-keeled, hyaline; stamens 3; ovary elliptic, styles 2, free; stigmas plumose; caryopsis obtusely trigonous.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3192* (GVCH).

Eragrostis Wolf, Gen. Pl. [Wolf] 23 (1776)

1.Spikelets breaking up from above downwards….…….(2)
1.Spikelets breaking up from below upwards……..…….(5)
2.Panicle 20-40 cm long; keels of palea eciliate…...……...***E. japonica***
2.Panicle upto 15 cm long; keels of palea ciliate…….…….(3)
3.Panicle contracted, spiciform...***E. riparia***
3.Panicle effuse……...……(4)
4.Culms viscous below panicle...***E. viscosa***
4.Culms not viscous……..…..***E. tenella***
5.Lemmas upto 1.5 mm long…….***E. gangetica***
5.Lemmas over 2 mm long…….(6)
6.Spikelets grey or black……..…….(7)
6.Spikelets purplish or olive green…….(8)
7.Ligule truncate; spikelets grey……..…….***E. atrovirens***
7.Ligule fimbriate; spikelets black……..……***E. nigra***
8.Spikelets broadly ovate..……...***E. uniloides***
8.Spikelets linear-oblong……..…***E. patula***

Eragrostis atrovirens (Desf.) Trin. ex Steud., 1: 562 (1840).

Habit: Herb
Habitat: Riverbanks, grasslands and dry deciduous forests
Morphology: Perennial herb; culms tufted; node glabrous; leaves glaucous; ligule membranous; inflorescence a lax panicle; spikelets 10-30-flowered; glumes 1-nerved; lemma 3-nerved; palea 2-keeled; stamens 3; ovary oblong; caryopsis ellipsoid.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena &*

Maya 1581 (GVCH); Nelliyampathy range; Mattumala, 17 January 2020, *Jabeena & Maya 3794* (GVCH).

Eragrostis gangetica Steud., Syn. Pl. Glumac. 1(3): 266 (1854); Gamble, Fl. Pres. Madras 1826 (1994); Vajr., Fl. Palghat Dist. 574 (1990).

Habit: Herb
Habitat: Grasslands and banks of streams
Morphology: Annual herb; culms stout; nodes glabrous; leaves narrow; ligules fimbriate; panicles narrow, rhachilla tough, persistent; spikelets fascicled, close, pointing forwards; glumes 1-nerved; lemmas 3-nerved; palea 2-keeled, 2-nerved, keels scabrid; stamens 3; caryopsis oblong.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Least Concern

Phenology: June-December

Distribution: Rare

Altitude: 1000-1300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 1998* (GVCH).

Eragrostis japonica Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. i. (1831) 405; Gamble, Fl. Pres. Madras 1826 (1934); *Eragrostis interrupta* Lam., Hook. f., Fl. Brit. India 7: 316 (1896); *Eragrostis diarrhena* (Schult.) Steud., Gamble, Fl. Pres. Madras 1820 (1934); Vajr., Fl. Palghat Dist. 574 (1990).

Habit: Herb
Habitat: Along banks of streams
Morphology: Perennial herb; culms tufted; nodes glabrous; leaves flat; sheath keeled; ligule membranous; panicles effuse, oblong, branches more or less whorled; spikelets 2-9 flowered; glumes 1-nerved; lemmas 3-nerved; palea 2-keeled, 2-nerved; stamens 2; grains obovoid.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: November-May
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3570* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4473* (GVCH).

Eragrostis nigra Nees ex Steud., Nomencl. Bot. [Steudel], ed. 2. i. 563; et Syn. Pl. Gram. 267; Hook. f., Fl. Brit. India 7: 324 (1896); Gamble, Fl. Pres. Madras 1827 (1934).

Habit: Herb
Habitat: Degraded Evergreen forests and Grasslands
Morphology: Perennial herb; culms erect, tufted; nodes glabrous; leaves linear; sheath keeled; ligule fimbriate; panicle lax, branches slender, flexuous; spikelets pedicelled, 5-8 flowered; glumes similar, 1-nerved, keeled; lemma 3-nerved; palea oblong, keeled.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: July-September

Distribution: Common

Altitude: 800-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1659* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2081* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3061* (GVCH); Plate 14: Fig. a

Eragrostis patula Steud., Nomencl. Bot. [Steudel], ed. 2. i. 564; *Eragrostis tenuifolia* (A. Rich.) Hochst. ex Steud., Hook. f., Fl. Brit. India 7: 322 (1896); Gamble, Fl. Pres. Madras 1827 (1934); Vajr., Fl. Palghat Dist. 575 (1990).

Habit: Herb
Habitat: Wet areas in waste lands
Morphology: Perennial herb; culms tufted; leaves narrow; mouth of sheath naked; ligule membranous; panicle lax, oblong, branches solitary or binate; spikelets oblong, 10-18 flowered; glumes hyaline, 1-nerved; lemmas obtuse; palea curved, persistent; caryopsis oblong, dorsally grooved.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: March-September
Distribution: Occasional
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2905* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3063* (GVCH).

Eragrostis riparia Nees, Fl. Bras. Enum. Pl. 2(1): 512, adn. (1829); Gamble, Fl. Pres. Madras 1825 (1934); *Eragrostis tenella* (L.) P. Beauv. var. *riparia* (Willd.) Stapf. Hook.f., Fl. Brit. India 7: 315 (1896).

Habit: Herb
Habitat: Along backwaters
Morphology: Perennial herb; culms tufted; node glabrous; leaf sheath keeled; panicles contracted; spikelets 5-10-flowered; glumes 1-nerved; lemma 3-nerved; palea 2-keeled; stamens 3; caryopsis linear.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: December-June
Distribution: Rare
Altitude: 200-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 July 2017, *Jabeena & Maya 318* (GVCH); Plate 14: Fig. b.

Eragrostis tenella (L.) P.Beauv. ex Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 2: 576 (1817); *Eragrostis tenella* (L.) P. Beauv. var. *plumosa* (Retz.) Stapf., Hook.f., Fl. Brit. India 7: 315 (1896); *Eragrostis plumosa* (Retz.) Link, Gamble, Fl. Pres. Madras 1826 (1934).

Habit: Herb
Habitat: Degraded deciduous forests and Grasslands
Morphology: Annual herb; culms tufted; nodes glabrous; young parts glandular; leaves flat; sheaths hairy; ligule fimbriate; inflorescence a panicle, oblong or linear, more or less effuse; spikelets 4-8-flowered; glumes 1-nerved; lemmas 3-nerved, not ciliate; palea 2-keeled, keels ciliate; stamens 3; grains ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 644* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1652* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2492* (GVCH).

Eragrostis unioloides Nees ex Steud., Syn. Pl. Glumac. 1(3): 264 (1854); Hook. f., Fl. Brit. India 7: 317 (1896); Gamble, Fl. Pres. Madras 1826 (1934); Vajr., Fl. Palghat Dist. 575 (1990).

Habit: Herb
Habitat: banks of streams and waste places

Morphology: Annual herb; culms tufted; nodes glabrous; leaves narrow; ligule membranous; panicles lax, oblong or ovoid, rhachilla tough, persistent; spikelets much compressed, upto 80 flowered; glumes acute, 1-nerved; lemmas 3-nerved, falling off from the base upwards; palea elliptic, 2-keeled; stamens 3; grains ellipsoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Common
Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1684* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2909* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3179* (GVCH); Plate 14: Fig. c.

Eragrostis viscosa Trin., Mém. Acad. Imp. Sci. St.-Pétersbourg, Sér. 6, Sci. Math. i. (1831) 397; Gamble, Fl. Pres. Madras 1826 (1934); *Eragrostis tenella* (L.) P. Beauv. ex Roem. & Schult. var. *viscosa* (Retz.) Stapf., Hook.f., Fl. Brit. India 7: 315 (1896).

Habit: Herb

Habitat: Wastelands

Morphology: Annual herb; culms erect, viscous below the panicles; nodes glabrous; leaves flat; ligule fimbriate; panicles oblong, more or less effuse, lower parts of rachis viscid, branches and pedicels glandular; spikelets 4-10-flowered; glumes 1-nerved; lemmas 3-nerved, eciliate; palea 2-keeled; stamens 3; grains ellipsoid.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Occasional

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1579* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1846* (GVCH).

Eriochloa Kunth, Nov. Gen. Sp. [H.B.K.] 1: 94, t. 30, 31 (1816)

Eriochloa procera (Retz.) C.E.Hubb., Bull. Misc. Inform. Kew 1930(6): 256 (1930); Gamble, Fl. Pres. Madras 1767 (1934); *Eriochloa polystachya* Hook.f., Fl. Brit. India 7: 20 (1896).

Habit: Herb

Habitat: Wetlands

Morphology: Perennial herb; culms tufted, erect; nodes glabrous; leaves flat; sheath keeled; ligule fimbriate; inflorescence racemosely panicled; spikelets solitary or binate, secund; glumes and lemmas unequal; lower glume reduced to a minute cupular rim clasping the callus; upper glume 5-nerved; lower lemma chartaceous; upper lemma 3-5-nerved; palea 2-keeled; stamens 3.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Least Concern

Phenology: September-March

Distribution: Rare

Altitude: 100-300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5013* (GVCH).

Euclasta Franch., Bull. Soc. Hist. Nat. Autun 8: 335 (1895)

Euclasta oligantha (Hochst. ex Steud.) M.R.Almeida, Fl. Maharashtra 6A: 147 (2014); *Andropogon oliganthus* Hochst. ex Steud., Hook. f., Fl. Brit. India 7: 201 (1896); *Heteropogon oliganthus* (Hochst. ex Steud.) Blatt. & McCann, Gamble, Fl. Pres. Madras 1744 (1934).
Habit: Herb
Habitat: Moist areas in Grasslands
Morphology: Annual herb; culms slender, tufted; nodes glabrous; leaves 2flat, hirsute, margins thickened; sheath keeled; ligule membranous; raceme solitary, joints and pedicels whitish hairy; sessile spikelets glabrous; lower glume coriaceous; upper glume equal, 1-nerved; pedicelled spikelets hairy; glumes sub-equal, 13-nerved.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: September-November
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2437* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2638* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3281* (GVCH).

Garnotia Brongn., Voy. Monde, Phan. 132, t. 21 (1832)

1.Nodes glabrous; leaves more than 30 cm long….……..…..***G. elata***
1.Nodes bearded; leaves upto 20 cm long…….(2)
2.Leaves narrowed to the base....***G. tenella***
2.Leaves rounded or cordate at base…...(3)
3.Plant annual; leaves eciliate; glumes sub-equal…...……..……***G. courtallensis***
3.Plant perennial; leaves ciliate along margins; glumes equal.…..***G. arundinacea***

Garnotia arundinacea Hook.f., Fl. Brit. India [J. D. Hooker] 7(22): 243 (1896); Gamble, Fl. Pres. Madras 1812 (1934); Vajr., Fl. Palghat Dist. 576 (1990).

Habit: Herb
Habitat: Forest margins
Morphology: Perennial herb; culms not tufted; nodes hairy; leaves scattered, flat, articulate on sheaths; ligule membranous; panicle contracted, branches suberect; spikelets pedicelled; glumes equal, aristate, 3-nerved; lemma similar to glumes, awned; palea oblong.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3275* (GVCH); Nelliyampathy range, Koonampalam, 14 December 2019, *Jabeena & Maya 3491* (GVCH).

Garnotia courtallensis Thwaites, Enum. Pl. Zeyl. [Thwaites] 363 (1864); Hook. f., Fl. Brit. India 7: 244 (1896); Gamble, Fl. Pres. Madras 1812 (1934).

Habit: Herb
Habitat: Wetlands
Morphology: Annual herb; culms erect; nodes hairy; leaves narrowed to the base, pubescent; ligule membranous; panicle lax, branches in distant fascicles; spikelets lanceolate; glumes sub-equal, 3-nerved; lemma elliptic, awned; palea oblong, 2-nerved; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: November-December
Distribution: Occasional
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 306* (GVCH); Nelliyampathy range, Pothupara, 11 January 2020, *Jabeena & Maya 3683* (GVCH).

Garnotia elata Janowski, Repert. Spec. Nov. Regni Veg. 17: 86 (1921); *Garnotia scoparia* Stapf ex Hook. f., Fl. Brit. India 7: 42 (1896); Gamble, Fl. Pres. Madras 1812 (1934); *Garnotia tenuiglumis* Stapf ex Hook.f., Fl. Brit. India 7: 242 (1896).

Habit: Herb
Habitat: Rocky areas in Grasslands
Morphology: Perennial herb; culms tufted; nodes glabrous; leaves mostly basal, not articulated on the sheath, margins scabrid; margins of sheath woolly; sheath keeled; ligule a tuft of hairs; panicle lax, branches glabrous; spikelets glabrous; glumes sub-equal, 3-nerved; lower glume cuspidate; upper glume muticous; lemma awned; palea 2-nerved.
Raunkiaer's life-form: Hemicryptophye
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 642* (GVCH); Hilltop, 20 January 2018, *Jabeena & Maya 1122* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1648* (GVCH).

Garnotia tenella Janowski, Repert. Spec. Nov. Regni Veg. 17: 86 (1921); Vajr., Fl. Palghat Dist. 576 (1990); *Garnotia stricta* sensu Hook.f., Fl. Brit. India 7: 243 (1896); Gamble, Fl. Pres. Madras 1812 (1934).

Habit: Herb
Habitat: Wet rocky areas in Grasslands
Morphology: Perennial herb; culms not tufted; nodes hairy; leaves scattered, flat, articulate on the sheaths; ligule membranous; panicle contracted, branches angled, suberect; spikelets glabrous; glumes sub-equal, aristate, 3-nerved; lower glume muticous; upper glume cuspidate; lemma 3-nerved; palea hyaline; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1965* (GVCH); Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2129* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4199* (GVCH).

Glyphochloa Clayton, Kew Bull. 35(4): 814 (1981)

Glyphochloa forficulata (C.E.C.Fisch.) Clayton, Kew Bull. 35(4): 815 (1981); *Rottboellia divergens* Hook.f., Fl. Brit. India 7: 155. (1896); *Manisuris forficulata* C.E.C. Fisch., Gamble, Fl. Pres. Madras 1761 (1934); Vajr., Fl. Palghat Dist. 581 (1990).
Habit: Herb
Habitat: Rocky Grasslands
Morphology: Annual herb; culms tufted; nodes bearded; leaves linear; sheath keeled; ligule membranous; raceme solitary; spikelets paired; sessile spikelet ovate-oblong; lower glume lanceolate, acute, terminated by 2 divaricate unequal awns, margins winged, 4-6 grooved at back with 5-9 marginal hooked spinules; upper glume chartaceous; lower lemma smooth; palea oblong; stamens 3; ovary elliptic; styles 2, basely united; stigmas 2, feathery; lower glume of pedicelled spikelet with an awn; upper glume aristate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2643* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3267* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4210* (GVCH).

Hackelochloa Kuntze, Revis. Gen. Pl. 2: 776 (1891).

Hackelochloa granularis Kuntze, Revis. Gen. Pl. 2: 776 (1891); Gamble, Fl. Pres. Madras 1758 (1934); Vajr., Fl. Palghat Dist. 577 (1990); *Manisuris granularis* (L.) L. f., Hook. f., Fl. Brit. India 7: 150 (1896).
Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; node hairy; sheath keeled; ligule membranous; inflorescence an axillary or terminal fascicle of racemes; sessile spikelet bearing 2 florets, awnless; lower lemma epaleate; upper lemma paleate; stamens 2; stigma feathery; pedicelled spikelets awned; lower glume winged; upper glume wingless.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Not Evaluated

Phenology: September-December

Distribution: Occasional

Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2652* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4225* (GVCH).

Heteropogon Pers., Syn. Pl. [Persoon] 2: 533 (1807)

Ligule a fimbriate membrane; racemes hairy…..……..….***H. contortus***
Ligule a fringe of hairs; racemes glabrous……...…...***H. fischerianus***

Heteropogon contortus (L.) P.Beauv. ex Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 2: 836 (1817); Gamble, Fl. Pres. Madras 1743 (1934); Vajr., Fl. Palghat Dist. 577 (1990); *Andropogon contortus* L., Sp. Pl. 1045. 1753; Hook. f., Fl. Brit. India 7: 199 (1896).

Habit: Herb
Habitat: Grasslands and wastelands
Morphology: Perennial herb; culms erect, stout; node glabrous; leaves narrow; ligule fimbriate; raceme solitary, spikelets awned; callus rufous hairy; glumes equal; lemmas hyaline; palea minute; stamens 3; grain terete.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1046* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2957* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3854* (GVCH); Plate 14: Fig. d.

Heteropogon fischerianus Bor, Kew Bull. 6(2): 170 (1951); *Heteropogon contortus* (L.) P. Beauv. Ex Roem. & Schult. var. *distichus* C.E.C. Fisch., Gamble, Fl. Madras 1743 (1934).

Habit: Herb
Habitat: Grasslands

Morphology: Perennial herb; culms caespitose; leaves distichous; sheath keeled; striately veined. Ligule a row of hairs; racemes single; spikelets in pairs; fertile spikelet sessile and smaller than the pedicelled sterile spikelet; palea absent or minute; stamens 3; stigmas 2.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3891* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3981* (GVCH).

Isachne R.Br., Prodr. Fl. Nov. Holland. 196 (1810)

1.Glumes longer than lemmas……..….(2)
1.Glumes as long as or shorter than lemmas…….……..(3)
2.Lower lemma hyaline; palea ovate…….....***I. setosa***
2.Lower lemma chartaceous; palea elliptic……..…....***I. fischeri***
3.Spikelets more than 3.5 mm long…….....***I. walkeri***
3.Spikelets less than 3 mm long…...…..(4)
4.Plant annual; culms upto 25 cm high; leaves sparsely villous.....……....***I. gracilis***
4.Plant perennial; culms above 30 cm high; leaves glabrous……...***I. globosa***

Isachne fischeri Bor, Kew Bull. 4(1): 69 (1949); *Isachne kunthiana* (Wight & Arn. ex Steud.) Miq. var. *nana* C.E.C. Fisch., Gamble, Fl. Pres. Madras 1796 (1934).

Habit: Herb
Habitat: Moist areas in Grasslands
Morphology: Annual herb; culms erect; leaves ovate-lanceolate, margins not cartiliginous; sheath sparsely hairy; inflorescence mostly racemose; spikelets tubercled hairy; glumes longer than lower lemma; lower glume 5-nerved; upper glume 5-7-nerved; lower lemma 3-5-nerved; palea oblong; upper lemma hairy; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: September-November
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1081* (GVCH).

Isachne globosa (Thunb.) Kuntze, Revis. Gen. Pl. 2: 778 (1891); Vajr., Fl. Palghat Dist. 578 (1990); *Isachne australis* R. Br., Hook. f., Fl. Brit. India 7: 24 (1896); *Isachne dispar* Hook.f., Fl. Brit. India 7: 26 (1896); *Isachne miliacea* Roth, Hook. f., Fl. Brit. India 7: 25 (1896); Gamble, Fl. Pres. Madras 1797 (1934).

Habit: Herb
Habitat: Wetlands
Morphology: Perennial herb; culms prostrate, slender; nodes glabrous; leaves flat; sheath glabrous; ligule a tuft of hairs; panicle loosely arranged, branches serrulate; spikelets globose; glumes equal, broader than long; upper glume deeply concave; lower lemma glabrous; palea 2-nerved; upper lemma ciliate; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4065* (GVCH); Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4500* (GVCH).

Isachne gracilis C.E.Hubb., Bull. Misc. Inform. Kew 1927(2): 77 (1927); Gamble, Fl. Pres. Madras 1797 (1934); Vajr., Fl. Palghat Dist. 579 (1990).

Habit: Herb
Habitat: Moist Rocky areas in Grasslands
Morphology: Annual herb; culms very slender; nodes glabrous; leaves sparsely villous; ligule absent; panicles lax; spikelets globose; glumes membranous, sparsely setose; lower glume faintly 5-7-nerved; upper glume faintly 7-9-nerved; lower lemma chartaceous; palea oblong; upper lemma coriaceous; palea obovate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1096* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4345* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4536* (GVCH).

Isachne setosa C.E.C.Fisch., Bull. Misc. Inform. Kew 1932(5): 247 (1932); Gamble, Fl. Pres. Madras 1797 (1934).

Habit: Herb
Habitat: Moist rocky areas of Grasslands
Morphology: Annual herb; culms tufted; nodes hairy; leaves flat; sheath lax, patently hairy from tubercles; ligule a row of hairs; panicle lax, branches smooth; spikelets ovoid; glumes ovate, 7-nerved, setose from large tubercles; lower lemma hyaline; upper lemma coriaceous; palea 2-keeled, 2-nerved; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1123* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1658* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2639* (GVCH); Plate 14: Fig. e.

Isachne walkeri Arn. ex Steud., Syn. Pl. Glumac. 1(2): 97 (1854); Hook. f., Fl. Brit. India 7: 26 (1896); Gamble, Fl. Pres. Madras 1797 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; culms stout; nodes glabrous; leaves flat; ligule a tuft of hairs; inflorescence loosely panicled, branches with glandular hairs; spikelets pedicelled; glumes and lemmas sub-equal; lemma paleate; stamens 3; ovary elliptic.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-March
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3215* (GVCH).

Ischaemum L., Sp. Pl. 2: 1049 (1753)

1.Margins of lower glume of sessile spikelets expanded below the middle……..***I. timorense***
1.Margins of lower glume of sessile spikelets not expanded below the middle……..…(2)
2.Pedicels more than half as long as the sessile spikelets……...……....(3)
2.Pedicels less than half as long as the sessile spikelets…….……..…(4)
3.Culms erect; ligule oblong, membranous…...……..…..***I. commutatum***
3.Culms creeping or trailing; ligule linear, fimbriate……...…….....***I. zeylanicola***

4.Pedicels and joints plano-convex……..…..***I. molle***
4.Pedicels and joints acutely trigonous...(5)
5.Nodes glabrous; joints of racemes and pedicels not inflated; lower glume of pedicelled spikelets nodulated…….....***I. rangacharianum***
5.Nodes sparsely villous; joints of racemes and pedicels inflated; lower glume of pedicelled spikelets non-nodulated…….....***I. sp.nov.***

Ischaemum commutatum Hack., Monogr. Phan. [A.DC. & C.DC.] 6: 209 (-210) (1889); *Ischaemum commutatum* Hack. var. *commutatum*, Hook. f., Fl. Brit. India 7:131 (1896); Gamble, Fl. Pres. Madras 1722 (1934).

Habit: Herb
Habitat: Wetlands, forest lands and Grasslands
Morphology: Perennial herb; culms erect; nodes hairy; leaves lanceolate; sheath keeled; ligule membranous; racemes stout; sessile spikelet awned; callus bearded; lower glume noduled, 2-keeled, 2-nerved; lemma notched at apex, awned; palea 2-keeled, 2-nerved; lodicules 2; stamens 3; ovary oblong; pedicelled usually awnless; lower glume winged on one side; upper glume keeled, winged; lemma hyaline, paleate.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: June-September

Distribution: Common

Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2045* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2422* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2646* (GVCH); Plate 14: Fig. f.

Ischaemum sp.nov. Jabeena, Nithya, Sunil & Maya

Habit: Herb
Habitat: Grasslands
Morphology: Annuals; culms decumbent; nodes sparsely villous; leaf sheath bulbous based and hairy; ligule keeled on both sides, bulbous based and hairy abaxially; inflorescence terminal, long exerted; racemes two**,** paired, sparsely hairy; peduncle prominently inflated towards apex and bulbous pilose; sessile spikelet awned; callus inflated, hairy; lower glume, generally smooth without nodules or rarely with 3–4 interconnecting side nodules below the middle; upper glume keeled on the back with scabrous keel, 7-nerved; lower florets male and upper florets bisexual; lower lemma hyaline, 3-nerved, glabrous; lower palea 2-keeled, 2-nerved, glabrous; upper lemma cleft upto two-third, 3-veined and awned from the sinus; upper palea 2-veined; pedicellate spikelet shortly awned or awn less; pedicel trigonous; lower glume non-nodulated, broadly winged on one margin and narrowly winged on the other margin towards apex or wingless, apex shortly clefted, 9–11-nerved; upper glume keeled along the upper half and rounded along the lower half, 5–7-nerved; lower florets male and upper florets bisexual; lower lemma 3-nerved, margins ciliate towards upper half; lower palea hyaline, 2-keeled, 2-nerved; upper lemma deeply cleft to one third below at apex with obtuse to acute lobes, 3-veined and awned from the sinus; upper palea 2-nerved, 2-keeled; lodicules 2; stamens 3; ovary glabrous; stigma feathery; caryopsis oblong-elliptic.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Govindamala, 20 November 2020, *Jabeena & Maya 4469* (GVCH).

Ischaemum molle Hook.f., Fl. Brit. India [J. D. Hooker] 7(21): 128 (1896); Gamble, Fl. Pres. Madras 1722 (1934).

Habit: Herb
Habitat: Wetlands
Morphology: Perennial herb; culms erect, stout; nodes hairy; leaves lanceolate, sessile; sheath keeled; ligule membranous; racemes stout; sessile spikelets awned; callus bearded; lower glume noduled, faintly 9-11 nerved; upper glume keeled, minutely winged at apex; lower lemma faintly 3-nerved; palea 2-keeled, 2-nerved; upper lemma notched at apex, awned, paleate; pedicelled spikelets awnless; lower glume winged on one margin; lodicules 2; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: October-January
Distribution: Occasional
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1060* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1630* (GVCH).

Ischaemum rangacharianum C.E.C. Fisch., Bull. Misc. Inform. Kew 1933(7): 352 (1933); Gamble, Fl. Pres. Madras 1722 (1934); Vajr., Fl. Palghat Dist. 579 (1990).

Habit: Herb
Habitat: Dry Grasslands
Morphology: Annual herb; culms erect from a prostrate base; nodes glabrous; leaves lanceolate; sheath keeled; ligules membranous; racemes 2, pedicels and joints acutely trigonous; sessile spikelets awned; lower glume keeled, nodulated; upper glume faintly 3-nerved; lower lemma hyaline, faintly 3-5 nerved; palea 2-keeled, 2-nerved; stamens 3, upper lemma notched, awned faintly 3-nerved; lodicules 2; pedicelled spikelets awnless; upper lemma entire and awnless.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Rare
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1768* (GVCH).

Ischaemum timorense Kunth, Révis. Gramin. i. 369. t. 98; Hook. f., Fl. Brit. India 7: 135 (1896); Gamble, Fl. Pres. Madras 1722 (1934); *Ischaemum muricatum* sensu Hook.f., Fl. Brit. India 7: 135 (1896); *Ischaemum thomsonianum* Stapf ex C.E.C. Fisch., Gamble, Fl. Pres. Madras 1722 (1934); *Ischaemum timorense* Kunth var. *villosum* Fischer, Gamble, Fl. Pres. Madras 1722 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; culms creeping; nodes hairy; leaves lanceolate, hairy; sheath keeled; ligule fimbriate; racemes 2, rachis undulate; sessile spikelets awned; lower glume ribbed at the apex, hirsute; upper glume minutely 2-lobed at tip, keeled upwards; lower lemma elliptic; palea 2-keeled; upper lemma notched at apex, awned; palea 2-keeled; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1067* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1647* (GVCH); Nelliyampathy

range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4475* (GVCH).

Ischaemum zeylanicola Bor, Grasses Burma, Ceyl., Ind. & Pakist. 186 (1960);

Habit: Herb

Habitat: Grasslands

Morphology: Perennial; culms stoloniferous; leaves sparsely ciliate; ligule fimbriate at apex; inflorescence terminal; racemes 2; both spikelets awned; callus hairy; lower glume 7–11-nerved; upper glume 5-nerved; lemmas paleate, 3-nerved; stamens 3; ovary oblong.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: October-March

Distribution: Occasional

Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3250* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4202* (GVCH).

Jansenella Bor, Kew Bull. 10(1): 96 (1955)

Jansenella griffithiana (Müll.Hal.) Bor, Kew Bull. 10(1): 98 (1955); Vajr., Fl. Palghat Dist. 580 (1990); *Arundinella avenacea* Munro ex Thw., Hook. f., Fl. Brit. India 7: 69 (1896); Gamble, Fl. Pres. Madras 1801 (1934).

Habit: Herb
Habitat: Moist rocky Grasslands
Morphology: Annual herb; culms creeping; leaves linear, amplexicaul; sheath keeled; ligules membranous; inflorescence congested into a crowded ovoid or oblong head; spikelets elliptic; lower glume setose; upper glume 3-5-nerved; lower lemma oblong; palea 2-keeled; upper lemma notched, 2-aristate, awned, pilose; palea notched, 2-keeled; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 618* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1115* (GVCH); Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3276* (GVCH); Plate 14: Fig. g.

Leptochloa P.Beauv., Ess. Agrostogr. 71. t. 15. f. 1 (1812)

Leptochloa chinensis Nees, Syll. Pl. Nov. i. (1824) 4; Agrost. Bras. 432 (1824); Hook. f., Fl. Brit. India 7: 299 (1896); Gamble, Fl. Pres. Madras 1820 (1934); Vajr., Fl. Palghat Dist. 581 (1990).

Habit: Herb
Habitat: Wetlands
Morphology: Perennial herb; culms tufted; nodes glabrous; leaves flat; ligule membranous; panicles lax, branches spiciform; spikelets 2-7-flowered; glumes lanceolate, 1-veined; lemmas elliptic, keeled, 3-veined; palea ovate, 2-keeled; grain ellipsoid.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: May-December

Distribution: Rare

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3528* (GVCH).

Megathyrsus (Pilg.) B.K.Simon & S.W.L.Jacobs, Austrobaileya 6(3): 572 (2003)

Megathyrsus maximus (Jacq.) B.K.Simon & S.W.L.Jacobs, Austrobaileya 6(3): 572 (2003); *Panicum maximum* Jacq., Hook. f., Fl. Brit. India 7: 49 (1896); Gamble, Fl. Pres. Madras 1783 (1934).

Habit: Herb
Habitat: Cultivated; also growing in wild
Morphology: Perennial herb; culms stout; nodes hirsute; leaves tapering; ligules membranous, margins spinulose; panicles effuse; lowest node of the panicle villous; spikelets oblong; lower glume ovate; upper glume oblong; lower lemma oblong; palea elliptic; stamens 3; upper lemma ovate; palea rugose; stamens 3; ovary elliptic.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 200-600m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1197* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4825* (GVCH).

Melinis P.Beauv., Ess. Agrostogr. 54. t. 11. f. 4 (1812)

Melinis repens (Willd.) Zizka, Biblioth. Bot. 138: 55 (1988); *Tricholaena wightii* Nees & Arn. ex Steud., Hook. f., Fl. Brit. India 7: 65 (1896); *Rhynchelytrum villosum* (Parl) Chisu, Gamble, Fl. Pres. Madras 1791 (1934);

Habit: Herb
Habitat: Moist Deciduous forests and Grasslands
Morphology: Annual herb; culms tufted; nodes hairy; leaves linear; ligule a row of hairs. panicles compound, branches and pedicels capillary; spikelets laterally compressed, distant; villous; glumes separated; lower glume minute; upper glume gibbous, 5-nerved; lemmas sub-equal; lower lemma aristate; palea 2-keeled; upper lemma oblong; palea coriaceous; lodicules 2; stamens 3; style 2, free.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: March-August
Distribution: Occasional
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3346* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4819* (GVCH).

Microstegium Nees, Nat. Syst. Bot. (Lindley), ed. 2. 447 (1836)

Microstegium sp. nov. Jabeena, Sunil & Maya

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; culms rambling; nodes cottony hairy; leaves shortly petioled; ligules conspicuous, adpressed hairy towards the base; leaf sheath hairy throughout; inflorescence 4–6 subdigitate raceme; raceme flexuosus, densely ciliate in 2 rows; sessile spikelet oblong, awned; callus sparsely villous; lower glume oblong-lanceolate, margins ciliate towards upper half, chartaceous, 5-nerved, dorsally grooved, margins infolded; upper glume ovate-lanceolate, apex acute, not awned, strongly keeled on dorsal side, chartaceous, 5-nerved, margins infolded, hyaline, ciliolate; lower lemma absent; upper lemma represented by a hyaline base of awn, inconspicuous, linear-oblong, not incised at apex, awn geniculate; palea absent; lodicules 2, obovate, faintly 2–3 nerved; stamens 3;

anthers oblong; filaments hyaline, glabrous; ovary oblong, glabrous; style hyaline, glabrous; stigma feathery; pedicelled spikelets lanceolate; pedicels densely hairy; callus sparsely hairy; glumes and florets similar to that of sessile flowers.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: December-February
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1663* (GVCH).

Ochlandra Thwaites, Enum. Pl. Zeyl. [Thwaites] 376 (1864)

Ochlandra travancorica Gamble, Ann. Roy. Bot. Gard. (Calcutta) 7: 125 (1896); Hook. f., Fl. Brit. India 7: 419 (1896); Gamble, Fl. Pres. Madras 1863 (1934); *Ochlandra travancorica* Benth. ex Gamble var. *hirsuta* Gamble, Gamble, Fl. Pres. Madras 1863 (1934).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; rootstock rhizomatous, branched; culms erect, covered with culm sheaths; culm sheath persistent; leaves scattered, many-veined; sheaths striate, fringed; ligule short; panicles terminating leafy branches; spikelets in verticils, 1-flowered; glumes 2-5, unequal; lemmas similar to the uppermost glume; palea membranous; stamens 20-40, filaments united; ovary narrow; stigma 4-6; fruit ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: November-May
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1236* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3836* (GVCH).

Oplismenus P.Beauv., Fl. Oware 2: 14 (1810)

Leaves glabrescent; inflorescence upto 10 cm long; lower lemma elliptic, epaleate…..…….....***O. burmanni***
Leaves hispid; inflorescence upto 20 cm long; lower lemma ovate, paleate…….....***O. compositus***

Oplismenus burmanni (Retz.) P.Beauv., Ess. Agrostogr. 54, 168 (1812); Hook. f., Fl. Brit. India 7: 68 (1896); Gamble, Fl. Pres. Madras 1778 (1934).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Annuals herb; culms trailing, slender; nodes hairy; leaves flat; ligule a row of hairs; inflorescence spiciform raceme, rachis triquetrous; spikelets elliptic; lower glume awned; awn capillary, minutely scaberulous; lower lemma aristate; palea absent; upper lemma ovate; palea 2-keeled; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: September-November
Distribution: Occasional
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1149* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1785* (GVCH); Plate 14: Fig. h.

Oplismenus compositus P.Beauv., Ess. Agrostogr. 54. (1812); Hook. f., Fl. Brit. India 7: 66 (1896); Gamble, Fl. Pres. Madras 1778 (1934); Vajr., Fl. Palghat Dist. 581 (1990).
Habit: Herb
Habitat: Degraded Deciduous forests
Morphology: Annual herb; culms slender; nodes hairy; leaves flat; ligule a row of hairs; inflorescence lax, spiciform raceme, rachis triquetrous; racemes distant; spikelets paired, sub-sessile; lower glume awned; upper glume aristate; lower lemma ovate; palea lanceolate; upper lemma elliptic; palea 2-keeled; stamens 3; grains ellipsoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1150* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1686* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1856* (GVCH); Plate 15: Fig. a

Oryza L., Sp. Pl. 1: 333 (1753)

Plant annual; panicle upto 25 cm long; glumes unequal……..……..***O. rufipogon***
Plant perennial; panicle upto 10 cm long; glumes equal……..……..***O. meyeriana***

Oryza meyeriana Baill., Hist. Pl. (Baillon) 12: 166 (1893); *Oryza granulata* Nees & Arn. ex Watt, Hook. f., Fl. Brit. India 7: 93 (1896); *Oryza meyeriana* sensu C.E.C. Fisch., Gamble, Fl. Pres. Madras 1845 (1934)

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Perennial herb; culms slender, erect; leaves narrow; ligule membranous; panicle simple; spikelets few; glumes similar, minute; lemmas crustaceous; palea 3-nerved; lodicules 2; stamens 6; styles 2, free.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: July-February
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2110* (GVCH).

Oryza rufipogon Griff., Not. Pl. Asiat. 3: 5, 1851; Icon. Pl. Asiat. t. 145, f. 2. (1851); Vajr., Fl. Palghat Dist. 582 (1990).

Habit: Herb
Habitat: Marshy Grasslands
Morphology: Annual herb; culms erect; nodes glabrous; leaves narrow; sheaths keeled; ligule membranous; panicles lax; glumes unequal; lemmas 3-nerved, awned; palea oblong; stamens 6: grains elliptic.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Least Concern
Phenology: September-March
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2387* (GVCH).

Ottochloa Dandy, J. Bot. 69: 54 (1931)

Ottochloa nodosa (Kunth) Dandy, J. Bot. 69: 55 (1931); Gamble, Fl. Pres. Madras 1778 (1934); *Panicum nodosum* Kunth, Hook. f., Fl. Brit. India 7: 43 (1896).

Habit: Herb
Habitat: Forest margins
Morphology: Perennial herb; culms creeping and rooting below, geniculate; leaves narrow; sheath ciliate; ligules membranous; panicles elongate; racemes

distant; spikelets dorsally compressed; glumes 2, sub-equal, membranous; lower glume 3-5-nerved; upper glume 7-nerved; lemmas sub-equal; palea 2-keeled; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2138* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2405* (GVCH).

Panicum L., Sp. Pl. 1: 55 (1753)

1.Leaves linear……..…….(2)
1.Leaves ovate-lanceolate……...(4)
2.Plant an annual…….....***P. curviflorum***
2.Plant a perennial……..……...(3)
3.Leaves distichous…….....***P. repens***
3.Leaves not distichous.....***P. paludosum***
4.Spikelets more than 4 mm long…….....***P. gardneri***
4.Spikelets less than 3.3 mm long...…...(5)
5.Leaves ovate; apex acute; culms decumbent; upper glume gibbous……..…..***P. brevifolium***
5.Leaves lanceolate; apex acuminate; culms erect; upper glume not gibbous……..***P. notatum***

Panicum brevifolium L., Sp. Pl. 1: 59 (1753); Gamble, Fl. Pres. Madras 1783 (1934); *Panicum ovalifolium* Poir., Hook. f., Fl. Brit. India 7: 44. 1896.

Habit: Herb
Habitat: Forest margins
Morphology: Annual herb; culms decumbent and rooting below; nodes glabrous; leaves amplexicaul; sheath ciliate; ligules membranous; panicles effuse; spikelets gibbous; lower glume ovate; upper glume gibbous; lower lemma 3-nerved; palea 2-keeled; stamens 3; upper lemma ovate; palea 2- keeled; stamens 3; ovary elliptic.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Common
Altitude: 800-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 384* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 551* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 966* (GVCH).

Panicum curviflorum Hornem., Hort. Bot. Hafn. Suppl. 116 (1819); *Panicum trypheron* Schult., Hook. f., Fl. Brit. India 7: 47 (1896); Gamble, Fl. Pres. Madras 1783 (1934).

Habit: Herb
Habitat: Grasslands and wastelands
Morphology: Annual herb; culms erect; nodes glabrous; leaves usually basal only, not tapering, copiously hairy; sheath ciliate; ligules membranous; panicles large, effuse; spikelets gaping; lower glume shorter than upper; lemmas oblong; palea 2-keeled; stamens 3; ovary ovate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Common
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 627* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3821* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4297* (GVCH).

Panicum gardneri Thwaites, Enum. Pl. Zeyl. [Thwaites] 359 (1864); Gamble, Fl. Pres. Madras 1783 (1934); Vajr., Fl. Palghat Dist. 582 (1990); *Isachne gardneri* (Thw.) Benth., Hook. f., Fl. Brit. India 7: 26 (1896).

Habit: Herb
Habitat: Semi-evergreen and Shola forests
Morphology: Perennial herb; culms slender; leaves narrow; sheath ciliate; ligule membranous; panicle effuse; spikelets solitary; glumes and lemmas sub-equal; lower glume 1-nerved; upper glume 7-nerved; lower lemma 7-9-nerved; palea oblong; upper lemma and palea ovate.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-October
Distribution: Occasional
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 567* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 920* (GVCH).

Panicum notatum Retz., Observ. Bot. (Retzius) iv. 18 (1786); *Panicum montanum* Roxb., Hook. f., Fl. Brit. India 7: 53 (1896); Gamble, Fl. Pres. Madras 1783 (1934); Vajr., Fl. Palghat Dist. 583 (1990).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Perennial herb; culms erect; nodes glabrous; leaves lanceolate; ligules membranous; spikelets ovate; lower glume ovate; upper glume ovate, not gibbous; lemmas ovate; lower palea absent; upper palea ovate; stamens 3; ovary elliptic.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-October
Distribution: Occasional
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 491* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3336* (GVCH); Plate 15: Fig. b.

Panicum paludosum Roxb., Hort. Bengal. 8; Fl. Ind. i. 307; Gamble, Fl. Pres. Madras 1783 (1934); *Panicum proliferum* sensu Hook.f., Fl. Brit. India 7: 50 (1896).

Habit: Herb
Habitat: Marshy areas
Morphology: Perennial herb; culms stout, base creeping and rooting at lower nodes; nodes glabrous; leaves linear, tapering; sheath inflated; panicles effuse; spikelets lanceolate; lower glume distinct, shorter than upper glume; upper glume ovate; lemmas elliptic; lower palea usually absent; upper palea auricled; stamens 3; grains oblong.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: March-December
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu. 30 November 2019, *Jabeena & Maya 2930* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3092* (GVCH).

Panicum repens L., Sp. Pl., ed. 2. 1: 87 (1762); Hook. f., Fl. Brit. India 7: 49 (1896); Gamble, Fl. Pres. Madras 1783 (1934).

Habit: Herb
Habitat: Wetlands and marshy areas of Grasslands
Morphology: Perennial herb; culms creeping at the base, stoloniferous, nodular; nodes glabrous; leaves distichous, involute, rigid, glabrous; ligule membranous; inflorescence a panicle;

spikelets oblong; glumes ovate; lower lemma ovate-lanceolate; palea hyaline, 2-keeled; stamens 3; upper lemma oblong; palea elliptic; stamens 3; ovary ovate.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Common
Altitude: 800-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 542* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 940* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4278* (GVCH).

Paspalum L., Syst. Nat., ed. 10. 2: 855 (1359) (1759)

Plants tubercle based hairy; ligule obscure……..……..***P. canarae***

Plants glabrous; ligule membranous……....***P. conjugatum***

Paspalum canarae (Steud.) Veldkamp, Blumea 21(1): 72 (1973); *Paspalum compactum* sensu Hook.f., Fl. Brit. India 7: 12 (1896); Gamble, Fl. Pres. Madras 1772 (1934); Vajr., Fl. Palghat Dist. 584 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; culms creeping; nodes hairy; leaves flat, hairy; sheath keeled; racemes 6-20, alternate, rachis sub-triquetrous, margins tubercled; spikelets turgidly plano-convex; glumes more or less ciliate with rigid hairs from tubercles; upper glume 3-nerved; lower lemma 3-nerved; upper lemma nerveless; palea similar to lemma; lodicules 2; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Least Concern
Phenology: October-December
Distribution: Common
Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 168* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 569* (GVCH); Karassuri, 20 October 2019, *Jabeena & Maya 2681* (GVCH).

Paspalum conjugatum P. J . Bergius, Acta Helv. Phys.-Math. 7: 129 (-130; t. 8) (1772); Hook. f., Fl. Brit. India 7: 11 (1896); Gamble, Fl. Pres. Madras 1772 (1934); Vajr., Fl. Palghat Dist. 584 (1990).

Habit: Herb
Habitat: Banks of rivers
Morphology: Perennial herb; culms creeping; nodes glabrous; leaves flat; sheath keeled; ligule membranous; racemes paired, conjugate, rachis flat, margins cartilaginous and smooth; spikelets compressed; lower glume absent; upper glume membranous; lower lemma membranous; upper lemma 2-keeled; stamens 3.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Least Concern

Phenology: Throughout the year

Distribution: Common

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 373* (GVCH); Karimala, 20 October 2019, *Jabeena & Maya 2700* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2773* (GVCH).

Perotis Aiton, Hort. Kew. [W. Aiton] 1: 85; 3: 506 (1789)

Perotis indica (L.) Kuntze, Rev. Gen. Pl. 2 (1891); Gamble, Fl. Pres. Madras 1814 (1934); Vajr., Fl. Palghat Dist. 585 (1990); *Perotis latifolia* Ait., Hook. f., Fl. Brit. India 7: 98 (1796).

Habit: Herb
Habitat: Wastelands
Morphology: Annual herb; culms tufted; leaves flat; sheaths to 3.5 cm long; ligule membranous; raceme spiciform, simple, terminal; spikelets minute, subulate, 1-flowered, articulated on short pedicel; glumes sub-equal, narrow, tapering into a long, capillary awn; lemma hyaline, much shorter than the glumes; palea narrower; lodicules 2; stamens 3; styles 2, shortly connate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2783* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3036* (GVCH).

Pogonatherum P.Beauv., Ess. Agrostogr. 56. t. 11. f. 7 (1812)

Pogonatherum crinitum Kunth, Enum. Pl. [Kunth] 1: 478 (1833); Hook. f., Fl. Brit. India 7: 141 (1896); *Pogonatherum paniceum* sensu Gamble, Fl. Pres. Madras 1714 (1934).

Habit: Herb
Habitat: Grasslands and open areas
Morphology: Perennial herb; culms erect, branching; node villous; leaves flat; ligules membranous; raceme solitary, terminal; spikelets binate, one sessile and other pedicelled, 1-2 flowered; callus bearded; glumes membranous; lower glume truncate; upper glume keeled, awned, bifid at apex; lemmas hyaline, lower lemma absent in pedicelled spikelet; upper lemma awned, bifid at apex; lodicules 0; stamen 1.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: February-March
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1069* (GVCH); Kollengode range, Karassuri, 04 March 2021, *Jabeena & Maya 4994* (GVCH).

Polytrias Hack., Nat. Pflanzenfam. [Engler & Prantl] ii. 2 (1887) 24

Polytrias indica (Houtt.) Veldkamp, Blumea 36(1): 180 (1991); *Ischaemum aristatum* C.E.C. Fisch., Gamble, Fl. Pres. Madras 1721 (1934); *Ischaemum ciliare* Retz., Hook. f., Fl. Brit. India 7: 133 (1896).

Habit: Herb
Habitat: Moist Grasslands and forest margins
Morphology: Perennial herb; culms creeping; nodes villous; leaves sessile, sparsely hairy; sheaths keeled; racemes 2; sessile spikelets awned; glumes winged at apex; lower glume notched at apex, 7-9 nerved; lower lemma 1-nerved; upper lemma cleft to the middle, awned; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and Australian
IUCN category: Least Concern
Phenology: October-November
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya*

1075 (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2932* (GVCH); Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3253* (GVCH).

Pseudechinolaena Stapf, Fl. Trop. Afr. [Oliver et al.] 9(1): 14 (1917)

Pseudechinolaena polystachya (Kunth) Stapf in Prain, Fl. Trop. Afr. [Oliver et al.] 9(3): 495 (1919); Gamble, Fl. Pres. Madras 1766 (1934); Vajr., Fl. Palghat Dist. 587 (1990); *Panicum uncinatum* Raddi, Hook. f., Fl. Brit. India 7: 58 (1896).

Habit: Herb
Habitat: Forest margins
Morphology: Annual herb; culms slender; nodes pubescent; leaves flaccid, pilose; panicle simple; racemes few, spiciform; spikelet solitary, pedicelled; glumes sub-equal; lower glume 3-nerved; upper glume 7-nerved; lemmas chartaceous; lower lemma 3-nerved; palea convolute; upper lemma 5-nerved; lodicules 2; stamens 3. styles 2, free; caryopsis oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 513* (GVCH); Hilltop, 20 January 2018, *Jabeena & Maya 988* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1764* (GVCH); Plate 15: Fig. c.

Pseudopogonatherum A.Camus, Fl. Indo-Chine [P.H. Lecomte et al.] 7: 254 (1922)

Pseudopogonatherum trispicatum (Schult.) Ohwi, Bull. Tokyo Sci. Mus. 18: 3 (1947); *Pollinia argentea* Trin., Hook. f., Fl. Brit. India 7: 11 (1896); *Eulalia tristachya* (Roxb.) O. Ktze., Gamble, Fl. Pres. Madras 1715 (1934); *Eulalia trispicata* (Schult.) Henrard, Vajr., Fl. Palghat Dist. 575 (1990).

Habit: Herb
Habitat: Rocky areas in Grasslands
Morphology: Perennial herb; culms erec, quite glabrous; leaves narrow, convolute; sheath glabrous; ligule membranous; racemes 2-17, spiciform, white hairy; spikelets densely packed; glumes 2, sub-equal; upper glume 1-keeled; lemmas hyaline, sub-equal; upper lemma awned, epaleate; lodicules 2; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 962* (GVCH); Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2519* (GVCH).

Pseudoxytenanthera Soderstr. & R.P.Ellis, Smithsonian Contr. Bot. 72: 52 (1988)

Pseudoxytenanthera bourdillonii (Gamble) H.B.Naithani, J. Bombay Nat. Hist. Soc. 87(3): 440 (1991); *Oxytenanthera bourdillonii* Gamble, Hook. f., Fl. Brit. India 7: 403 (1896); Gamble, Fl. Pres. Madras 1861 (1934).

Habit: Shrub
Habitat: Evergreen and Shola forests
Morphology: Shrub; culms from a thick rhizome, hollow, glabrous; culm sheath glabrous; leaves sessile; sheath with 2 apical calluses; spikelets robust, 3-flowered; glumes 1-3, eciliate; lemma ovate, glabrous; palea 2-keeled; lodicules

absent; stamens 6, filaments united into a tube; ovary ovoid; style hairy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2563* (GVCH).

Rottboellia L.f., Suppl. Pl. 13, 114 (Rottboella) (1782)

Rottboellia cochinchinensis (Lour.) Clayton, Kew Bull. 35(4): 817 (1981); Vajr., Fl. Palghat Dist. 587 (1990); *Rottboellia exaltata* L. f., Hook. f., Fl. Brit. India 7: 156 (1896); Gamble, Fl. Pres. Madras 1759 (1934).

Habit: Herb
Habitat: Moist Deciduous, Semi-Evergreen forests and Grasslands
Morphology: Annual herb; culms branched with stilt roots; nodes glabrous; leaves flat; ligules membranous; inflorescence a solitary, slender, cylindric spiciform raceme; sessile spikelets pale; glumes sub-equal; lower glume ovate; upper glume boat-shaped; lemmas hyaline, palette, nearly as long as the glumes; lodicules 2; stamens 3; pedicelled spikelets shorter than sessile ones.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2582* (GVCH); Karimala, 20 October 2019, *Jabeena & Maya 2727* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4203* (GVCH).

Saccharum L., Sp. Pl. 1: 54 (1753)

Saccharum spontaneum L., Mant. Pl. Altera 183 (1771); Hook. f., Fl. Brit. India 7: 118 (1896); Gamble, Fl. Pres. Madras 1709 (1934); Vajr., Fl. Palghat Dist. 588 (1990).

Habit: Herb
Habitat: Wetlands
Morphology: Perennial herb; culms erect; leaves narrow; sheath hairy; ligules membranous; inflorescence of large terminal panicles of racemes, silky white; spikelets paired, one sessile and one pedicelled; callus hairs twice as long as spikelets; glumes glabrous on the back; lower glume ovate; upper glume keeled; lemmas hyaline; stamens 3; ovary oblong.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: November-February
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 943* (GVCH); Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1258* (GVCH).

Sacciolepis Nash, Man. Fl. N. States [Britton] 89 (1901)

Sacciolepis indica (L.) Chase, Proc. Biol. Soc. Washington 21: 8 (1908); Gamble, Fl. Pres. Madras 1787 (1934); Vajr., Fl. Palghat Dist. 588 (1990); Panicum indicum L., Hook. f., Fl. Brit. India 7: 41 (1896).

Habit: Herb
Habitat: Wetlands and marshy areas
Morphology: Annual herb; culms slender, tufted; leaves narrow; ligules membranous;

panicles cylindric, spiciform, pedicels short; pseudospikes continuous; spikelets ovoid; lower glume clasping at base, half as long as the spikelet; upper glume ovate; lower lemma ovate; palea absent; upper lemma coriaceous; palea similar; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American
IUCN category: Least Concern
Phenology: June-February
Distribution: Common
Altitude: 800-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1619* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1763* (GVCH); Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2149* (GVCH).

Setaria P.Beauv., Ess. Agrostogr. 51, 178 (1812)

1.Grain cylindric; palea hyaline……....***S. parviflora***
1.Grain oblong or ellipsoid; palea not hyaline……....(2)
2.Leaves elliptic-lanceolate; palea elliptic……..…...***S. barbata***
2.Leaves linear; palea ovate……(3)
3.Ligule membranous; spikelets ovate or sub-globose; upper glume ovate...***S. pumila***
3.Ligule a row of hairs; spikelets broadly elliptic; upper glume elliptic.....***S. intermedia***

Setaria barbata (Lam.) Kunth, Révis. Gramin. 1: 47 (1829); *Panicum flavescens* sensu Hook.f., Fl. Brit. India 7: 56 (1896).

Habit: Herb
Habitat: Banks of streams
Morphology: Annual herb; culms decumbent; nodes hairy; leaves narrow; sheath keeled; panicle lax; spikelets elliptic. glumes ovate; lemmas elliptic; palea hyaline, 2-keeled; stamens 3; ovary oblong.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, Holarvtic and African

IUCN category: Not Evaluated

Phenology: September-March

Distribution: Occasional

Altitude: 300-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2393* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3081* (GVCH).

Setaria intermedia Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 2: 489 (1817); Hook. f., Fl. Brit. India 7: 79 (1896); Gamble, Fl. Pres. Madras 1789 (1934); Vajr., Fl. Palghat Dist. 589 (1990).

Habit: Herb

Habitat: Moist deciduous forests and grasslands

Morphology: Annual herb; node glabrous; leaves linear; ligule hairy; inflorescence a spiciform panicle; spikelets elliptic; glumes 1-nerved; lower lemma paleate, 5-nerved; upper lemma coriaceous.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: September-December

Distribution: Occasional

Altitude: 500-1000

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 565* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4212* (GVCH).

Setaria parviflora (Poir.) Kerguelen, Lejeunia 120: 161 (1987); *Pennisetum setosum* (Sw.) L.C. Rich., Hook. f., Fl. Brit. India 7: 87 (1896); *Pennisetum polystachyon* (L.) Schult., Gamble, Fl. Pres. Madras 1792 (1934); Vajr., Fl. Palghat Dist. 585 (1990).

Habit: Herb
Habitat: Degraded Moist Deciduous forests
Morphology: Annual herb; culms erect, stout; nodes glabrous; leaves expanded; sheath keeled; ligules fimbriate; panicles slender, linear, rachis angled, flexuous; involucre sessile, spirally arranged at short intervals; spikelets solitary in an involucre; glumes ovate; lower lemma ovate, 3-toothed at apex; palea hyaline; upper lemma fimbriate; palea oblong, fimbriate; stamens 3; anthers not penicellate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: April-December
Distribution: Common
Altitude: 200-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1818* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3374* (GVCH); Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3707* (GVCH); Plate 15: Fig. d.

Setaria pumila Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 2: 891 (1817); Vajr., Fl. Palghat Dist. 590 (1990); *Setaria pallida-fusca* (Schum.) Stapf & C.E.Hubb., Gamble, Fl. Pres. Madras 1789 (1934).

Habit: Herb
Habitat: Degraded Moist Deciduous forests, Grasslands and wastelands
Morphology: Annual herb; culms erect; nodes glabrous; leaves narrow; sheath keeled; ligules membranous; panicles continuous, cylindric; spikelets deciduous, ovate; glumes membranous, ovate; lemmas unequal; lower lemma elliptic; palea hyaline, 2-keeled; upper lemma beaked; palea 2-keeled; stamens 3; ovary oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1501* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2027* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2288* (GVCH).

Spodiopogon Trin., Fund. Agrost. (Trinius) 192, t. 17 (1820)

Spodiopogon rhizophorus (Steud.) Pilg., Nat. Pflanzenfam., ed. 2 [Engler & Prantl] 14e: 119 (1940); Vajr., Fl. Palghat Dist. 591 (1990); *Spodiopogon albidus* Benth., Hook. f., Fl. Brit. India 7: 108 (1896); Gamble, Fl. Pres. Madras 1710 (1934).

Habit: Herb
Habitat: Semi-evergreen forests
Morphology: Annual herb; nodes glabrous; leaves flat, petioled; sheath keeled; ligule membranous; inflorescence a panicled 2-3-nate spikelets, rachis jointed; spikelets in groups of three one sessile and two pedicelled, 1-2 flowered; glumes sub-equal, membranous; lower lemma plicate, 1-nerved; palea 2-nerved; upper lemma bifid with a slender awn; lodicules 2; stamens 3; styles 2.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Occasional
Altitude: 600-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 October 2017, *Jabeena & Maya 386* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 910* (GVCH); Plate 15: Fig. e.

Sporobolus R.Br., Prodr. Fl. Nov. Holland. 169 (-170) (1810)

1.Lower glume as long as or longer than the lemma……...……....***S. virginicus***
1.Lower glume shorter than the lemma…….....(2)
2.Upper glume as long as or longer than the lemma……..…...***S. pilifer***
2.Upper glume shorter than the lemma…...……..(3)
3.Panicle effuse.....……..***S. tenuissimus***
3.Panicle spiciform, contracted...***S. indicus***

Sporobolus indicus (L.) R.Br., Prodr. Fl. Nov. Holland. 170 (1810); Sporobolus indicus sensu Hook. f., Fl. Brit. India 7: 247 (1896); Gamble, Fl. Pres. Madras 1817 (1934); *Sporobolus diander* (Retz.) P. Beauv., Gamble, Fl. Pres. Madras 1817 (1934).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Perennial herb; culms erect, not stoloniferous; nodes glabrous; leaves flaccid, flat; ligules fimbriate; panicles spiciform; spikelets ellipsoid, single flowered; glumes distinctly shorter than the lemma; lower glume oblong; upper glume ovate; lemma elliptic; palea elliptic.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: March-September
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1516* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2225* (GVCH).

Sporobolus pilifer (Trin.) Kunth, Enum. Pl. [Kunth] 1: 211 (1833); Gamble, Fl. Pres. Madras 1817 (1934); Vajr., Fl. Palghat Dist. 591 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; culms tufted; not stoloniferous; node glabrous; leaves flat, softly pilose, margins serrulate; panicles contracted, subspiciform; spikelets elliptic; lower glume lanceolate; upper glume oblong; lemma closely 2-nerved; palea oblong; stamens 2.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 218* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2383* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2527* (GVCH).

Sporobolus tenuissimus (Mart. ex Schrank) Kuntze, Revis. Gen. Pl. 3[3]: 369 (1898); *Sporobolus minutiflorus* (Trin.) Link, Hook. f., Fl. Brit. India 7: 248 (1896); Gamble, Fl. Pres. Madras 1816 (1934).

Habit: Herb
Habitat: Moist Deciduous forests and Grasslands
Morphology: Annual herb; culms erect; nodes glabrous; leaves narrow, glabrous; ligules membranous; panicles effuse; glumes distinctly shorter than the lemma, hyaline, 1-nerved; lemma 1-nerved; palea 2-nerved; stamens 3.
Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 521* (GVCH); Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 628* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2010* (GVCH).

Sporobolus virginicus Kunth, Révis. Gramin. i. 67 (1829); Gamble, Fl. Pres. Madras 1818 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; culms not stoloniferous, decumbent below; nodes glabrous; leaves convolute, margins smooth; panicles effuse; spikelets lanceolate; glumes subeqaul; lemma muticous; palea as long as lemma, closely 2-nerved; stamens 3; styles 2, free.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2139* (GVCH).

Themeda Forssk., Fl. Aegypt.-Arab. 178 (1775)

1.Sessile spikelets 6-10 mm long…….....***T. triandra***
1.Sessile spikelets 4-5 mm long…….(2)
2.Leaves upto 120 cm long; lower glume hirtus…..…….....***T. cymbaria***
2.Leaves upto 40 cm long; lower glume pubescent…….....***T. sabarimalayana***

Themeda cymbaria Hack., Monogr. Phan. [A.DC. & C.DC.] 6: 668 (1889); Gamble, Fl. Pres. Madras 1746 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; culms robust; leaves narrow; sheath keeled; ligule membranous; spathules slender, glabrous; panicle decompound, thyrsiform; involucral spikelets in superposed pairs, often 2 bisexual spikelets in a raceme; glumes sub-equal; callus bearded; lower glumes lanceolate; lower lemma oblong, awnless; upper lemma awned; lodicules 2; stamens 3; styles 2.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4321* (GVCH); Kollengode range, Karssuri, 12 January 2021, *Jabeena & Maya 4733* (GVCH).

Themeda sabarimalayana Sreek. & V.J.Nair, Bull. Bot. Surv. India 29(1-4): 127 (1989).

Habit: Herb
Habitat: Forest margins
Morphology: Perennial herb; culms erect; nodes glabrous; leaves narrow; panicles drooping; involucral spikelets 2-pairs; lower glume 9-13-nerved; upper glume 3-5-nerved; lodicules 2; stamens 3; styles 2; sessile spikelets solitary, awned; pedicelled spikelets 3-4 in a raceme.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Rare

Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4482* (GVCH).

Themeda triandra Forssk., Fl. Aegypt.-Arab. 178 (1775); Gamble, Fl. Pres. Madras 1746 (1934); Vajr., Fl. Palghat Dist. 591 (1990); *Anthistiria imberbis* Retz., Hook. f., Fl. Brit. India 7: 211 (1896).

Habit: Herb
Habitat: Deciduous forests and Grasslands
Morphology: Perennial herb; culms robust; nodes glabrous; leaves narrow; sheath keeled; ligule fimbriate; flowers clustered in globose or fan-shaped drooping fascicles; involucral spikelets all on the same level, only one bisexual spikelet in the fascicle; sessile spikelets solitary in a fascicle; glumes similar; lemmas awned; stamens 3; pedicelled spikelets 2 in a fascicle.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Common
Altitude: 600-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1022* (GVCH); Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1171* (GVCH); Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 426* (GVCH); Plate 15: Fig. f.

Tripogon Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 2: 34 (1817)

1.Lemmas cleft at the apex into 2-lobes……...(2)
1.Lemmas cleft at the apex into 4-6 lobes.....(4)
2.Median awn shorter than the lemma…….……..…...***T. bimucronatus***
2.Median awn as long as or longer than the lemma…..……(3)
3.Awns straight or curved, not more than twice as long as the lemma...…..***T. wightii***
3.Awns flexuous, capillary, several times as long as the lemma……..***T. capillatus***
4.Lemmas 3-lobed……...…....***T. sp.nov.***
4.Lemmas 4-lobed……...……...(5)
5.Median awn shorter than or nearly equal to the lemma……...…...***T. bromoides***
5.Median awn twice as long as the lemma or more……...…...……..….***T. ravianus***

Tripogon bimucronatus Thoiba & Sunil, Gard. Bull. Singapore 67(1): 151 (2015).

Habit: Herb
Habitat: Grassy slopes
Morphology: Perennial herb; culms erect; node glabrous; leaves linear; sheath hairy; inflorescence a spiciform raceme bearing 45–65 spikelets; spikelets 6–8-flowered; callus bearded; lower glume 1-nerved; upper glume awned, 3-nerved; lemma 3-nerved, 1-awned, lateral awns absent; palea hyaline, keeled; lodicules 2, 3-toothed; stamens 3; ovary obovate; styles 2.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to South India
IUCN category: Not Evaluated
Phenology: September-November
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1039* (GVCH).

Tripogon bromoides Roth, Nov. Pl. Sp. 79 (1821); Gamble, Fl. Pres. Madras 1834 (1934); Vajr., Fl. Palghat Dist. 592 (1990).

Habit: Herb
Habitat: Rocky Grasslands

Morphology: Perennial herb; culms tufted; node glabrous; leaves linear; spiciform raceme slender; spikelets sessile, 5-16 flowered; callus bearded; lower glume 1-keeled, 1-nerved; upper glume awned, 1-keeled, 1-nerved; lemma 4-lobed, 3-awned, 3-nerved; palea hyaline, 2-keeled, ciliate on upper half; lodicules 2; stamens 3; ovary obovate.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-March
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1643* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3822* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4481* (GVCH).

Tripogon capillatus Jaub. & Spach, Ill. Pl. Orient. 4(33): 47, t. 332 (1851); Hook. f., Fl. Brit. India 7: 285 (1896); Gamble, Fl. Pres. Madras 1833 (1934).

Habit: Herb
Habitat: Rocky Grasslands
Morphology: Annual herb; culms slender; nodes glabrous; leaves narrow; ligule membranous; inflorescence a terminal spiciform raceme; spikelets remote, few-flowered; callus bearded; rachilla glabrous; glumes awned, 3-lobed at apex, 1-keeled, 1-nerved; lemma 3-veined, 3-awned, 2-lobed at apex, distinctly shorter than the awns; palea 2-keeled, bilobed at apex; lodicules 2; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 986* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4320* (GVCH).

Tripogon ravianus Sunil & Pradeep, Sida 19(4): 803 (2001).

Habit: Herb
Habitat: Wet rocky hill slopes
Morphology: Perennial herb; nodes glabrous; leaves narrow; sheath glabrous; ligule membranous; inflorescence a spiciform raceme; spikelets secund; lower glume 2-lobed, 1-veined; upper glume awned, notched at apex; lemma awned, 4-lobed at the apex, 3-veined; lateral awns almost equaling the central awn; callus bearded; palea 2-keeled; lodicules 2; stamens 3; ovary obovate.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to South India
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4206* (GVCH).

Tripogon sp. nov. Jabeena, Sunil & Maya

Habit: Herb
Habitat: Grasslands
Morphology: Caespitose perennials; culms terete, erect; nodes glabrous; leaf blades flat, sparsely villous on both sides; ligules membraneous, eciliate; inflorescence a solitary terminal spiciform raceme; peduncle glabrous; spikelets 4–7-flowered; callus bearded; lower glume asymmetrical, broadened on one side, 1-veined, acuminate to mucronulate at apex; upper glume symmetrical, 1-veined, 1-awned; lemma 3-veined, 3-lobed at apex, without lobes between the median and lateral awns, the mid-lobe acute at apex or rarely with a minute notch in the lowermost lemma, 3-

awned, awns scabridulose, central awn a little longer or about equalling with its lemma, lateral awns about the half the length of median awn; palea notched at apex, hyaline, 2-veined, 2-keeled; keels minutely winged; lodicules 2, glabrous; stamens 3; anthers oblong; filaments glabrous; ovary glabrous; styles hyaline; stigma feathery.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 19 November 2020, *Jabeena & Maya 4380* (GVCH).

Tripogon wightii Hook.f., Fl. Brit. India [J. D. Hooker] 7(22): 286 (1896); Gamble, Fl. Pres. Madras 1833 (1934).

Habit: Herb
Habitat: Grasslands
Morphology: Perennial herb; culms simple, slender, not thickened by the old sheaths; leaves linear; ligule membranous; inflorescence spiciform raceme; spikelets sessile; lower glume 1-nerved, aristate; upper glume keeled; callus bearded; lemma awned, bifid at apex, 3-nerved, distinctly shorter than their awns; palea 2-keeled, 2-nerved; lodicules 2; stamens 3; ovary oblong.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: September-November
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2566* (GVCH); Karimala, 20 October 2019, *Jabeena & Maya 2730* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4229* (GVCH).

Urochloa P.Beauv., Ess. Agrostogr. 52 (1812)

1.Rachis trigonous…..…….....***U. ramosa***
1.Rachis flat……(2)
2.Upper glume 7-9-nerved; lower floret empty; anthers 1 mm long, orange-red…….....***U. subquadripara***
2.Upper glume 5-nerved; lower floret male; anthers more than 2 mm long, yellow……...***U. eminii***

Urochloa eminii (Mez) Davidse, Monogr. Syst. Bot. Missouri Bot. Gard. 45: 1258 (1993).

Habit: Herb
Habitat: Waste places
Morphology: Perennial herb; culms; leaves narrow; sheath pubescent; racemes pseudo-paniculate, rachis flat; spikelets elliptic; lower glume 9-nerved; upper glume 5-nerved; lower lemma 5-nerved; palea 2-keeled; stamens 3; upper lemma crustaceous; stamens 3.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and Australian
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2962* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3138* (GVCH).

Urochloa ramosa (L.) T.Q.Nguyen, Novosti Sist. Vyssh. Rast. 1966, 13 (1966); *Panicum ramosum* L., Hook. f., Fl. Brit. India 7: 36 (1896); *Brachiaria ramosa* (L.) Stapf., Gamble, Fl. Pres. Madras 1770 (1934).

Habit: Herb

Habitat: Grasslands and Moist Deciduous forests
Morphology: Annual herb; culms decumbent; leaves lanceolate, base clasping the culm; sheath densely pubescent; racemes pseudo-paniculate, rachis trigonous; spikelets elliptic, imbricate; glumes 7-nerved; lower lemma 5-nerved; palea hyaline, 2-keeled; upper lemma crustaceous; stamens 3.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: March-September
Distribution: Common
Altitude: 800-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2406* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2630* (GVCH); Karimala, 20 October 2019, *Jabeena & Maya 2701* (GVCH).

Urochloa subquadripara (Trin.) R.D.Webster, Austral. Paniceae (Poaceae) 252 (1987); *Brachiaria miliiformis* (J. Presl ex C. Presl) A. Chase, Gamble, Fl. Pres. Madras 1769 (1934); Vajr., Fl. Palghat Dist. 567 (1990); *Panicum miliforme* J. Presl ex C. Presl Hook. f., Fl. Brit. India 7: 37 (1896).

Habit: Herb
Habitat: Degraded, moist and dry deciduous forests, roadsides and wastelands
Morphology: Perennial herb; culms creeping; node glabrous; sheath glabrous; ligule fimbriate; rachis flat; lower glume 9-11-nerved; upper glume 7-9-nerved; lower lemma 5-7-nerved; upper lemma 3-5-nerved; palea 2-keeled, 2-nerved; stamens 3; ovary elliptic.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Least Concern

Phenology: July-October

Distribution: Common

Altitude: 600-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 701* (GVCH); Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1473* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1721* (GVCH).

Zenkeria Trin., Linnaea 11(2): 150, t. 3 (1837)

Zenkeria elegans Trin., Linnaea 11(2): 150, t. 3 (1837); Gamble, Fl. Pres. Madras 1805 (1934).

Habit: Herb

Habitat: Rocky Grasslands

Morphology: Perennial herb; culms tufted; nodes glabrous; leaves flat; sheath keeled; panicles pyramidal, branches capillary; spikelets 2-flowered, laterally compressed, rhachilla bearded; glumes equal 1-nerved, keeled, persistent; lemmas equal; palea 2-keeled, 2-nerved, long ciliate; stamens 3; styles 2, free; grains narrowly oblong.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: May-December

Distribution: Common

Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1036* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2015* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2122* (GVCH).

IV.1.5. Eudicots

RANUNCULALES

MENISPERMACEAE

1.Leaves with hairy domatia in nerve axils……...……...……..***Anamirta***
1.Leaves without domatia in nerve axils…….(2)
2.Inflorescence from old wood…....….(3)
2.Inflorescence axillary or from leaf scars…..……..….(4)
3.Leaf apex obtuse; drupe compressed……....***Diploclisia***
3.Leaf apex acuminate; drupes ovoid, 3-together……...…….……..***Fibraurea***
4.Male flowers in racemes…….***Tinospora***
4.Male flowers in axillary panicles or in umbels…….……(5)
5.Male flowers in umbels……...***Stephania***
5.Male flowers in panicles…..…….(6)
6.Bracts large, orbicular……..***Cissampelos***
6.Bracts small or absent…....……(7)
7.Sepals hairy outside; carpels 8-12, glabrous; drupe glabrous……..***Tiliacora***
7.Sepals glabrous; carpels one, densely hairy; drupe pilose……..…...……..***Cyclea***

Anamirta Colebr., Trans. Linn. Soc. London 13(1): 52 (1821)

Anamirta cocculus (L.) Wight & Arn., Prodr. Fl. Ind. Orient. 1: 446 (1834); Hook. f., Fl. Brit. India 1: 93 (1872); Gamble, Fl. Pres. Madras 27 (1915); Vajr., Fl. Palghat Dist. 50. (1990).

Habit: Climber
Habitat: Moist Deciduous and Evergreen forests
Morphology: Climber; leaves simple, 5-ribbed; flowers unisexual, panicled; sepals 6; petals absent; male flowers with anthers capitate in many whorls on the top of the staminal column; female flowers with 9 staminodes in one whorl; carpels 3 on a short gynophore; style absent; stigma sub-capiatate, reflexed; drupes on a 3-fid gynophore, ovoid.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 100-600m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 08 November 2017, *Jabeena & Maya 719* (GVCH); Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1169* (GVCH).

Cissampelos L., Sp. Pl. 2: 1031 (1753)

Cissampelos pareira L., Sp. Pl. 2: 1031 (1753); Hook. f., Fl. Brit. India 1: 103 (1872); Gamble, Fl. Pres. Madras 30 (1915); *Cissampelos pareira* L. var. *hirsuta* (Ham. ex DC.) Forman, Vajr., Fl. Palghat Dist. 50 (1990).

Habit: Climber
Habitat: Deciduous forests
Morphology: Climber; stem pubescent; leaves peltate; male flowers cymose, sessile; sepals 4, hairy within; petals 4, connate; stamens 4, connate around the staminal column; female flowers in bracteate racemes; sepals 2; petals absent; staminodes absent; ovary solitary, densely hairy; styles 3; drupe globose.
Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: July-September

Distribution: Occasional

Altitude: 300-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1279* (GVCH); Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1511* (GVCH).

Cyclea Arn. ex Wight, Ill. Ind. Bot. i. 22 (1840)

Cyclea peltata (Lam.) Hook. f. & Thomson, Fl. Ind. [Hooker f. & Thomson] 201 (1855); Hook. f., Fl. Brit. India 1: 104 (1872); Gamble, Fl. Pres. Madras 31 (1915); Vajr., Fl. Palghat Dist. 51 (1990); *Cyclea burmannii* (DC.) Hook. f. & Thoms., Hook. f., Fl. Brit. India 1: 104 (1872).

Habit: Climber
Habitat: Semi-evergreen and Evergreen forests
Morphology: Climber; leaves peltate, 4-8 ribbed; inflorescence an axillary panicle; rachis pubescent; flowers sessile, densely hairy; male flowers sepals connate, hairy without; petals glabrous; anther 6-8 celled; female flowers sepal and petal one, hairy; carpel one, densely hairy; style short; drupe ovoid.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1747* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1854* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3944* (GVCH).

Diploclisia Miers, Ann. Mag. Nat. Hist. ser. 2, 7(37): 37, 42 (1851)

Diploclisia glaucescens (Blume) Diels, Pflanzenr. (Engler) IV. 94(Heft 46): 225 (1910); Gamble, Fl. Pres. Madras 28 (1915); *Cocculus macrocarpus* Wight & Arn., Hook. f., Fl. Brit. India 1: 101 (1872).

Habit: Climber
Habitat: Semi-evergreen and Evergreen forests
Morphology: Climber; leaves membranous; flowers in drooping panicles; sepals 6, two seriate; petals 6, margins incurved; male flowers with 6 stamens; female flowers with 3 free carpels; drupe compressed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: March-August
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 041* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1626* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1825* (GVCH); Plate 15: Fig. g.

Fibraurea Lour., Fl. Cochinch. 2: 626 (1790)

Fibraurea darshanii Udayan & K. Ravik., Rheedea 17(1-2): 9 (-12; fig. 1) (2007).

Habit: Climber
Habitat: Semi-evergreen forests
Morphology: Climber; leaves alternate, glabrous, 3-nerved from base; male flowers in a condensed umbellate raceme; sepals 6 in 2 whorls; petals absent; stamens 5-7; female flowers in an elongated raceme; sepals 3; staminodes 6; carpels 3; stigma sessile; drupes 3 together, oblong.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Rare
Altitude: 300-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4155* (GVCH).

Stephania Lour., Fl. Cochinch. 2: 608 (1790)

Inflorescence head umbelled.....***S.japonica***
Inflorescence head solitary.....***S. wightii***

Stephania japonica (Thunb.) Miers, Ann. Mag. Nat. Hist. ser. 3, 18(103): 14 (1866); *Stephania japonica* (Thunb.) Miers, var. *japonica*, Gamble, Fl. Pres. Madras 29 (1915); *Stephania hernandifolia* (Willd.) Walp., Hook. f., Fl. Brit. India 1: 103 (1872).

Habit: Climber
Habitat: Moist Deciduous and Evergreen forests
Morphology: Climber; leaves alternate, peltate; male flowers in umbels; sepals 8, two seriate; petals 3-5; stamens 6-8, connate; female flowers with 3-5 sepals; petals 3-5; staminodes absent; carpel solitary, ovoid; stigmas 3-lobed; drupes globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: March-September
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2061* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2108* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2179* (GVCH).

Stephania wightii (Arn. ex Wight) Dunn, Fl. Madras 1(1): 30 (1915); Vajr., Fl. Palghat Dist. 51 (1990); *Stephania rotundus* sensu Hook. f. & Thoms., Hook. f., Fl. Brit. India 1: 103 (1872).

Habit: Climber
Habitat: Evergreen and Semi-evergreen forests
Morphology: Climber; leaves orbicular; peduncle erect; male flowers in densely packed heads; female flowers in pedunculate cymes; sepals 5, glabrous; petals ovate; drupe oblique, stalked.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-June
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 July 2017, *Jabeena & Maya 136* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 677* (GVCH); Plate 15: Fig. h.

Tiliacora Colebr., Trans. Linn. Soc. London 13: 53, 67 (1821)

Tiliacora racemosa Colebr., Trans. Linn. Soc. London 13(1): 67 (1821); Hook. f., Fl. Brit. India 1: 99 (1872); *Tiliacora acuminata* (Poir.) Miers ex Hook.f. & Thoms., Gamble, Fl. Pres. Madras 28 (1915); Vajr., Fl. Palghat Dist. 52 (1990).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; leaves 3-5 nerved at base; plant dioecious or polygamous; flowers in axillary panicles; sepals 6, 2-seriate; petals 6, cuneate; male flowers stamens 6; female flower solitary; carpels 3-12; drupes obovoid, pedicelled.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-December
Distribution: Rare
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1418* (GVCH); Plate 16: Fig. a

Tinospora Miers, Ann. Mag. Nat. Hist. ser. 2, 7(37): 35, 38 (1851)

Tinospora cordifolia (Willd.) Miers ex Hook.f. & Thomson, Fl. Ind. [Hooker f. & Thomson] 1: 184 (1855); Hook. f., Fl. Brit. India 1: 97 (1872); Gamble, Fl. Pres. Madras 26 (1915); Vajr., Fl. Palghat Dist. 52 (1990).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; leaves simple, alternate; inflorescences racemes or panicled; sepals 6, 2-seriate; petals 6; male flowers stamens 6, clavate; female flowers staminodes 6, ovaries 3; stigmas forked; drupes ventrally flat, dorsally convex.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-June
Distribution: Rare
Altitude: 100-300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 06 July 2019, *Jabeena & Maya 2331* (GVCH).

BERBERIDACEAE

Berberis L., Sp. Pl. 1: 330 (1753)

Berberis tinctoria Lesch., Mém. Mus. Hist. Nat. 9: 306 (1822); Gamble, Fl. Pres. Madras 32 (1915).

Habit: Shrub
Habitat: Shola forests
Morphology: Erect shrub; leaves simple, fascicled in the axils of spines. flowers racemed or panicled; sepals and petals 6, imbricate, 2-seriate; stamens 6, free; ovary stipitate; berries few-seeded.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Rare
Altitude: 1100-1300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3852* (GVCH); Plate 16: Fig. b.

RANUNCULACEAE

Clematis L., Sp. Pl. 1: 543 (1753)

Terminal leaflet modified into tendril; petals present; staminal filaments ligulate...……..…....***C. zeylanica***

Terminal leaflet normal; tendrils and petals absent; staminal filaments linear…...……..…..***C. gouriana***

Clematis gouriana Roxb. ex DC., Syst. Nat. [Candolle] 1: 138 (1817); Hook. f., Fl. Brit. India 1:4 (1872); Gamble, Fl. Pres. Madras 3 (1915); Vajr., Fl. Palghat Dist. 43 (1990).

Habit: Climber
Habitat: Moist Deciduous forests and Grasslands
Morphology: Climber; leaves opposite, compound, 3-7-foliate, 3-5 ribbed from base; flowers in drooping panicles; tepals pubescent; stamens many, filaments glabrous, connective not produced; carpels 10-15, pubescent; ovules 1 in each; fruit a head of achenes.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: November-March

Distribution: Occasional

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 878* (GVCH); Mattumala, 04 November 2020, *Jabeena & Maya 4369* (GVCH).

Clematis zeylanica Poir., Encycl. [J. Lamarck *et al*.] Suppl. 2. 296 (1811); Hook. f., Fl. Brit. India 1: 7 (1872); Gamble, Fl. Pres. Madras 3 (1915); Vajr., Fl. Palghat Dist. 44. (1990).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; leaves 2-3-foliolate, 5-ribbed from base, terminal leaflet transformed into a hooked tendril; flowers in terminal and axillary panicles; sepals 4-5; petals 6-12; stamens many; staminodes petaloid; carpels many; ovule one per carpel; fruit achenes many.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-April
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 614* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3359* (GVCH); Plate 16: Fig. c.

PROTEALES

SABIACEAE

Meliosma Blume, Cat. Gew. Buitenzorg (Blume) 10 (1823)

Meliosma simplicifolia Walp., Repert. Bot. Syst. (Walpers) i. 423. (1842); *Meliosma simplicifolia* (Roxb.) Walp., ssp. *simplicifolia*, Hook. f., Fl. Brit. India 2: 5 (1876); Gamble, Fl. Pres. Madras 256 (1918); Vajr., Fl. Palghat Dist. 134 (1990).

Habit: Tree
Habitat: Evergreen and Shola forests
Morphology: Tree; leaves simple, alternate, membranous, often with domatia; flowers panicled, panicles puberulous; sepals 4-5; petals 5; inner petals bifid; ovary glabrous, 2-celled, 2-ovuled; fruit a globose drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: March-June
Distribution: Occasional
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2084* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2097* (GVCH); Plate 16: Fig. d.

PROTEACEAE

Grevillea R.Br. ex Knight, Cult. Prot. xvii, 120 (1809)

Grevillea robusta A.Cunn. ex R.Br., Prodromus Florae Novae Hollandiae - Suppl. 1 (1830); Vajr., Fl. Palghat Dist. 408 (1990).

Habit: Herb
Habitat: Grown as shady trees
Morphology: Tree; leaflets sessile; flowers racemed or panicled; sepals hooded; stamens sessile; connective not produced; disc semi-annular; ovary on a gynophore, glabrous; fruit a 2-seede follicle; seeds winged.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African, Australian and South American
IUCN category: Least Concern
Phenology: June-September
Distribution: Common
Altitude: 800-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2822* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2996* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3438* (GVCH); Plate 16: Fig. e.

IV.1.6. Core eudicots

DILLENIALES

DILLENIACEAE

Dillenia L., Sp. Pl. 1: 535 (1753)

1.Flowers solitary, appearing with the leaves; seeds 5, reniform..……....***D. indica***
1.Flowers clustered on nodes of old wood, appearing before the leaves; seeds numerous, ovoid……..…..***D. pentagyna***

Dillenia indica L., Sp. Pl. 1: 535 (1753); Hook. f., Fl. Brit. India 1: 36 (1872); Gamble, Fl. Pres. Madras 7 (1915).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple, alternate, estipulate; flowers terminal, solitary, appearing with the leaves; bracts solitary; sepals 5, spreading; petals 5; stamens many in 2 whorls; carpels 14-20; ovules many; styles free, spreading; fruit an aggregate of berries; seeds reniform.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: May-February
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3021* (GVCH); Victoria, 12 October 2020, *Jabeena & Maya 4184* (GVCH).

Dillenia pentagyna Roxb., Pl. Coromandel 1(1): 21, t. 20 (1795); Hook. f., Fl. Brit. India 1: 38 (1872); Gamble, Fl. Pres. Madras 8 (1915); Vajr., Fl. Palghat Dist. 44 (1990).

Habit: Tree
Habitat: Deciduous forests
Morphology: Tree; leaves simple, alternate, estipulate; flowers fascicled on old branches; bracts hairy; sepals 5; petals 5; stamens many in 2 whorls; carpels 5-10; ovules many; styles free; fruit an aggregate of berries; seeds numerous, ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Occasional
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1177* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1671* (GVCH); Plate 16: Fig. f.

IV.1.7. Superrosids

SAXIFRAGALES

CRASSULACEAE

Kalanchoe Adans., Fam. Pl. (Adanson) 2: 248 (1763)

1.Leaves bulbiferous in the crenature; calyx with long inflated tube & shortly 4-fid limb……..……..……...***K. pinnata***
1.Leaves not bulbiferous; calyx with short tube & deeply 4-partite limb……...(2)
2.Leaves ovate; stamens 4……....***K. blossfeldiana***
2.Leaves obovate; stamens 8.....***K. olivacea***

Kalanchoe blossfeldiana Poelln., Repert. Spec. Nov. Regni Veg. 35: 159 (1934).

Habit: Herb
Habitat: Grown as garden plant
Morphology: Herb; stem and leaves succulent; leaves opposite or sub-opposite, nerves indistinct; petals 4; stamens 4, epipetalous; carpels 4.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: African
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional

Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4125* (GVCH); Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4820* (GVCH).

Kalanchoe olivacea Dalz., Dals. & Gibs. Bombay Fl. 313 (1861); Gamble, Fl. Pres. Madras 450 (1919).

Habit: Herb
Habitat: Deciduous forests
Morphology: Succulent herb; leaves obovate; inflorescence a corymb of cymes; bracts glandular; calyx 4-lobed to the base, glandular; stamens 8, 2-seriate; stigma oblique; follicle glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Rare
Altitude: 1200-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4487* (GVCH); Plate 16: Fig. g.

Kalanchoe pinnata (Lam.) Pers., Syn. Pl. [Persoon] 1: 446 (1805); *Bryophyllum calycinum* Salisb., Hook. f., Fl. Brit. India 2: 413 (1878); *Bryophyllum pinnatum* (Lam.) Kurz, Gamble, Fl. Pres. Madras 451 (1919).

Habit: Herb
Habitat: Rocky areas in Moist Deciduous forests
Morphology: Herb; leaves opposite, margin crenate; inflorescence a panicle of cymes; flowers pendulous; sepals 4; petals glandular; stamens 8; hypogynous scales 4; carpels 4; ovules many.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2187* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2999* (GVCH); Plate 16: Fig. h.

HALORAGACEAE

Myriophyllum L., Sp. Pl. 2: 992 (1753)

Myriophyllum oliganthum (Wight & Arn.) F.Muell., Fragm. (Mueller) 10(83): 54 (1876); Vajr., Fl. Palghat Dist. 194 (1990); *Myriophyllum intermedium* Clarke, Hook.f., Fl. Brit. India 2: 433 (1878); Gamble, Fl. Pres. Madras 454 (1919).

Habit: Herb

Habitat: Perennial ponds

Morphology: Herb; leaves alternate, floating leaves linear, submerged leaves pinnatifid; flowers axillary, clustered, sessile; sepals 4; petals absent; stamens 4; ovary 4-loculed; ovules solitary in each cell; fruit 4-partite.

Raunkiaer's life-form: Hydrophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India

IUCN category: Least Concern

Phenology: March-April

Distribution: Occasional

Altitude: 800-1300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3104* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4216* (GVCH); Plate 17: Fig. a

IV.1.8. Rosids

VITALES

VITACEAE

1.Erect shrub; tendrils absent; ovary 3-6 loculed; cells one ovuled……..***Leea***
1.Scandent shrubs or herbs; tendrils present; ovary 2 loculed; cells 2 ovuled……(2)
2.Flowers polygamo-monoecious; tendrils from peduncle...……..***Ampelocissus***
2.Flowers bisexual; tendrils leaf-opposed……...……(3)
3.Berry 1 seeded…...……..…..***Cissus***
3.Berry 2-4 seeded……...……..…….(4)
4.Inflorescence a large panicle; endosperm T-shaped lacking a membrane covering the cavities…...……...…..***Causonis***
4.Inflorescence a dichotomous cyme; endosperm U-shaped with a membrane covering the cavities…...…….……..***Cayratia***

Ampelocissus Planch., Vigne Amer. Vitic. Eur. 8(12): 371 (1884)

Ampelocissus latifolia (Roxb.) Planch., Vigne Amer. Vitic. Eur. 8(12): 374 (1884); Gamble, Fl. Pres. Madras 230 (1918); Vajr., Fl. Palghat Dist. 122 (1990); *Vitis latifolia* Roxb., Hook. f., Fl. Brit. India 1: 652 (1875).

Habit: Climber
Habitat: Near streams in Evergreen forests
Morphology: Climber; leaves simple, glabrous; flowers in pedunculate puberulous thyrsus; tendrils branched; calyx glabrous; petals glabrous; disc thick, 5-furrowed; berries globose; seeds oblong.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-June
Distribution: Occasional
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1454* (GVCH); Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3574* (GVCH); Plate 17: Fig. b.

Causonis Raf., Med. Fl. 2: 122 (1830)

Causonis japonica (Thunb.) Raf., Sylva Tellur. 87 (1838); *Vitis tenuifolia* Wight & Arn., Hook. f., Fl. Brit. India 1: 660 (1875); *Cayratia tenuifolia* (Wight & Arn.) Gagnep., Gamble, Fl. Pres. Madras 237 (1918); Vajr., Fl. Palghat Dist. 124 (1990).

Habit: Climber
Habitat: Evergreen and Semi-evergreen forests
Morphology: Climber; leaves pedately 5-foliolate, glabrous; leaflets crenate, glabrous; flowers in axillary dichotomous cymes; peduncle and pedicels filiform; calyx truncate; petals hooded at apex; disc lobed; berry obovoid, black; seed with sharp angles.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: September-March
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1650* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2077* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2147* (GVCH).

Cayratia Juss., Dict. Sci. Nat., ed. 2. [F. Cuvier] 10: 103 (1818)

Cayratia pedata Gagnep., Notul. Syst. (Paris) 1: 346 (1911); *Cayratia pedata* (Lam.) A. Juss. ex Gagnep. var. *pedata*, Gamble, Fl. Pres. Madras 236 (1915); Vajr., Fl. Palghat Dist. 123 (1990); *Vitis pedata* (Lam.) Wall. ex Wight & Arn., Hook. f., Fl. Brit. India 1: 661 (1875).

Habit: Climber
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Climber; leaves pedately 5-9-foliolate; leaflets serrate, hispid; cymes hispid; calyx cupular; petals 4; stamens 4, inserted around a fleshy rim of disc; berry lobed, rusty tomentose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Vulnerable
Phenology: June-July
Distribution: Common
Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1535* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1933* (GVCH); Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2103* (GVCH).

Cissus L., Sp. Pl. [Linnaeus] 1: 117 (1753)

1.Stem 4-angled or 4-winged……..…...(2)
1.Stem terete……..……....(3)
2.Leaves early caducous, rounded at apex…..……..***C.quadrangularis***
2.Leaves not early caducous, acuminate at apex…….....***C. discolor***
3.Stem glaucous……...…….***C. repens***
3.Stem not glaucous…...……..….(4)
4.Plant glabrous…...……..…....***C. latifolia***
4.Plant densely tomentose..…***C. vitiginea***

Cissus discolor Blume, Cat. Gew. Buitenzorg (Blume) 39 (1823); Gamble, Fl. Pres. Madras 235 (1918); Vajr., Fl. Palghat Dist. 124 (1990); *Vitis discolor* (Blume) Dalz., Hook. f., Fl. Brit. India 1: 648 (1875).

Habit: Climber
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Slender climber; stem quadrangular, glabrous; leaves spinous serrate; inflorescence an umbellate cyme; flowers pedicelled; calyx cupular; petals 4; stamens 4; disc pubescent; berry obovoid; seeds obovoid, pitted.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-January
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1210* (GVCH); Kollengode range, 15 January 2019, *Jabeena & Maya 1697* (GVCH); Plate 17: Fig. c.

Cissus latifolia Lam., Encycl. [J. Lamarck & al.] 1(1): 30 (1783); *Vitis glauca* sensu Wight & Arn., Hook. f., Fl. Brit. India 1:645 (1875); *Vitis gigantea* Bedd., Hook. f., Fl. Brit. India 1:648 (1875); *Cissus glauca* sensu Gamble, Fl. Pres. Madras 234 (1918).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Climber; branchlets glabrous, glaucous; leaves bristly serrate; cymes opposite to leaves; calyx cupular; petals 4, hooded at apex; stamens 4; disc 4-lobed; ovary tomentose; berry ovoid, 1-seeded; seeds tessellated on either side of the raphe.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1303* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3054* (GVCH).

Cissus quadrangularis L., Mant. Pl. 39 (1767); Gamble, Fl. Pres. Madras 233

(1915); *Vitis quadrangularis* (L.) Wall. ex Wight, Hook. f., Fl. Brit. India 1:645 (1875).

Habit: Climber
Habitat: Deciduous forests
Morphology: Climber; stem quadrangular, winged, fleshy, contracted at the nodes; leaves reniform; cymes leaf-opposed, umbellate; calyx obscurely 4-lobed; petals recurved; stamens 4; disc 4-lobed; ovary 2-loculed; ovules 2 per cell; berry sub-globose; seeds ellipsoid, smooth.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: June-January
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 08 February 2020, *Jabeena & Maya 4016* (GVCH).

Cissus repens Lam., Encycl. [J. Lamarck & al.] 1(1): 31 (1783); Gamble, Fl. Pres. Madras 233 (1918); *Vitis repens* (Lam.) Wight & Arn., Hook. f., Fl. Brit. India 1:646 (1872).

Habit: Climber
Habitat: All types of forests
Morphology: Climber; stem glaucous, terete; leaves 5-nerved from base; inflorescence an umbellate glabrous cyme; calyx obtusely lobed, ciliate; disc glabrous; drupe obovoid; seeds tessellated.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2747* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3039* (GVCH); Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3298* (GVCH); Plate 17: Fig. d.

Cissus vitiginea L., Sp. Pl. 1: 117 (1753); Gamble, Fl. Pres. Madras 234 (1918); Vajr., Fl. Palghat Dist. 126 (1990); *Vitis linnaei* Wall. ex Wight & Arn., Hook. f., Fl. Brit. India 1: 649 (1875).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Climber; stem tomentose; leaves simple, 5-angled or lobed, margin dentate, basally 3-nerved; stipules pubescent; flowers in umbellate cymes; pedicels recurved in fruit; calyx cupular, pubescent; petals 4, recurved; stamens 4; disc 4-lobed; berry obovoid, blue, glaucous.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-December
Distribution: Occasional
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 518* (GVCH); Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 688* (GVCH).

Leea D. Royen, Mant. Pl. 17, 124 (1767)

Leea indica (Burm.f.) Merr., Philipp. J. Sci. 14(2): 245 (1919); Vajr., Fl. Palghat Dist. 127 (1990); *Leea sambucina* (L.) Willd., Hook. f., Fl. Brit. India 1: 666 (1875); Gamble, Fl. Pres. Madras 240 (1918).

Habit: Tree
Habitat: Degraded Semi-evergreen and Evergreen forests
Morphology: Tree; leaves glabrous, much divided; main nerves forked at top, lateral nerves 12-15 pairs; inflorescence a peduncled corymbose cyme; staminal tube shortly lobed at apex, lobes notched;

anthers united; berry black-purple; seeds glandular.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Least Concern
Phenology: March-August
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 530* (GVCH); Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1201* (GVCH); Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1551* (GVCH); Plate 17: Fig. e.

FABALES

FABACEAE

1.Flowers papilionate; sepals united atleast at the base; seeds with hilar valve; embryo radicle curved...……..**Papilionoideae**
1.Flowers not papilionate; sepals free or fused; seeds without hilar valve; embryo radicle straight……...…….....(2)
2.Leaves bipinnate; seeds with pleurogram..……..…….**Caesalpinioideae**
2.Leaves not pinnate; seeds without pleurogram…..……..……..(3)
3.Leaves unifoliolate, bilobed or entire, or compound and bifoliolate; seed hilum circular or crescent shaped....**Cercidoideae**
3.Leaves usually paripinnate or bifoliolate, rarely unifoliolate; seed hilum not crescent shaped……...……..……...**Detarioideae**

CERCIDOIDEAE

1.Calyx splitting to mouth of hypanthium at anthesis……..…….***Bauhinia***
1.Calyx splitting only in the upper part of anthesis……..…….***Piliostigma***

Bauhinia L., Sp. Pl. 1: 374 (1753)

1.Flower bud clavate; fertile stamens three...……...…...***B. purpurea***
1.Flower bud fusiform; fertile stamens five…..…….....***B. variegata***

Bauhinia purpurea L., Sp. Pl. 1: 375 (1753); Hook. f., Fl. Brit. India 2: 284 (1878); Gamble, Fl. Pres. Madras 407 (1919); Vajr., Fl. Palghat Dist. 179 (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves 9-11 nerved; flowers in terminal panicles; flowers pedicellate, buds clavate; calyx splitting into two reflexed segments; petals clawed; fertile stamens 3; ovary stipitate; stigma oblique; pod stalked; seeds 12-15.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-December
Distribution: Occasional
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1591* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2796* (GVCH).

Bauhinia variegata L., Sp. Pl. 1: 375 (1753); Hook. f., Fl. Brit. India 2: 284 (1878); Gamble, Fl. Pres. Madras 407 (1919).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves 9-15 nerved; flowers racemed; flower buds fusiform; hypanthium slender; calyx 5 toothed; petals clawed; fertile stamens 5; staminodes absent; ovary hairy, stipitate; stigma capitate; pods flat, stalked; seeds 10-15.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: September-May
Distribution: Occasional
Altitude: 100-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Konnampalam, 14 December 2019, *Jabeena & Maya 3472* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5080* (GVCH); Plate 17: Fig. f.

Piliostigma Hochst., Flora 29: 598 (1846)

Piliostigma malabaricum Benth., Plantae Junghuhnianae enumeratio plantarum (1852); *Bauhinia malabarica* Roxb., Hook. f., Fl. Brit. India 2: 227 (1878); Gamble, Fl. Pres. Madras 407 (1919); Vajr., Fl. Palghat Dist. 179 (1990).

Habit: Tree
Habitat: Deciduous forests
Morphology: Tree; leaves coriaceous, 9-11 nerved; stipules lateral; inflorescence an axillary corymb; calyx tube shortly 5-lobed; petals 5; fertile stamens 10; ovary half inferior, stipitate; ovules many; style filiform; stigma peltate; pod beaked.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-March
Distribution: Rare
Altitude: 200-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3080* (GVCH); Plate 17: Fig. g.

DETARIOIDEAE

1.Petals zero; flowers in lateral corymbose panicle; stamens usually 7……..***Saraca***
1.Petals 3-5; flowers in racemes; stamens 3…..……***Tamarindus***

Saraca L., Mant. Pl. 13 (1767)

Saraca asoca (Roxb.) W.J.de Wilde, Blumea 15(2): 393 (1968); Vajr., Fl. Palghat Dist. 184 (1990); *Saraca indica* sensu Bedd., Hook. f., Fl. Brit. India 2: 271 (1878); Gamble, Fl. Pres. Madras 409 (1919).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves pinnate; leaflets 6-12; stipules connate, intra-petiolar; stipels absent; flowers in corymbose panicles; calyx petalloid, tube elongate, enclosing a lobed disc; lobes 4, petals absent; stamens 7 or 8; filaments filiform; anthers versatile; ovary stalked; style filiform; stigma capitate; ovules many; pod flat; seeds 2-8.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Vulnerable
Phenology: February-August
Distribution: Occasional
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4159* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5065* (GVCH).

Tamarindus Tourn. ex L., Sp. Pl. 1: 34 (1753)

Tamarindus indica L., Sp. Pl. 1: 34 (1753); Hook. f., Fl. Brit. India 2: 273 (1878); Gamble, Fl. Pres. Madras 409 (1919); Vajr., Fl. Palghat Dist. 184 (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves paripinnate; leaflets opposite, sessile, lateral nerves 10-15 pairs; stipules lateral; stipels absent; rachis pulvinate; flowers racemed at the end of branches; calyx tube turbinate, lined by the disc; lobes 4; petals 3, imbricate; fertile stamens 3; filaments connate; anthers versatile; ovary stipitate; style tomentose; stigma globose; pod incurved; seeds 3-8.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Least Concern
Phenology: September-April
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1783* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3908* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3172* (GVCH).

CAESALPINIOIDEAE

1.Flowers actinomorphic...…...……(2)
1.Flowers zygomorphic……(11)
2.Stamens definite…...……..…….(3)
2.Stamens indefinite…...……..……..(5)
3.Anthers gland-crested……..***Xylia***
3.Anthers not gland-crested……....(4)
4.Pods straight…...……..…***Leucaena***
4.Pods curved...……..…***Mimosa***
5.Stamens free……..…….....(6)
5.Stamens showing adelphy……..…....(7)
6.Phyllodes present…...…….……..***Acacia***
6.Phyllodes absent.…...……..***Senegalia***
7.Filaments in diadelphous condition……....***Calliandra***
7.Filaments in monadelphous condition…….(8)
8.Pods septate between the seeds…….....***Samanea***
8.Pods not septate between the seeds….(9)
9.Pods straight, with thin valves……..***Albizzia***
9.Pods curved or twisted, with coriaceous valves…….…...…(10)
10.Plants armed…...…….....***Pithecellobium***
10.Plants unarmed...……....***Archidendron***
11.Leaves bipinnate……..……..….(12)
11.Leaves unipinnate…...…….……(13)
12.Pods broadly winged…....***Mezoneuron***
12.Pods not winged……....***Hultholia***
13.Leaves eglandular……...…....***Cassia***
13.Leaves glandular……..……...(14)
14.Bracteoles absent; pod indehiscent or if dehiscent not elastic…….…….***Senna***
14.Bracteoles two; pod elastically dehiscent ……..….***Chamaecrista***

Acacia Mill., Gard. Dict. Abr., ed. 4. 1: [25] (1754).

Acacia auriculiformis A.Cunn. ex Benth., London J. Bot. 1: 377 (1842).

Habit: Tree
Habitat: Cultivated
Morphology: Trees; phyllodes alternate; stipule lateral; leaves glabrous; inflorescence an axillary spike; calyx & corolla lobes 5 each; stamens many, free; ovary glabrous; pod flat, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Australian
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3721* (GVCH); Nelliyampathy range, Pothupara, 11 January 2020, *Jabeena & Maya 3685* (GVCH).

Albizia Durazz., Mag. Tosc. 3(4): 13 (1772)

Lateral nerves 3-6 pairs; pinnae 6-8 pairs……..…....***A. odoratissima***
Lateral nerves 6-8 pairs; pinnae upto 5 pairs…….……..…..…..***A. lebbeck***

Albizia lebbeck (L.) Benth., Hooker's London Journal of Botany 3 (1844); Hook. f., Fl. Brit. India 2: 298 (1878); Gamble, Fl. Pres. Madras 432 (1919).

Habit: Tree
Habitat: Deciduous forests
Morphology: Tree; leaves bipinnate; leaflets 8-20, opposite, a gland in between each leaflets; stipules lateral; rachis pulvinate; lateral nerves 6-8 pairs; flowers in globose head, pedicelled; calyx tubular, puberulous; petals united; stamens many, monadelphous; ovary sub-sessile, glabrous; pod flat, oblong; seeds 8-12.
Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: March-December
Distribution: Occasional
Altitude: 100-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4150* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5086* (GVCH).

Albizia odoratissima (L.f.) Benth., London J. Bot. 3: 88 (1844); Hook. f., Fl. Brit. India 2: 299 (1878); Gamble, Fl. Pres. Madras 431 (1919); Vajr., Fl. Palghat Dist. 187 (1990).

Habit: Tree
Habitat: Deciduous forests
Morphology: Tree; leaves bipinnate; glands between the junctions of 1-2 distal pairs of pinnae, leaflets 14-40, opposite; stipule free, lateral; rachis with a gland at the base; flowers in globose head, sessile; calyx campanulate, pubescent; petals connate; stamens many, monadelphous; ovary stipitate; pod flat, glabrous; seeds 6-12.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: April-January
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4990* (GVCH).

Archidendron F.Muell., Fragm. (Mueller) 5(34): 59 (1865)

Archidendron bigeminum (L.) I.C.Nielsen, Opera Bot. 76: 73 (1985); *Pithecellobium bigeminum* (L.) Mart. ex Benth., Hook. f., Fl. Brit. India 2: 303 (1878); Gamble, Fl. Pres. Madras 435 (1919); *Pithecellobium monadelphum* (Roxb.) Kosterm., Vajr., Fl. Palghat Dist. 189 (1990).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Unarmed tree; leaves bipinnate; leaflets 1-4 pairs, glands one on the petiole, one each at the base of each pinna and leaflet; rachis pulvinate, with a gland near its base; bracteoles persistent; flowers in globose heads; calyx campanulate; petals 4, recurved; stamens 4, monadelphous; ovary sessile; pod twisted; seeds 3-8.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 668* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4092* (GVCH).

Calliandra Benth., J. Bot. (Hooker) 2: 138 (1840)

Flower head in axillary clusters…....***C.tergemina* var. *emarginata***
Flower head in axillary and terminal panicles...***C. houstoniana* var. *calothyrsus***

Calliandra houstoniana* var. *calothyrsus (Meisn.) Barneby, Mem. New York Bot. Gard. 74(3): 180 (1998).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; leaves bipinnate; pinnae 15-20 pairs; flowers in globose heads in axillary and terminal panicles; calyx teethed; petals connate at base; stamens many; pods glabrous; seeds 3-15.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-February

Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2772* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3433* (GVCH).

Calliandra tergemina* var. *emarginata (Humb. & Bonpl. ex Willd.) Barneby, Mem. New York Bot. Gard. 74(3): 129 (1998).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; leaves bipinnate; flowers in globose heads in axillary clusters; stamens numerous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: December-June
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2797* (GVCH); Pothundy-Kaikatty, *Jabeena & Maya 3434* (GVCH).

Cassia L., Sp. Pl. 1: 376 (1753)

Cassia fistula L., Sp. Pl. 1: 377 (1753); Hook. f., Fl. Brit. India 2: 201 (1878); Gamble, Fl. Pres. Madras 400 (1919); Vajr., Fl. Palghat Dist. 181 (1990).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; leaves paripinnate; leaflets 6-16, opposite; stipules linear, lateral; rachis pulvinate, glabrous; inflorescence axillary, raceme, drooping; sepals divided to the base; petals 5; fertile stamens 10; anthers sagittate at base; ovary half inferior; pod cylindric, terete.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: February-September
Distribution: Occasional
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2753* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5061* (GVCH).

Chamaecrista (L.) Moench, Methodus (Moench) 272 (1794)

Leaflets 8-24 pairs; sepals ovate; seeds 10-12……..…….....***C. leschenaultiana***
Leaflets 24-50 pairs; sepals lanceolate; seeds 20……..……..…...***C. mimosoides***

Chamaecrista leschenaultiana (DC.) O.Deg., Fl. Hawaiiensis [Degener] Fam. 169 b (1934); Gamble, Fl. Pres. Madras 403 (1919); Vajr., Fl. Palghat Dist. 181 (1990).

Habit: Herb
Habitat: Grasslands and open areas in moist deciduous forests
Morphology: Herb; leaves alternate; leaflets 8-24 pairs; gland solitary, cupuliform, midway on petiole; stipules persistent; inflorescence a short raceme or fasciculate, 3-4 flowered; sepals glabrous; stamens 10, sub-equal; staminodes 3; ovary tomentose; pods flat; seeds 8-16.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Common
Altitude: 600-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2430* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2606* (GVCH); Nelliyampathy range,

Mattumala, 02 November 2020, *Jabeena & Maya 4239* (GVCH); Plate 17: Fig. h.

Chamaecrista mimosoides (L.) Greene, Pittonia 4(20): 27 (1899); Hook. f., Fl. Brit. India 2: 266 (1878); Gamble, Fl. Pres. Madras 403 (1919); Vajr., Fl. Palghat Dist. 181 (1990).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Annual herb, pubescent; leaflets opposite, 24-80 pairs, sessile; rachis with a sessile gland near the base; stipules persistent; inflorescence axillary or supra-axillary, 1-3-flowered; sepals 5; petals 5; stamens 10, unequal; ovary linear, appressed hairy; pods pubescent; seeds 20.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Least Concern

Phenology: July-December

Distribution: Occasional

Altitude: 600-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 July 2017, *Jabeena & Maya 324* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3568* (GVCH); Plate 18: Fig. a

Hultholia Gagnon & G. P. Lewis, PhytoKeys 71: 58 (2016)

Hultholia mimosoides (Lam.) Gagnon & G.P.Lewis, PhytoKeys 71: 61 (2016); *Caesalpinia mimosoides* Lam., Hook. f., Fl. Brit. India 2: 256 (1878); Gamble, Fl. Pres. Madras 394 (1919).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; stem prickly; leaves with 12-18 pairs of pinnae; rachis prickly, glandular hairy; inflorescence a raceme; calyx lobes glandular; petals 5; stamens 10, sub-equal; ovary stipitate; pods with minute bristles, turgid, shortly beaked, 2-seeded.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-March
Distribution: Occasional
Altitude: 600-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3408* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3550* (GVCH); Plate 18: Fig. b.

Leucaena Benth., J. Bot. (Hooker) 4: 416 (1842)

Leucaena leucocephala (Lam.) de Wit, Taxon 10: 54 (1961); *Leucaena glauca* Benth., Hook. f., Fl. Brit. India 2: 290 (1878); Gamble, Fl. Pres. Madras 419 (1919); *Leucaena latisiliqua* (L.) Gillis, Vajr., Fl. Palghat Dist. 190 (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; branchlets pubescent; leaves bipinnate; rachis hairy; gland single; leaflets 5-20 pairs, sub-sessile; flowers in axillary umbels; calyx tubular, teeth ciliate; petals spathulate; stamens 10; ovary shortly stipitate, pubescent; style glabrous; pod flat; seeds 15-20.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated

Phenology: November-April

Distribution: Rare

Altitude: 700-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 06 July 2019, *Jabeena & Maya 2155* (GVCH).

Mezoneuron (Desf.) Vidal ex Herend. & Zarucchi, Ann. Missouri Bot. Gard. 77(4): 854 (1990)

Mezoneuron cucullatum (Roxb.) Wight & Arn., Prodr. Fl. Ind. Orient. 1: 283 (1834); Hook. f., Fl. Brit. India 2: 258 (1878); Gamble, Fl. Pres. Madras 395 (1919); Vajr., Fl. Palghat Dist. 182 (1990).

Habit: Climber
Habitat: Semi-Evergreen and Evergreen forests
Morphology: Climber; stem prickly; leaves paripinnate; pinnules 5 or 6 pairs; rachis with curved thorns; inflorescence an axillary or terminal panicle of raceme; flowers cucullate; calyx oblique, glabrous; petals unequal; stamens 10, free; ovary 2-many ovuled; style filiform; stigma capitate; pods flat, winged.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 14 December 2019, *Jabeena & Maya 3340* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4048* (GVCH).

Mimosa L., Sp. Pl. 1: 516 (1753)

Stamens 8; pinnae more than 4 pairs…….....***M. diplotricha***
Stamens 4; pinnae upto 3 pairs…….....***M. pudica***

Mimosa diplotricha C. Wright, Anales Acad. Ci. Med. Habana 5: 405 (-406) (1868).

Habit: Climber
Habitat: Weed in degraded forests
Morphology: shrubby; branchlets 4-angled with recurved prickles, pubescent; leaves alternate; rachis furrowed, prickly; pinnae 4-8 pairs; leaflets 18-20 pairs; rachis prickled; flowers sub-sessile in axillary globose head; corolla 4-lobed; stamens 8; ovary ovoid, puberulous; pods 4-5-jointed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and South American
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Common
Altitude: 500-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 672* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2189* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3126* (GVCH); Plate 18: Fig. c.

Mimosa pudica L., Sp. Pl. 1: 518 (1753); Hook. f., Fl. Brit. India 2: 291 (1878); Gamble, Fl. Pres. Madras 421 (1919); Vajr., Fl. Palghat Dist. 188 (1990).

Habit: Herb

Habitat: Weed

Morphology: Herb; stem quadrangular, with curved prickles; leaves 2-3 pinnate; leaflets 10-20 hispid, ciliate along margins; rachis furrow, hispid; flowers sessile in globose heads, 2-3 together; calyx faintly 4-lobed; petals 4; stamens 4; ovary sub-sessile, globose; pods horned at apex; seeds 2-5.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Least Concern

Phenology: July-January

Distribution: Common

Altitude: 100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3503* (GVCH); Kollengode range,

Greenland, 11 January 2020, *Jabeena & Maya 3718* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4069* (GVCH).

Pithecellobium Mart., Flora 20(2, Beibl.): 114 (1837)

Pithecellobium dulce (Roxb.) Benth., London J. Bot. 3: 199 (1844); Hook. f., Fl. Brit. India 2: 302 (1878); Gamble, Fl. Pres. Madras 434 (1919); Vajr., Fl. Palghat Dist. 189. (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; branchlets tomentose; leaves with 1 pair of pinnae; pinnae with 1 pair of leaflets; stipule spinose; rachis grooved above; gland solitary; lamina glabrous; flowers in close heads in long narrow terminal panicles; calyx campanulate, pubescent; petals 5, tomentose; stamens monadelphous; ovary sessile; pod twisted.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: November-March
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1187* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2792* (GVCH).

Samanea (Benth.) Merr., J. Wash. Acad. Sci. 6(2): 46 (1916)

Samanea saman (Jacq.) Merr., J. Wash. Acad. Sci. 6(2): 47 (1916).

Habit: Tree
Habitat: Grown as avenue tree
Morphology: Tree; branchlets pubescent; leaf rachis with concave sessile, glands between the bases of pinnae; leaves bipinnate; stipule pubescent; leaflets sub-sessile; racemes corymbose, 1-3 together in axils of upper leaves; flowers sub-sessile; bracts pilose; calyx lobes 5, pilose; corolla puberulous; stamens many; ovary glabrous, sessile; pod sessile, flattened, straight.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: March-May
Distribution: Occasional
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2945* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5079* (GVCH).

Senegalia Raf., Sylva Tellur. 119 (1838)

1.Pinnae 5-6 pairs……..……..*S. caesia*
1.Pinnae 7-15 pairs……...…….…….(2)
2.Bracts ovate; pods thick with wrinkled surface……..……...*S .sinuata*
2.Bracts linear-lanceolate; pods thin with smooth surface…..……..…(3)
3.Flowers pedicellate.....……...*S. pennata*
3.Flowers sessile……...….....*S. torta*

Senegalia caesia (L.) Maslin, Seigler & Ebinger, Blumea 58(1): 40 (2013); Acacia intsia Willd. var. caesia (L.) Baker. Hook. f., Fl. Brit. India 2: 297 (1878); *Acacia caesia* (L.) Willd., Gamble, Fl. Pres. Madras 428 (1919); *Acacia columnaris* Craib., Gamble, Fl. Pres. Madras 429 (1919).

Habit: Climber
Habitat: Evergreen and Semi-evergreen forests
Morphology: Climber; branchlets prickly with hooked spines; leaves alternate with 5-6 pairs of pinnae; stipules ovate; rachis with 3 disc-like glands; leaflets 18-22 pairs, 3-nerved from base; flowers sessile in globose heads, grouped into a terminal

panicle; calyx tube funnel shaped, 5-lobed; corolla membranous; stamens numerous; pods strap-shaped.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: October-December
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4091* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4257* (GVCH).

Senegalia pennata (L.) Maslin, Nuytsia 22(6): 466 (2012); *Acacia pennata* Willd., Hook. f., Fl. Brit. India 2: 297 (1878); Gamble, Fl. Pres. Madras 429 (1919); Vajr., Fl. Palghat Dist. 186 (1990).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: climber; stem tomentose, prickly with recurved spines; stipular spines absent; leaves bipinnate; leaflets sessile, 30-50 pairs; rachis prickly; inflorescence umbelled panicles of globose heads; flowers sub-sessile; calyx campanulate; pod thin, flat, coriaceous; seeds 6-12.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: October-January
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1267* (GVCH).

Senegalia rugata Britton & Rose, N. Amer. Fl. 23(2): 120 (1928); *Acacia sinuata* (Lour.) Merr., Vajr., Fl. Palghat Dist. 186 (1990); *Acacia concinna* (Willd.) DC., Hook. f., Fl. Brit. India 2: 296 (1878); Gamble, Fl. Pres. Madras 429 (1919); *Acacia concinna* (Willd.) DC. var. *rugata* (Benth.) Baker, Hook. f., Fl. Brit. India 2: 297 (1878); *Acacia rugata* (Lam.) J. Voigt, Gamble, Fl. Pres. Madras 429 (1919).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; stem with short, stout recurved prickles; leaves alternate, bipinnate; pinnae 4-6 pairs; leaflets sessile, about 18 pairs; rachis prickled, gland near the base; stipules and bracts ovate-cordate; heads axillary, solitary or paired; calyx 5-lobed; petals longer than the calyx; stamens numerous; pods rugose, wrinkled.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-March
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3398* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3555* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3912* (GVCH); Plate 18: Fig. d.

Senegalia torta (Roxb.) Maslin, Seigler & Ebinger, Blumea 58(1): 42 (2013); *Acacia torta* (Roxb.) Craib, Gamble, Fl. Pres. Madras 428 (1919); Vajr., Fl. Palghat Dist. 186 (1990).

Habit: Climber
Habitat: Deciduous forests
Morphology: Straggling shrub; branchlets pubescent with straight spines; leaves alternate, bipinnate; leaflets sessile; rachis with 4 glands; petiole with a single gland; heads 1-3 in terminal panicles; calyx tube 5-lobed; petals 5; stamens connate at base; pods strap-shaped; seeds 6.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated

Phenology: April-December
Distribution: Occasional
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4986* (GVCH).

Senna Mill., Gard. Dict. Abr., ed. 4. [1280] (1754)

1.Leaftlets 3-4 pairs……...….***S. tora***
1.Leaftlets more than 4 pairs……..……(2)
2.Pods stipitate…….…….***S. didymobotrya***
2.Pods not stipitate……..……..……(3)
3.Pod hirsute……..……..***S. hirsuta***
3.Pod glabrous…...…….……(4)
4.Leaflets 4-5 pairs; rachis bearing a hemispherical gland; stipules and bracts linear-lanceolate……..***S. occidentalis***
4.Leaflets 6-10 pairs; rachis bearing a clavate gland; stipules and bracts ovate……...…….…...….***S. sophera***

Senna didymobotrya (Fresen.) H.S.Irwin & Barneby, Mem. New York Bot. Gard. 35: 467 (1982).

Habit: Shrub
Habitat: Grown as garden plant; also seen as wild escape in high ranges
Morphology: Shrub; branches pubescent; leaves alternate; leaflets pilose on margins; stipules foliaceous, pilose; glands absent; flowers in axillary raceme; bracts ovate; bracteoles absent; sepals ovate; petals clawed; fertile stamens 7; anthers spurred at base; staminodes 3; ovary stipitate, tomentose; pods flat, stipitate, beaked.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: African
IUCN category: Least Concern
Phenology: October-March
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3738* (GVCH).

Senna hirsuta (L.) H.S.Irwin & Barneby, Phytologia 44: 499 (1979); *Cassia hirsuta* L., Hook. f., Fl. Brit. India 2: 263 (1878); Gamble, Fl. Pres. Madras 401 (1919); Vajr., Fl. Palghat Dist. 181 (1990).

Habit: Shrub
Habitat: Degraded forests
Morphology: Shrub; leaflets 3-6 pairs, silky hairy on both sides; stipule persistent; raceme axillary, solitary or umbellate; sepals densely hairy; petals 5; fertile stamens 6-7; staminal filaments winged; ovary hirsute; pods linear, subterete.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 698* (GVCH); Keshavanpara, 21 November 2017, *Jabeena & Maya 752* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1599* (GVCH).

Senna occidentalis (L.) Link, Handbuch [Link] 2: 140 (1831); *Cassia occidentalis* L., Hook. f., Fl. Brit. India 2: 262 (1878); Gamble, Fl. Pres. Madras 401 (1919); Vajr., Fl. Palghat Dist. 182 (1990).

Habit: Herb
Habitat: Along roadsides and wastelands
Morphology: Herb; leaflets 3-5 pairs, ciliate; glands solitary, sessile, seated at the base of the petiole; flowers in corymbose raceme; sepals obtuse; petals 5, clawed; fertile stamens 7, unequal; pods linear, flat; seeds 20-25.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: July-December

Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 111* (GVCH); Nelliyampathy range, Kalchady, 08 November 2017, *Jabeena & Maya 718* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3350* (GVCH).

Senna sophera (L.) Roxb., Fl. Ind. (Roxburgh) ii. 347 (1832); *Cassia sophera* L., Hook. f., Fl. Brit. India 2: 262 (1878); Gamble, Fl. Pres. Madras 401 (1919).

Habit: Shrub
Habitat: Along roadsides in forest areas
Morphology: Shrub; leaflets 5-9 pairs; stipule ovate; glands solitary, below the middle of petiole; inflorescence a corymbose raceme; bracts pubescent; fertile stamens 7; ovary pubescent; stigma ciliate; pods beaked, seedless at base; seeds 30-40.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Rare
Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 06 July 2019, *Jabeena & Maya 2177* (GVCH); Plate 18: Fig. e.

Senna tora Roxb., Fl. Ind. ii. 340; *Cassia tora* L., Hook. f., Fl. Brit. India 2: 263 (1878); Gamble, Fl. Pres. Madras 401 (1919); Vajr., Fl. Palghat Dist. 182 (1990).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaves with a cylindric gland on the rachis; leaflets 3 pairs; inflorescence a few-flowered axillary raceme; bracteoles 2; sepals 5; petals exceeding sepals; fertile stamens 7, unequal; ovary hairy; pods septate between seeds; seeds 20-30.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2257* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2835* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3506* (GVCH).

Xylia Benth., J. Bot. (Hooker) 4: 417 (1842)

Xylia xylocarpa (Roxb.) W.Theob., Burmah [Mason], ed. 3. 2: 541 (1883); Gamble, Fl. Pres. Madras 417 (1919); Vajr., Fl. Palghat Dist. 190 (1990); *Xylia dolabriformis* sensu Bedd., Hook. f., Fl. Brit. India 2: 286 (1878).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; leaves bipinnate; pinnae 1 pair; leaflets with a gland between each pairs; flowers sessile in globose peduncled heads; bracts absent; calyx tubular; petals 5 slightly connate at base; stamens 10, free; anthers tipped with a stalked gland which is early deciduous; ovary sessile; pod flat, septate between the seeds; seeds 4-10.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: February-December
Distribution: Rare
Altitude: 100-300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 042* (GVCH); Plate 18: Fig. f.

PAPILIONOIDEAE

1.Flowers actinomorphic...……..***Entada***
1.Flowers zygomorphic…...…..…….(2)
2.Corolla not papillionaceous; stamens free……...…….……..***Delonix***
2.Corolla papillionaceous; stamens usually united……..……(3)
3.Trees or Lianas……..……...……..(4)
3.Herbs, shrubs or herbaceous climbers……(16)
4.Pod one seeded……...…...……..(5)
4.Pod more than one seeded…….……..(9)
5.Plant climbing....……..……(6)
5.Plant erect……...……(7)
6.Stamens monadelphous…...…..***Aganope***
6.Stamens diadelphous…….…..***Kunstleria***
7.Leaflets opposite; stamens free……...***Ormossia***
7.Leaflets alternate; stamens monadelphous or diadelphous…...…..…(8)
8.Pods winged……..…….....***Pterocarpus***
8.Pods not winged….....……...***Pongamia***
9.Leaves trifoliolate.....……..……(10)
9.Leaves not trifoliolate…....……...(12)
10.Liana…...…….……..***Spatholobus***
10.Trees……..……..….(11)
11.Petals very unequal in length……...……...***Erythrina***
11.Petals nearly equal in length…....***Butea***
12.Pods winged……***Derris***
12.Pods not winged…...……(13)
13.Leaflets opposite…….……(14)
13.Leaflets alternate…….……(15)
14.Inflorescence a raceme; wing petals auricled……..…….....***Gliricidia***
14.Inflorescence single or panicle of cyme; wing petals not auricled……..***Dalbergia***
15.Liana…….……***Milletia***
15.Tree……...……..….***Sesbania***
16.Plant climbing…..……(17)
16.Plant erect to decumbent…..…….(30)
17.Leaflets 5-7……..……..***Clitoria***
17.Leaflets 3…….(18)
18.Stamen monadelphous……...…….(19)
18.Stamen diadelphous……...…….(20)
19.Inflorescence rachis swollen at nodes…….……..***Canavalia***
19.Inflorescence rachis not swollen at nodes……..……..***Neonotonia***
20.Pods 1 or 2 seeded…...…..***Rhynchosia***
20.Pods more than 4 seeded……...…(21)
21.Calyx lobes obscure…....…..***Dumasia***
21.Calyx lobes distinct…...……...…...(22)
22.Keel petals twisted…...……...……(23)
22.Keel petals not twisted…...…...…..(24)
23.Woody habit; style bearing an introse pollen brush of linear arrayed hairs……..***Wajira***
23.Non-woody habit; style not as above…….…….....***Vigna***
24.Pods glabrous or glabrescent….....(25)
24.Pods pubescent, hirsute or densely tomentose……..…(27)
25.Branches glandular pubescent....***Lablab***
25.Branches pubescent or strigose, but not glandular……...……(26)
26.Racemes 5-8 flowered; style broadly pubescent……..……...***Centrosema***
26.Racemes 2 flowered; style densely bearded above……..…….***Dolichos***
27.Anthers dimorphic…..……..***Mucuna***
27.Anthers uniform……..…….(28)
28.Bracteoles zero; standard petal orbicular……...……...***Calopogonium***
28.Bracteoles 2; standard petal obovate……..……....(29)
29.Pod oblong, inflated; seeds with a minute strophiole……...….***Pycnospora***
29.Pod linear, flat; seeds estrophiole……...…….....***Shuteria***
30.Anthers dimorphic…...……....(31)
30.Anthers uniform…….....…….(35)
31.Leaves 2 or 4 foliolate…….……(32)
31.Leaves 1 or 3 foliolate…….……(33)
32.Leaflets 2……...……***Zornia***
32.Leaflets 4……..……***Arachis***
33.Pods flat, jointed…..……..***Stylosanthes***
33.Pods turgid, not jointed…....***Crotalaria***
34.Leaves even-pinnate……(35)
34.Leaves single or odd-pinnate…...…(36)
35.Stamens monadelphous; bracts large, ciliate…….……***Geissaspis***
35.Stamens diadelphous; bracts small, membranous…….…..……***Smithia***
36.Pods breaking into one seeded articles…..…….……(37)
36.Pods not breaking into one seeded articles……..……(44)

37.Pods twisted and enclosed in calyx tube……..…...……..***Uraria***
37.Pods straight and not enclosed in calyx tube……...……...……(38)
38.Joints of pods turgid…..…..***Alysicarpus***
38.Joints of pods not turgid……..…(39)
39.Leaflets exstipillate……***Aeschynomene***
39.Leaflets stipillate…….…….(40)
40.Pods dehiscing in a continuous line along the ventral suture, the 5-10 joints not separating...……...…...***Codariocalyx***
40.Pods dehiscing, dividing into several one seeded joints.....……....(41)
41.Flowers in short dense peduncled axillary umbels……...….***Dendrolobium***
41.Flowers in racemes…..……...……(42)
42.Inflorescence on axillary short raceme……..……...……***Grona***
42.Inflorescence axillary or terminal elongated raceme or panicle…....……(43)
43.Stamen monadelphous; pods with square joints…….....…..***Tadehagi***
43.Stamen diadelphous; pods with semicircular joints……..***Polhillides***
44.Pods one or two seeded…....***Flemingia***
44.Pods three or more seeded…....…(45)
45.Pods with viscid glandular hairs……..…..***Pseudarthria***
45.Pods without viscid glandular hairs……..……(46)
46.Plants covered with laterally adnated hairs…….……..……***Indigofera***
46.Plants not covered with laterally adnated hairs…….……...……(47)
47.Leaves 3-foliolate...……..……***Cajanus***
47.Leaves more than 3-foliolate……..***Tephrosia***

Aeschynomene L., Sp. Pl. 2: 713 (1753)

Aeschynomene indica L., Sp. Pl. 2: 713 (1753); Hook. f., Fl. Brit. India 2: 151 (1876); Gamble, Fl. Pres. Madras 313 (1918); Vajr., Fl. Palghat Dist. 145 (1990).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaflets 15-30 pairs, sub-sessile; stipule peltate, ciliate; inflorescence an axillary few-flowered raceme; bracts acuminate; calyx glabrous; corolla clawed, glabrous; ovary many-ovuled; pods 3-9 articulate; seeds reniform.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: August-December
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3456* (GVCH); Plate 18: Fig. g.

Aganope Miq., Fl. Ned. Ind. 1(1): 151 (1855)

Aganope thyrsiflora (Benth.) Polhill, Kew Bull. 25(2): 268 (1971); *Derris eualata* Bedd., Gamble, Fl. Pres. Madras 388 (1918); *Derris platyptera* Baker, Hook. f., Fl. Brit. India 2: 245 (1878); *Aganope thyrsiflora* (Benth.) Polhill, Vajr., Fl. Palghat Dist. 145 (1990).

Habit: Climber
Habitat: Semi-evergreen forests
Morphology: Climber; leaves imparipinnate; leaflets 4-9 pairs; flowers in long panicle of pubescent raceme; calyx campanulate, pubescent; stamens diadelphous, filaments united halfway; ovary hairy; style incurved; stigma capitate; pod winged on both sutures; seeds 1-3.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: March-August
Distribution: Occasional
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2994* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3818* (GVCH).

Alysicarpus Neck. ex Desv., J. Bot. Agric. 1(2): 120 (1813)

1.Calyx shorter than the first joint of the pod……..….***A. vaginalis***
1.Calyx mush longer than the first joint of the pod……..……..…(2)
2.Calyx teeth not imbricate in fruit……..……...***A. parviflorus***
2.Calyx teeth imbricate in fruit….……..(3)
3.Joints of the pod transversely ribbed..……...……(4)
3.Joints of the pod not transversely ribbed……...……..(5)
4.Calyx lobes with ferruginous hairs; inflorescence condensed.....***A. glumaceus***
4.Calyx lobes without ferruginous hairs; inflorescence elongated…....***A. heyneanus***
5.Inflorescence upto 10-15 cm long…….…….....***A. bupleaurifolius***
5.Inflorescence 2-7 cm long……..…..***A. naikianus***

Alysicarpus bupleurifolius (L.) DC., Prodr. [A. P. de Candolle] 2: 352 (1825); Hook. f., Fl. Brit. India 2: 158 (1876); Gamble, Fl. Pres. Madras 338 (1918); Vajr., Fl. Palghat Dist. 146 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; branches glabrous; leaves 1-foliolate; stipule linear, glabrous; racemes lax, interrupted; flowers 10-26, in distant pairs; calyx tube glabrous, apically ciliate, longer than first joint of pod; pod cylindric, glabrous, 3-7-jointed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Least Concern
Phenology: September-January
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2564* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2969* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4193* (GVCH); Plate 18: Fig. h.

Alysicarpus glumaceus (Vahl) DC., Prodr. [A. P. de Candolle] 2: 353 (1825); *Alysicarpus rugosus* (Willd.) DC., Hook. f., Fl. Brit. India 2: 159 (1876); Gamble, Fl. Pres. Madras 338 (1918); Vajr., Fl. Palghat Dist. 146 (1990).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaves 1-foliolate; stipule scarious, elliptic; leaflets appressed hairy; racemes congested; flowers appressed to rachis; pedicel glabrous; calyx deeply 4-lobed, glabrous, ciliate; pod included in calyx, moniliform.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03-11-2019, *Jabeena & Maya 2837* (GVCH).

Alysicarpus heyneanus Wight & Arn., Prodr. Fl. Ind. Orient. 1: 234 (1834).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem pubescent, terete, striate; leaves 1-foliolate; petiole channeled; leaves lower side and margins hairy; inflorescence terminal, rachis puberulous; flowers bicoloured; bracts glabrous; calyx striate; corolla exserted; ovary glabrous; juncture of ovary and style pubescent; style bent; stigma capitate.

Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4306* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4471* (GVCH).

Alysicarpus naikianus Pokle, Reinwardtia 11(4): 285 (1999) (1999).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves unifoliolate; stipule triangular; racemes 6-10-flowered; peduncle elongated in fruits; bracts glabrous; calyx lobes sub-equal, sparsely ciliate; pods 4-6-jointed; seed sub-globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Rare
Altitude: 600-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4304* (GVCH).

Alysicarpus parviflorus Dalz., Hooker's J. Bot. Kew Gard. Misc. 3: 211 (1851); Gamble, Fl. Pres. Madras 339 (1918); *Desmodium parviflorum* (Dalz.) Baker, Hook. f., Fl. Brit. India 2: 172 (1876).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; stem villous; leaflets tomentose below; inflorescence terminal, lax raceme; calyx longer than first joint of pod, densely hairy; petals glabrous; pod curved, 6-jointed, much exsert from the setaceous pilose calyx teeth.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3563* (GVCH); Mattumala, 14 December 2019, *Jabeena & Maya 3826* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4305* (GVCH).

Alysicarpus vaginalis (L.) DC., Prodr. [A. P. de Candolle] 2: 353 (1825); *Alysicarpus vaginalis* (L.) DC., var. *vaginalis* Hook. f., Fl. Brit. India 2: 158 (1876); Gamble, Fl. Pres. Madras 338 (1918); Vajr., Fl. Palghat Dist. 146 (1990).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; branches glabrous; leaves pubescent; stipule scarious; inflorescence an elongated raceme; calyx glabrous; corolla included; anthers uniform; pod terete, 3-7-jointed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Rare
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1260* (GVCH); Plate 19: Fig. a.

Arachis L., Sp. Pl. 2: 741 (1753)

Arachis pintoi Krapov. & W. C. Greg., Bonplandia (Corrientes) 8(1-4): 81 (-83, 79, figs. 2(31), 18) (1994).

Habit: Herb
Habitat: Grown in gardens
Morphology: Perennial herb; stem stoloniferous; leaves tetra-foliolate;

leaflets glabrous at upper surface and pubescent underneath; flowers on short axillary racemes; pod one-seeded.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: September-May
Distribution: Rare
Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3733* (GVCH).

Butea Roxb., Pl. Coromandel 1(1): 22 (-23) (1795)

Butea monosperma Kuntze, Revis. Gen. Pl. 1: 202 (1891); Vajr., Fl. Palghat Dist. 147. (1990); *Butea frondosa* Koenig ex Roxb., Hook. f., Fl. Brit. India 2: 194 (1876); Gamble, Fl. Pres. Madras 357 (1918).

Habit: Tree
Habitat: Dry and Moist Deciduous forests
Morphology: Tree; branchlets tomentose; leaves trifoliate; stipules lateral; rachis pubescent; lateral nerves 6-8 pairs, glabrous above; flowers large, showy; pedicels tomentose; calyx tube dark velvety, upper lobes connate; corolla much exserted, tomentose; standard petal silky pubescent; wings falcate, incurved, beaked; stamens diadelphous; staminal sheath curved; ovary villous, 2-ovuled; pod linear, stipitate, tomentose; seed solitary.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: March-April
Distribution: Occasional
Altitude: 500-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4264* (GVCH); Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4989* (GVCH).

Cajanus Adans., Fam. Pl. (Adanson) 2: 326, 529 (1763)

1.Pods not depressed outside between the seeds...……..……...***C. heynei***
1.Pods depressed outside between the seeds….……..…….(2)
2.Seeds without strophiole…..…***C. cajan***
2.Seeds with a large grooved strophiole..……..……(3)
3.Plant erect…….……..…...***C. lineatus***
3.Plant climbing……..(4)
4.Pod hooked at apex…...……***C. rugosus***
4.Pod not hooked at apex…….....***C. scarabaeoides***

Cajanus cajan (L.) Huth, Helios 11: 133 (1893); Vajr., Fl. Palghat Dist. 177 (1990); *Cajanus indicus* Spreng., Hook. f., Fl. Brit. India 2: 217 (1876); Gamble, Fl. Pres. Madras 369 (1918).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; branches pubescent; stem ribbed; leaves trifoliolate; stipule lanceolate; leaflets glandular-punctate; stipels setaceous; inflorescence an axillary raceme; bracts triangular; calyx persistent in fruit, pubescent; stamens diadelphous; anthers uniform, dorsifixed; ovary glandular-punctate; stigma papillate; pod hairy; seeds 2-9.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Rare
Altitude: 100-300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, *Jabeena & Maya 5076* (GVCH).

Cajanus heynei (Wight & Arn.) Maesen, Agric. Univ. Wageningen Pap. 85(4): 129 (1986); *Dunbaria heynei* Wight & Arn., Hook. f., Fl. Brit. India 2: 217 (1876); Gamble, Fl. Pres. Madras 370 (1918).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; branches clothed with long spreading hairs; leaves trifoliolate; stipule papery; leaflets strigose; inflorescence an axillary raceme; calyx teeth triangular, pubescent; ovary densely hairy; stigma globular; pod oblong, compressed, villous, 3 cm long.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1682* (GVCH); Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3527* (GVCH).

Cajanus lineatus (Wight & Arn.) Maesen, Agric. Univ. Wageningen Pap. 85(4): 143 (1986); *Atylosia lineata* Wight & Arn., Hook. f., Fl. Brit. India 2: 213 (1876); Gamble, Fl. Pres. Madras 368 (1918); Vajr., Fl. Palghat Dist. 147 (1990).

Habit: Shrub
Habitat: Grasslands
Morphology: Shrub; branchlets tomentose; stipule lanceolate; leaves alternate; leaflets 3-ribbed, glandular-punctate; flowers in axillary pairs; calyx tomentose; ovary densely pubescent; pod oblong, densely hairy; seeds flattened.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: June-January
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1111* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3892* (GVCH).

Cajanus rugosus (Wight & Arn.) Maesen, Agric. Univ. Wageningen Pap. 85(4): 179 (1986); *Atylosia rugosa* Wight & Arn., Hook. f., Fl. Brit. India 2: 215 (1876); Gamble, Fl. Pres. Madras 369 (1918).

Habit: Herb
Habitat: Grasslands
Morphology: Climber; branches terete, pubescent; leaves digitately trifoliolate; leaflets densely tomentose; racemes long, 2-4-flowered; calyx silky; standard clawed; keels oblique; stamens upcurved; ovary pubescent; pod oblong, apex hooked; seeds 3-4.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1656* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3829* (GVCH).

Cajanus scarabaeoides (L.) Thouars, Dictionnaire des Sciences Naturelle (1817); *Atylosia scarabaeoides* (L.) Benth., Hook. f., Fl. Brit. India 2: 215 (1876); Gamble, Fl. Pres. Madras 369 (1918).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; branches pubescent; leaves pinnately 3-foliolate; stipules of triangular scales, pubescent; leaflets glandular-punctate; flowers in

axillary, pubescent raceme; calyx densely pubescent; standard petal with two inflexed auricles at base; stamens diadelphous; ovary white pubescent; stigma capitate; pod oblong, pubescent; seeds flattened.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: September-January
Distribution: Occasional
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3560* (GVCH); Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4992* (GVCH).

Calopogonium Desv., Ann. Sci. Nat. (Paris) 9: 423 (1826)

Calopogonium mucunoides Desv., Ann. Sci. Nat. (Paris) 9: 423 (1826); Vajr., Fl. Palghat Dist. 178 (1990).

Habit: Climber
Habitat: Forest plantations
Morphology: Climber; stem pubescent; leaves trifoliolate; leaflets pubescent; inflorescence an axillary raceme; calyx lobes unequal; standard petal appendaged with 2 inflexed auricles; stamens diadelphous; ovary densely villous; pods oblong, septate, hairy; seeds 5-6.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2614* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2769* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3388* (GVCH); Plate 19: Fig. b.

Canavalia DC., Mém. Légum. ix. 375; Prod. ii. 403 (1825)

Canavalia africana Dunn ex Hutch., Bull. Misc. Inform. Kew 1921(10): 367, nomen (1921); *Canavalia ensiformis* DC. var. *virosa* (Roxb.) Baker, Hook.f., Fl. Brit. India 2: 196 (1876); *Canavalia virosa* (Roxb.) Wight & Arn., Gamble, Fl. Pres. Madras 359 (1918).

Habit: Climber
Habitat: Along stream banks and Shola forests
Morphology: Climber; leaves trifoliolate; flowers racemed; calyx campanulate, sparsely pubescent; corolla exserted; staminal tube glabrous; style glabrous at apex, pubescent below; pods compressed, pubescent.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Rare
Altitude: 400-600m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 788* (GVCH).

Centrosema (DC.) Benth., Commentat. Legum. Gen. 53 (1837)

Centrosema molle Mart. ex Benth., Ann. Wiener Mus. Naturgesch. ii. (1838) 119; *Centrosema pubescens* auct., Vajr., Fl. Palghat Dist. 178. (1990).

Habit: Climber
Habitat: Forest plantations and Deciduous forests
Morphology: Climber; leaves trifoliolate; leaflets pubescent, nerves upto 7 pairs; inflorescence an axillary 2-3-flowered raceme; bracts connate, scaly; calyx

campanulate, 5-lobed; standard petal auriculate at base; keel recurved; stamens 10, diadelphous; ovary oblong, tomentose; pod flat, linear; seed reniform.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and South American
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1159* (GVCH); Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2530* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2958* (GVCH); Plate 19: Fig. c.

Clitoria L., Sp. Pl. 2: 753 (1753)

Clitoria ternatea L., Sp. Pl. 2: 753 (1753); *Clitoria ternatea* L., var. *ternatea*, Hook. f., Fl. Brit. India 2: 208 (1876); Gamble, Fl. Pres. Madras 365 (1918); Vajr., Fl. Palghat Dist. 148 (1990).

Habit: Climber
Habitat: Grown in gardens; also runs in wild
Morphology: Climber; branchlets glandular pubescent; leaves pinnately 3-7-foliolate; stipule persistent; flowers in axillary clusters; bracts unequal, persistent; calyx tube sparsely pubescent; corolla exserted, clawed; stamens diadelphous; anthers uniform; ovary stipitate, tomentose; style curved, tomentose; pod compressed, beaked; seeds reniform.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 533* (GVCH).

Codariocalyx Hassk., Linnaea 15(Litt.): 80 (-81) (1841)

Codariocalyx motorius H.Ohashi, J. Jap. Bot. 40(12): 367 (1965).

Habit: Shrub
Habitat: Moist Deciduous forests
Morphology: Shrub; leaflets glabrous above, tomentose below; lateral nerves up to 8 pairs; inflorescence an axillary or terminal raceme; bracts ovate, acute; flowers shortly pedicelled; keel petals glabrous; pod 6-8 jointed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2836* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2970* (GVCH).

Crotalaria L., Sp. Pl. 2: 714 (1753)

1.Leaves compound…...…….(2)
1.Leaves simple……...…...……...(6)
2.Leaflets 5-7…..……...***C. grahamiana***
2.Leaflets 3……...……..……(3)
3.Seeds more than 10 in number…...…...……..……....***C. pallida***
3.Seeds less than 10 in number……..(4)
4.Flowers 2-4…….....***C. laevigata***
4.Flowers more than 10……...……...…(5)
5.Branches angular; raceme upto 15 cm long; pods 2.5-3 cm long.....***C. micans***
5.Branches terete; raceme upto 5 cm long; pods less than 1 cm long..…….....***C. notonii***
6.Stipules decurrent...…..……***C. scabrella***
6.Stipules not decurrent……...……...…(7)
7.Raceme few flowered; less than 8 in number…….……...……....(8)

7.Raceme many flowered; more than 10 in number……..……....(14)
8.Plant erect……..…..…...***C. salicifolia***
8.Plant trailing……..…….……(9)
9.Pod glabrous…...……..……(10)
9.Pod hairy……..……...…….(12)
10.Stipule absent…….…..……..***C. prostrata***
10.Stipule present…..……..……(11)
11.Pod 10-12 seeded; inflorescence usually 3-flowered…..…...…..…..***C. nana***
11.Pod 6-8 seeded; inflorescence 6-8-flowered……..***C. umbellata***
12.Flowers small, 5-9 mm long……...……..***C. evolvuloides***
12.Flowers large, more than 9 mm long……..……...……(13)
13.Pods sessile……..…...…..***C. multiflora***
13.Pods stalked…….....……..***C. fysonii***
14.Flowers blue……...……..***C. heyneana***
14.Flowers yellow…...…….(15)
15.Pod glabrous…...……...….(16)
15.Pod hairy…...……...……(19)
16.Pod twice or more times longer than calyx…….…….(17)
16.Pod shorter or slightly longer than calyx…….…….(18)
17.Stipule & bracts minute, filiform……..***C. retusa***
17.Stipule & bracts ovate-acuminate, reflexed…...…….…....***C. spectabilis***
18.Flowers in terminal raceme; pods 20-30 seeded…….……...***C. calycina***
18.Flowers in terminal head; pods 12-15 seeded…….....***C. priestleyoides***
19.Inflorescence a panicle.....***C. longipes***
19.Inflorescence a simple raceme.……(20)
20.Branches 4-angled…….....***C. clarkei***
20.Branches terete……...……...….(21)
21.Stipule semi-lunate…..…...***C. walkerii***
21.Stipule lanceolate…...…..…..***C. obtecta***

Crotalaria calycina Schrank, Pl. Rar. Hort. Monac. t. 12. 1817; Hook. f., Fl. Brit. India 2: 72 (1876); Gamble, Fl. Pres. Madras 295 (1918).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem silky hairy; leaves simple; stipule subulate; inflorescence lax, terminal raceme, 5-10-flowered; bracts hairy; calyx bilipped, hairy; corolla equal to calyx; ovary sub-sessile, oblong; pod sessile, oblong, glabrous, included inside calyx.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 04 November 2020, *Jabeena & Maya 4373* (GVCH); Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4497* (GVCH).

Crotalaria clarkei Gamble, Bull. Misc. Inform. Kew 1917(1): 27 (1917); Gamble, Fl. Pres. Madras 296 (1918).
Habit: Herb
Habitat: Evergreen forests and Grasslands
Morphology: Herb; stem 4-angled; leaves simple, sub-sessile; stipule lanceolate, reflexed; inflorescence terminal or axillary, 3-8-flowered; calyx lobes divided to more than half of their length; corolla distinctly exserted; keel rostrate, apex twisted; ovary sessile, oblong, densely villous; stigma lobed; pod oblong, densely silky hairy; seeds 15-25.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Common
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 751* (GVCH); Hilltop, 20 January 2018, *Jabeena & Maya 1024* (GVCH); Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2689* (GVCH).

Crotalaria evolvuloides Wight, Prodr. Fl. Ind. Orient. 1: 188 (-189) (1834); Hook. f., Fl. Brit. India 2: 68 (1876); Gamble, Fl. Pres. Madras 292 (1918).

Habit: Herb
Habitat: Moist Deciduous forests; often in grassy patches
Morphology: Herb; stem terete, hairy; leaves simple, shortly petiolate; stipule linear-lanceolate, deflexed, pubescent; leaves simple, pubescent beneath; racemes leaf-opposed or terminal, 3-6-flowered; peduncle pubescent; calyx lobes equal, villous; corolla slightly exserted; ovary oblong, densely hirsute on one side; style villous; stigma globose; pods sessile, oblong, hirsute, deflexed; seeds 5-10.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Occasional
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2536* (GVCH); Karimala, 20 October 2019, *Jabeena & Maya 2723* (GVCH); Plate 19: Fig. d.

Crotalaria fysonii Dunn, Bull. Misc. Inform. Kew 1914(1): 26 (1914); Gamble, Fl. Pres. Madras 292 (1918).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; branches hirsute; leaves simple, sub-sessile; stipules linear-lanceolate, spreading; raceme terminal, 5-8-flowered; bracts hirsute; calyx obscurely 2- lipped; corolla much exserted, one and half to two times longer than calyx; ovary oblong, shortly stalked; pod cylindrical; seeds 5-10.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Least Concern
Phenology: September-November
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1113* (GVCH).

Crotalaria grahamiana Wight & Arn., Prodr. Fl. Ind. Orient. 1: 194 (1834); Hook. f., Fl. Brit. India 2: 85 (1876); Gamble, Fl. Pres. Madras 301 (1918).

Habit: Shrub
Habitat: Grasslands and montane scrub jungles
Morphology: Shrub; branches angled, tomentose; leaves compound, 7-foliolate; petiole hairy; leaflets sessile, unequal; stipule linear, reflexed, persistent; racemes terminal, 15-30-flowered; bracts reflexed, persistent; calyx tube campanulate, lobes equal, glabrous; keel rounded with an incurved twisted beak; ovary stalked; pod cylindric, glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-March
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 251* (GVCH); Karassuri, 20 October 2019, *Jabeena & Maya 2663* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4112* (GVCH).

Crotalaria heyneana Graham ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 187 (-188) (1834); Hook. f., Fl. Brit. India 2: 78 (1876); Gamble, Fl. Pres. Madras 297 (1918); Vajr., Fl. Palghat Dist. 150 (1990).

Habit: Shrub
Habitat: Moist Deciduous and Semi-evergreen forests

Morphology: Shrub; stem hairy; leaves simple, puberulous below; stipule semi-lunate, reflexed; inflorescence a terminal raceme, 10-20-flowered; bracts reflexed; calyx campanulate, pubescent; corolla slightly exserted; pod oblong, hairy; seeds 10-12.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 440* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 790* (GVCH).

Crotalaria laevigata Lam., Encycl. [J. Lamarck & al.] 2(1): 198 (1786); Hook. f., Fl. Brit. India 2: 83 (1876); Gamble, Fl. Pres. Madras 300 (1918); Vajr., Fl. Palghat Dist. 151. (1990).

Habit: Shrub
Habitat: Moist Deciduous forests and Grasslands
Morphology: Shrub; stem terete, pubescent; leaves trifoliolate;; leaflets glabrous; stipule minute, setaceous; raceme 2-4-flowered, sub-corymbose at end of copious branchlets; bracts setaceous; calyx twice as long as tube; lobes puberulous; keels beaked; pod beaked at apex, glabrous; seeds 8-10.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-pacific and African
IUCN category: Least Concern
Phenology: October-January
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 540* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 845* (GVCH).

Crotalaria longipes Wight & Arn., Prodr. Fl. Ind. Orient. 1: 183 (1834); Hook. f., Fl. Brit. India 2: 76 (1876); Gamble, Fl. Pres. Madras 298 (1918).

Habit: Shrub
Habitat: Wet regions in Deciduous forests
Morphology: Erect annual branched woody herb. Stem terete, densely tomentose. Leaves simple, alternate, ex-stipulate, oblong-lanceolate, base cuneate, apex with an acute tip, margins entire with white tomentose hairs on both surfaces. Inflorescence densely flowered terminal raceme, tomentose. Flowers pedicellate, bracteate. Bracts 2, equal, persistent, cordate-acuminate, margin revolute, tomentose beneath, glabrous above. Bracteoles 2, persistent, similar to bracts in shape and hairiness. Calyx bilipped, upper 2-lobed, lobes broader than the lower, lower 3-lobed, deeply divided, lobes narrowly ovate-acuminate, margin revolute, tomentose outside, glabrous inside. Corolla exerted, striped, standard rhomboid, tomentose outside, glabrous inside, claw hairy, wings oblong, glabrous, keel ovate, margins densely ciliate, beak blunt. Stamens 10, monadelphous, 5 longer, sagittate, 5 shorter, club-shaped. Ovary sessile, densely pubescent, style hairy towards apex, stigma blunt. Pod sessile, ovoid-oblong, silky tomentose. Seeds 7–8, reniform, brown, shining, smooth.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Occasional
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya*

1049 (GVCH); Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2676* (GVCH).

Crotalaria micans Link, Enum. Hort. Berol. Alt. 2: 228 (1822).

Habit: Shrub
Habitat: Along roadsides in high ranges
Morphology: Shrub; branchlets angular; leaves trifoliolate; leaflets pubescent beneath; stipule subulate; racemes many-flowered; bracts and bracteoles linear; calyx lobe bilobed, divided to a little more than half of the length of calyx; corolla twice as long as calyx; beak of keel petals not twisted; ovary shortly stalked, pubescent; pod pubescent, much exceeding the calyx; seeds 3-5.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: South American
IUCN category: Least Concern
Phenology: April-May
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1593* (GVCH); Karimala, 20 October 2019, *Jabeena & Maya 2731* (GVCH).

Crotalaria multiflora Benth., London J. Bot. 2: 478 (1843); Hook. f., Fl. Brit. India 2: 69 (1876); Gamble, Fl. Pres. Madras 293 (1918); Vajr., Fl. Palghat Dist. 151 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem villous; leaves simple, shortly petiolate; stipule lanceolate, puberulous, deflexed; raceme 2-10-flowered, terminal; bracts persistent, reflexed; corolla slightly exserted; beak of keel twisted; ovary sub-sessile, softly hirsute on one side only; pod beaked, densely hirsute; seeds 8-10.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1026* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2419* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2561* (GVCH); Plate 19: Fig. e.

Crotalaria nana Burm.f., Fl. Ind. (N. L. Burman) 156, t. 48 (1768); *Crotalaria nana* Burm.f., var. *nana*, Hook. f., Fl. Brit. India 2: 71 (1876); Gamble, Fl. Pres. Madras 294 (1918); Vajr., Fl. Palghat Dist. 151 (1990).

Habit: Herb
Habitat: Grasslands and wastelands
Morphology: Herb; branches terete, hairy; leaves simple, sub-sessile; inflorescence sub-capitate raceme or umbel, 3-10-flowered; calyx bilipped, densely hairy; corolla not exserted, almost equal to calyx; ovary sub-sessile; pod sub-sessile, glabrous; seeds 10-12.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2664* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3191* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4194* (GVCH).

Crotalaria notonii Wight & Arn., Prodr. Fl. Ind. Orient. 1: 192 (1834); Hook. f., Fl. Brit. India 2: 82 (1876); Gamble, Fl. Pres. Madras 300 (1918).

Habit: Shrub
Habitat: Grasslands
Morphology: Shrub; branches terete, minutely silky hairy; leaves trifoliolate; stipule linear, persistent; racemes terminal or leaf-opposed, 10-20-flowered; bracts linear, persistent; calyx sparsely silky, divide to half of their length; corolla more than twice as long as calyx; keel with a twisted beak; pod obliquely sub-globose, thinly silky; seeds 2.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4312* (GVCH).

Crotalaria obtecta Graham ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 185 (1834); *Crotalaria obtecta* Graham ex Wight & Arn., var. *obtecta*, Hook. f., Fl. Brit. India 2: 79 (1876); Gamble, Fl. Pres. Madras 297 (1918).

Habit: Herb
Habitat: Grasslands
Morphology: Shrub; branches terete, tomentose; leaves simple, sub-sessile; stipule subulate, deflexed; racemes 10-20-flowered; bract lanceolate; bracteoles setaceous; calyx densely tomentose, deeply 5-cleft; corolla slightly exserted; anthers sagittate; ovary ovoid, densely hairy; pod oblong, sessile, densely velvety; seeds 10-12.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothumala, 12 October 2019, *Jabeena & Maya 2539* (GVCH).

Crotalaria pallida Aiton, Hort. Kew. [W. Aiton] 3: 20 (1789); *Crotalaria pallida* Dryand. var. *pallida*, Vajr., Fl. Palghat Dist. 152 (1990); *Crotalaria striata* DC., Hook. f., Fl. Brit. India 2: 84 (1876); Gamble, Fl. Pres. Madras 301 (1918).

Habit: Shrub
Habitat: Degraded forests
Morphology: Shrub; leaves trifoliolate; leaflets glabrous above, pubescent beneath; stipule filiform; racemes terminal many-flowered; pedicels 3-4 mm long; bracts linear; calyx campanulate, tomentose, lobes sub-equal; corolla twice as long as calyx; beak of keel not twisted; stamens monadelphous; ovary stipitate, oblong, densely pubescent; pod shortly stipitate, deflexed, much exceeding the calyx; seeds 20-40.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 749* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2832* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2976* (GVCH).

Crotalaria priestleyoides Benth., Trans. Linn. Soc. London 25(2): 214 (1865); Hook. f., Fl. Brit. India 2: 74 (1879); Gamble, Fl. Pres. Madras 296 (1915).

Habit: Herb
Habitat: Grasslands
Morphology: A much branched trailing herb, upto 35 cm long, covered with brown

silky hairs. Stem prostrate, terete, slender, densely hairy. Leaves membranous, simple, alternate, sub-sessile (petiole up to 0.1 cm) 0.6–2 × 0.4–0.9 cm, elliptic or obovate, base acute, margin entire, apex round, mucronate, sparsely hairy above, densely hairy below; midrib impressed above and raised below; lateral nerves 4–5 pairs, indistinct. Stipules absent. Inflorescence terminal, 4–8 flowered raceme with a short peduncle which looks like a capitulum; peduncle 1-2(-6) mm long, hairy. Flowers pedicellate, bracteate; pedicel 3–4 mm long, hairy. Bracts 2, equal, 1.3–1.5 × 0.2–0.4 cm, lanceolate, acuminate at apex, hairy outside, glabrous inside, persistent; bracteoles 2, similar to bracts, 0.9–1 cm long. Calyx bilipped, 5-lobed, lobes unequal, free near to the base, 1.5–1.7 × 0.3–0.4 cm, hairy outside, glabrous inside; upper lip 2-lobed, lanceolate, apex acute; lower lip 3-lobed, linear, acuminate at apex. Corolla as long as the calyx, yellow; standard 0.9–1.2 × 0.9–1.0 cm, obovate, glabrous except few hairs on the back; wing petals 0.7–0.9 × 0.2–0.3 cm, oblong, glabrous, keel 0.9–1.0 × ca. 0.5 cm, beak of keel spirally twisted. Staminal sheath 0.6 cm long; filament glabrous; anthers dimorphic (5+5), 5 large, linear, ca. 0.15 cm, 5 small, globose, ca. 0.025 cm long. Ovary 0.25 cm long, ovoid, glabrous; style ca. 0.6 cm long, hairy towards the apex; stigma blunt. Pods sessile, included in the calyx, 1.2–1.4 × 0.6–0.7 cm, oblong, tip hooked, blackish brown, glabrous. Seeds 12–15, ca. 0. 25 × ca. 0.25 cm, reniform, brown, smooth, polished.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to South India
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3988* (GVCH).

Crotalaria prostrata Rottler, Enum. Pl. [Willdenow] 2: 747 (1809); Hook. f., Fl. Brit. India 2:67 (1876); Gamble, Fl. Pres. Madras 292 (1918).
Habit: Herb
Habitat: Moist deciduous forests
Morphology: Herb; stem terete, silky hairy; leaves simple, shortly petiolate; stipule absent; racemes 2-4-flowered, lax, leaf-opposed or terminal; bracts subulate; calyx bilipped, deflexed, silky villous; corolla hardly exserted; keel twisted; ovary sessile, oblong, glabrous; pod shortly stalked, oblong, glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3561* (GVCH).

Crotalaria retusa L., Sp. Pl. 2: 715 (1753); Hook. f., Fl. Brit. India 2: 75 (1876); Gamble, Fl. Pres. Madras 293 (1918); Vajr., Fl. Palghat Dist. 152 (1990).

Habit: Herb
Habitat: All types of vegetation
Morphology: Herb; stem terete; leaves simple, shortly petiolate; racemes 10-20-flowered, terminal, lax; bracts subulate, margin ciliate; bracteoles 2; stipule minute, subulate; calyx bilipped, puberulous; corolla much exserted; ovary sub-sessile, oblong, glabrous; pod much exceeding the calyx; seeds 15-20.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena &*

Maya 2576 (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2975* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3893* (GVCH).

Crotalaria salicifolia B. Heyne ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 182 (1834); Hook. f., Fl. Brit. India 2: 77 (1876); Gamble, Fl. Pres. Madras 294 (1918); Vajr., Fl. Palghat Dist. 152 (1990).

Habit: Shrub
Habitat: Grassy patches in degraded forests
Morphology: Shrub; stem terete, densely ferruginous; leaves simple, shortly petioled; stipule absent; raceme terminal, lax; bracts hairy; calyx densely hairy; corolla shorter than calyx; ovary oblong; stigma pubescent on tip; pod oblong, shortly stalked, glabrous; seeds 20 or more.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4472* (GVCH); Plate 19: Fig. f.

Crotalaria scabrella Wight & Arn., Prodr. Fl. Ind. Orient. 1: 181 (1834); Gamble, Fl. Pres. Madras 291 (1918); Vajr., Fl. Palghat Dist. 153 (1990); *Crotalaria rubiginosa* Willd. var. *scabrella* (Wight & Arn.) Baker, Hook.f., Fl. Brit. India 2: 70 (1876); *Crotalaria ovalifolia* Wall. ex Fyson, Gamble, Fl. Pres. Madras 291 (1918).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem terete, tomentose; leaves simple, shortly petiolate; stipules singed, wings widened upwards into a broad recurved point and abruptly narrowing down from halfway of internode; raceme leaf-opposed, 2-4-flowered; bracts pubescent; calyx bilipped, pubescent; corolla shorter or equal to calyx; ovary glabrous; pod glabrous; seeds 12.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: November-March
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 539* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4215* (GVCH); Plate 19: Fig. g.

Crotalaria spectabilis Roth, Nov. Pl. Sp. 341 (1821); *Crotalaria sericea* Retz., Hook. f., Fl. Brit. India 2: 75 (1876); Gamble, Fl. Pres. Madras 293 (1918); Vajr., Fl. Palghat Dist. 153 (1990); *Crotalaria leschenaultii* DC., Hook. f., Fl. Brit. India 2: 76 (1876); Gamble, Fl. Pres. Madras 293 (1918).

Habit: Shrub
Habitat: Deciduous forests and Shola margins
Morphology: Shrub; stem glabrous; leaves simple, shortly petiolate; stipule leafy, persistent, glabrous; racemes 15-25 flowered, lax, glabrous; bracts foliaceous, persistent, glabrous; calyx campanulate, bilipped; corolla much exserted; ovary sessile, glabrous; pod much exceeding the calyx, oblong, glabrous; seeds 20-30.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Manpara, 29 July 2017, *Jabeena & Maya 280* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2420* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2849* (GVCH).

Crotalaria umbellata Wight, Numer. List [Wallich] n. 5383; Gamble, Fl. Pres. Madras 294 (1918).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves pubescent on upper side; stipule minute; umbels 3-6-flowered; bracts linear; calyx tomentose, bifid; corolla not exserted; ovary stipitate; pod sub-globose, glabrous, shorter than or equalling the calyx; seeds 5-6.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-March
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 423* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 629* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4195* (GVCH).

Crotalaria walkeri Arn., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 18(1): 328 (1840); Gamble, Fl. Pres. Madras 297 (1918); *Crotalaria semperflorens* Vent. var. *walkeri* (Arn.) Baker, Hook. f., Fl. Brit. India 2: 78 (1876).

Habit: Shrub
Habitat: Grasslands and open areas in Evergreen and Semi-evergreen forests
Morphology: Shrub; stem terete, glabrous; leaves simple, shortly petiolate; stipule semi-lunate, deflexed; raceme 10-20-flowered, terminal; calyx densely pubescent; corolla much longer than calyx; glandular within; beak of keel twisted; ovary stalked, oblong, hairy; pod much exceeding calyx; seeds 10-15 .
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Rare
Altitude: 800-1000
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mannathypalam, 12 October 2020, *Jabeena & Maya 4167* (GVCH); Plate 19: Fig. h.

Dalbergia L. f., Suppl. Pl. 52, 316 (1782)

1.Leaflets less than 10; stamen 9……...***D. lanceolaria***
1.Leaflets more than 10; stamen 10……(2)
2.Flowers in axillary corymbose panicle……...…...….***D. latifolia***
2.Flowers in terminal panicle in new shoots…..…….……...***D. sissoides***

Dalbergia lanceolaria L.f., Suppl. Pl. 316 (1782); *Dalbergia lanceolaria* L. f., ssp. *lanceolaria* Hook. f., Fl. Brit. India 2: 235 (1876); Gamble, Fl. Pres. Madras 383 (1918); Vajr., Fl. Palghat Dist. 154 (1990).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves imparipinnate; leaflets 7-13; stipule sub-falcate; inflorescence an axillary or terminal panicle; bracts lanceolate; calyx campanulate, 5-toothed; wing petals and keel petals clawed; stamens 10; pod oblong, glabrous, stipitate; seeds 1-3, compressed, reniform.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: January-December
Distribution: Occasional
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4094* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4988* (GVCH); Plate 20: Fig. a.

Dalbergia latifolia Roxb., Pl. Coromandel 2(1): 7, t. 113 (1799); Hook. f., Fl. Brit. India 2: 231 (1876); Gamble, Fl. Pres. Madras 383 (1918); Vajr., Fl. Palghat Dist. 154 (1990).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves imparipinnate; leaflets 3-7; stipule lateral; rachis glabrous; lateral nerves 5-10 pairs; flowers in subterminal corymbose panicles; calyx campanulate, 5-toothed, glabrous; standard petal reflexed; wing and keel petals clawed; stamens 9, monadelphous; ovary stipitate, 1-loculed; pod oblong, flat, apiculate; seeds 1-4, reniform, compressed.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Vulnerable

Phenology: August-September

Distribution: Occasional

Altitude: 400-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1152* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3041* (GVCH).

Dalbergia sissoides Graham ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 265 (1834); Hook. f., Fl. Brit. India 2: 231 (1870); Gamble, Fl. Pres. Madras 383 (1918); Vajr., Fl. Palghat Dist. 154 (1990).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves imparipinnate, alternate; leaflets 5-7; rachis glabrous; lateral nerves 4-12 pairs; flowers pedicelled, in lax terminal or axillary panicle; calyx campanulate, 5-toothed, stamens 9, monadelphous; ovary stipitate; pod tapering to both ends, oblong, stipitate; seeds 1-4, reniform.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-August
Distribution: Occasional
Altitude: 400-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1180* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3142* (GVCH).

Delonix Raf., Fl. Tellur. 2: 92 (1837)

Delonix regia (Bojer) Raf., Fl. Tellur. 2: 92 (1837).

Habit: Tree

Habitat: Planted as ornamental tree

Morphology: Tree; branchlets puberulous; leaves bipinnate; stipule lateral; rachis puberulent; a sessile gland seen between each pinnae on upper side; leaflets sessile; inflorescence a lateral or terminal corymbose panicle; calyx lobes sub-equal; petals fimbriate at margins; stamens 10; ovary sub-sessile; style filiform; stigma truncate; pod flat; seeds many.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Least Concern

Phenology: February-July

Distribution: Rare

Altitude: 200-500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4826* (GVCH).

Dendrolobium (Wight & Arn.) Benth., Pl. Jungh. [Miquel] 2: 215 (1852)

Dendrolobium triangulare Schindl., Repert. Spec. Nov. Regni Veg. 20: 279 (1924); *Desmodium cephalotes* (Roxb.) Wall. ex Wight & Arn., Hook. f., Fl. Brit. India 2: 161 (1876); Gamble, Fl. Pres. Madras 344 (1918); *Desmodium triangulare* (Retz.) Merr. var. *congestum* (Prain) Sant., Vajr., Fl. Palghat Dist. 159 (1990).

Habit: Shrub
Habitat: Moist Deciduous forests and also in forest plantations
Morphology: Shrub; branchlets hairy; leaflets sub-equal; nerves 8-10 pairs; stipule ovate; inflorescence an axillary cluster; upper calyx longer than the others; standard petal glabrous; wing petals obovate; keel petals glabrous; pod curved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Rare
Altitude: 200-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 519* (GVCH).

Derris Lour., Fl. Cochinch. 2: 423, 432 (1790)

1.Pods winged along the upper suture only, acute at both ends……....***D. scandens***
1.Pods winged on both suture, obtuse at both ends……..***D. brevipes***

Derris brevipes Baker, Fl. Brit. India [J. D. Hooker] 2(5): 244 (1878); *Derris brevipes* (Benth.) Baker var. *brevipes*, Gamble, Fl. Pres. Madras 388 (1918).

Habit: Climber
Habitat: Evergreen and Semi-evergreen forests
Morphology: Climbing shrub; branchlets glabrous; leaves 3-9-foliolate; lateral nerves 6-8 pairs; flowers in axillary, tomentose panicles; calyx cupular, tomentose; standard petal clawed; stamens 10, monadelphous, dimorphic; ovary tomentose; pod oblong, tomentose; seeds 1-2.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: February-December
Distribution: Common
Altitude: 800-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 057* (GVCH); Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1912* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3811* (GVCH).

Derris scandens Benth., J. Proc. Linn. Soc., Bot. 4(Suppl.): 103 (1860); Hook. f., Fl. Brit. India 2: 240 (1878); Gamble, Fl. Pres. Madras 387 (1918); Vajr., Fl. Palghat Dist. 155 (1990).

Habit: Climber
Habitat: Deciduous forests, also in mangrove forests and sacred groves
Morphology: Climber; branches drooping; leaves imparipinnate, 5-11 foliolate; lateral nerves 7-9 pairs; stipule linear; flowers clustered on axillary or terminal raceme; calyx campanulate, tomentose; stamens 10, monadelphous; pod oblong, tapering at both ends, winged on upper sutures; seeds 1-5.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: June-December
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 30 November 2019,

Jabeena & Maya 3077 (GVCH); Plate 20: Fig. b.

Dolichos L., Sp. Pl. 2: 725 (1753)

Dolichos trilobus L., Sp. Pl. 2: 726 (1753); Vajr., Fl. Palghat Dist. 160 (1990); *Dolichos falcatus* Klein ex Willd., Hook. f., Fl. Brit. India 2: 211 (1876); Gamble, Fl. Pres. Madras 366 (1918).
Habit: Climber
Habitat: Grasslands
Morphology: Climber; stem puberulous; leaves trifoliolate; leaflets unequal; stipule reflexed, scarious; inflorescence axillary 2-3-flowered raceme; calyx campanulate, hispid; corolla exserted; wing petals auricled; keel petals incurved; stamens diadelphous; ovary glabrous; style incurved; pod compressed, beaked; seeds 6-8.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Common
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 953* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2032* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4238* (GVCH): Plate 20: Fig. c.

Dumasia DC., Ann. Sci. Nat. (Paris) 4: 96 (1825)

Dumasia villosa DC., Mém. Légum. 257. t. 44; Hook. f., Fl. Brit. India 2: 183 (1876); Gamble, Fl. Pres. Madras 351 (1918); Vajr., Fl. Palghat Dist. 160 (1990).

Habit: Climber
Habitat: Margins of Evergreen forests
Morphology: Climber; stem densely villous; leaves trifoliolate; leaflets hairy; stipule lanceolate; inflorescence an axillary many-flowered raceme; axillary; calyx tube gibbous at base; corolla exserted, clawed; wing petals 2-lobed; stamens diadelphous; ovary villous; pod linear, compressed, shortly beaked; seeds 1-4.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: August-December
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 211* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2052* (GVCH).

Entada Adans., Fam. Pl. (Adanson) 2: 318, 554 (1763)

Entada rheedei Spreng., Syst. Veg., ed. 16 [Sprengel] 2: 325 (1825); Vajr., Fl. Palghat Dist. 188 (1990); *Entada scandens* sensu Hook. f., Fl. Brit. India 2: 86 (1878); Gamble, Fl. Pres. Madras 417 (1919).

Habit: Climber
Habitat: Along the sides of rivers in Evergreen forests
Morphology: Liana; stem spirally twisted, glabrous; leaves bipinnate, terminal pair modified into a tendril; leaflets 4-7 pairs, inequilateral; inflorescence an axillary, solitary or paired spike arranged in panicles; peduncle puberulous; calyx cup-shaped; petals 4, oblong; stamens 10, free; ovary shortly stipitate, glabrous; pod woody, curved; seeds flattened.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Rare
Altitude: 500-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4828* (GVCH).

Erythrina L., Sp. Pl. 2: 706 (1753)

1.Calyx bilabiate...…...……...***E. suberosa***
1.Calyx spathaceous…....……(2)
2.Keel petals free…....…….....***E. variegata***
2.Keel petals connate…..……..***E. stricta***

Erythrina stricta Roxb., Hort. Bengal. 53; Fl. Ind. iii. 251; Hook. f., Fl. Brit. India 2: 189 (1876); Gamble, Fl. Pres. Madras 354 (1918).
Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; young branchlets armed with prickles; leaves trifoliate; stipules lateral; rachis glabrous; inflorescence a terminal raceme; calyx spathaceous, split half way down, glabrous; petals 5; stamens monadelphous; ovary inferior, stipitate, pubescent; stigma capitate; pod sub-turgid; seeds 2-3.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: January-May
Distribution: Common
Altitude: 100-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3703* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3921* (GVCH); Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4972* (GVCH).

Erythrina suberosa Roxb., Hort. Bengal. 53; Fl. Ind. iii. 253; Hook. f., Fl. Brit. India 2: 189 (1876); Gamble, Fl. Pres. Madras 354 (1918).

Habit: Tree
Habitat: Deciduous forests
Morphology: Tree; branchlets sparsely prickly; leaves trifoliate; stipule lateral; rachis puberulent; stipel gland like; leaflets 3-ribbed from the base; inflorescence an axillary or terminal raceme; calyx campanulate, bilabiate; corolla exserted; ovary inferior, oblong, pubescent, stipitate; pod linear-falcate; seeds 2-5.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: February-April

Distribution: Occasional

Altitude: 600-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2618* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3806* (GVCH).

Erythrina variegata L., Herb. Amboin. (Linn.) 10 (1754); Vajr., Fl. Palghat Dist. 161 (1990); *Erythrina indica* Lam., Hook. f., Fl. Brit. India 2: 188 (1876); Gamble, Fl. Pres. Madras 353 (1918).

Habit: Tree
Habitat: Deciduous forests
Morphology: Tree; branches profusely prickly; leaves trifoliate; leaflets stellate-pubescent, 3-ribbed from base; stipule lateral; raceme many flowered with stout peduncles; calyx spathaceous, splitting down to base, stellate tomentose; petals glabrous; stamens monadelphous; ovary stipitate, pubescent; pod turgid, linear; seeds 3-8.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific, Holarctic and African

IUCN category: Least Concern

Phenology: March-April

Distribution: Rare

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4074* (GVCH).

Flemingia Roxb. ex W. T. Aiton, Hort. Kew., ed. 2 [W.T. Aiton] 4: 349 (1812)

1.Leaves simple…..…..…..***F. strobilifera***
1.Leaves trifoliate…..…..……..……(2)
2.Leaflets acuminate at apex; glabrous except on the nerves beneath….....***F. macrophylla***
2.Leaflets acute or obtuse at apex; leaflets pubescent or tomentose…….....***F. wallichii***

Flemingia macrophylla (Willd.) Kuntze ex Merr., Philipp. J. Sci., C 5: 130 (1910); *Flemingia congesta* Roxb. ex Ait.f., Hook. f., Fl. Brit. India 2: 228 (1876); Gamble, Fl. Pres. Madras 378 (1918); *Flemingia congesta* Roxb. ex Ait.f. var. *semialata* (Roxb.) Baker Hook.f., Fl. Brit. India 2: 229 (1876); *Flemingia semialata* Roxb., Gamble, Fl. Pres. Madras 378 (1918); Vajr., Fl. Palghat Dist. 161 (1990).

Habit: Shrub
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Shrub; branchlets trigonous; leaves trifoliolate, basally 3-nerved; stipule cuspidate; inflorescence an axillary raceme; flowers congested; calyx lobes silky, dotted with black glands; pod turgid, oblong; seeds 2.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2023* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2178* (GVCH); Plate 20: Fig. d.

Flemingia strobilifera (L.) W. T. Aiton, Hort. Kew., ed. 2 [W.T. Aiton] 4: 350 (1812); Hook. f., Fl. Brit. India 2: 227 (1876); Gamble, Fl. Pres. Madras 377 (1918); *Flemingia strobilifera* (L.) R. Br. ex Ait.f. var. *bracteata* (Roxb.) Baker, Hook. f., Fl. Brit. India 2:227 (1876); *Flemingia bracteata* (Roxb.) Wight, Gamble, Fl. Pres. Madras 378 (1918); Vajr., Fl. Palghat Dist. 161 (1990).

Habit: Shrub
Habitat: Deciduous and Semi-evergreen forests
Morphology: Shrub; leaves unifoliolate, glabrous above, pubescent beneath; nerves 8-10 pairs; petioles pubescent; stipule scarious; inflorescence axillary or terminal, tomentose racemes; bracts membranous, stalked; calyx lobes linear, pubescent; standard petal auriculate; pod oblong, turgid, pubescent; seeds 2.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1057* (GVCH); Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2579* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2944* (GVCH); Plate 20: Fig. e.

Flemingia wallichii Wight & Arn., Prodr. Fl. Ind. Orient. 1: 242 (1834); Hook. f., Fl. Brit. India 2:229 (1876); Gamble, Fl. Pres. Madras 379 (1918).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; branches hairy; leaves trifoliolate; petiole grooved, hairy; leaflets glabrous above, black glandular beneath; nerves 5 pairs, nervules prominent; petiole 3-4 cm long, slightly winged. inflorescence an axillary raceme; calyx lobes with hairs from yellow glands; corolla included; ovary hairy; pod turgid, pubescent; seeds 2.
Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-March
Distribution: Rare
Altitude: 1000-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1071* (GVCH).

Geissaspis Wight & Arn., Prodr. Fl. Ind. Orient. 1: 217 (1834)

1.Flowers shorter than bracts; bracts orbicular; stipules lanceolate….***G. cristata***
1.Flowers as long as bracts; bracts ovate; stipules oblanceolate……...***G. cristata var. tenella***

Geissaspis cristata Wight & Arn., Prodr. Fl. Ind. Orient. 1: 218 (1834); Hook. f., Fl. Brit. India 2: 141 (1876); Gamble, Fl. Pres. Madras 324 (1918); Vajr., Fl. Palghat Dist. 162 (1990).

Habit: Herb
Habitat: Moist open grassy patches
Morphology: Herb; rooting at lower nodes; branches glabrous; leaflets 4, glabrous; stipule spurred at base; inflorescence an axillary peduncled raceme; bracts imbricate, enclosing flowers; calyx membranous, glabrous, bilipped; corolla glabrous; stamens monadelphous; ovary suborbicular; pods 1-2-jointed, beaked, glabrous; seed solitary.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: July-September
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 770* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2931* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2184* (GVCH)

Geissaspis cristata* var. *tenella (Benth.) M. R. Almeida, Fl. Maharashtra 2: 83 (1998) (1998); *Geissaspis tenella* Benth., var. *tenella*, Hook. f., Fl. Brit. India 2:141 (1876); Gamble, Fl. Pres. Madras 324 (1919).

Habit: Herb
Habitat: Moist rocky slopes
Morphology: Herb; leaves bipinnate; leaflets 4; stipule dentate, membranous, ciliate; inflorescence an axillary raceme; bracts dentate; calyx deeply bilipped; corolla longer than the calyx; stamens monadelphous; ovary shortly stalked; ovules 2; pods 1-2-seeded.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Least Concern
Phenology: August-November
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2761* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3112* (GVCH).

Gliricidia Kunth, Nov. Gen. Sp. [H.B.K.] 6(pt. 28): 309 (ed. fol.) (1824)

Gliricidia sepium (Jacq.) Kunth, Repert. Bot. Syst. (Walpers) 1(4): 679 (1842); Vajr., Fl. Palghat Dist. 178 (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; branchlets glandular-pubescent; leaves imparipinnate; stipule lateral; leaflets 7-21; lateral nerves 5-10 pairs; calyx campanulate; petals exserted; wing petals auricled; stamens diadelphous; filaments unequal; ovary sessile; style glabrous; stigma capitate; pod 8-10-seeded.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and South American

IUCN category: Least Concern

Phenology: March-May

Distribution: Common

Altitude: 100-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1223* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3725* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4120* (GVCH).

Grona Lour., Fl. Cochinch. 2: 459 (1790)

Grona triflora (L.) H. Ohashi & K. Ohashi, J. Jap. Bot. 93(2): 117 (2018); *Desmodium triflorum* (L.) DC., Hook. f., Fl. Brit. India 2: 173 (1876); Gamble, Fl. Pres. Madras 347 (1918); Vajr., Fl. Palghat Dist. 159 (1990).

Habit: Herb
Habitat: Grasslands and Moist Deciduous forests
Morphology: Prostrate herb; rooting at nodes; leaves trifoliolate; leaflets glabrous above, pubescent beneath; stipule obliquely ovate, persistent; flowers in axillary fascicles; calyx 5-lobed, hairy; corolla clawed; pod 3-5-jointed, hooked hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Least Concern
Phenology: July-December
Distribution: Common
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 088* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 473* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2734* (GVCH).

Indigofera L., Sp. Pl. 2: 751 (1753)

1.Leaves trifoliolate...……..…(2)
1.Leaves more than 3-foliolate……...…(3)
2.Raceme 3-6 flowered; pod deflexed..……...…...***I. prostrata***
2.Raceme upto 12 flowered; pod straight….……..……...***I. pedicellata***
3.Leaflets 5……...***I. trita var. marginulata***
3.Leaflets more than 6……(4)
4.Side leaflets alternate....***I. hendecaphylla***
4.Side leaflets opposite…...……(5)
5.Pods 4-angular; stipules lanceolate……...……...***I. astragalina***
5.Pods terete; stipules ovate…….***I. wightii***

Indigofera astragalina DC., Prodr. [A. P. de Candolle] 2: 228 (1825); *Indigofera hirsuta* sensu Baker, Hook.f., Fl. Brit. India 2: 98 (1876); Gamble, Fl. Pres. Madras 312 (1918).

Habit: Herb

Habitat: Moist Deciduous forests and Scrub jungles
Morphology: Annual herb; stem densely hairy; leaflets 7-9 pairs; stipules lanceolate; stipels filiform; inflorescence an axillary raceme; bracts pilose; calyx plumose, lobes setaceous; petals glabrous; pod reflexed, sub-quadrangular; seeds tetragonous, pitted.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated

Phenology: October-January

Distribution: Occasional

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 635* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4269* (GVCH).

Indigofera hendecaphylla Jacq., Collectanea [Jacquin] 2: 358; *Indigofera endecaphylla* Jacq., Hook. f., Fl. Brit. India 2: 98 (1876); Gamble, Fl. Pres. Madras 311 (1918); Vajr., Fl. Palghat Dist. 164 (1990).

Habit: Herb
Habitat: Degraded forest areas
Morphology: Herb; leaflets 9-12 pairs, sessile, side leaflets alternate; stipule lanceolate, scarious; flowers in many-flowered raceme; calyx lobes subulate; pod deflexed, tetragonous, sharp-pointed; seeds 6-10.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Not Evaluated

Phenology: September-January

Distribution: Common

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 402* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 590* (GVCH); Karimala, 20 October 2019, *Jabeena & Maya 2711* (GVCH); Plate 20: Fig. f.

Indigofera pedicellata Wight & Arn., Prodr. Fl. Ind. Orient. 1: 200 (1834); Gamble, Fl. Pres. Madras 311 (1918).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; branches pubescent; leaves trifoliolate; leaflets gland-dotted beneath; stipule scarious; inflorescence an axillary sub-corymbose raceme, 6-12-flowered; bracteoles linear; calyx tube setaceous, hairy; lobes sub-equal; corolla twice as long as calyx; stamens diadelphous; ovary sessile; pod straight, pubescent with glands towards tip; seeds many.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: July-November

Distribution: Occasional

Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3262* (GVCH); Nelliyampathy range, Valiya Govindamala, *Jabeena & Maya 4486* (GVCH).

Indigofera prostrata Willd., Sp. Pl., ed. 4 [Willdenow] 3(2): 1226 (1802); Gamble, Fl. Pres. Madras 310 (1918); Vajr., Fl. Palghat Dist. 164 (1990); *Indigofera trifoliata* sensu Baker, Hook.f., Fl. Brit. India 2: 96 (1876).

Habit: Herb
Habitat: Grassy areas in moist deciduous forests
Morphology: Herb; branches pubescent; leaves trifoliolate; leaflets gland-dotted beneath; stipule subulate; racemes axillary, 3-6-flowered, shorter than leaves; calyx lobes setaceous; corolla exserted, pubescent; ovary sessile; pod terete, deflexed, slightly winged, pubescent; seeds 8.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific, Holarctic and Australian

IUCN category: Not Evaluated

Phenology: November-December

Distribution: Occasional

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 609* (GVCH); Nelliyampathy range, Valiya Govindamala, 03 November 2020, *Jabeena & Maya 4280* (GVCH).

Indigofera trita var. marginulata (Grah. ex Wight & Arn.) Sanjappa, Bull. Bot. Surv. India 26(1-2): 118 (1985); *Indigofera marginulata* Graham ex Wight & Arn., Hook. f., Fl. Brit. India 2: 97 (1876); Gamble, Fl. Pres. Madras 311 (1918).

Habit: Herb
Habitat: Dry Deciduous forests
Morphology: Herb; branches with appressed hairs; leaves pinnately trifoliolate; petioles canaliculate; stipule triangular, hairy; leaflets pilose; racemes axillary, 15-30-flowered, sterile towards tip; calyx campanulate, hairy; ovary linear, glabrous; pod sub-tetragonous, sharply beaked; seeds 6-10.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4987* (GVCH).

Indigofera wightii Graham ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 202 (1834); Hook. f., Fl. Brit. India 2: 99 (1876); Gamble, Fl. Pres. Madras 313 (1918).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; branches furrowed, hairy; leaves imparipinnate; leaflets 6-8 pairs; stipule subulate; racemes dense, axillary, many-flowered; calyx lobes triangular, pubescent; ovary pubescent; Pod terete, sessile; seeds 8-10.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-July
Distribution: Rare
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothumala, 12 October 2019, *Jabeena & Maya 2535* (GVCH).

Kunstleria Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 66(1): 109 (1897)

Kunstleria keralensis C. N. Mohanan & N. C. Nair, Proc. Indian Acad. Sci. Pl. Sci. 90(3): 208 (1981)

Habit: Climber
Habitat: Evergreen and Semi-evergreen forests
Morphology: Liana; leaves imparipinnate; leaflets opposite; lateral nerves 4-6 pairs; inflorescence a terminal panicle; flowers sub-sessile; calyx campanulate, 5-lobed; standard petals glabrous; wing and keel petals ciliate; stamens diadelphous; ovary sessile; pod strap-shaped, tomentose; seeds 2, flat.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: April-June
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4464* (GVCH).

Lablab Adans., Fam. Pl. (Adanson) 2: 325 (1763)

Lablab purpureus (L.) Sweet, Hort. Brit. [Sweet] 481 (1826); Vajr., Fl. Palghat Dist. 165 (1990); *Dolichos lablab* L., Hook. f., Fl. Brit. India 2: 209 (1876).

Habit: Climber
Habitat: Cultivated
Morphology: Climber; branchlets glandular-pubescent; leaves trifoliolate; stipule ciliate; inflorescence a simple raceme; flowers in pairs or in clusters on

rachis; calyx campanulate; tomentose; corolla exserted, clawed; standard auricled; stamens diadelphous; ovary stipitate, tomentose; pod oblong-falcate; seeds 2.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2989* (GVCH).

Millettia Wight & Arn., Prodr. Fl. Ind. Orient. 1: 263 (1834)

Millettia rubiginosa Wight & Arn., Prodr. Fl. Ind. Orient. 1: 263 (1834); Hook. f., Fl. Brit. India 2: 104 (1876); Gamble, Fl. Pres. Madras 322 (1918); Vajr., Fl. Palghat Dist. 166 (1990).

Habit: Climber
Habitat: Evergreen forests
Morphology: Liana; stem ferruginous pubescent; leaves pinnate; leaflets 5-7, ferruginous pubescent beneath, lateral veins 8-10 pairs; racemes as long as leaves; flowers fascicled at nodes; calyx campanulate, silky hairy; corolla densely hairy; stamens diadelphous; ovary sessile; pod turgid, densely hairy; seeds 1-3.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 149* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 559* (GVCH).

Mucuna Adans., Fam. Pl. (Adanson) 2: 325, 579 (1763)

Mucuna bracteata DC. ex Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 231 (1873); Hook. f., Fl. Brit. India 2: 186 (1876).

Habit: Climber
Habitat: Grown as cover crop in rubber plantations
Morphology: Climber; leaves pinnately trifoliolate; stipule caducous; racemes axillary; flowers crowded in apical end of rachis; bracts ovate; calyx campanulate, rufous hairy; corolla exserted; stamens diadelphous; ovary sessile; stigma capitate; pod linear-oblong, densely covered with bristles; seeds 4-5.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: January-April
Distribution: Occasional
Altitude: 300-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1680* (GVCH); Pothundy-Kaikatty, 06-07-2019, *Jabeena & Maya 2328* (GVCH).

Neonotonia J.A.Lackey, Phytologia 37(3): 210 (1977)

Neonotonia wightii (Arn.) J. A. Lackey, *Phytologia* 37(3): 210 (1977); Vajr., Fl. Palghat Dist. 162 (1990); *Glycine javanica* sensu Baker, Hook.f., Fl. Brit. India 2: 183 (1876); Gamble, Fl. Pres. Madras 351 (1918); *Glycine wightii* (Graham ex Wight & Arn.) Verdc., Vajr., Fl. Palghat Dist. 162 (1990).
Habit: Climber
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Climber; branches pubescent; leaves trifoliolate; leaflets equal; racemes erect, axillary; flowers densely clustered; calyx campanulate,

tomentose; corolla clawed; stamens monadelphous; ovary densely hairy; stigma fimbriate; pod flat, deflexed, densely hairy; seeds 2-5.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: November-December
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1196* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4817* (GVCH); Plate 20: Fig. g.

Ormosia Jacks., Trans. Linn. Soc. London 10: 360 (1811)

Ormosia travancorica Bedd., Fl. Sylv. S. India i. t. 45. 1870; Hook. f., Fl. Brit. India 2: 253 (1878); Gamble, Fl. Pres. Madras 390 (1918).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves imparipinnate; leaflets 7-11; stipule lateral; lateral nerves 6-8 pairs; inflorescence an axillary or terminal racemes; calyx campanulate, tomentose; corolla exserted; stamens 10, free; ovary sub-sessile, tomentose; pod woody, glabrous; seed solitary.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: February-April
Distribution: Rare
Altitude: 1300-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1129* (GVCH).

Polhillides H.Ohashi & K.Ohashi, J. Jap. Bot. 94(2): 71 (2019)

Polhillides velutina (Willd.) H.Ohashi & K.Ohashi, J. Jap. Bot. 94(2): 72 (2019); *Desmodium latifolium* (Roxb. ex Ker.) DC., Hook. f., Fl. Brit. India 2: 168 (1876); Gamble, Fl. Pres. Madras 346 (1918); *Desmodium velutinum* (Willd.) DC., Vajr., Fl. Palghat Dist. 159 (1990)

Habit: Shrub
Habitat: Moist and Dry Deciduous forests
Morphology: Shrub; branches clothed with fulvous hairs; leaves unifoliate, fulvous hairy; stipule ciliate; leaflets tomentose beneath; nerves 6-8 pairs; raceme terminal and axillary; flowers 2-3 in clusters along hairy rachis; calyx 4-lobed, densely hairy; pods linear, 3-7-jointed, hooked hairy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 657* (GVCH).

Pongamia Vent., Jard. Malmaison 1: 28, t. 28 (1803)

Pongamia pinnata (L.) Pierre, Fl. Forest. Cochinch. sub t. 385 (1899), Vajr., Fl. Palghat Dist. 167 (1990); *Pongamia glabra* Vent., Hook. f., Fl. Brit. India 2:240 (1876); Gamble, Fl. Pres. Madras 385 (1918);

Habit: Tree
Habitat: Deciduous and Mangrove forests
Morphology: Tree; leaves imparipinnate; leaflets 5-7, glabrous; lateral nerves 6-8 pairs; stipules lateral; rachis pubescent; racemes axillary, shorter than leaves; flowers fascicles of 2-4 on rachis; calyx campanulate, pubescent; corolla clawed;

stamens monadelphous; ovary sub-sessile; pod oblong, compressed, glabrous; seed solitary.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: April-December
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3394* (GVCH).

Pseudarthria Wight & Arn., Prodr. Fl. Ind. Orient. 1: 209 (1834)

Pseudarthria viscida (L.) Wight & Arn., Prodr. Fl. Ind. Orient. 1: 209 (1834).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; leaves trifoliolate, densely hairy; leaflets ciliate; stipule cuspidate; flowers in pairs or fascicled on axillary or terminal racemes; pedicels filiform; calyx-campanulate, hairy; corolla clawed; stamens diadelphous; ovary oblong, tomentose; pod flat, compressed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Occasional
Altitude: 300-700m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4823* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5058* (GVCH); Plate 20: Fig. h.

Pterocarpus Jacq., Select. Stirp. Amer. Hist. 283 (1763)

Pterocarpus marsupium Roxb., Pl. Coromandel 2(1): 9, t. 116 (1799); Hook. f., Fl. Brit. India 2: 239 (1876); Gamble, Fl. Pres. Madras 385 (1918); Vajr., Fl. Palghat Dist. 168 (1990).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves imparipinnate; leaflets 5-7; stipule lateral; rachis glabrous; panicle terminal or axillary; calyx campanulate, pubescent; corolla exserted; stamens monadelphous; ovary stalked, tomentose; pod winged; seed solitary.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Near Threatened
Phenology: September-October
Distribution: Occasional
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3974* (GVCH); Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4148* (GVCH).

Pycnospora R.Br. ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 197 (1834)

Pycnospora lutescens Schindl., J. Bot. 64: 145 (1926); Vajr., Fl. Palghat Dist. 169 (1990); *Pycnospora hedysaroides* R. Br. ex Baker, Hook. f., Fl. Brit. India 2: 153 (1876); Gamble, Fl. Pres. Madras 333 (1918).

Habit: Climber
Habitat: Deciduous forests
Morphology: Climber; branches appressed pubescent; leaves trifoliolate; stipule lanceolate, scarious; leaflets ciliate; flowers in pairs in terminal and axillary raceme; peduncles hairy; calyx campanulate, pubescent; corolla clawed; stamens diadelphous; ovary oblong; pods oblong, turgid, hirsute.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic, African and Australian
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Seetharkundu, 23 September 2017, *Jabeena & Maya 472* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2551* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03-11-2020, *Jabeena & Maya 4308* (GVCH).

Rhynchosia Lour., Fl. Cochinch. 2: 425 (460) (1790)

Plant an erect subshrub……...***R. rufescens***
Plant a twinning herb…….....***R. hirta***

Rhynchosia hirta (Andrews) Meikle & Verdc., Taxon xvi. 462 (1967); Vajr., Fl. Palghat Dist. 170 (1990); *Rhynchosia cyanosperma* Benth., Hook. f., Fl. Brit. India 2: 222 (1876); Gamble, Fl. Pres. Madras 375 (1918).

Habit: Climber
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Climber; stem hairy; leaves trifoliolate; stipule ovate; racemes axillary, viscid; bracts foliaceous; flowers densely arranged; calyx pubescent; corolla clawed; ovary sessile, hispid; pod as long as calyx, beaked, densely pubescent; seeds 2.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Not Evaluated

Phenology: December-February

Distribution: Common

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, *Jabeena & Maya 881* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1079* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3878* (GVCH); Plate 21: Fig. a.

Rhynchosia rufescens (Willd.) DC., Prodr. [A. P. de Candolle] 2: 387 (1825); Hook. f., Fl. Brit. India 2: 220 (1876); Gamble, Fl. Pres. Madras 373 (1918); Vajr., Fl. Palghat Dist. 170 (1990).

Habit: Shrub
Habitat: Moist Deciduous forests and Grasslands
Morphology: Shrub; branches viscid pubescent; leaves trifoliolate; stipule linear; racemes lax; calyx accrescent, foliaceous, pubescent; corolla included; ovary stipitate; pod ovoid, beaked; seed solitary.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Occasional
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothumala, 15 October 2017, *Jabeena & Maya 573* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2005* (GVCH).

Sesbania Scop., Intr. Hist. Nat. 308 (1777)

Sesbania grandiflora (L.) Poir., Encycl. [J. Lamarck & al.] 7: 127 (1806); Hook. f., Fl. Brit. India 2: 115 (1876); Gamble, Fl. Pres. Madras 323 (1918).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; branchlets pubescent; leaflets 12-25 pairs; racemes lax, 2-4-flowered; calyx campanulate; corolla reflexed; pod straight; seeds many.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2966* (GVCH).

Shuteria Wight & Arn., Prodr. Fl. Ind. Orient. 1: 207 (1834)

Shuteria involucrata (Wall.) Wight & Arn. ex Walp., Repert. Bot. Syst. (Walpers) 1(4): 761 (1842); *Shuteria vestita* Wight & Arn., Hook. f., Fl. Brit. India 2: 181 (1876); Gamble, Fl. Pres. Madras 350 (1918); Vajr., Fl. Palghat Dist. 171 (1990).

Habit: Climber
Habitat: Evergreen and Semi-evergreen forests
Morphology: Climber; branchlets strigose-villous; leaves trifoliolate; leaflets unequal, hairy; stipule lanceolate; racemes axillary; calyx tube gibbous, hairy outside; wing petals spurred at base; stamens diadelphous; ovary hairy; pod linear, flat, hairy; seeds 2-6.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 04 November 2020, *Jabeena & Maya 4363* (GVCH); Karassuri, 12 January 2021, *Jabeena & Maya 4732* (GVCH).

Smithia Aiton, Hort. Kew. [W. Aiton] 3: 496 (1789)

1.Flowers solitary or in pairs....***S. conferta***
1.Flowers racemose…...…….(2)
2.Inflorescence a lax raceme; peduncles filiform……....***S. gracilis***
2.Inflorescence a congested raceme or sub-capitate head; peduncles not filiform……..……..….(3)
3.Flowers in sub-capitate head.....***S. venkobarowii***
3.Flowers in corymbose raceme……(4)
4.Calyx with bulbous based bristles; lomentum joints 7-10…...….....***S. hirsuta***
4.Calyx with simple bristles; lomentum joints 3-6……..….....***S. blanda***

Smithia blanda Wall., Numer. List [Wallich] n. 5669; Hook. f., Fl. Brit. India 2: 151 (1876); Gamble, Fl. Pres. Madras 330 (1918); Vajr., Fl. Palghat Dist. 172 (1990).

Habit: Herb
Habitat: Marshy areas in Grasslands
Morphology: Herb; stem bristly; leaves pinnate; leaflets 4-5 pairs; stipule scarious, hairy; inflorescence a corymbose raceme; bracteoles hairy; calyx bilipped; pod 4-7-jointed, glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Least Concern
Phenology: October-January
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 443* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 610* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 793* (GVCH).

Smithia conferta Sm., Cycl. [A. Rees], (London ed.) xxxiii. n. 2. (1819); Gamble, Fl. Pres. Madras 329 (1918); Vajr., Fl. Palghat Dist. 172 (1990); *Smithia geminiflora* Roth, Hook. f., Fl. Brit. India 2:149 (1876); Gamble, Fl. Pres. Madras 329 (1918).

Habit: Herb
Habitat: Marshy areas in Grasslands
Morphology: Herb; branches glabrous; leaves pinnate, sessile; leaflets 4-8 pairs, bristly ciliate; stipule bilobed below; flowers in pairs, in axils of leaves, crowded at end of branches; calyx rigid; pod 3-7-jointed.
Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Occasional
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 04 November 2020, *Jabeena & Maya 4365* (GVCH); Karassuri, 12 January 2021, *Jabeena & Maya 4725* (GVCH).

Smithia gracilis Benth., Linnaea 24(6): 642 (1852); Hook. f., Fl. Brit. India 2: 150 (1876); Gamble, Fl. Pres. Madras 330 (1918).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; rooting at lower nodes; leaflets 3 pairs, ciliate on margins; stipule peltate; inflorescence a few-flowered, axillary or terminal raceme; bracts membranous; calyx bi-lipped; lobes ciliate on margins; stamens 5+5; ovary curled; pod 3-5-jointed, twisted; seeds reniform.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Common
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2441* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2737* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3118* (GVCH).

Smithia hirsuta Dalz., Hooker's J. Bot. Kew Gard. Misc. 3: 135 (1851); Gamble, Fl. Pres. Madras 330 (1918); *Smithia blanda* Wall. ex Wight & Arn. var. *racemosa* Baker, Hook. f., Fl. Brit. India 2: 151 (1876).

Habit: Herb
Habitat: Marshy areas in Grasslands
Morphology: Herb; stem with bulbous based hairs; leaflets 3 pairs; stipules bristled along the margins; rachis densely villous; calyx bilipped; standard petals clawed; keel spurred; pods 8-10-jointed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: July-November
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 625* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3002* (GVCH); Plate 21: Fig. b.

Smithia venkobarowii Gamble, Fl. Madras 330 (1918), nomen; et in Kew Bull. 1919, 223, descr.

Habit: Shrub
Habitat: Grasslands
Morphology: Subshrub; stem villous; leaflets 4-foliolate; stipule bilobed at base; capitate heads 2-3 in upper axils; bracts deciduous; calyx lips ciliate on edges; lomentum with 3-6 reticulate bordered joints.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2409* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3200* (GVCH).

Spatholobus Hassk., Flora 25(2, Beibl.): 52 (1842)

Spatholobus parviflorus Kuntze, Revis. Gen. Pl. 1: 205 (1891); Vajr., Fl. Palghat Dist. 172 (1990); *Spatholobus roxburghii* Benth., Hook. f., Fl. Brit. India 2: 193 (1876); Gamble, Fl. Pres. Madras 358 (1918).

Habit: Climber
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Large climbers; branches velvety tomentose; leaves trifoliolate; leaflets hairy below; lateral nerves 8 pairs; inflorescence an axillary panicle; flowers fascicled in the rachis; calyx fulvous tomentose within; standard and keel petals clawed; ovary 2-ovuled; pod stalked, tomentose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-April
Distribution: Occasional
Altitude: 600-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2748* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4250* (GVCH); Plate 21: Fig. c.

Stylosanthes Sw., Prodr. [O. P. Swartz] 7, 108 (1788)

Stylosanthes hamata Taub., Verh. Bot. Vereins Prov. Brandenburg 32: 22 (1890).

Habit: Herb
Habitat: Scrub jungles and dry deciduous forests
Morphology: Herb; branches tomentose, without bristles; leaves trifoliate; inflorescence an oblong spike; bracts leafy; calyx membranous, hairy; petals clawed; stamen monadelphous; pod single seeded, segmented, hooked, glabrous; seeds reniform.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3884* (GVCH).

Tadehagi H.Ohashi, Ginkgoana 1: 280 (1973)

Tadehagi triquetrum (L.) H.Ohashi, Ginkgoana 1: 290 (1973); *Desmodium triquetrum* (L.) DC., Hook. f., Fl. Brit. India 2: 163 (1876); Gamble, Fl. Pres. Madras 345 (1918); Vajr., Fl. Palghat Dist. 159 (1990).

Habit: Shrub
Habitat: Semi-evergreen and MOist Deciduous forests
Morphology: Shrub; branches triquetrous, grooved, glabrous; leaves unifoliolate; petiole winged; stipule scarious; flowers 1-3, fascicled, in axillary and terminal raceme; pedicels filiform; bracts subulate; calyx campanulate, hairy, teeth unequal; stamens monadelphous; ovary pubescent; pod laterally compressed, 2-8-jointed, hairy.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: July-December

Distribution: Rare

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4466* (GVCH).

Tephrosia Pers., Syn. Pl. [Persoon] 2: 328 (1807)

Stem densely retrorse hairy; standard petal densely hairy on back; stipule broadly ovate-deltoid……...***T. pulcherrima***
Stem densely erect hairy; standard petal glabrous; stipule linear-lanceolate……..***T. tinctoria***

Tephrosia pulcherrima Wight ex Baker, Fl. Brit. India [J. D. Hooker] 2(4): 112 (1876), pro syn.; Gamble, Fl. Pres. Madras 319 (1918); Vajr., Fl. Palghat Dist. 174 (1990); *Tephrosia tinctoria* Pers. var. *pulcherrima* Wight ex Baker, Hook. f., Fl. Brit. India 2: 112 (1876).

Habit: Shrub
Habitat: Moist Deciduous forests and Savannas
Morphology: Shrub; branches angular, hairy; leaves imparipinnate; leaflets glabrous above; stipule deltoid; racemes axillary; flowers congested towards apex; calyx hairy; pod oblong, slightly curved, densely hairy.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-March
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2685* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4237* (GVCH); Plate 21: Fig. d.

Tephrosia tinctoria Pers., Syn. Pl. [Persoon] 2(2): 329 (1807); Hook. f., Fl. Brit. India 2: 111 (1876); Gamble, Fl. Pres. Madras 319 (1918); Vajr., Fl. Palghat Dist. 174 (1990).

Habit: Shrub
Habitat: Dry Deciduous forests and Scrub Jungles
Morphology: Shrub; branches woolly, velvety; leaves imparipinnate; leaflets velvety below; racemes axillary; peduncle exceeding leaves; bracts lanceolate; calyx velvety; keel petals glabrous; ovary velvety; pod slightly curved, sparsely hairy; seeds many.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-December
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1050* (GVCH); Plate 21: Fig. e.

Uraria Desv., J. Bot. Agric. 1: 122, t. 5, f. 19 (1813)

Uraria rufescens Schindl., Repert. Spec. Nov. Regni Veg. 21: 14 (1925); Vajr., Fl. Palghat Dist. 175 (1990); *Uraria hamosa* (Roxb.) Wall. ex Wight & Arn., Hook. f., Fl. Brit. India 2: 150 (1876); Gamble, Fl. Pres. Madras 336 (1918).

Habit: Shrub
Habitat: Deciduous forests
Morphology: Straggling shrub; branches triquetrous, villous; leaves trifoliolate; leaflets hispid below; stipule lanceolate; leaflets tomentose; racemes tomentose, branched; flowers distant; bracts hispid; calyx teeth sub-equal; keel petals shortly spurred near the base; stamens diadelphous; ovary stipitate; style inflexed, pubescent; pod 3-7-jointed, minutely hispid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 846* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3019* (GVCH); Plate 21: Fig. f.

Vigna Savi, Nuovo Giorn. Lett. ser. 3, 8: 113 (1824)

1.Keel petal not spiral……...…..(2)

1.Keel petal spiral……...……....(3)

2.Calyx strigosely hirsute; pod with black hairs…..…….……...***V. vexillata***

2.Calyx softly villous; pod with pale brown hairs……***V. vexillata var. wightii***

3.Pod glabrous...…….……(4)

3.Pod hirsute...……...……(5)

4.Stem and stipule glabrous; leaflets acute…..……..……..***V. dalzelliana***

4.Stem with stiff deflexed hairs; stipule hispid; leaflets acuminate....***V. umbellatum***

5.Stem erect……..…..…***V. mungo***

5.Stem twining….***V. radiata var.sublobata***

Vigna dalzelliana (Kuntze) Verdc., Kew Bull. 24(3): 558 (1970); *Phaseolus dalzellii* Cooke, Gamble, Fl. Pres. Madras 363 (1918).

Habit: Climber

Habitat: Moist Deciduous forests

Morphology: Slender climber; leaves trifoliate; stipule attached above base of petiole; leaflets membranous, hairy; racemes capitate, 2-3-flowered; calyx glabrous; pod sub-cylindric, slightly recurved, glabrous, beaked; seeds 6-10.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats

IUCN category: Least Concern

Phenology: December-March

Distribution: Rare

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1796* (GVCH).

Vigna mungo (L.) Hepper, Kew Bull. 11(1): 128 (1956).
Habit: Herb
Habitat: Cultivated
Morphology: Herb; stem hirsute; leaves trifoliolate; leaflets 3-nerved from base; stipule peltate; flowers in axillary peduncle; calyx lobes 5; standard petals with inflexed auricles; stamens diadelphous; pod linear, compressed, villous; seeds 10-12.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Rare
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4328* (GVCH).

Vigna radiata* var. *sublobata (Roxb.) Verdc., Kew Bull. (1970); Vajr., Fl. Palghat Dist. 176 (1990); *Phaseolus sublobatus* Roxb., Gamble, Fl. Pres. Madras 363 (1918); *Phaseolus trinervius* Heyne ex Wight & Arn., Hook. f., Fl. Brit. India 2: 203 (1876).

Habit: Herb
Habitat: Semi-evergreen forests
Morphology: Slender climber; stem deflexed hairy; leaflets hirsute; stipule peltate; inflorescence an axillary, capitate raceme, 2-6-flowered; calyx hairy; pod cylindric, straight, hairy.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017,

Jabeena & Maya 909 (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2785* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3564* (GVCH).

Vigna umbellata (Thunb.) Ohwi & H. Ohashi, Journ. Jap. Bot. xliv. 31 (1969); Vajr., Fl. Palghat Dist. 177 (1990); *Phaseolus calcaratus* Roxb., Hook. f., Fl. Brit. India 2: 203 (1876); Gamble, Fl. Pres. Madras 363 (1918).

Habit: Climber
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Climber; stem clothed with stiff deflexed hairs; leaves trifoliate; leaflets membranous, hispid; stipule decurrent at base; inflorescence a short axillary racemes, 2-3-flowered; bracteoles linear; calyx teeth deltoid; keel spurred to one side; pod compressed, recurved, glabrous; seeds 8-12.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 833* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3566* (GVCH).

Vigna vexillata (L.) A.Rich., Hist. Fis. Cuba 10: 191 (1845); *Vigna vexillata* (L.) A. Rich. var. *vexillata*, Hook. f., Fl. Brit. India 2: 206 (1876); Gamble, Fl. Pres. Madras 364 (1918); Vajr., Fl. Palghat Dist. 177 (1990).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; branches hairy; leaves trifoliate; leaflets strigose hairy; stipule shortly bilobed; raceme few-flowered; calyx campanulate, strigosely hirsute; corolla clawed; keel beaked; stamen diadelphous; ovary many-ovuled; pod compressed, hirsute.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Occasional
Altitude: 800-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 911* (GVCH); Mattumala, 15 May 2018, *Jabeena & Maya 1442* (GVCH).

Vigna vexillata* var. *wightii (Benth. ex Bedd.) Babu & S.K.Sharma, Bull. Bot. Surv. India 27(1-4): 28 (1987); *Vigna wightii* Benth. ex Bedd., Hook. f., Fl. Brit. India 2: 206 (1876); Gamble, Fl. Pres. Madras 365 (1918).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; branches rusty pubescent; leaflets coriaceous, pubescent; leaflets densely silky pubescent below; racemes axillary, 2-4 flowered; calyx campanulate, softly villous; corolla shortly clawed; ovary pubescent; style bearded; pod terete, pilose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2418* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4283* (GVCH).

Wajira Thulin, Nordic J. Bot. 2(5): 475 (1982)

Wajira grahamiana (Wight & Arn.) Thulin & Lavin, Syst. Bot. 29(4): 908 (2004); *Vigna grahamiana* (Wight & Arn.) Verdc., Vajr., Fl. Palghat Dist. 176 (1990); *Phaseolus grahamianus* Wight & Arn., Hook. f., Fl. Brit. India 2: 201 (1876); Gamble, Fl. Pres. Madras 362 (1918).

Habit: Climber
Habitat: Evergreen forests
Morphology: Climber; leaves trifoliolate; leaflets deltoid, pubescent; stipule ovate; inflorescence an axillary lax raceme; calyx bilabiate; corolla exserted; stamen diadelphous; ovary linear; style bearded; pod many seeded.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4326* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3933* (GVCH); Plate 21: Fig. g.

Zornia J. F. Gmel., Syst. Nat., ed. 13[bis]. 2: 1076, 1096 (1792)

Leaves with scattered black glands; prickles on lomentum retrorsely scabrous…….....***Z. diphylla***
Leaves with many minute glands; prickles on lomentum glabrous…….....***Z. gibbosa***

Zornia diphylla (L.) Pers., Syn. Pl. [Persoon] 2(2): 318 (1807); Hook. f., Fl. Brit. India 2:147 (1876); Gamble, Fl. Pres. Madras 325 (1918); *Zornia diphylla* (L.) Pers. var. *zeylonensis* (Pers.) Baker, Hook.f., Fl. Brit. India 2: 148 (1876); *Zornia zeylonensis* Pers., Gamble, Fl. Pres. Madras 325 (1918).

Habit: Herb
Habitat: Grassy slopes and forest plantations
Morphology: Herb; leaves bifoilolate; leaflets glabrous with scattered black glands; stipule glandular; racemes 5-12-flowered; bracts foliaceous, peltate; auricles epunctate; calyx lobes unequal; stamens monadelphous; ovary pubescent; style filiform, erect; lomentum 2-5-jointed, with apically glochidiate bristles.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Rare
Altitude: 600-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2763* (GVCH).

Zornia gibbosa Span., Linnaea 15: 192 (1841); Vajr., Fl. Palghat Dist. 177 (1990).

Habit: Herb
Habitat: Degraded Forest areas
Morphology: Herb; leaves bifoliolate; stipule peltate; flowers in terminal or axillary raceme; bracts peltate, gland-dotted; calyx lobes sub-equal; corolla clawed; stamens monadelphous; ovary densely pubescent; style incurved; pod 2-6-jointed with retrorsely scabrid bristles.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 581* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2933* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4311* (GVCH); Plate 21: Fig. h.

POLYGALACEAE

Tree, fruit indehiscent, 1-seeded……....***Xanthophyllum***
Herb, fruit loculisidal capsule, 2-seeded……..……..…...***Polygala***

Polygala L., Sp. Pl. 2: 701 (1753)

1.Flowers pink coloured…...***persicariifolia***
1.Flowers yellow coloured……..…..…(2)
2.Leaves linear…….....***P. rosmarinifolia***
2.Leaves obovate-oblanceolate……...(3)
3.Caruncle appendages sub-equal…….....***P. arvensis***
3.Caruncle appendages equal……...***P. chinensis***

Polygala arvensis Willd., Sp. Pl., ed. 4 [Willdenow] 3(2): 876 (1802); *Polygala chinensis* Bennett, Hook. f., Fl. Brit. India 1: 204 (1872); Gamble, Fl. Pres. Madras 58 (1915).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaves sub-sessile; flowers in few-flowered axillary or lateral raceme; bracts ciliate, persistent; sepals persistent, ciliate at margin, 1-nerved; keel petal crested with shortly notched appendages; staminal sheath free; ovary obovoid, hairy at margins; style hooked at apex; capsule ciliate along the margins; seeds pilose; caruncle hood-shaped, s-fid to base with short appendages.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 219* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1140* (GVCH).

Polygala chinensis L., Sp. Pl. 2: 704 (1753); Gamble, Fl. Pres. Madras 58 (1915); *Polygala glomerata* Lour., Hook. f., Fl. Brit. India 1: 206 (1872).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; branches terete, hairy; leaves glabrous; bracts hairy, persistent; flowers in dense supra-axillary few-flowered raceme; sepals persistent, unequal, ciliate at margins; wing sepals 5-nerved; petals 3-lobed; staminal sheath free; ovary orbicular, ciliate; style hooked at apex; stigma bilobed; capsule slightly winged, notched at apex; ciliate along the margins; seeds pilose; caruncle cup shaped.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: April-December
Distribution: Common
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2465* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2540* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3216* (GVCH).

Polygala persicariifolia DC., Prodr. [A. P. de Candolle] 1: 326 (1824); Hook. f., Fl. Brit. India 1: 202 (1872); Gamble, Fl. Pres. Madras 58 (1915); Vajr., Fl. Palghat Dist. 65 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem terete, hairy; leaves sub-sessile, glabrous; flowers in many-flowered raceme; bracts 3, persistent; sepals sub-equal, puberulous at margin; petals hairy inside; staminal sheath adnate to petals; capsule emarginate at apex, glabrous, winged and ciliate at margin; seeds hirsute; caruncle hood-shaped, 3-lobed with short blunt lobes.

Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and Australian
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1543* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2048* (GVCH); Plate 22: Fig. a

Polygala rosmarinifolia Wight & Arn., Prodr. Fl. Ind. Orient. 1: 37 (1834).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; branches appressed-pubescent; leaves sub-sessile, hairy; racemes axillary or extra-axillary; bracts caducous; bracteoles 3, ciliate at margins, persistent; pedicels pubescent; sepals ciliate; petals forked; ovary ciliate at margins; capsule pubescent, narrowly winged and ciliate at margins; seeds pubescent; caruncle hood shaped with 2 oblong, curved appendages.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4318* (GVCH).

Xanthophyllum Roxb., Pl. Coromandel 3(4): 81 (1820)

Xanthophyllum flavescens Roxb., Hort. Bengal. [88]; Fl. Ind. ii. 222; Hook. f., Fl. Brit. India 1: 209 (1874); Gamble, Fl. Pres. Madras 59 (1915); Vajr., Fl. Palghat Dist. 66 (1990).

Habit: Tree
Habitat: Evergreen and semi-evergreen forests, also in sacred groves
Morphology: Tree; branchlets puberulous; leaves simple, glabrous, coriaceous; lateral nerves 5-9 pairs; inflorescence an axillary or terminal panicle, pubescent; sepals sub-equal, densely pubescent; petals sub-equal; stamens 8, ciliate at base, 6 adnate to petals, 2 on disc; disc annular, deeply 5-lobed; ovary short-stipitate, strigose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 154* (GVCH); Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 737* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3575*(GVCH).

ROSALES

ROSACEAE

1.Ovary inferior……...***Rosa***
1.Ovary superior...……...……..(2)
2.Carpel one……...…...…….***Prunus***
2.Carpel many…….....……..***Rubus***

Prunus L., Sp. Pl. 1: 473 (1753)

Prunus ceylanica Miq., Fl. Ned. Ind. i. 366. 1855; Vajr., Fl. Palghat Dist. 190 (1990); *Pygeum acuminatum* Colebr., Hook. f., Fl. Brit. India 2: 318 (1878); Gamble, Fl. Pres. Madras 439 (1919); *Pygeum wightianum* Blume ex Muell., Hook. f., Fl. Brit. India 2: 319 (1878); Gamble, Fl. Pres. Madras 439 (1919).

Habit: Tree

Habitat: Evergreen, semi-evergreen and moist deciduous forests
Morphology: Tree; leaves simple, glabrous, sub-coriaceous; glands 2 at the base of lamina on either sides of midrib; lateral nerves 6-7 pairs; stipule lateral, pubescent; raceme simple, axillary, pubescent; calyx campanulate, hairy inside; petals tomentose without; stamens 10-40, exserted; ovary glabrous with a ring of hairs around insertion; drupe oblong, 2-lobed, glabrous, 2-seeded.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Endangered
Phenology: September-April
Distribution: Occasional
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4818* (GVCH); Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4985* (GVCH).

Rosa L., Sp. Pl. 1: 491 (1753)

Leaflets up to 5; petals many in several rows..…….....…..***R. damascena***
Leaflets up to 9; petals few in 2 rows…..…….....***R. multiflora***

Rosa damascena Mill., Gard. Dict., ed. 8. n. 15 (1768); Hook. f., Fl. Brit. India 2: 364 (1878).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; stems densely armed with stout, curved prickles and stiff bristles; leaves pinnate; leaflets 5; petals in several rows; stamens many; ovary inferior.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2990* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4795*(GVCH).

Rosa multiflora Thunb., Syst. Veg., ed. 14 (J. A. Murray). 474 (1784).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; branches with two short prickles under each leaf and some scattered ones on internodes; leaves pinnate; leaflets 5–9; rachis densely hairy; stipule hairy beneath; inflorescence a corymbose thyrses, many-flowered; pedicel eglandular; calyx tube obovoid, pubescent; stamens numerous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Holarctic
IUCN category: Not Evaluated
Phenology: Rare
Distribution: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Koonampalam, 14 December 2019, *Jabeena & Maya 3467* (GVCH).

Rubus L., Sp. Pl. 1: 492 (1753)

1.Leaves simple, 5-lobed……..….....***R. fairholmianus***
1.Leaves pinnately 5-7 foliolate…….…(2)
2.Branches glabrous; stipules subulate……...…..…...…...***R. niveus***
2.Branches with glandular bristles and hairs; stipules lanceolate.....***R. racemosus***

Rubus fairholmianus Gardner, Calcutta J. Nat. Hist. viii (1847); Gamble, Fl. Pres. Madras 441 (1919); *Rubus moluccanus* sensu Hook. f., Fl. Brit. India 2: 330 (1878).

Habit: Climber
Habitat: Evergreen forests
Morphology: Straggling shrub; young stems tomentose; prickles sparse, slightly

recurved; leaves simple, 5-7-lobed, basally 5-nerved, hairy; stipule pilose; inflorescence a corymbose cyme or panicle, pilose; bracts persistent; calyx lobes dentate, pilose; carpels upto 40, inserted on shortly convex hirsute receptacle; fruit sub-globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 900-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 967* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 1993* (GVCH); Plate 22: Fig. b.

Rubus niveus Thunb., Rubo 9 (1813); Gamble, Fl. Pres. Madras 442 (1919); *Rubus niveus* Thunb. var. *subglaber* (Thw.) Gamble, Fl. Pres. Madras 442 (1919).

Habit: Climber
Habitat: Evergreen and moist deciduous forests, also in grasslands
Morphology: Straggling shrub; prickles few; leaves pinnate; leaflets 7-11, sub-sessile; stipule subulate; lateral nerves 6-9 pairs; inflorescence an axillary or terminal corymbose panicles, tomentose; pedicels villous; calyx lobes woolly tomentose inside; petals glabrous; carpels densely hairy; drupe ovoid.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Common
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1336* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2380* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2991* (GVCH).

Rubus racemosus Roxb., Hort. Bengal. [92]; Fl. Ind. ii. 519; Hook. f., Fl. Brit. India 2: 340 (1878); Gamble, Fl. Pres. Madras 442 (1919).

Habit: Climber
Habitat: Semi-evergreen forests
Morphology: Scandent shrub; stem glandular hairy; prickles recurved; leaves pinnate; leaflets 5, white tomentose beneath; midrib with short recurved prickles beneath; inflorescence a corymb or panicle; bracts pectinately laciniate; calyx lobes glandular hairy; petals longer than sepals; stamens numerous; ovary glabrous; fruit globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: December-May
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 223* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1010* (GVCH).

ELAEAGNACEAE

Elaeagnus L., Sp. Pl. 1: 121 (1753)

Elaeagnus indica Serv., Bull. Herb. Boissier Ser. II. viii. 393 (1908); Gamble, Fl. Pres. Madras 1246 (1925).

Habit: Climber
Habitat: Semi-evergreen forests
Morphology: Liana; stem thorny with stellate scales; scales silvery; thorn axillary, straight; leaves simple, entire, silvery-white below; lateral nerves 5-6; inflorescence a few-flowered axillary cluster; perianth lobes 4; stamens 4, on the mouth of the perianth, on a ring alternate

with the lobes; ovary one loculed; nut enclosed in the thickened perianth-base, oblong.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Common
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1314* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1740* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2220* (GVCH); Plate 22: Fig. d.

RHAMNACEAE

1.Fruit inferior; climber……***Gouania***
1.Fruit superior; Erect shrub……..……(2)
2.Fruit a drupe; leaves 3-5 ribbed at base……..……..……...***Ziziphus***
2.Fruit baccate; leaves penninerved……...***Scutia***

Gouania Jacq., Select. Stirp. Amer. Hist. 263 (1763)

Gouania microcarpa DC., Prodr. [A. P. de Candolle] 2: 40 (1825); Hook. f., Fl. Brit. India 1: 643 (1875); Gamble, Fl. Pres. Madras 225 (1918); Vajr., Fl. Palghat Dist. 120 (1990).

Habit: Climber
Habitat: Semi-evergreen and Evergreen forests
Morphology: Climbing shrub; tendrils axillary or extra-axillary; branches & tendrils hairy; leaves simple, alternate; stipule subulate, pubescent; inflorescence a terminal panicle, foetid; calyx lobes deltoid, keeled, pubescent; petals spatulate; stamens 5, free; disc patelliform, glabrous; ovary 3-loculed, hairy; style 3-lobed; stigma capitate; capsule 3-lobed, 3-winged, crowned by persistent calyx.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: October-March

Distribution: Occasional

Altitude: 400-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3351* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4824* (GVCH); Plate 22: Fig. e.

Scutia (Comm. ex DC.) Brongn., Mém. Fam. Rhamnées 55 (1826)

Scutia myrtina Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 44(3): 168 (1876); Gamble, Fl. Pres. Madras 223 (1918).

Habit: Climber

Habitat: Dry Deciduous forests

Morphology: Scandent shrub; branches armed with subopposite recurved spines; leaves glabrous; stipule lanceolate; inflorescence cymose or fascicled, 2-12-flowered; bracts ciliate; calyx lobes deltoid, keeled below; petals deeply emarginate or deeply 2-lobed; stamens 4-5; disc glabrous; ovary globose, 2-loculed; drupe glabrous, separating into 2 indehiscent stones; seeds 2.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Least Concern

Phenology: March-November

Distribution: Rare

Altitude: 100-300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1178* (GVCH).

Ziziphus Mill., Gard. Dict. Abr., ed. 4. [1547] (1754)

1.Flowers in elongate paniculate cyme; petals 0…….……..…...***Z. rugosa***
1.Flowers in condensed cyme; petals 5……..(2)
2.Plant climbing…....…..…..***Z. oenopolia***
2.Plant erect……...……...…..(3)
3.Calyx lobes triangular; fruit black-red……..……..…...***Z. jujuba***
3.Calyx lobes deltoid; fruit yellow or orange……...……..…..….***Z. nummularia***

Ziziphus jujuba Mill., Gard. Dict., ed. 8. n. 1 (1768); Hook. f., Fl. Brit. India 1: 632 (1875); Gamble, Fl. Pres. Madras 219 (1918).

Habit: Tree
Habitat: Dry Deciduous forests
Morphology: Tree; younger parts rusty-tomentose; spines solitary or paired; leaves 3-nerved; inflorescence axillary cyme or fascicle, 10-15-flowered; flowers fragrant; calyx lobes 5, 3-angled; petals spatulate; disc 10-grooved; stamens 5, as long as enclosed by petals; ovary 2-loculed; styles 2; drupe ovoid or globose; seeds 1-2.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: February-April
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1154* (GVCH).

Ziziphus nummularia (Burm.f.) Wight & Arn., Cat. Ind. Pl. 31 (1833); Hook. f., Fl. Brit. India 11: 633 (1875); Gamble, Fl. Pres. Madras 220 (1918).

Habit: Climber
Habitat: Dry deciduous forests and scrub jungles
Morphology: Climber; branches tomentose; spines paired, one straight and one hooked; leaves 3-nerved at base; flowers in axillary cymes; calyx lobes deltoid, keeled nearly to base; petals spatulate; disc 10-lobed; ovary 2-loculed; drupes globose, glabrous; seeds 1-2.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: August-September
Distribution: Rare
Altitude: 900-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3805* (GVCH).

Ziziphus oenopolia (L.) Mill., Gard. Dict., ed. 8. [textus s.n.] Ziziphus no. 3 (1768); Hook. f., Fl. Brit. India 1:634 (1875); Gamble, Fl. Pres. Madras 220 (1918); Vajr., Fl. Palghat Dist. 121 (1990).

Habit: Climber
Habitat: Moist and Dry Deciduous forests
Morphology: Climber; branches rusty-tomentose; thorns recurved; leaves simple, 3-4 nerved from base; inflorescence cymose or fascicled; calyx lobes triangular; petals spatulate, clawed; disc 10-lobed; ovary oblong; style bifid; drupe globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Least Concern
Phenology: November-March
Distribution: Occasional
Altitude: 600-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1300* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3571* (GVCH); Plate 22: Fig. f.

Ziziphus rugosa Lam., Encycl. [J. Lamarck & al.] 3(1): 319 (1789); Hook. f., Fl. Brit. India 1: 636 (1875); Gamble, Fl. Pres. Madras 221 (1918); Vajr., Fl. Palghat Dist. 121 (1990).

Habit: Shrub
Habitat: Grasslands and Deciduous forests
Morphology: Climbing shrub; young branches tomentose; spine solitary, recurved; leaves alternate, 5-nerved at base; petiole tomentose; inflorescence a terminal or axillary panicle, tomentose; flowers sub-sessile; sepals 3-angled, pubescent; disc 5-lobed, glabrous; ovary 2-loculed, tomentose; style 2-partite; drupe globose, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-May
Distribution: Common
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 281* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1013* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4327* (GVCH); Plate 22: Fig. h.

ULMACEAE

Holoptelea Planch., Ann. Sci. Nat., Bot. sér. 3, 10: 259 (1848)

Holoptelea integrifolia (Roxb.) Planch., Ann. Sci. Nat., Bot. sér. 3, 10: 259 (1848); Hook. f., Fl. Brit. India 5: 481 (1888); Gamble, Fl. Pres. Madras 1348 (1928); Vajr., Fl. Palghat Dist. 441 (1990).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Tree; leaves alternate, distichous, entire, penni-nerved; stipule lateral; petiole pubescent; lateral nerves 6-9 pairs; flowers in axillary fascicles; perianth simple, calycine, 4-8, unequal; stamens 4-8; anthers hairy; ovary stipitate, compressed, 2-winged, 1-loculed; ovule solitary, pendulous; style bifid; fruit samaroid, flat.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1304* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5060* (GVCH); Plate 22: Fig. h.

CANNABACEAE

Trema Lour., Fl. Cochinch. 2: 562 (1790)

Trema orientale Blume, Mus. Bot. 2(1-8): 62. (1856); Hook. f., Fl. Brit. India 5: 484 (1888); Gamble, Fl. Pres. Madras 1350 (1928); Vajr., Fl. Palghat Dist. 442 (1990).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; branches pubescent; leaves alternate, 3-ribbed at base; stipule lateral; lateral nerves 3-4 pairs; flowers in axillary cymes; perianth simple, calycine, 4-5-partite, equal; stamens 4-5; pistillode oblong; ovary sessile, 1-loculed; style central with 2 linear arms; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and Australian
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 158* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1164* (GVCH); Kollengode range, Vazhakkundu, 15

January 2019, *Jabeena & Maya 1819* (GVCH); Plate 23: Fig. a

MORACEAE

1.Stamen inflexed in bud; anthers reversed……..…….……...***Streblus***
1.Stamen and anthers straight in bud…..(2)
2.Flowers enclosed in syconia……...***Ficus***
2.Flowers not enclosed in syconia……..(3)
3.Female flowers solitary; male flowers crowded on the upper surface of a disciform receptacle…..…..……..***Antiaris***
3.Female and male flowers crowded crowded around an oblong or globose receptacle…...…….……..***Artocarpus***

Antiaris Lesch., Ann. Mus. Natl. Hist. Nat. 16: 478 (1810)

Antiaris toxicaria (Pers.) Lesch., Ann. Mus. Natl. Hist. Nat. 16: 478 (1810); Hook. f., Fl. Brit. India 5: 537 (1888); Gamble, Fl. Pres. Madras 1367 (1928).

Habit: Tree
Habitat: Evergreen and semi-evergreen forests, also in the sacred groves
Morphology: Tree; leaves alternate, bifarious, penni-nerved; lateral nerves 6-11 pairs; stipule connate; plant monoecious; male flowers crowded on the surface of an axillary, pedunculate receptacle, surrounded by confluent, imbricating bracts; perianth 3-4; stamens 3-8; pistillode absent; female flowers solitary in an involucre of few connate bracts; tepals absent; ovary adnate to the involucre; ovule solitary, pendulous; style arms 2, subulate, recurved; drupe fleshy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: January-April
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2185* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4595* (GVCH).

Artocarpus J.R.Forst. & G.Forst., Char. Gen. Pl., ed. 2. 101 (1776)

1.Fruit smooth…...……..***A. gomezianus***
1.Fruit echinate...……...…….(2)
2.Leaves and young shoots hirsute……..…***A. hirsuta***
2.Leaves and young shoots glabrous…...……...…..***A. heterophyllus***

Artocarpus gomezianus Wall. ex Trécul, Ann. Sci. Nat., Bot. sér. 3, 8: 118 (1847); *Artocarpus gomezianus* Wall. ex Trecul ssp. *zeylanicus* Jarrett, Vajr., Fl. Palghat Dist. 443. (1990); *Artocarpus lakoocha* sensu C.E.C. Fisch., Gamble, Fl. Pres. Madras 1369 (1928).

Habit: Tree
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Tree; young parts tomentose; leaves alternate, scabrous below; lateral nerves 9-15 pairs; stipule pubescent; male spike globose; fruit smooth, globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2181* (GVCH).

Artocarpus heterophyllus Lam., Encycl. [J. Lamarck & al.] 3(1): 209 (1789); Vajr., Fl. Palghat Dist. 443 (1990); *Artocarpus integrifolius* Wight, Hook. f., Fl. Brit. India 5: 541 (1888); Gamble, Fl. Pres. Madras 1369 (1928).

Habit: Tree
Habitat: Evergreen and semi-evergreen forests, also widely cultivated

Morphology: Tree; stem glabrous; leaves simple, alternate; lateral nerves 7-8 pairs; stipule lateral, spathaceous; petiole grooved above; plant monoecious; perianth bilobed; stamen solitary; female inflorescence in catkins; ovary globose-obovoid; sorosis tubercled, oblong; seeds elliptic.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: November-April
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2210* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2956* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3509* (GVCH).

Artocarpus hirsutus Lam., Encycl. [J. Lamarck & al.] 3(1): 211 (1789); *Artocarpus integrifolius* Wight, Hook. f., Fl. Brit. India 5: 541 (1888); Gamble, Fl. Pres. Madras 1369 (1928).

Habit: Tree
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Tree; young parts strigose with tawny hairs; leaves simple, alternate, glabrous above, pubescent beneath; stipule lateral, strigose; petiole hirsute; lateral nerves 6-12 pairs; plant monoecious; male and female inflorescence a spike; tepals 2, united below; stamen solitary; perianth tubular; sorosis spinous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Least Concern
Phenology: December-March
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3810* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3959* (GVCH).

Ficus L., Sp. Pl. 2: 1059 (1753)

1.Leaves opposite……...…...***F. hispida***

1.Leaves alternate or spiral……...…(2)

2.Leaves spirally arranged…….....***F. laevis***

2.Leaves alternately arranged…...……(3)

3.Leaves scabrid above..……***F. exasperata***

3.Leaves not scabrid……...……..(4)

4.Plant a scandent shrub.....***F. microcarpa***

4.Plant a erect tree…….…….(5)

5.Primary nerves upto 40 pairs……***F. elastica***

5.Primary nerves upto 16 pairs……...…(6)

6.Receptacle sessile or shortly peduncled……(7)

6.Receptacle distinctly peduncled…....(11)

7.Leaves not caudate……..…….(8)

7.Leaves caudate……...……..(9)

8.Lateral veins 5-7 pairs.....***F .arnottiana***

8.Lateral veins 8-10 pairs..……***F. religiosa***

9.Leaves white puberulous when young……...…..…...***F. benghalensis***

9.Leaves glabrous…….…...…….(10)

10.Basal bracts minute, scarious……...….***F. amplissima***

10.Basal bracts patent, not scarious…….....***F. tsjakela***

11.Receptacles on short leafless branches…..……..…..***F. racemosa***

11.Receptacles axillary on the twigs....(12)

12.Petioles less than 2 cm long.....***F. nervosa***

12.Petioles more than 3 cm long..……(13)

13.Leaves glabrous below..….***F. beddomei***

13.Leaves minutely white pubescent below…..…….....…***F. dalhousiae***

Ficus amplissima Sm., Cycl. [A. Rees], (London ed.) xiv. n. 1. (1810); Vajr., Fl. Palghat Dist. 445 (1990); *Ficus tsiela* Roxb. ex Buch.-Ham., Hook. f., Fl. Brit. India 5: 515 (1888); Gamble, Fl. Pres. Madras 1362 (1928).

Habit: Tree
Habitat: Evergreen, Moist and Dry Deciduous forests
Morphology: Tree; leaves all alternate, coriaceous, 3-ribbed from base, lateral nerves 8-10 pairs; stipule lateral; petiole glandular at apex; plant monoecious; inflorescence a syconia, axillary; basal bracts 3; receptacles in axillary pairs, globose; anther oblong, unequal; female flower sessile; ovary reniform.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: September-December

Distribution: Occasional

Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3004* (GVCH); Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 871* (GVCH).

Ficus arnottiana (Miq.) Miq., Ann. Mus. Bot. Lugduno-Batavi 3: 287 (1867); Hook. f., Fl. Brit. India 5: 513 (1888); Gamble, Fl. Pres. Madras 1363 (1928).

Habit: Tree
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Tree; leaves simple, all alternate, coriaceous; stipule lateral, glabrous; 5-7-ribbed from base, lateral nerves 5-8 pairs; petiole glabrous; plant monoecious; syconia in axillary pairs, globose; bracts 3; flowers sessile; stamens 1; ovary depressed globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: December-April

Distribution: Occasional

Altitude: 600-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1620* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3885* (GVCH).

Ficus beddomei King, Ann. Roy. Bot. Gard. (Calcutta) 1: 26, t. 24 (1888); Hook. f., Fl. Brit. India 5: 513 (1888); Gamble, Fl. Pres. Madras 1364 (1928); Vajr., Fl. Palghat Dist. 446 (1990).

Habit: Tree

Habitat: Semi-evergreen forests

Morphology: Tree; leaves all alternate, glabrous, coriaceous; lateral nerves 10-15 pairs; stipule lateral; petiole glandular at apex below; plant monoecious; syconia in axillary pairs; basal bracts 3, reflexed; receptacles distinctly peduncled, axillary; perianth cupular, glabrous; stamen solitary; perianth in female flowers unequal, glabrous; ovary globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats

IUCN category: Not Evaluated

Phenology: July-February

Distribution: Occasional

Altitude: 400-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 17 January 2020, 26 January 2018, *Jabeena & Maya 1158* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1809* (GVCH).

Ficus benghalensis L., Sp. Pl. 2: 1059 (1753); *Ficus benghalensis* L., var. *benghalensis*; Hook. f., Fl. Brit. India 5: 499 (1888); Gamble, Fl. Pres. Madras 1361 (1928); Vajr., Fl. Palghat Dist. 450 (1990).

Habit: Tree
Habitat: Dry Deciduous forests
Morphology: Tree; young parts pubescent; leaves all alternate; 3-7-ribbed at base; primary nerves 5-8 pairs; stipule lateral, glandular at apex; plant monoecious; syconia sessile in axillary pairs; basal bracts 3; tepals glabrous; stamen solitary; anther unequal; female flowers sessile; tepals 3-4, glabrous; ovary obovoid-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-August
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1209* (GVCH).

Ficus dalhousieae Miq., Ann. Mus. Bot. Lugduno-Batavi 3: 285 (1867); Hook. f., Fl. Brit. India 5: 499 (1888); Gamble, Fl. Pres. Madras 1364 (1928); Vajr., Fl. Palghat Dist. 446. (1990).

Habit: Tree
Habitat: Dry and Moist Deciduous forests
Morphology: Tree; leaves all alternate; stipule lateral, pubescent; lamina glabrous above, pubescent beneath; 3-7-ribbed from base, lateral nerves 10-13 pairs; plant monoecious; syconia in axillary pairs; bracts 3, triangular, densely hairy; male and female flowers sessile, globose; tepals 3; stamen solitary; ovary ovoid; ovary obovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Occasional
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1402* (GVCH); Nelliyampathy range, 29 February 2020, *Jabeena & Maya 4149* (GVCH); Plate 23: Fig. b.

Ficus elastica Roxb. ex Hornem., Hort. Bot. Hafn. Suppl. 7 (1819); Hook. f., Fl. Brit. India 5: 508 (1888); Gamble, Fl. Pres. Madras 1367 (1928).

Habit: Tree
Habitat: Planted as ornamental
Morphology: Tree; young parts pubescent; leaves with lateral nerves 20-40 pairs; stipule spathaceous; hypanthodia sessile, in extra axillary pairs; basal bracts 3, internal bristles absent; male flowers pedicellate; sepals 3-4; female flowers sessile; sepals 4; figs ovoid-oblong.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1165* (GVCH).

Ficus exasperata Vahl, Enum. Pl. [Vahl] ii. 197. (1805); Vajr., Fl. Palghat Dist. 447 (1990); *Ficus asperrima* Roxb., Hook. f., Fl. Brit. India 5: 522 (1888); Gamble, Fl. Pres. Madras 1366 (1928).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; all parts scabrid; leaves simple, 3-ribbed from base; lateral nerves 3-6 pairs; stipule lateral; plant monoecious; syconia axillary, solitary; male and female flowers sessile; tepals 3-6; stamen solitary; ovary obovoid; gall

flowers sessile to pedicellate; ovary sessile.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: February-April
Distribution: Common
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1174* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019 *Jabeena & Maya 1811* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1871* (GVCH); Plate 23: Fig. c.

Ficus hispida L.f., Suppl. Pl. 442 (1782); Hook. f., Fl. Brit. India 5: 522 (1888); Gamble, Fl. Pres. Madras 1367 (1928); Vajr., Fl. Palghat Dist. 447 (1990).

Habit: Tree
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Tree; leaves opposite, membranous, scabrid, 3-5-ribbed from base, lateral nerves 5-6 pairs; stipule interpetiolar, in whorls of 4; plant monoecious; syconia fascicled, depressed-globose; basal bracts 3; male flowers in 2 rings; stamen solitary; perianth glabrous; ovary depressed-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Least Concern
Phenology: September-May
Distribution: Common
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 1166* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2751* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3497* (GVCH); Plate 23: Fig. d.

Ficus laevis Blume, Bijdr. Fl. Ned. Ind. 9: 437 (1825); Hook. f., Fl. Brit. India 5: 526. (1888).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Tree; leaves spirally arranged, glabrous; lateral veins 4-6 pairs; syconia axillary, solitary; internal bristles many; tepals 4, glabrous; flowers sessile; stamens 2-3; ovary sessile; style bifid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-April
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3789* (GVCH).

Ficus microcarpa L.f., Suppl. Pl. 442 (1782); Vajr., Fl. Palghat Dist. 448. (1990); *Ficus retusa* King, Hook. f., Fl. Brit. India 5: 511 (1888); Gamble, Fl. Pres. Madras 1362 (1928). *Ficus retusa* var. *nitida* sensu Hook. f., Fl. Brit. India 5: 511 (1888); Gamble, Fl. Pres. Madras 1362 (1928).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves all alternate, glabrous, 3-ribbed; primary nerves 5-6 pairs; stipule lateral; plant monoecious; syconia sessile, in axillary pairs, depressed-globose; basal bracts 3; male flowers sessile or shortly pedicelled; stamen solitary; anthers unequal; female flowers sessile; ovary glabrous; syconium globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: March-May
Distribution: Rare
Altitude: 1000-1400m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1315* (GVCH).

Ficus nervosa Roth, Syst. Veg., ed. 15 bis [Roemer & Schultes] 1: 513 (1817); Hook. f., Fl. Brit. India 5: 512 (1888); Gamble, Fl. Pres. Madras 1364 (1928); Vajr., Fl. Palghat Dist. 448 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves all alternate; 3-5-ribbed from base; lateral nerves 5-12 pairs; stipule lateral; petiole grooved; plant monoecious; syconia axillary, paired or solitary; basal bracts absent; male flowers pedicelled; stamen solitary; female flowers sessile; stigma bifid; ovary ovoid; syconium depressed-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Least Concern
Phenology: March-May
Distribution: Occasional
Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1706* (GVCH); Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4829* (GVCH).

Ficus racemosa L., Sp. Pl. 2: 1060 (1753); Vajr., Fl. Palghat Dist. 448 (1990); *Ficus glomerata* Roxb., Hook. f., Fl. Brit. India 5: 535 (1888); Gamble, Fl. Pres. Madras 1364 (1928).

Habit: Tree
Habitat: Semi-evergreen and Deciduous forests
Morphology: Tree; leaves all alternate; 3-ribbed from base; lateral nerves 4-8 pairs; stipule pubescent; petiole grooved; plant monoecious; receptacles on short, leafless branchlets from the main stem; basal bracts 3; male and female flowers sessile; stamens 2; ovary sessile; gall flowers peduncled.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Least Concern
Phenology: February-May
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2200* (GVCH); Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4138* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4568* (GVCH).

Ficus religiosa L., Sp. Pl. 2: 1059 (1753); Hook. f., Fl. Brit. India 5: 513 (1888); Gamble, Fl. Pres. Madras 1363 (1928); Vajr., Fl. Palghat Dist. 450 (1990).

Habit: Tree
Habitat: Planted
Morphology: Tree; leaves all alternate; stipule lateral; gland solitary in the petiole; lamina 5-7-ribbed from base; lateral nerves 8-10 pairs; plant monoecious; syconia sessile, in axillary pairs; basal bracts 3; male and female flowers sessile; tepals 2; stamen solitary; tepals glabrous; ovary ovoid-oblong.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Common
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Koonampalam, 14 December 2019, *Jabeena & Maya 3465* (GVCH); Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 409* (GVCH); Kalchady, 01 October 2017, *Jabeena & Maya 523* (GVCH).

Ficus tsjakela Burm.f., Fl. Ind. (N. L. Burman) 227 (1768); Hook. f., Fl. Brit.

India 5: 514 (1888); Gamble, Fl. Pres. Madras 1362 (1928); Vajr., Fl. Palghat Dist. 450 (1990).

Habit: Tree

Habitat: Moist Deciduous forests

Morphology: Tree; leaves all alternate, coriaceous; stipule foliaceous; petiole glandular; 3-5-ribbed from base, lateral nerves 7-14 pairs; plant monoecious; syconia sessile in clusters, depressed-globose; male and female flowers sessile; ovary obovate.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: March-April

Distribution: Common

Altitude: 100-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2183* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3541* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4086* (GVCH); Plate 23: Fig. e.

Streblus Lour., Fl. Cochinch. 2: 614 (1790)

Streblus asper Lour., Fl. Cochinch. 2: 615 (1790); Hook. f., Fl. Brit. India 5: 489 (1888); Gamble, Fl. Pres. Madras 1353 (1928); Vajr., Fl. Palghat Dist. 450 (1990).

Habit: Tree

Habitat: Moist and Dry Deciduous forests

Morphology: Tree; leaves alternate, penni-nerved, scabrid; lateral nerves 4-10 pairs; stipule ensiform; flowers axillary; male flowers in peduncled head or spike; female flower solitary or 2-5 in a cluster, peduncled; perianth of 4 imbricate sepals; stamens 5; pistillode dilated at apex; ovary ovoid; drupe sub-globose; seed solitary, globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Least Concern

Phenology: January-October

Distribution: Occasional

Altitude: 200-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1592* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1797* (GVCH).

URTICACEAE

1.Plants with stinging hairs…….(2)
1.Plants without stinging hairs……(4)
2.Flowers clustered on spikes or cymes……...……..***Girardinia***
2.Flowers not clustered……...…(3)
3.Leaves 3-ribbed at base……....***Laportea***
3.Leaves penninerved…..…..***Dendrocnide***
4.Large shrubs or small trees…….…….(5)
4.Herbs or undershrubs…….……..(7)
5.Leaves white tomentose below……...***Debregeasia***
5.Leaves not as above…….(6)
6.Inflorescence a short cyme…..***Oreocnide***
6.Inflorescence a sessile globose cluster……..…..***Boehmeria***
7.Female flowers aggregated on a fleshy receptacle…..……...…(8)
7.Female flowers not aggregated on a fleshy receptacle…….…(9)
8.Leaves opposite……...…..***Lecanthus***
8.Leaves alternate…...…...…..***Elatostema***
9.Flowers cymose……...……..……(10)
9.Flowers in sessile clusters…….…….(11)
10.Leaves opposite, serrate……...…..***Pilea***
10.Leaves alternate, entire……....***Pellionia***
11.Flowers on axillary raceme……...***Gonostegia***
11.Flowers on axillary cluster or terminal raceme……..……...……***Pouzolzia***

Boehmeria Jacq., Enum. Syst. Pl. 9 (31) (1760)

Boehmeria depauperata Wedd., Ann. Sci. Nat., Bot. sér. 4, 1: 202 (1854); *Boehmeria malabarica* Wedd., Hook. f., Fl. Brit. India 5: 575 (1888); Gamble, Fl. Pres. Madras 1387 (1928); *Boehmeria glomerulifera* Miq., Vajr., Fl. Palghat Dist. 451 (1990).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; stem pilose; leaves alternate, glabrous above, pubescent below; lateral nerves 5-6 pairs; flowers 10-20 together, axillary; perianth lobes 4; stamens 3-5, inflexed in bud; pistillode globose; ovary included; ovule erect; stigma filiform, persistent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: April-May
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1286* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3890* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4053* (GVCH); Plate 23: Fig. f.

Debregeasia Gaudich., Voy. Bonite, Bot. 3(Atlas): t. 90 (1844)

Spikes paniculate; leaves orbicular…….....***D. wallichiana***
Spikes cymose; leaves linear or oblong-lanceolate…..……...….***D. longifolia***

Debregeasia longifolia (Burm.f.) Wedd., Prodr. [A. P. de Candolle] 16(1): 235(24) (1869); Vajr., Fl. Palghat Dist. 451 (1990); *Debregeasia velutina* Gaud., Hook. f., Fl. Brit. India 5: 590 (1888); Gamble, Fl. Pres. Madras 1389 (1928).

Habit: Shrub
Habitat: Evergreen forests, near water courses
Morphology: Shrub; branchlets pilose; leaves alternate, 3-ribbed at base, lanceolate; lateral nerves 4 pairs; stipule connate, intrapetiolar, bifid; flowers in small heads in short, dichotomous cymes, from the axils along the branchlets; bracts and bracteoles ciliate; tepals 4, hairy; stamens 4; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: December-April
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1312* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2370* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4055* (GVCH); Plate 23: Fig. g.

Debregeasia wallichiana Wedd., Arch. Mus. Hist. Nat. viii. (1855-56) 464; Hook. f., Fl. Brit. India 5: 591 (1888); *Debregeasia ceylanica* Hook.f., Fl. Brit. India 5: 592 (1888); Gamble, Fl. Pres. Madras 1389 (1928).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; branchlets glabrous; leaves 3-ribbed, round-ovate; lateral nerves 8-11 pairs; stipule bifid; flowers in larger heads in long-peduncled, panicled cymes from the axils of terminal leaves; perianth tubular, 3-5 toothed; stamens 3-5; ovary included.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-June
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1292* (GVCH).

Dendrocnide Miq., Pl. Jungh. [Miquel] 1: 29 (1851)

Dendrocnide sinuata (Blume) Chew, Gard. Bull. Singapore 21: 206 (1965); *Laportea crenulata* (Roxb.) Gaud., Hook. f., Fl. Brit. India 5: 550 (1888); Gamble, Fl. Pres. Madras 1373 (1928); Vajr., Fl. Palghat Dist. 453 (1990).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves alternate, penni-nerved; lateral nerves 9 pairs; flowers in peduncled cymes; tepals 4-5, pubescent; stamens 4, inflexed in bud; pistillode clavate; ovary single loculed; ovule solitary; style papillose on one side; achene oblique, compressed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 167* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1119* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4351* (GVCH).

Elatostema J.R.Forst. & G.Forst., Char. Gen. Pl., ed. 2. [105] (1776)

1.Plant small, 20 cm high; apex subacute to round…….....……..***E. cuneatum***
1.Plant large; apex acuminate or caudate……...(2)
2.Leaves upto 9 pairs; receptacle solitary…….....….***E. acuminatum***
2.Leaves upto 7 pairs; receptacles 1-3……..……..….***E. sessile***

Elatostema acuminatum (Poir.) Brongn., Bot. Voy. Coquille 211 (1834); Hook. f., Fl. Brit. India 5: 566 (1888); Gamble, Fl. Pres. Madras 1377 (1928); Vajr., Fl. Palghat Dist. 452. (1990).

Habit: Herb
Habitat: Near water courses in Evergreen forests
Morphology: herb; stem glabrous; leaves coarsely crenate; lateral nerves 7-9 pairs; receptacle sessile, solitary; bracts obovate-obtuse; bracteoles linear; perianth 4-5; stamens 4-5, inflexed in bud; ovary straight; ovule erect; stigma sessile.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 182* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1275* (GVCH); Hilltop, 08 February 2020, *Jabeena & Maya 4015* (GVCH); Plate 23: Fig. h.

Elatostema cuneatum Wight, Icon. Pl. Ind. Orient. [Wight] vi. t. 2094. f. 3; Hook. f., Fl. Brit. India 5: 568 (1888); Gamble, Fl. Pres. Madras 1377 (1928).

Habit: Herb
Habitat: Growing on rocks along water courses
Morphology: Herb; stem 3-angled, pubescent; leaves sub-sessile, ciliate; stipule ovate; involucral bracts 2-4; male flowers in heads of upper axils; tepals glabrous; stamens 4; achenes ovoid-ellipsoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-July
Distribution: Occasional
Altitude: 300-800m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 514* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4812* (GVCH).

Elatostema sessile J. R. Forst. & G.Forst., Char. Gen. Pl., ed. 2. 106, t. 53 (1776); Hook. f., Fl. Brit. India 5: 563 (1888); Gamble, Fl. Pres. Madras 1376 (1928).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; leaves alternate, sub-sessile; stipule lanceolate; flowers in axillary clusters; tepals 4; stamens 4; ovary 1-loculed; ovule solitary; stigma penicillate; achene ovoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 400* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 592* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4329* (GVCH).

Girardinia Gaudich., Voy. Uranie, Bot. 498 (1830)

Girardinia diversifolia (Link) Friis, Kew Bull. 36(1): 145 (1981); Vajr., Fl. Palghat Dist. 453 (1990); *Girardinia heterophylla* Decne., Hook. f., Fl. Brit. India 5: 551 (1888); *Girardinia heterophylla* Decne., var. *zeylanica* (Decne.) Hook. f., Fl. Brit. India 5: 551 (1888); *Girardinia leschenaultiana* Decne., Gamble, Fl. Pres. Madras 1372 (1928); *Girardinia zeylanica* Decne., Gamble, Fl. Pres. Madras 1373 (1928).

Habit: Shrub
Habitat: Evergreen, semi-evergreen, moist deciduous and shola forests, also in waste lands
Morphology: Shrub; stem with stinging hairs; leaves alternate, 3-ribbed from base; stipule connate, foliaceous; flowers clustered on spike or heads, armed with stinging hairs; perianth 4, cucullate; stamens 4, inflexed in bud; pistillode globose; ovary straight; ovule erect; stigma papillose; achene compressed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Occasional
Altitude: 800-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 883* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3883* (GVCH); Plate 24: Fig. a

Gonostegia Turcz., Bull. Soc. Imp. Naturalistes Moscou 19(2): 509 (1846)

Gonostegia pentandra (Roxb.) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 302 (1869); *Pouzolzia meeboldii* W.W. Smith & Ramaswami, Gamble, Fl. Pres. Madras 1383 (1928); Vajr., Fl. Palghat Dist. 456 (1990).

Habit: Shrub
Habitat: Moist Deciduous forests
Morphology: Shrub; leaves ternate, sessile, glabrous; Inflorescence an axillary raceme; bracts ovate; tepals 4, ciliate at apex; achene ridged.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Rare
Altitude: 300-500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1285* (GVCH).

Laportea Gaudich., Voy. Uranie, Bot. 498 (1830)

Inflorescence paniculate; pedicel winged……..***L. bulbifera***
Inflorescence simple spike; pedicel wingless……...……...***L. interrupta***

Laportea bulbifera (Siebold & Zucc.) Wedd., Arch. Mus. Hist. Nat. 9: 139 (1856); *Laportea terminalis* Wight, Ic. t. 1972. 1853; Hook. f., Fl. Brit. India 5: 549 (1888); Gamble, Fl. Pres. Madras 1373 (1928).

Habit: Herb
Habitat: Evergreen and Shola forests
Morphology: Herb; leaves ovate, coarsely toothed, 3-ribbed; inflorescence a terminal cyme; pedicels broadly winged; achenes compressed, obovoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Rare
Altitude: 1100-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4227* (GVCH).

Laportea interrupta (L.) Chew, Gard. Bull. Singapore 21: 200 (1965); Vajr., Fl. Palghat Dist. 453 (1990); *Fleurya interrupta* (L.) Gaud., Hook. f., Fl. Brit. India 5: 548 (1888); Gamble, Fl. Pres. Madras 1372 (1928).

Habit: Herb
Habitat: Degraded Deciduous forests
Morphology: Herb; stem with stinging hairs; leaves alternate, 3-nerved from base; inflorescence an axillary lax cyme; perianth 4; stamens 4, filaments unequal; pistillode linear; ovary ovoid; achene ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: August-September
Distribution: Common
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1204* (GVCH); Victoria, 12 October 2020, *Jabeena & Maya 4182* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4211* (GVCH); Plate 24: Fig. b.

Lecanthus Wedd., Ann. Sci. Nat., Bot. sér. 4, 1: 187 (1854)

Lecanthus peduncularis (Royle) Wedd., Prodr. [A. P. de Candolle] 16(1): 164 (1869); *Fleurya interrupta* (L.) Gaud., Hook. f., Fl. Brit. India 5: 548 (1888); Gamble, Fl. Pres. Madras 1372 (1928).

Habit: Herb
Habitat: Evergreen and Shola forests
Morphology: Herb; stem with stinging hairs; leaves alternate, toothed, 3-ribbed, pilose; stipule connate in pairs; flowers clustered on axillary spike or cyme; perianth 4-5; stamens 4-5, inflexed in bud; pistillode globose; ovary oblique; achene compressed, exserted.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Common
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 574* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2821* (GVCH); Nooradi,

14 December 2019, *Jabeena & Maya 3511*(GVCH).

Oreocnide Miq., Pl. Jungh. [Miquel] 1: 39 (1851)

Oreocnide integrifolia (Gaudich.) Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 306 (1869); Vajr., Fl. Palghat Dist. 454 (1990); *Villebrunea integrifolia* Gaud., Hook. f., Fl. Brit. India 5: 589 (1888); Gamble, Fl. Pres. Madras 1388 (1928).

Habit: Shrub
Habitat: Along the sides of streams in Evergreen forests
Morphology: Shrub; leaves simple, alternate; stipule bifid; inflorescence an axillary cluster; perianth 4-lobed; stamens 3-5; pistillode obovate, pilose below; ovary adnate to perianth; stigma discoid; achenes adnate to the perianth.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-August
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 899* (GVCH); Mattumala, 15 May 2018, *Jabeena & Maya 1406* (GVCH); Nelliyampathy range, Hilltop, 08 February 2020, *Jabeena & Maya 4017* (GVCH); Plate 24: Fig. c.

Pellionia Gaudich., Voy. Uranie, Bot. 494 (1830)

Pellionia heyneana Wedd., Arch. Mus. Hist. Nat. 9: 287 (1856); Hook. f., Fl. Brit. India 5: 561 (1888); Gamble, Fl. Pres. Madras 1380 (1928); Vajr., Fl. Palghat Dist. 455 (1990).

Habit: Herb
Habitat: Evergreen and Semi-evergreen forests
Morphology: Herb; stem angled; leaves distichous, inequilateral, 3-ribbed; inflorescence an axillary peduncled cyme; male tepals 4; stamens 4, free; pistillode conical; female tepals 5, unequal; ovary elliptic; achene compressed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Common
Altitude: 800-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2585* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3344* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4463* (GVCH).

Pilea Lindl., Coll. Bot. (Lindley) ad t. 4 (1821)

1.Herb prostrate...……....***P. microphylla***
1.Herb erect……...……..…..(2)
2.Lineoles scarce; leaves less than 6 cm long……...…….....***P. kingii***
2.Lineoles crowded; leaves upto 20 cm long……..……...…....***P. melastomoides***

Pilea kingii C.E.C.Fisch., Bull. Misc. Inform. Kew 1927(2): 76 (1927); Gamble, Fl. Pres. Madras 1379 (1928).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; stem glabrous; leaves 3-ribbed; lineoles glabrous; inflorescence an axillary peduncled, dichotomous cyme; sepals rounded, not spurred; achene biconvex.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-March
Distribution: Common
Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 901* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2398* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3828* (GVCH).

Pilea melastomoides (Poir.) Wedd., Ann. Sci. Nat., Bot. sér. 4, 1: 186 (1854); Vajr., Fl. Palghat Dist. 455 (1990); *Pilea trinervia* (Roxb.) Wight, Hook. f., Fl. Brit. India 5: 557 (1888); Gamble, Fl. Pres. Madras 1379 (1928).

Habit: Herb
Habitat: Evergreen and Shola forests
Morphology: Herb; stem glabrous; leaves simple, opposite, 3-ribbed; lateral ribs prolonged right into the apex; lineoles crowded; petiole unequal in opposite pairs, hairy; inflorescence a peduncled panicle of cymes; tepals 4; stamens 4; stigmas 3-fid; achene granular.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Rare
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 691* (GVCH); Plate 24: Fig. d.

Pilea microphylla (L.) Liebm., Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Math. Afd. ser. 5, 2: 296, 302 (1851); Gamble, Fl. Pres. Madras 1379 (1928); *Pilea muscosa* (L.) Lindl., Hook. f., Fl. Brit. India 5: 551 (1888).

Habit: Herb
Habitat: Grown as garden plant; often found as escape
Morphology: Herb; stem succulent; leaves simple, opposite, single-nerved; inflorescence an umbellate cluster; tepals 4, free; stamens 4; ovary ovoid, 1-loculed; ovule solitary; achene ellipsoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Common
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3532* (GVCH); Pothupara, 11 January 2020, *Jabeena & Maya 3666* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3732* (GVCH).

Pouzolzia Gaudich., Voy. Uranie [Freycinet] pt. 12: 503 (1830)

1.Flowers in axillary clusters…..…….(2)
1.Flowers in axillary or terminal racemes……..……(3)
2.Flowers tetramerous.....…...***P. zeylanica***
2.Flowers pentamerous...…...***P. auriculata***
3.Inflorescence axillary...……...***P. cymosa***
3.Inflorescence terminal……..……..(4)
4.Leaf apex acute…….***P. scabra***
4.Leaf apex acuminate…...……(5)
5.Leaves glabrous…….....***P. caudata***
5.Leaves pubescent……...…....***P. wightii***

Pouzolzia auriculata Wight, Icon. Pl. Ind. Orient. [Wight] vi. 42; Hook. f., Fl. Brit. India 5: 582 (1888); Gamble, Fl. Pres. Madras 1383 (1928); Vajr., Fl. Palghat Dist. 456 (1990).

Habit: Shrub
Habitat: Moist Deciduous forests
Morphology: Shrub; stem scabrous; leaves alternate; flowers in axillary sessile clusters; perianth pubescent; ovary 2-winged; achenes ovoid, strigose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-October
Distribution: Occasional

Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 383* (GVCH); Karassuri, 20 October 2019, *Jabeena & Maya 2695* (GVCH); Plate 24: Fig. e.

Pouzolzia caudata Benn., Pl. Jav. Rar. 66 (1838); Hook. f., Fl. Brit. India 5: 585 (1888); *Pouzolzia wightii* Bennett var. *caudata* (Bennett) C.E.C. Fisch., Gamble, Fl. Pres. Madras 1384 (1928); Vajr., Fl. Palghat Dist. 457 (1990).

Habit: Herb
Habitat: Along streams of Moist Deciduous forests
Morphology: Herb; stem slender, glabrous; leaves sessile, glabrous; inflorescence a slender pubescent spike; bracts cordate; sepals glabrous; achenes 2-winged.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: July-August

Distribution: Occasional

Altitude: 600-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1139* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2363* (GVCH).

Pouzolzia cymosa Wight, Icon. Pl. Ind. Orient. [Wight] 6: 42, t. 1979 (1853); Gamble, Fl. Pres. Madras 1383 (1928); *Pouzolzia auriculata* Wight var. *cymosa* (Wight) Hook. f., Fl. Brit. India 5: 582 (1888).

Habit: Shrub
Habitat: Moist Deciduous forests
Morphology: Shrub; stem pubescent; leaves opposite, pubescent below; inflorescence an axillary hirsute cyme; tepals 5, free, pubescent; stamens 5; ovary ellipsoid; achenes ribbed, ellipsoid.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: July-August

Distribution: Rare

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1134* (GVCH).

Pouzolzia scabra Wight, Icon. Pl. Ind. Orient. [Wight] vi. 41 (1853); *Pouzolzia wightii* Bennett var. *scabra* (Wight) C.E.C. Fisch., Gamble, Fl. Pres. Madras 1384 (1928).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem scabrid; leaves whorled; inflorescence an axillary or terminal pedunculate panicle; bracts ovate; perianth lobes 4; achenes winged.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to South India

IUCN category: Not Evaluated

Phenology: September-March

Distribution: Occasional

Altitude: 1100-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1143* (GVCH); Kollengode range, 20 October 2019, *Jabeena & Maya 2694* (GVCH).

Pouzolzia wightii Benn., Pl. Jav. Rar. (Bennett) 1: 66 (1838); *Pouzolzia wightii* Bennett, var. *wightii* Wight, Hook. f., Fl. Brit. India 5:584 (1888); Gamble, Fl. Pres. Madras 1383 (1928); Vajr., Fl. Palghat Dist. 457 (1990).

Habit: Herb
Habitat: Evergreen and Semi-evergreen forests
Morphology: Herb; stem pilose; leaves ternate, opposite, 3-ribbed; stipule ovate; spike terminal; bracts ovate; flowers in sessile clusters in the axils of leaf or bracts; male flowers shortly pedicelled; tepals 4, ciliate; filaments hairy; female flowers sessile; achenes not winged.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 431* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 695* (GVCH); Hilltop, 20 January 2018, *Jabeena & Maya 949* (GVCH).

Pouzolzia zeylanica (L.) Benn., Pl. Jav. Rar. (Bennett) 67 (1838); Vajr., Fl. Palghat Dist. 457 (1990); *Pouzolzia indica* (L.) Gaud., Hook. f., Fl. Brit. India 5: 581 (1888); Gamble, Fl. Pres. Madras 1382 (1928).

Habit: Herb
Habitat: Watelands
Morphology: Herb; stem procumbent; leaves simple, alternate, strigose; inflorescence an axillary, sub-sessile clusters; tepals 4, villous; stamens 4; style linear, pubescent; achenes 2-4-winged.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 100-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1224* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2014* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2196* (GVCH).

CUCURBITALES

CUCURBITACEAE

1.Tendrils branched……..…..……(2)
1.Tendrils simple……..…….…….(3)
2.Petals fimbriate (sometimes entire)……...***Trichosanthes***
2.Petals entire.....***Diplocyclos***
3.Scales present in calyx tube.....***Momordica***
3.Scales absent in calyx tube……..…(4)
4.Male flowers solitary……...…..***Coccinia***
4.Male flowers not solitary…….……(5)
5.Staminal filaments and connectives ciliate…….……..…….***Zehneria***
5.Staminal filaments and connectives glabrous…...……...……(6)
6.Anther crested...…….……***Cucumis***
6.Anther not crested……(7)
7.Stylar disc cup shaped…...……***Solena***
7.Stylar disc obscure…..……***Cayaponia***

Cayaponia Silva Manso, Enum. Subst. Braz. 31 (1836)

Cayaponia laciniosa (L.) C.Jeffrey, Kew Bull. 15(3): 346 (1962); *Cerasiocarpum zeylanicum* (Thw.) Hook. f., Hook. f., Fl. Brit. India 2: 629 (1879); *Cerasiocarpum bennettii* (Miq.) Cogn. in A. & C. DC., Gamble, Fl. Pres. Madras 541 (1919).

Habit: Climber
Habitat: Semi-evergreen forests

Morphology: Climber; stem glabrous; tendrils simple; leaves simple, opposite; plant monoecious; male inflorescence a raceme; female solitary; calyx tube campanulate; lobes 5; corolla rotate, 5-partite; stamens 3, free, inserted on the mouth of the calyx tube; anther one 1-celled, two 2-celled; staminodes absent; ovary globular, 1-loculed; placentas 2-3; ovules 5-6; stigma 3-fid; fruit a depressed globose berry.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 031* (GVCH); Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 225* (GVCH); Plate 24: Fig. f.

Coccinia Wight & Arn., Prodr. Fl. Ind. Orient. 1: 347 (1834)

Coccinia grandis (L.) Voigt, Hort. Suburb. Calcutt. 59 (1845); Vajr., Fl. Palghat Dist. 212 (1990); *Coccinia indica* Wight & Arn., Gamble, Fl. Pres. Madras 537 (1919); *Cephalandra indica* (Wight & Arn.) Naud., Hook. f., Fl. Brit. India 2: 621 (1879).

Habit: Climber
Habitat: Dry deciduous forests and wastelands, also planted in home gardens
Morphology: Climber; plant dioecious; tendrils simple; leaves 3-5-lobed, lower surface glandular; flowers axillary, solitary; male pedicel striate; calyx campanulate, glabrous; corolla campanulate, villous; stamens 3, connate; anthers flexuous; pistillode absent; ovary glabrous; stigma papillate; fruit glabrous; seeds compressed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5055* (GVCH).

Cucumis L., Sp. Pl. 2: 1011 (1753)

1.Anther cells not flexuose……....***C. maderaspatanus***
1.Anther cells flexuose..……....(2)
2.Fruit upto 2 cm long, hispid.……...…...***C.silentvalleyi***
2.Fruit more than 15 cm long, more or less glabrous……...……..(3)
3.Leaf margin denticulate…...…....***C.melo***
3.Leaf margin bidenticulate.…….***C.sativus***

Cucumis maderaspatanus L., Sp. Pl. 2: 1012 (1753); *Mukia scabrella* (L. f.) Arn., Hook. f., Fl. Brit. India 2: 623 (1879); *Melothria maderaspatana* (L.) Cogn., Gamble, Fl. Pres. Madras 539 (1919); Vajr., Fl. Palghat Dist. 213 (1990).

Habit: Climber
Habitat: Deciduous forests
Morphology: Climber; stem scabrous; leaves simple, alternate, shortly hirsute beneath; plant monoecious; male flowers in fascicle; female flower solitary; calyx hairy; petals obovate; anthers sub-sessile, connective apiculate; berry globose, sub-sessile.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 300-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1278* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4309* (GVCH).

Cucumis melo L., Sp. Pl. 2: 1011 (1753); Hook. f., Fl. Brit. India 2: 620 (1879); Gamble, Fl. Pres. Madras 535 (1919); *Cucumis trigonus* Roxb., Hook. f., Fl. Brit. India 2 :619 (1879); Gamble, Fl. Pres. Madras 535 (1919); *Cucumis pubescens* Willd., Gamble, Fl. Pres. Madras 535 (1919); *Cucumis callosus* (Rottl.) Cogn. ex Cogn. & Harms., Vajr., Fl. Palghat Dist. 212 (1990).

Habit: Climber
Habitat: Cultivated
Morphology: Climber; plant monoecious; stem hirsute; tendrils simple; leaves alternate, villous; petiole hispid; male flowers in axillary fascicle; female flowers solitary; calyx campanulate, scabrous; petals obovate; ovary hairy; stigma connivant; fruit edible.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific, African, Australian, Holarctic and South American

IUCN category: Not Evaluated

Phenology: May-September

Distribution: Occasional

Altitude: 300-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 685* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2781* (GVCH).

Cucumis sativus L., Sp. Pl. 2: 1012 (1753); *Cucumis sativus* L. f. *sativus* Hook. f., Fl. Brit. India 2: 620 (1879); Gamble, Fl. Pres. Madras 535 (1919).

Habit: Climber
Habitat: Cultivated
Morphology: Climber; plant monoecious; stem hirsute; tendrils simple; petiole hispid; leaves denticulate; male flowers fascicled; calyx campanulate, scabrous; corolla scabrous, ciliate at margins; stamens 3; anthers flexuous; pistillode globose; ovary ellipsoid, pubescent; fruit oblong; seeds compressed.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated

Phenology: November-May

Distribution: Rare

Altitude: 100-300

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5063* (GVCH).

Cucumis silentvalleyi (Manilal, T.Sabu & P. Mathew) Ghebret. & Thulin, Novon 17(2):178 (2007).

Habit: Climber
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Climber; stem scabrous; leaves simple, alternate; flowers axillary, solitary; calyx tubular; petals 5; stamens 3, free, erect; anthers flexuous; ovary hispid; fruit ellipsoid, hispid; seeds compressed.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: July-December

Distribution: Common

Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 607* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2028* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2123* (GVCH).

Diplocyclos (Endl.) T.Post & Kuntze, Lex. Gen. Phan. [Post & Kuntze] 178 (1903)

Diplocyclos palmatus (L.) C.Jeffrey, Kew Bull. 15(3): 352 (1962); Vajr., Fl. Palghat Dist. 212 (1990); *Bryonia laciniosa* L., Hook. f., Fl. Brit. India 2: 622 (1879); *Bryonopsis laciniosa* sensu Naud., Gamble, Fl. Pres. Madras 534 (1919).

Habit: Climber
Habitat: Deciduous forests
Morphology: Climber; plant monoecious; stem glabrous; tendrils bifid; leaves palmately 5-lobed, scabrous; calyx campanulate, lobes 5; stamens 3, free; anther flexuous; staminodes 3; ovary globose; stigma trifid, papillose; fruit globose; seeds compressed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 287* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1710* (GVCH); Plate 24: Fig. g.

Momordica L., Sp. Pl. 2: 1009 (1753)

Plant monoecious; leaves villous……....***M. charantia***
Plant dioecious; leaves glabrous……...***M. dioica***

Momordica charantia L., Sp. Pl. 2: 1009 (1753); *Momordica charantia* L. var. *charantia* Hook. f., Fl. Brit. India 2: 616 (1879); Gamble, Fl. Pres. Madras 532 (1919); Vajr., Fl. Palghat Dist. 214 (1990).

Habit: Climber
Habitat: Cultivated; also runs in wild
Morphology: Climber; tendrils simple, glabrous; plant monoecious; leaves orbicular, 5-7-lobed; flower solitary with a foliaceous bract on pedicel; calyx pubescent, campanulate; corolla 5-partite to base; ovary fusiform, beaked; fruit oblong.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Occasional
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2768* (GVCH); Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3074* (GVCH); Plate 24: Fig. h.

Momordica dioica Roxb. ex Willd., Sp. Pl., ed. 4 [Willdenow] 4(1): 605 (1805); Hook. f., Fl. Brit. India 2: 617 (1879); Gamble, Fl. Pres. Madras 531 (1919); Vajr., Fl. Palghat Dist. 214 (1990).

Habit: Climber
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Climber; tendrils simple; leaves 3-5-lobed; flowers solitary, axillary, bracteate; bracts sessile, foliaceous, ciliate at margins; calyx campanulate, villous; petals oblong; stamens 3; staminodes of 2-3 glands; ovary ovoid, beaked, densely hirsute; stigma bilobed; fruit echinulate; seeds ovoid.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1532* (GVCH); Vazhakkundu, 15

January 2019, *Jabeena & Maya 1699* (GVCH).

Solena Lour., Fl. Cochinch. 2: 514 (1790)

Solena amplexicaulis (Lam.) Gandhi, Fl. Hassan Dist. [Saldanha & Nicolson] 179 (1976); Vajr., Fl. Palghat Dist. 215 (1990); *Zehneria umbellata* (Klein) Thw., Hook. f., Fl. Brit. India 2: 625 (1879); *Melothria amplexicaulis* (Lam.) Cogn., Gamble, Fl. Pres. Madras 539 (1919); *Melothria heterophylla* (Lour.) Cogn., Gamble, Fl. Pres. Madras 539 (1919).

Habit: Climber
Habitat: Deciduous forests
Morphology: Climber; plant dioecious; tendril simple; leaves simple, alternate, 3-5-lobed; male inflorescence an axillary sessile cluster; female solitary; calyx campanulate, villous; petals 5; stamens 3, free; anthers papillate at apex; ovary villous; fruit a globose berry.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: July-January
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1058* (GVCH); Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2613* (GVCH); Plate 25: Fig. a

Trichosanthes L., Sp. Pl. [Linnaeus] 2: 1008 (1753)

1.Female flowers bracteate ……***T. anaimalaiensis***
1.Female flowers ebracteate...……....(2)
2.Male racemes without bracts……...***T. cucumerina***
2.Male racemes with small bracts…...…(3)
3.Petals fimbriate…....…..…***T. villosula***
3.Petals entire…...…….....***T. tubiflora***

Trichosanthes anaimalaiensis Bedd., Madras J. Lit. Sci. Ser. III, i. (1864) 47; Gamble, Fl. Pres. Madras 530 (1919).

Habit: Climber
Habitat: Grasslands and Shola forests margins
Morphology: Climber; stem pubescent; tendrils bifid; leaves 3-5-lobed, toothed; inflorescence an axillary raceme; bracts serrate; calyx pubescent; corolla puberulous; ovary ovoid, pubescent; style glabrous; fruit a globose berry.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: April-September
Distribution: Rare
Altitude: 1200-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 544* (GVCH).

Trichosanthes cucumerina L., Sp. Pl. 2: 1008 (1753); Hook. f., Fl. Brit. India 2: 609 (1879); Gamble, Fl. Pres. Madras 529 (1919); Vajr., Fl. Palghat Dist. 215 (1990).

Habit: Climber
Habitat: Forest margins of Moist Deciduous and Semi-evergreen forests
Morphology: Climber; stem pubescent; leaves 3-7-lobed; male inflorescence an axillary raceme; female solitary; calyx glandular-pubescent; petals fimbriate; stamens 3; pistillodes 3; ovary ribbed, pubescent; fruit beaked.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-May
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3791* (GVCH); Kalchady, 09 March

2021, *Jabeena & Maya 5071* (GVCH); Plate 25: Fig. b.

Trichosanthes tubiflora (Wight & Arn.) H.J.de Boer, PhytoKeys 12: 31 (2012); *Gymnopetalum wightii* Arn., Hook. f., Fl. Brit. India 2: 611 (1879); Gamble, Fl. Pres. Madras 530 (1919); Vajr., Fl. Palghat Dist. 213 (1990).

Habit: Climber
Habitat: Deciduous forests
Morphology: Climber; stem furrowed; tendrils undivided; leaves alternate, 3-5-lobed; petiole pubescent; male flowers in umbellate racemes; female flower solitary; calyx pubescent; corolla deeply divided to base; ovary ovoid, hirsute; stigma 3; fruit sparsely hairy.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3035* (GVCH); Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3068* (GVCH); Plate 25: Fig. c.

Trichosanthes villosula Cogn., Monogr. Phan. [A.DC. & C.DC.] 3: 362 (1881); Hook. f., Fl. Brit. India 2: 610 (1879); Gamble, Fl. Pres. Madras 529 (1919); *Trichosanthes perrottetiana* Cogn., Gamble, Fl. Pres. Madras 529 (1919).

Habit: Climber
Habitat: Evergreen forests
Morphology: Climber; plant dioecious; stem glandular; tendrils 3-5-fid; leaves 5-7-lobed, pubescent beneath; male inflorescence a raceme; female solitary; inflorescence glandular-pubescent; calyx puberulus; petals fimbriate; berry beaked at apex.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2752* (GVCH).

Zehneria Endl., Prod. Fl. Norfolk. 69 (1833)

Flower bisexual; petals glabrous……..…....***Z. mysorensis***
Flower unisexual; petals villous within..…….***Z. scabra***

Zehneria mysorensis Wight, Ann. Mag. Nat. Hist. 8: 268 (1842); *Zehneria maysorensis* (Wight & Arn.) Arn. var. *maysorensis* Vajr., Fl. Palghat Dist. 216 (1990); *Melothria perpusilla* sensu Gamble, Fl. Pres. Madras 538 (1919).

Habit: Climber
Habitat: Degraded forests and Grasslands
Morphology: Climber; plant monoecious; stem glabrous; leaves 3-angled; tendrils simple;. male flowers sub-umbellate; female solitary; calyx campanulate hairy; corolla lobes ovate; stamens 3; anthers papillose; disk 3-lobed; staminodes 3, hairy; fruit oblong.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: October-December

Distribution: Common

Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2943* (GVCH); Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3067* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2767* (GVCH); Plate 25: Fig. d.

Zehneria scabra Sond., Fl. Cap. (Harvey) 2: 486 (1862); Vajr., Fl. Palghat Dist. 217 (1990); *Zehneria hookeriana* Arn., Hook. f., Fl. Brit. India 2: 624 (1879); *Melothria mucronata* sensu Gamble, Fl. Pres. Madras 538 (1919).

Habit: Climber
Habitat: Forest margins
Morphology: Climber; stem glabrous; leaves shallowly 3-5-lobed; inflorescence sub-umbellate; calyx campanulate; petals obovate; anther connective pubescent; stigma 3-lobed; fruit a globose berry.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Occasional
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 886* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3378* (GVCH).

TETRAMELACREAE

TETRAMELACEAE

Tetrameles R.Br., Denh. & Clapp. Trav. II. 230 (App. 25). (1826)

Tetrameles nudiflora R.Br., Pl. Jav. Rar. (Bennett) 79. t. 17. 1838; Hook. f., Fl. Brit. India 2: 627 (1879); Gamble, Fl. Pres. Madras 544 (1919); Vajr., Fl. Palghat Dist. 217 (1990).

Habit: Tree
Habitat: Semi-evergreen, Evergreen and Moist Deciduous forests
Morphology: Tree; leaves simple, alternate, pubescent; 3-5 nerved at base; lateral nerves 4-9 pairs; male inflorescence panicled; female racemose; flowers sessile; calyx lobes 4, united at base; petals absent; stamens 4; staminodes absent; ovary inferior, 1-loculed; ovules numerous on 4 parietal placentas; styles 4, subulate; capsule ovoid, glandular, 4-8-ribbed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: March-May
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mannathypalam, 12 October 2020, *Jabeena & Maya 4171* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4589* (GVCH); Plate 25: Fig. e.

BEGONIACEAE

Begonia L., Sp. Pl. 2: 1056 (1753)

1.Plant a scapigerous herb……..……...(2)
1.Plant a caulescent herb……..……(3)
2.Placenta 2-fid……..……....***B. cordifolia***
2.Placenta undivided.....…..***B. bachulkarii***
3.Placenta 2-fid…….....***B. fallax***
4.Placenta undivided...…...…..***B. dipetala***

Begonia bachulkarii Aitawade, Kattuk. & S.R.Yadav, Phytotaxa 423(5): 278 (2019).

Habit: Herb
Habitat: Slopes and in rock crevices in humid wet places
Morphology: Acaulescent herb; stipule triangular; leaves alternate; petiole villous; flowers in an axillary compound cyme; flowers pedicellate; tepals 2; stamens many; styles 3; stigma bilobed, spirally twisted; ovary glabrous, winged, wings equal; capsule 3-winged.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: November-April
Distribution: Occasional
Altitude: 400-600m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1230* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4813* (GVCH); Plate 25: Fig. f.

Begonia cordifolia Thwaites, Enum. Pl. Zeyl. [Thwaites] 129 (1859); Hook. f., Fl. Brit. India 2: 641 (1879); Gamble, Fl. Pres. Madras 546 (1919).

Habit: Herb
Habitat: Evergreen forests
Morphology: Acaulescent herb; rootstock tuberous; leaves crenate-serrate, pubescent; stipule glabrous; tepals in male flowers 4, in female flowers 5; stamens many, shortly monadelphous; ovary glabrous; style 3; stigma unbranched; capsule winged.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-December
Distribution: Rare
Altitude: 600-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2216* (GVCH).

Begonia dipetala Graham, Bot. Mag. 55: t. 2849 (1828); *Begonia malabarica* Lam., sensu Gamble, Fl. Pres. Madras 546 (1919); Vajr., Fl. Palghat Dist. 219 (1990).
Habit: Herb
Habitat: Semi-evergreen forests
Morphology: Herb; stem glabrous; leaves alternate, pubescent; stipule glabrous; inflorescence an axillary, dichotomous cyme; tepals 2; stamens many, shortly monadelphous; capsule winged, wings sub-equal.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-April
Distribution: Common
Altitude: 500-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2591* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2741* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3339* (GVCH).

Begonia fallax A.DC., Prodr. [A. P. de Candolle] 15(1): 329 (1864); Hook. f., Fl. Brit. India 2: 643 (1879).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; stem glabrous; leaves glabrous; stipule glabrous; inflorescence an axillary dichotomously branched cyme; tepals in male flowers 4, in female flowers 3; placenta bifid; capsule 3-winged.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India

IUCN category: Not Evaluated

Phenology: December-March

Distribution: Rare

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 08 February 2020, *Jabeena & Maya 4018* (GVCH); Plate 25: Fig. g.

CELASTRALES

CELASTRACEAE

1.Stamen 3; seeds not arillate……....(2)
1.Stamen 4-5; seeds arillate…..……(3)
2.Petals triangular-lanceolate, valvate……...***Loeseneriella***
2.Petals orbicular, imbricate.....***Pristimera***
3.Fruit indehiscent…..…....***Elaeodendron***
3.Fruit dehiscent……..……...…..(4)
4.Leaves opposite…..…….....***Euonymus***
4.Leaves alternate……..……..…..(5)
5.Inflorescence paniculate……..***Celastrus***
5.Inflorescence cymose…....***Gymnosporia***

Celastrus L., Sp. Pl. 1: 196 (1753)

Celastrus paniculatus Willd., Sp. Pl., ed. 4 [Willdenow] 1(2): 1125 (1798); Hook. f., Fl. Brit. India 1: 617 (1875); Gamble, Fl. Pres. Madras 208 (1918).

Habit: Climber
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Scandent shrub; branchlets terete, glabrescent; leaves simple, alternate, pubescent; lateral nerves 5-8 pairs; inflorescence an axillary or terminal panicle; calyx 5-lobed, ciliate; petals 5; stamens 5; anthers sagittate; ovary 3-loculed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: December-May
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 865* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1628* (GVCH); Nelliyampathy range, Kaikatty, 06 July 2019, *Jabeena & Maya 2326* (GVCH); Plate 25: Fig. h.

Elaeodendron Jacq., Icon. Pl. Rar. [Jacquin] 1: 5, t. 48 (1782)

Cyme slender, dense; flowers small, white….……...***E. glaucum***
Cyme stout, lax; flowers large, greenish-yellow…...…….***E. paniculatum***

Elaeodendron glaucum Pers., Syn. Pl. [Persoon] 1: 241 (1805); Gamble, Fl. Pres. Madras 211 (1918).

Habit: Tree
Habitat: Shola and Evergreen forests
Morphology: Tree; leaves opposite; stipule caducous; petiole grooved; lateral nerves 6-8 pairs; inflorescent an axillary, slender, dense cyme; flowers hermaphrodite; calyx 5-lobed, lobes unequal; petals 5; stamens 5; ovary 2-5-loculed; fruit a globose drupe.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: March-June

Distribution: Occasional

Altitude: 400-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4561* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4815* (GVCH).

Elaeodendron paniculatum Wight & Arn., Prodr. Fl. Ind. Orient. 1: 157 (1834); Gamble, Fl. Pres. Madras 212 (1918).

Habit: Tree

Habitat: Evergreen forests

Morphology: Tree; branchlets glabrous; leaves simple, elliptic; lateral nerves 7-9 pairs; inflorescence a dense, stout cyme; drupe 2-seeded.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: March-June

Distribution: Rare

Altitude: 1200-1400m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3970* (GVCH).

Euonymus L., Sp. Pl. 1: 197 (1753)

Cymes 1-3 flowered; petals fimbriate...……....***E. indica***

Cymes more than 7 flowered; petals entire…….……..…***E. angulatus***

Euonymus angulatus Wight, Icon. Pl. Ind. Orient. [Wight] t. 1053; Hook. f., Fl. Brit. India 1: 610 (1875); Gamble, Fl. Pres. Madras 203 (1918); Vajr., Fl. Palghat Dist. 117 (1990).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Tree; branchlets tetragonous; leaves opposite, glabrous; inflorescence a lax drooping cyme; sepals 5; petals 5; stamens 5; disc 5-lobed; ovary within disc; fruit a 5-loculed capsule.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Vulnerable
Phenology: December-April
Distribution: Rare
Altitude: 1100-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Manpara, 01 December 2018, *Jabeena & Maya 1622* (GVCH).

Euonymus indicus B. Heyne ex Wall., Fl. Ind. (Carey & Wallich ed.) 2: 409 (1824); Hook. f., Fl. Brit. India 1: 608 (1875); Gamble, Fl. Pres. Madras 202 (1918).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; branchlets terete; leaves simple, glabrous; lateral nerves 4-5 pairs; flowers in axillary umbelled cyme; calyx 5-lobed, glabrous, persistent; petals 5; stamens 5; disc 5-angled; ovary within the disc; fruit a capsule, 5-angled.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Least Concern
Phenology: September-March
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1538* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2024* (GVCH); Plate 26: Fig. a.

Gymnosporia (Wight & Arn.) Benth. & Hook.f., Gen. Pl. [Bentham & Hooker f.] 1(1): 359, 365 (1862)

Gymnosporia heyneana (Roth) M. A. Lawson, Fl. Brit. India [J. D. Hooker] 1(3): 620 (1875); *Gymnosporia heyneana* Wight & Arn., Hook. f., Fl. Brit. India 1: 630 (1875).

Habit: Tree
Habitat: Dry Deciduous forests
Morphology: Tree; branches armed; leaves alternate; inflorescence an axillary cyme; calyx 5-lobed; petals 5; stamens 5; ovary 3-loculed; stigma trifid; capsule obovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: July-February
Distribution: Rare
Altitude: 1300-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1103* (GVCH).

Loeseneriella A. C. Sm., Amer. J. Bot. 28: 438 (1941)

Loeseneriella bourdillonii (Gamble) D.C.S.Raju, J. Biol. Sci. (Bombay) 8(2): 56 (1966); Vajr., Fl. Palghat Dist. 118 (1990); *Hippocratea bourdillonii* Gamble, Gamble, Fl. Pres. Madras 213 (1918).

Habit: Climber
Habitat: Evergreen and Semi-evergreen forests
Morphology: Climber; branchlets tetragonous; leaves coriaceous, glabrous; lateral nerves arched at margin; inflorescence an axillary pedunculate cyme; sepals 5, pubescent; petals 5; stamens 3, puberulous; ovary within the disc; fruit oblong.

Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Rare
Altitude: 1200-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1359* (GVCH).

Pristimera Miers, Trans. Linn. Soc. London 28(2): 360 (1872).

Pristimera arnottiana (Wight) R.H.Archer, Molec. Phylogen. Evol. 59(2): 328 (2011); *Hippocratea arnottiana* Wight, Hook. f., Fl. Brit. India 1: 624 (1875); Gamble, Fl. Pres. Madras 213 (1918); *Loeseneriella arnottiana* (Wight) A.C. Smith, Vajr., Fl. Palghat Dist. 118 (1990).

Habit: Climber
Habitat: Dry and Moist Deciduous forests
Morphology: Climber; stem terete, glabrous; leaves coriaceous; inflorescence an axillary or terminal panicled cyme; calyx 5-lobed; petals 5, glabrous; stamens 3; ovary within the disc, 3-loculed; fruit oblong.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-March
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1676* (GVCH).

OXALIDALES

CONNARACEAE

Calyx accrescent in fruit…...……..***Rourea***
Calyx not accrescent in fruit.....***Connarus***

Connarus L., Sp. Pl. 2: 675 (1753)

Valves of the follicle glabrous within...……...…….....***C. monocarpos***
Valves of the follicle velvety within….…….....***C. sclerocarpus***

Connarus monocarpos L., Sp. Pl. 2: 675 (1753); Hook. f., Fl. Brit. India 2: 50 (1876); Gamble, Fl. Pres. Madras 272 (1918); Vajr., Fl. Palghat Dist. 141 (1990).

Habit: Climber
Habitat: Semi-evergreen and moist deciduous forests, also in sacred groves in the plains
Morphology: Straggling shrub; leaves imparipinnate, glabrous; leaflets 3 or 5; inflorescence a terminal, panicled cyme, densely hairy; sepals keeled, pubescent; petals glandular-punctate; stamens 10, all fertile; ovary globose, pubescent, 1-locular; fruit a follicle.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-June
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1322* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3813* (GVCH); Plate 26: Fig. b.

Connarus sclerocarpus G. Schellenb., Candollea ii. 98 (1925); Gamble, Fl. Pres. Madras 273 (1918); Vajr., Fl. Palghat Dist. 141 (1990).

Habit: Climber
Habitat: Evergreen forests
Morphology: Scandent shrub; leaves imparipinnate; lateral nerves 3-4 pairs; inflorescence a terminal, tomentose panicle; sepals 5, connate at base, rusty-tomentose; petals hairy; stamens 10, all fertile; ovary globose, 1-loculed; stigma capitate.

Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: September-April
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4279* (GVCH).

Rourea Aubl., Hist. Pl. Guiane 1: 467, t. 187 (1775)

Rourea minor (Gaertn.) Alston, in Trimen, Hand-Book Fl. Ceylon vi. Suppl., 67 (1931); Vajr., Fl. Palghat Dist. 141 (1990); *Rourea santaloides* (Vahl) Wight & Arn., Hook. f., Fl. Brit. India 2: 47 (1876); Gamble, Fl. Pres. Madras 271 (1918).

Habit: Climber
Habitat: Semi-evergreen forests, also in sacred groves
Morphology: Climber; branchlets glabrous; leaves imparipinnate; leaflets 3-7; lateral nerves 4-9 pairs; inflorescence an axillary panicled cyme; sepals 5, minutely glandular hairy; petals 5; stamens 10; ovary ovoid; fruit a follicle.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-August
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2222* (GVCH).

OXALIDACEAE

1.Trees; fruit indehiscent…….***Averrhoa***
1.Herbs; fruit dehiscent…..…...……(2)
2.Leaves 3-foliolate; capsule valves cohering with the axis……..…..…...***Oxalis***
2.Leaves pinnate; capsule valves detaching with the axis…….…....***Biophytum***

Averrhoa L., Sp. Pl. 1: 428 (1753)

Averrhoa bilimbi L., Sp. Pl. 1: 428 (1753); Hook. f., Fl. Brit. India 1: 439 (1874); Vajr., Fl. Palghat Dist. 99 (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves terminally tufted; leaflets 4-20 pairs; lateral nerves 6-14 pairs; inflorescence cauliflorous; sepals puberulous; stamens all fertile; ovary ellipsoid, hairy; fruit cylindric.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 May 2021, *Jabeena & Maya 5056* (GVCH).

Biophytum DC., Prodr. [A. P. de Candolle] 1: 689 (1824)

1.Plant woody at base……..……..(2)
1.Plant not woody at base…...…..……..(3)
2.Leaflets 15-25 pairs…...***B. intermedium***
2.Leaflets 5-7 pairs……...***B. umbraculum***
3.Sepals as long as petals.....***B. sensitivum***
3.Sepals half as long as petals……....***B. reinwardtii***

Biophytum intermedium Wight, Ill. Ind. Bot. i. 162; Hook. f., Fl. Brit. India 1: 438 (1874); Gamble, Fl. Pres. Madras 133 (1918).

Habit: Herb
Habitat: Evergreen and Shola forests
Morphology: Herb; hairs on the nodes reflexed; leaflets 15-25 pairs, glabrous; flowers 4-8 in an umbel; sepals sparsely strigose; persistent calyx as long as the fruit; seeds tubercled.

Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Rare
Altitude: 1100-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2533* (GVCH).

Biophytum reinwardtii (Zucc.) Klotzsch, Naturw. Reise Mossambique [Peters] 6(Bot., 1): 85 (1861); *Biophytum reinwardtii* (Zucc.) Klotzsch. var. *reinwardtii* Hook. f., Fl. Brit. India 1: 437 (1874); Gamble, Fl. Pres. Madras 133 (1915); Vajr., Fl. Palghat Dist. 98. (1990).

Habit: Herb
Habitat: Moist deciduous forests and plantations
Morphology: Herb; leaflets 6-14 pairs; flowers upto 8 in an umbel; sepals sparsely strigose, 7-nerved; petals emarginate at apex; staminal filaments ciliate; capsule puberulous at apex; seeds ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 300-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 504* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2981* (GVCH); Plate 26: Fig. c.

Biophytum sensitivum (L.) DC., Prodr. [A. P. de Candolle] 1: 690 (1824); *Biophytum sensitivum* (L.) DC., var. *sensitivum* Hook. f., Fl. Brit. India 1: 436 (1874); Gamble, Fl. Pres. Madras 133 (1915).

Habit: Herb
Habitat: Moist Shady places
Morphology: Herb; leaflets 7-15 pairs; flowers 7-10 in an umbel; sepals 5, glandular hairy, 5-nerved; petals 5; stamens 10; style bifid; capsule glandular-pubescent; seeds concentrically 9-ridged.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2221* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4198* (GVCH).

Biophytum umbraculum Welw., Apont. 590 (1859); *Biophytum apodiscias* (Turcz.) Edgew. & Hook. f., Fl. Brit. India 1: 437 (1874); Gamble, Fl. Pres. Madras 133 (1928).

Habit: Herb
Habitat: Shady places, wasteland and riverbanks in crevices of rocks
Morphology: Herb; leaflets sparsely hairy; sepals glandular-hairy, 7-nerved; staminal filaments hairy; seeds transversely tubercled.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2199* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2787* (GVCH); Plate 26: Fig. d.

Oxalis L., Sp. Pl. 1: 433 (1753)

1.Plant an erect herb….....***O. corymbosa***
1.Plant a diffuse herb……..……...(2)
2.Leaflets angled…...……***O. latifolia***
2.Leaflets rounded…...…....***O. corniculata***

Oxalis corniculata L., Sp. Pl. 1: 435 (1753); Hook. f., Fl. Brit. India 1: 436 (1874); Gamble, Fl. Pres. Madras 132 (1915); Vajr., Fl. Palghat Dist. 98 (1990).

Habit: Herb
Habitat: Degraded forests
Morphology: Herb; leaves 3-foliolate; leaflets sessile; inflorescence solitary or umbelled; sepals 5, sparsely puberulous; petals 5, puberulous, 6-nerved; stamens 10; ovary 5-loculed; fruit a linear capsule.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American
IUCN category: Not Evaluated
Phenology: March-December
Distribution: Common
Altitude: 800-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019 *Jabeena & Maya 2812* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2984* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4081* (GVCH).

Oxalis debilis Kunth, Nov. Gen. Sp. [H.B.K.] v. 236. t. 466.

Habit: Herb
Habitat: Weed in high ranges
Morphology: Herb; rhizome bulbous; leaves basal; leaflets bilobed; inflorescences a pseudo-umbel; sepals puberulous, 3-5 nerved; staminal filaments connate; ovary hairy.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific and South American
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Occasional
Altitude: 900-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 921* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4307* (GVCH); Plate 26: Fig. e.

Oxalis latifolia Kunth, Nov. Gen. Sp. [H.B.K.] v. 237. t. 467.

Habit: Herb
Habitat: Degraded forest areas and roadsides
Morphology: Herb; rhizome bulbous; leaves erect; inflorescence an umbel; flowers pedicellate; stamens 10; ovary hairy.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: South American

IUCN category: Not Evaluated

Phenology: May-July

Distribution: Common

Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1475* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1774* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2194* (GVCH); Plate 26: Fig. f.

ELAEOCARPACEAE

1.Anthers not awned……..…….(2)
1.Anthers awned with arista……..……(3)
2.Leaves glandular; sepals pubescent…….***E. variabilis***
2.Leaves eglandular; sepals glabrous…….***E. serratus***
3.Leaves tomentose beneath……...***E .tuberculatus***
3.Leaves glabrous on both sides……..…(4)
4.Leaf base attenuate; lateral nerves 6-8 pairs; ovary glabrous; fruit ovoid……..….***E. monocera***
4.Leaf base round or obtuse; lateral nerves upto 6 pairs; ovary densely silky hairy; fruit oblong….....***E. munroii***

Elaeocarpus L., Sp. Pl. 1: 515 (1753)

Elaeocarpus monocera Cav., Icon. [Cavanilles] vi. 1. t. 501; Gamble, Fl. Pres. Madras 124 (1915).

Habit: Tree
Habitat: Evergreen forests
Morphology: Trees, branches glabrous; leaves simple, alternate, glabrous; lateral nerves 6-8 pairs; inflorescence an axillary raceme; sepals 5, pubescent; petals 5, tomentose; stamens numerous; anthers awned; ovary 2-loculed, glabrous; ovules 2 in each cell; fruit a drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Rare
Altitude: 1300-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1135* (GVCH).

Elaeocarpus munroii Mast., Fl. Brit. India [J. D. Hooker] 1(2): 407 (1874); Gamble, Fl. Pres. Madras 124 (1915); Vajr., Fl. Palghat Dist. 96 (1990).

Habit: Tree
Habitat: Evergreen and Shola forests
Morphology: Tree; leaves simple, alternate, glabrous; lateral nerves 3-6 pairs; inflorescence an axillary raceme; sepals 5, tomentose; petals 5, silky; stamens numerous; ovary 2-loculed, hairy; fruit a drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: September-April
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1335* (GVCH).

Elaeocarpus serratus L., Sp. Pl. 1: 515 (1753); *Elaeocarpus serratus* L., var. *serratus* Hook. f., Fl. Brit. India 1: 401 (1874); Gamble, Fl. Pres. Madras 124 (1915); Vajr., Fl. Palghat Dist. 96 (1990).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Tree; leaves alternate; lateral nerves 3-8 pairs; inflorescence an axillary raceme; sepals 5, pubescent; petals 5; stamens many; ovary 3-loculed, tomentose; fruit a drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-September
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 208* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 1986* (GVCH); Plate 26: Fig. g.

Elaeocarpus tuberculatus Roxb., Hort. Bengal. [93]; Fl. Ind. ii. 594 (1832); Hook. f., Fl. Brit. India 1:404 (1874); Gamble, Fl. Pres. Madras 124 (1915); Vajr., Fl. Palghat Dist. 97 (1990).

Habit: Tree
Habitat: Along banks of streams in Evergreen and Shola forests
Morphology: Tree; leaves simple, alternate; lateral nerves 8-12 pairs; inflorescence an axillary raceme; sepals 5, hairy; petals 5, hairy; stamens numerous; ovary 2-loculed, tomentose; fruit a drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-August
Distribution: Occasional
Altitude: 800-1400m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1109* (GVCH); Kollengode range, Pothumala, 20 October 2019, *Jabeena & Maya 2560* (GVCH).

Elaeocarpus variabilis Zmarzty, Kew Bull. 56(2): 429 (2001); *Elaeocarpus oblongus* sensu Mast. Hook. f., Fl. Brit. India 1: 403 (1874); Gamble, Fl. Pres. Madras 124 (1915).

Habit: Tree
Habitat: Moist Deciduous and Evergreen forests
Morphology: Tree; leaves alternate; lateral nerves 4-8 pairs; inflorescence an axillary or terminal raceme; sepals 5, puberulous; petals 5, glandular; stamens many; ovary 3-loculed, hairy; fruit a drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: May-October
Distribution: Common
Altitude: 800-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 061* (GVCH); Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2668* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4219* (GVCH); Plate 26: Fig. h.

MALPIGHIALES

CLUSIACEAE

Garcinia L., Sp. Pl. 1: 443 (1753)

Flower tetramerous; fruit globose or sub-globose…..……..……..***G. morella***
Flower pentamerous; fruit broadly oblong…….……..……..***G. talbotii***

Garcinia morella (Gaertn.) Desr., Encycl. [J. Lamarck & al.] 3: 701, t. 405, fig. 2 (1792); Hook. f., Fl. Brit. India 1: 204 (1874); Gamble, Fl. Pres. Madras 74 (1915); Vajr., Fl. Palghat Dist. 71 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves opposite, coriaceous; lateral nerves 8-16 pairs; inflorescence an axillary fascicle; flowers polygamous, sessile: sepals 4; petals 4; stamens 10-12, monadelphous; ovary 4-loculed; ovule solitary in each cell; stigma peltate; fruit a berry.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: February-August
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2066* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4244* (GVCH); Plate 27: Fig. a

Garcinia talbotii Raizada, Indian Forester 84: 485 (1958); *Garcinia ovalifolius* (Roxb.) Hook. f. var. *macrantha* Anders., Hook. f., Fl. Brit. India 1: 269 (1874); *Garcinia malabarica* Talbot, Gamble, Fl. Pres. Madras 74 (1915).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite, coriaceous; lateral nerves 16-18 pairs; inflorescences an axillary fascicle; sepals 5; petals 5; stamens in 5 bundles; ovary 3-4-loculed; stigmatic lobes 3; fruit a berry.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Least Concern
Phenology: November-May
Distribution: Rare
Altitude: 1000-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4494* (GVCH).

CALOPHYLLACEAE

Flowers in racemes or panicles; leaves not glaucous; fruit not woody…….***Calophyllum***
Flowers solitary or in pairs or cymes; leaves glaucous; fruit woody……***Mesua***

Calophyllum L., Sp. Pl. 1: 513 (1753)

Calophyllum polyanthum Wall., Numer. List [Wallich] n. 4844 (1831); *Calophyllum elatum* Bedd., Gamble, Fl. Pres. Madras 76 (1915); *Calophyllum tomentosum* sensu Hook. f., Fl. Brit. India 1: 274. 1874.

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite, glabrous; lateral nerves many; inflorescence a panicle or raceme; sepals 4; petals 4; stamens numerous; ovary 1-loculed; ovule solitary, erect; stigma peltate; drupe obliquely ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2546* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3812* (GVCH).

Mesua L., Sp. Pl. 1: 515 (1753)

1.Leaves oblong, over 15 cm long….……..….***M. thwaitesii***
1.Leaves elliptic, less than 10 cm long…….(2)
2.Ovary globose; seed one…….***M. ferrea***
2.Ovary ovoid; seeds 1-4……
……...***M. ferrea var. coromandelina***

Mesua ferrea L., Sp. Pl. 1: 515 (1753); *Mesua ferrea* L., var. *ferrea* Hook. f., Fl. Brit. India 1: 277 (1874); Gamble, Fl. Pres. Madras 77 (1915); *Mesua nagassarium* (Burm. f.) Kosterm., Vajr., Fl. Palghat Dist. 72 (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite, coriaceous; lateral nerves many; flowers axillary, solitary or in pairs; sepals 4, persistent; petals 4-5, margins curled; stamens numerous; ovary 2-loculed; ovules 2 in each locule; stigma peltate.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-July
Distribution: Common
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 125* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 895* (GVCH); Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4581* (GVCH); Plate 27: Fig. b.

Mesua ferrea* var. *coromandeliana (Wight) N. P. Singh, J. Econ. Taxon. Bot. 10(1): 203 (1988).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite, glabrous; lateral veins many; flowers axillary, solitary; sepals 4, glabrous; petals 4; stamens numerous; ovary superior, 2-loculed; stigma peltate; capsule ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated
Phenology: December-February
Distribution: Rare
Altitude: 700-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 806* (GVCH).

Mesua thwaitesii Planch. & Triana, Ann. Sci. Nat., Bot. sér. 4, 15: 305 (1861); Hook. f., Fl. Brit. India 1: 278 (1874).

Habit: Tree
Habitat: Evergreen forests and Sacred grooves
Morphology: Tree; leaves simple, opposite; lateral nerves many; inflorescence a terminal cyme; flowers sessile; sepals 4, outer pair smaller than inner petals; petals 4, orbicular; stamens numerous, polyadelphous; ovary superior, 2-loculed; capsule woody.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-December
Distribution: Rare
Altitude: 1000-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3977* (GVCH).

PODOSTEMACEAE

1.Stamens free…..……..***Indotristicha***
1.Stamens monadelphous...……(2)
2.Ovary not oblique…...……***Polypleurum***
2.Ovary oblique……..……...(3)
3.Fruit smooth; spathe erect…..***Griffithella***
3.Fruit ribbed; spathe prostrate……..***Zeylanidium***

Griffithella (Tul.) Warm., Kongel. Danske Vidensk.-Selsk. Skr. ser. 6, 11: 13 (-14, 65) (1901)

Griffithella hookeriana (Tul.) Warm., Kongel. Danske Vidensk.-Selsk. Skr. ser. 6, 11: 13 (-14, 65) (1901); Gamble, Fl. Pres. Madras 1197 (1925); *Podostemum hookerianus* (Tul.) Wedd., Hook. f., Fl. Brit. India 5: 65 (1866).

Habit: Herb
Habitat: On submerged rocks in streams
Morphology: Herb; thallus thread-like; leaves sheathing; flowers bisexual, naked, emerging from a spathe; stamens 2, monadelphous; staminodes 2, linear; ovary superior, oblique, 2-loculed; ovules many; capsule globose, splitting into 2 unequal lobes.
Raunkiaer's life-form: Hydrophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Least Concern
Phenology: November-February
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1099* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1642* (GVCH); Plate 27: Fig. c.

Indotristicha P.Royen, Acta Bot. Neerl. viii. 474 (1959)

Indotristicha ramosissima (Wight) P.Royen, Acta Bot. Neerl. viii. 475 (1959); *Tristicha ramosissima* (Wight) Willis, Gamble, Fl. Pres. Madras 1194 (1925).

Habit: Herb
Habitat: Streams
Morphology: Herb; stem free-floating, branched, attached to rock by base, with long ramuli and scale leaves; flowers axillary; perianth 3, free, ovate; stamens 3; ovary ellipsoid, stigma 3-lobed.
Raunkiaer's life-form: Hydrophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Least Concern
Phenology: January-March
Distribution: Rare
Altitude: 1200-1400m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1055* (GVCH).

Polypleurum (Tul.) Warm., Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Math. Afd. ser. 6, 11(1): 64 (1901)

Polypleurum wallichii (R.Br. ex Griff.) Warm., Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Math. Afd. Ser. 6, 11(1): 57 (1901); *Podostemum wallichii* R.Br. ex Griff., Hook. f., Fl. Brit. India 5:67 (1886); *Podostemum minor* (Wedd.) Benth. Hook. f., Fl. Brit. India 5: 67 (1886).

Habit: Herb
Habitat: On rocks in streams
Morphology: Herb; thallus irregularly branched; flowers pedicellate; bracts 2 pairs, keeled; spathe irregularly splitting at apex; stamens 2, monadelphous; staminodes linear; ovary ellipsoid; stigma 2, unequal; capsule 6-8-ribbed.
Raunkiaer's life-form: Hydrophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: November-March
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1660* (GVCH).

Zeylanidium Engl., Nat. Pflanzenfam., ed. 2 [Engler & Prantl] 18a: 61 (1930)

Zeylanidium subulatum (Gardner) C.Cusset, Bull. Mus. Natl. Hist. Nat., B, Adansonia Sér. 4, 14(1): 32 (1992); *Podostemum subulatum* Gard., Hook. f., Fl. Brit. India 5: 65 (1886); Gamble, Fl. Pres. Madras 1196 (1925).

Habit: Herb
Habitat: Along streams
Morphology: Herb; thallus creeping, branched; leaves 5-6, alternate; spathella 4-5-lobed; tepals shorter than ovary; stamen solitary; ovary 6-ribbed, stigma lobes equal; capsule ovoid.
Raunkiaer's life-form: Hydrophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: January-March
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3544* (GVCH).

HYPERICACEAE

Hypericum L., Sp. Pl. 2: 783 (1753)

Hypericum mysurense B.Heyne ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 99 (1834); Hook. f., Fl. Brit. India 1: 253 (1874); Gamble, Fl. Pres. Madras 70 (1915); Vajr., Fl. Palghat Dist. 68 (1990).

Habit: Shrub
Habitat: Grasslands and along the margins of Shola forests
Morphology: Shrub; leaves opposite, sessile; lateral nerves 2-3 pairs; inflorescence a terminal cyme; sepals 5; petals 5, glabrous; stamens many in 5 bundles; ovary 5-loculed; capsule septicidal.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2404* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3233* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3978* (GVCH); Plate 27: Fig. d.

PUTRANJIVACEAE

Drypetes Vahl, Eclog. Amer. 3: 49 (1807)

1.Ovary 2-loculed…….....***D. oblongifolia***
1.Ovary 1-loculed…….....(2)
2.Branches and petioles glabrous……..***D. venusta***
2.Branches and petioles tomentose……....***D. wightii***

Drypetes oblongifolia (Bedd.) Airy Shaw, Kew Bull. 23(1): 57 (1969); Vajr., Fl. Palghat Dist. 427 (1990); *Cyclostemon macrophyllus* sensu Gamble, Fl. Pres. Madras 1302 (1925); *Cyclostemon macrophyllus* Blume var. *peninsularis* Hook. f., Fl. Brit. India 5: 341 (1887).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate; lateral nerves 5-11 pairs; flowers unisexual, cauliflorus or axillary; perianth lobes 4-5; stamens many; ovary globose, 2-loculed, pubescent; fruit a drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1629* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3965* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4258* (GVCH); Plate 27: Fig. e.

Drypetes venusta Pax & K.Hoffm., Pflanzenr. (Engler) Euphorb. -Phyllanthoid. -Phyllanth. 268 (1922); *Hemicyclia venusta* (Wight) Thw., Hook. f., Fl. Brit. India 5: 339 (1887); Gamble, Fl. Pres. Madras 1300 (1925); *Drypetes elata* (Bedd.) Pax. & Hoffm., Vajr., Fl. Palghat Dist. 427 (1990); *Hemicyclia elata* Bedd., Hook. f., Fl. Brit. India 5: 339 (1887); Gamble, Fl. Pres. Madras 1300 (1925).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves alternate, glabrous; lateral nerves 10-15 pairs; inflorescence an axillary cluster; flowers unisexual; perianth 4-lobed; stamens 6-10; ovary ovoid, 1-loculed; fruit a drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: November-July
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4566* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1118* (GVCH).

Drypetes wightii Pax & K.Hoffm., Pflanzenr. (Engler) Euphorb.-Phyllanthoid.-Phyllanth. 273 (1922).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate; lateral nerves 6-9 pairs; flowers unisexual; perianth lobes 4-5, pubescent; stamens 6-10; ovary 1-loculed; fruit a capsule.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Vulnerable
Phenology: October-March
Distribution: Rare
Altitude: 1100-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2083* (GVCH).

CENTROPLACACEAE

Bhesa Buch.-Ham. ex Arn., in Edinb. Phil. Journ. xvi. (1834) 315

Bhesa indica (Bedd.) Ding Hou, Blumea, Suppl. 4: 152 (1958); *Kurrimia bipartita* Lawson, Hook.f., Fl. Brit. India 1: 622 (1875); *Kurrimia indica* (Bedd.) Gamble, Fl. Pres. Madras 209 (1918); *Kurrimia paniculata* sensu Lawson, Hook. f., Fl. Brit. India 1: 622 (1875).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate; lateral nerves 15-20 pairs; inflorescence a terminal panicle; calyx 5-lobed; petals 5, deflexed; stamens 5; ovary ovoid, 2-loculed; capsule 2-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Rare
Altitude: 1000-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3954* (GVCH); Plate 27: Fig. f.

MALPIGHIACEAE

Hiptage Gaertn., Fruct. Sem. Pl. ii. 69. t. 116 (1791)

Hiptage benghalensis (L.) Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 43(2): 136 (1874); Vajr., Fl. Palghat Dist. 97 (1990); *Hiptage madablota* Gaertn., Gamble, Fl. Pres. Madras 128 (1915).

Habit: Climber
Habitat: Along river banks in semi-evergreen and evergreen forests, also in sacred groves
Morphology: Climber; leaves opposite; inflorescence an axillary or terminal raceme; sepals 5, one larger with a large gland at the base; petals 5; stamens 10, unequal; ovary 3-loculed; fruit a 3-winged samara.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: January-November
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2070* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4060* (GVCH); Plate 27: Fig. g.

ACHARIACEAE

Hydnocarpus Gaertn., Fruct. Sem. Pl. i. 288. t. 60 (1788)

Berry glabrous; leaf margin not entire……..***H. pentandra***
Berry tomentose; leaf margin entire……..***H. alpinus***

Hydnocarpus alpinus Wight, Icon. Pl. Ind. Orient. [Wight] t. 942; Hook. f., Fl. Brit. India 1: 197 (1872); Gamble, Fl. Pres. Madras 52 (1915); Vajr., Fl. Palghat Dist. 61 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves alternate, glabrous; lateral nerves 7-10 pairs; flowers solitary or in fascicles; flowers unisexual; sepals 5, pubescent; petals 5, ciliate; stamens 5-15; ovary 1-loculed, hairy; berry hairy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Vulnerable
Phenology: February-July
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1254* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3966* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2273* (GVCH); Plate 27: Fig. h.

Hydnocarpus pentandrus (Buch.-Ham.) Oken, Allg. Naturgesch. 3(2): 1381 (1841); Vajr., Fl. Palghat Dist. 61 (1990); *Hydnocarpus wightiana* Blume, Hook. f., Fl. Brit. India 1: 196 (1872); Gamble, Fl. Pres. Madras 52 (1915).

Habit: Tree
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Tree; leaves alternate; lateral nerves 6-8 pairs; flowers solitary or in fascicles; flowers unisexual; sepals 5; petals 5, hairy; stamens 5-15; ovary globose, 1-loculed, hairy; fruit a berry.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Vulnerable
Phenology: December-May
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1793* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2053* (GVCH).

PASSIFLORACEAE

Plant erect……..…….....***Turnera***
Plant climbing…….……....***Passiflora***

Passiflora L., Sp. Pl. [Linnaeus] 2: 955 (1753)

Leaves upto 7 cm long; flowers small, white……..……..***P. foetida***

Leaves upto 15 cm long; flowers large, showy, red……..***P. vitifolia***

Passiflora foetida L., Sp. Pl. 2: 959 (1753); *Passiflora foetida* L., var. *foetida* Gamble, Fl. Pres. Madras 524 (1919); Vajr., Fl. Palghat Dist. 210 (1990).

Habit: Climber
Habitat: Degraded forests and wastelands
Morphology: Climber; leaves 3-5-lobed; flowers axillary, solitary; calyx 5-lobed, spurred; petals 5; stamens 5; ovary 1-loculed; ovules many; fruit an indehiscent berry.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 300-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1284* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2778* (GVCH); Plate 28: Fig. a.

Passiflora vitifolia Kunth, Nov. Gen. Sp. [H.B.K.] 2(ed. qu.): 138 (-139) (1817).

Habit: Climber
Habitat: Grown as garden plant
Morphology: Climber; leaves trilobed, serrate; calyx 5-lobed; petals 5; stamens 5; ovary 1-loculed; ovules many; fruit a berry.

Raunkiaer's life-form: Liana

Phytogeographical affinity: South American

IUCN category: Not Evaluated

Phenology: August-May

Distribution: Rare

Altitude: 900-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 541* (GVCH).

Turnera L., Sp. Pl. 1: 271 (1753).

Turnera ulmifolia L., Sp. Pl. 1: 271 (1753).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves alternate; flowers axillary, solitary; sepals 5, connate; petals 5; ovary 1-loculed; capsule 3-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: May-December
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 10 June 2017, *Jabeena & Maya 010* (GVCH); Plate 28: Fig. b.

SALICACEAE

1.Petals present…….……***Scolopia***
1.Petals absent……...…….……(2)
2.Flowers bisexual…...……***Casearia***
2.Flowers unisexual…..…….***Flacourtia***

Casearia Jacq., Enum. Syst. Pl. 4, 21 (1760)

Casearia graveolens Dalz., Hooker's J. Bot. Kew Gard. Misc. 4: 107 (1852); Hook. f., Fl. Brit. India 2: 592 (1879); Gamble, Fl. Pres. Madras 520 (1919).

Habit: Tree
Habitat: Deciduous forests
Morphology: Shrub; leaves distichous, glabrous; lateral nerves 7-9 pairs; inflorescence an axillary fascicle; calyx 5-lobed; petals absent; stamens 6-8; ovary 1-loculed; capsule 3-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Rare
Altitude: 400-600m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4991* (GVCH).

Flacourtia Comm. ex L'Hér., Stirp. Nov. 59 (1786)

1.Shoot apex not thorny……..***F. montana***

1.Shoot apex thorny……....(2)

2.Leaves upto 4 cm long; ovary 3-locular; stigma bilobed……..***F. indica***

2.Leaves 4-9 cm long; ovary incompletely 4-6 loculed; stigma 4-6……...***F. jangomas***

Flacourtia indica (Burm.f.) Merr., Interpr. Herb. Amboin. 377 (1917); Vajr., Fl. Palghat Dist. 60 (1990); *Flacourtia sepiaria* Roxb., Hook. f., Fl. Brit. India 1: 194 (1872); Gamble, Fl. Pres. Madras 54 (1915).

Habit: Shrub
Habitat: Deciduous forests
Morphology: Shrub; branches armed; leaves alternate; inflorescence an axillary raceme; sepals 4-5; petals absent; stamens numerous; ovary 3-loculed, globose; berry sub-globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Least Concern

Phenology: November-March

Distribution: Occasional

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1929* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3877* (GVCH).

Flacourtia jangomas (Lour.) Raeusch., Nomencl. Bot. [Raeusch.] ed. 3, 290 (1797); *Flacourtia cataphracta* Roxb. ex Willd., Hook. f., Fl. Brit. India 1: 193 (1872); Gamble, Fl. Pres. Madras 54 (1919).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves alternate, glabrous; lateral nerves 4-5 pairs; inflorescence an axillary raceme, glabrous; stamens many, free; ovary incompletely 4-6-loculed; berry sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: November-April
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1940* (GVCH); Plate 28: Fig. c.

Flacourtia montana J. Graham, Cat. Bomb. Pl. 10.

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; branches armed; leaves simple, spiral, 3-5-ribbed at base; lateral veins 4-6 pairs; plant dioecious; inflorescence an axillary cyme; sepals 4-5, hairy; petals absent; stamens many; ovary 2-5-loculed, glabrous; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: April-June
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 1989* (GVCH).

Scolopia Schreb., Gen. Pl., ed. 8[a]. 335 (1789)

Scolopia crenata Clos, Ann. Sci. Nat., Bot. sér. 4, 8: 250 (1857); Hook. f., Fl. Brit. India 1: 191 (1872); Gamble, Fl. Pres. Madras 52 (1915); Vajr., Fl. Palghat Dist. 62 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves alternate, 3-5-ribbed at base; plant monoecious; inflorescence an axillary raceme; sepals 4-6, ciliate; petals 4-6, glabrous; stamens many, free; ovary 1-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-April
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1536* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1872* (GVCH); Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2099* (GVCH); Plate 28: Fig. d.

EUPHORBIACEAE

1.Climbing herb……..……..(2)
1.Herb, shrub, tree or liana…...…….(3)
2.Plants with stinging hairs…...…...***Tragia***
2.Plants without stinging hairs……...***Dalechampia***
3.Leaves trifoliate...……..***Hevea***
3.Leaves simple…...……..…(4)
4.Inflorescence a cyathium; stamen 1…….……....***Euphorbia***
4.Inflorescence not a cyathium; stamens more than 1…….……(5)
5.Leaves opposite…...…….....***Excoecaria***
5.Leaves alternate…...……...…….(6)
6.Leaves distichous…..……...***Cleistanthus***
6.Leaves not distichous...……...……(7)

7.Plants with milky latex……...***Falconeria***
7.Plants without milky latex……..……(8)
8.Male flowers with uniseriate perianth……...(9)
8.Male flowers with biseriate perianth……(13)
9.Leaves with glands at the base of lamina…….……***Croton***
9.Leaves without glands at the base of lamina….……..……(10)
10.Leaves 3-5 lobed……..……...***Manihot***
10.Leaves not lobed……...……..….(11)
11.Sepals accrescent in fruit……...***Dimorphocalyx***
11.Sepals not accrescent in fruit…...…(12)
12.Leaves sessile or sub-sessile.....***Agrostistachys***
12.Leaves long petioled (upto 7 cm long)…….……..……..***Paracroton***
13.Plant monoecious…...…...……..(14)
13.Plant dioecious…...……..……(17)
14.Stamens 5……..……...***Microstachys***
14.Stamens 8 or more……..(15)
15.Tree…...……..…..***Epiprinus***
15.Herbs or subshrubs…...……..…(16)
16.Disc present……...…....***Baliospermum***
16.Disc absent……...……...***Acalypha***
17.Fruit echinate or glandular hairy….(18)
17.Fruit without glandular hairs nor echinate…….……...……(21)
18.Shrub...……..…….***Ricinus***
18.Tree……...……...……(19)
19.Ovary one loculed…...….***Macaranga***
19.Ovary three loculed……..……..(20)
20.Perianth uniseriate...…..……..***Mallotus***
20.Perianth biseriate…...……..…...***Givotia***
21.Tree……...……...……***Cleidion***
21.Shrub…...……...……..(22)
22.Calyx in male flowers valvate……***Homonoia***
22.Calyx in male flowers imbricate……...***Jatropha***

Acalypha L., Sp. Pl. 2: 1003 (1753)

1.Female flowers pedicelled……..***A.wilkesiana***
1.Female flowers sessile…….(2)
2.Petiole shorter than lamina…….***A.paniculata***
2.Petiole longer than lamina…….…..(3)
3.Bracts 3-5 lobed…..…..***A.brachystachya***
3.Bracts entire……..…..***A.malabarica***

Acalypha brachystachya Hornem., Cat. Hort. Hafn. 1; Willd. Enum. Hort. Berol. 992 (1809).

Habit: Herb
Habitat: Margins of Shola forests
Morphology: Herb; leaves alternate, 3-5-ribbed at base; inflorescence an axillary raceme; calyx 3-5-lobed, ciliate; petals absent; stamens 8; capsule 3-valved, hispid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Victoria, 12 October 2020, *Jabeena & Maya 4181* (GVCH); Plate 28: Fig. e.

Acalypha malabarica Müll.Arg., Linnaea 34(1): 42 (1865); Hook. f., Fl. Brit. India 5: 416 (1887); Gamble, Fl. Pres. Madras 1330 (1925).

Habit: Herb
Habitat: Wastelands and roadsides
Morphology: Herb; leaves alternate, 3-ribbed at base; inflorescence an axillary spike; calyx 4-lobed; petals absent; stamens many; ovary 3-loculed; capsule 3-valved.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1272* (GVCH);

Pullukaadu, 30 November 2019, *Jabeena & Maya 2936* (GVCH).

Acalypha paniculata Miq., Fl. Ned. Ind. i. II. 406. (1859); Hook. f., Fl. Brit. India 5: 415 (1887); Gamble, Fl. Pres. Madras 1330 (1925); *Acalypha racemosa* Wall. ex Baill., Vajr., Fl. Palghat Dist. 418 (1990).

Habit: Herb
Habitat: Semi-evergreen and Dry deciduous forests
Morphology: Herb; leaves alternate, 3-5-ribbed at base; plant monoecious; inflorescence an axillary spike; perianth 4-lobed; stamens 8; ovary 3-loculed; ovules solitary in each cell; capsule 3-valved.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 034* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2766* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3870* (GVCH); Plate 28: Fig. f.

Acalypha wilkesiana Müll.Arg., Prodr. [A. P. de Candolle] 15(2.2): 817 (1866); Gamble, Fl. Pres. Madras 1331 (1925).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves alternate, 5-ribbed at base; inflorescence an axillary spike; perianth lobes 4; stamens 8-16; ovary 3-loculed; ovules solitary in each cell.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Australian
IUCN category: Not Evaluated
Phenology: October-May
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pulayampara, 19 August 2017, *Jabeena & Maya 347* (GVCH).

Agrostistachys Dalz., Hooker's J. Bot. Kew Gard. Misc. 2: 41 (1850)

Leaf margin entire; stamen 10……..***A. borneensis***
Leaf margin serrate; stamen 12……..***A. indica***

Agrostistachys borneensis Becc., Nelle Foreste di Borneo 331 (1902); Vajr., Fl. Palghat Dist. 419 (1990); Agrostistachys longifolia (Wight) Trimen, Hook. f., Fl. Brit. India 5: 407 (1887).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 10-18 pairs; inflorescence a spiciform raceme; flowers unisexual; perianth lobes 8-10; stamens 10; ovary 3-loculed, pubescent; ovules solitary in each cell; capsule 3-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: December-March
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2012* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4554* (GVCH).

Agrostistachys indica Dalz., Hooker's J. Bot. Kew Gard. Misc. 2: 41 (1850); Hook. f., Fl. Brit. India 5: 406 (1887); Gamble, Fl. Pres. Madras 1317 (1925); Vajr., Fl. Palghat Dist. 419 (1990).

Habit: Shrub
Habitat: Evergreen and Shola forests

Morphology: Shrub; leaves alternate; lateral nerves 10-13 pairs; inflorescence an axillary raceme; calyx globose, 5-lobed; petals 5; stamens 12; ovary 3-loculed; ovule solitary in each cell; capsule 3-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Least Concern
Phenology: February-March
Distribution: Rare
Altitude: 1000-1300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 15 May 2018, *Jabeena & Maya 1425* (GVCH).

Baliospermum Blume, Bijdr. Fl. Ned. Ind. 12: 603 (1826)

Baliospermum solanifolium (Burm.) Suresh, Interpr. Van Rheede's Hort. Malab. 106 (1988); *Baliospermum axillare* Blume, Hook. f., Fl. Brit. India 5: 461 (1887); *Baliospermum montanum* (Willd.) Muell.-Arg., Gamble, Fl. Pres. Madras 1342 (1925); Vajr., Fl. Palghat Dist. 422 (1990).

Habit: Shrub
Habitat: Moist Deciduous forests
Morphology: Shrub; leaves alternate, 3-5-ribbed; inflorescence a raceme; perianth 4-lobed, pubescent; stamens numerous; ovary 3-loculed, hairy; ovule solitary in each cell; capsule 3-lobed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: August-March
Distribution: Occasional
Altitude: 100-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3069* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5057* (GVCH).

Cleidion Blume, Bijdr. Fl. Ned. Ind. 12: 612 (1826)

Cleidion javanicum Blume, Bijdr. Fl. Ned. Ind. 12: 613 (1826); Hook. f., Fl. Brit. India 5: 444 (1887); Gamble, Fl. Pres. Madras 1325 (1925); *Cleidion spiciflorum* auct. non (Burm. f.) Merr., Vajr., Fl. Palghat Dist. 424 (1990).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Tree; leaves simple, alternate; inflorescence an axillary raceme; flowers unisexual; calyx 2-5-lobed; petals absent; stamens many; ovary 2-loculed; ovules solitary in each cell; capsule 2-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: November-April
Distribution: Rare
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1014* (GVCH).

Cleistanthus Hook.f. ex Planch., Icon. Pl. 4: t. 779 (1848)

Cleistanthus collinus Benth. & Hook.f., Gen. Pl. [Bentham & Hooker f.] 3(1): 268 (1880); Gamble, Fl. Pres. Madras 1282 (1925); Vajr., Fl. Palghat Dist. 425 (1990).

Habit: Tree
Habitat: Deciduous forests
Morphology: Tree; leaves alternate; inflorescence an axillary cluster; flowers unisexual; calyx 5-6-lobed, hairy; petals 5; stamens 5-6; ovary sub-globose; capsule truncate.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Vulnerable
Phenology: December-November
Distribution: Occasional

Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4158* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4302* (GVCH).

Croton L., Sp. Pl. [Linnaeus] 2: 1004 (1753)

1.Plant herbaceous……..……..……(2)
1.Plant shrubby or trees……..……..….(3)
2.Leaves 3-5 nerved from the base; raceme upto 4 cm long; ovary ovoid; seeds trigonous……..……***C. hirtus***
2.Leaves single nerved from the base; raceme upto 10 cm long; ovary sub-globose; seeds globose...***C. bonplandianus***
3.Leaves not silvery white beneath……...***C. laccifer***
3.Leaves silvery white beneath...…..…..(4)
4.Leaves 3-4 ribbed from base; stamens 10-15; filaments bearded....***C. malabaricus***
4.Leaves single ribbed from base; stamens many; filaments glabrous.....***C. zeylanicus***

Croton bonplandianus Baill., Adansonia 4: 339 (1864); Vajr., Fl. Palghat Dist. 426 (1990); *Croton sparsiflorus* Morong., Gamble, Fl. Pres. Madras 1316 (1925).

Habit: Herb

Habitat: Degraded forest areas and wastelands

Morphology: Herb; leaves alternate; inflorescence a raceme; perianth lobes 10 in male flowers and 5 in female flowers; stamens many; ovary sub-globose, hairy; capsule ovoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: November-May
Distribution: Occasional
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1632* (GVCH); Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5070* (GVCH).

Croton hirtus L'Hér., Stirp. Nov. 17 (1785).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; leaves alternate, 3-5-ribbed at base; inflorescence a raceme; calyx 5-lobed; petals 5; stamens many; ovary ovoid, stellate-hairy; capsule ovoid, stellate-hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 018* (GVCH); Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 035* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2938* (GVCH); Plate 28: Fig. g.

Croton laccifer L., Sp. Pl. 2: 1005 (1753); Gamble, Fl. Pres. Madras 1315 (1925); *Croton aromaticus* sensu Hook. f., Fl. Brit. India 5: 338 (1887); Vajr., Fl. Palghat Dist. 425 (1990).

Habit: Shrub
Habitat: Shola forests and semi-evergreen forests
Morphology: Shrub; leaves alternate, 3-nerved at base; inflorescence a raceme; sepals 5; petals 5; stamens 20; ovary 3-loculed; capsule globose, stellate-hairy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-August
Distribution: Common
Altitude: 900-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 973* (GVCH); Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3199* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4110* (GVCH); Plate 28: Fig. h.

Croton malabaricus Bedd., Fl. Sylv. S. India Forester's Man. Bot.: p. cciv (1873); Hook. f., Fl. Brit. India 5: 386 (1887); Gamble, Fl. Pres. Madras 1314 (1925); Vajr., Fl. Palghat Dist. 426 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 4-6 pairs; inflorescence a terminal raceme; flowers unisexual; calyx 5-lobed; petals 5; stamens 5; ovary 3-loculed, stellate-hairy; ovules solitary in each cell; capsule obovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: April-November
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4056* (GVCH); Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4562* (GVCH).

Croton zeylanicus Müll.Arg., Linnaea 34(1): 107 (1865); Vajr., Fl. Palghat Dist. 426. (1990); *Croton reticulatus* Heyne ex Muell.-Arg., Hook. f., Fl. Brit. India 5: 380 (1887); Gamble, Fl. Pres. Madras 1314 (1925).

Habit: Shrub
Habitat: Evergreen forests margins
Morphology: Shrub; leaves alternate, 3-ribbed at base; lateral nerves 6-10 pairs; inflorescence a raceme; sepals 5; petals 5, pubescent; stamens many; ovary stellate hairy; capsule ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-October
Distribution: Common
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 197* (GVCH); Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 736* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3876* (GVCH).

Dalechampia L., Sp. Pl. 2: 1054 (1753)

Dalechampia velutina Wight, Icon. Pl. Ind. Orient. [Wight] v. t. 1881. (1852); Hook. f., Fl. Brit. India 5: 467 (1888); Gamble, Fl. Pres. Madras 1336 (1925).

Habit: Climber
Habitat: Rocky areas
Morphology: Climber; stem covered with stinging hairs; leaves alternate, trilobed; plant monoecious; inflorescence an axillary peduncled cluster; involucral bracts large, trilobed; perianth lobes 3-4; stamens upto 30; ovary 3-loculed; ovule solitary in each cell; capsule 3-4-valved.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: December-February
Distribution: Rare
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 04 November 2020, *Jabeena & Maya 4364* (GVCH).

Dimorphocalyx Thwaites, Enum. Pl. Zeyl. [Thwaites] 278 (1861)

Dimorphocalyx glabellus* var. *lawianus (Hook.f.) Chakrab. & N.P.Balakr., Proc. Indian Acad. Sci. Pl. Sci. 100(5): 296 (1990); *Dimorphocalyx lawianus* (Muell.-Arg.) Hook. f., Fl. Brit. India 5: 404 (1887); Gamble, Fl. Pres. Madras 1337 (1925).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; leaves simple, alternate; lateral nerves 7-13 pairs; inflorescence an axillary cyme; flowers unisexual; calyx 5-lobed, unequal; petals 5; stamens 10-20; ovary ovoid, 3-loculed; capsule obovoid.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats

IUCN category: Not Evaluated

Phenology: March-October

Distribution: Rare

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karappara, 06 July 2019, *Jabeena & Maya 2302* (GVCH).

Epiprinus Griff., Not. Pl. Asiat. 4: 487 (1854)

Epiprinus mallotiformis (Müll.Arg.) Croizat, J. Arnold Arbor. 23: 53 (1942); Vajr., Fl. Palghat Dist. 427 (1990); *Adenochlaena indica* (Bedd.) Bedd. ex Hook. f., Fl. Brit. India 5: 418 (1887); *Symphyllia mallotiformis* Muell.-Arg., Gamble, Fl. Pres. Madras 1323 (1925).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 6-10 pairs; inflorescence an axillary spikes; flowers unisexual; perianth lobes 4-6, unequal, pubescent; stamens 4-6; ovary globose, 3-loculed; ovules solitary in each cell; capsule 3-lobed.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: March-April

Distribution: Rare

Altitude: 1000-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4117* (GVCH).

Euphorbia L., Sp. Pl. 1: 450 (1753)

1.Succulent shrubs or trees…..……..(2)
1.Prostrate herbs…....……...…..(3)
2.Large tree upto 10 m height……..***E. santapaui***
2.Small tree or shrub upto 4 m height…….……....***E. vajravelui***
3.Plant with large showy red-coloured bracts of about 8 cm long……***E. pulcherrima***
3.Plant with small bracts……..…….…(4)
4.Plant prostrate……...…….……..(5)
4.Plant erect……...…….(6)
5.Involucre tubular; capsule with spreading hairs…...……..***E. prostrata***
5.Involucre campanulate; capsule glabrescent…….……..…..***E. thymifolia***
6.Leaves opposite…...……....***E. hirta***
6.Lower leaves alternate, upper opposite or whorled…….……...…..(7)
7.Cyathea 5-glandular; capsule and seeds globose……..……..….***E. rothiana***
7.Cyathea 1-glandular; capsule sub-globose; seeds angular…...***E. heterophylla***

Euphorbia heterophylla L., Sp. Pl. 1: 453 (1753); Gamble, Fl. Pres. Madras 1278 (1925); *Euphorbia prunifolia* Jacq., Hook. f., Fl. Brit. India 5: 266 (1887); *Euphorbia geniculata* Ortega., Gamble, Fl. Pres. Madras 1884 (1936).

Habit: Herb
Habitat: Weeds in waste places and degraded deciduous forests
Morphology: Herb; leaves alternate below, opposite above; cyathea in terminal cyme; involucral gland solitary; stamens numerous; capsules sub-globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: June-August
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1770* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2779* (GVCH).

Euphorbia hirta L., Sp. Pl. 1: 454 (1753); Gamble, Fl. Pres. Madras 1275 (1925); Vajr., Fl. Palghat Dist. 428 (1990).

Habit: Herb
Habitat: Degraded forest areas and forest plantations
Morphology: Herb; leaves opposite, 3-ribbed at base; cyathea in axillary clusters; involucral glands 5; stamens 4-6; ovary 3-loculed; capsule globose, pubescent.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 039* (GVCH); Hilltop, 20 January 2018, *Jabeena & Maya 930* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1776* (GVCH).

Euphorbia prostrata Aiton, Hort. Kew. [W. Aiton] 2: 139 (1789); Hook. f., Fl. Brit. India 5: 266 (1887); Gamble, Fl. Pres. Madras 1276 (1925); Vajr., Fl. Palghat Dist. 428 (1990).

Habit: Herb
Habitat: Weed in gardens
Morphology: Herb; strem prostrate; leaves opposite; cyathea axillary, solitary; stamens many; ovary 3-loculed; capsule beaked.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: March-June
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2873* (GVCH).

Euphorbia pulcherrima Willd. ex Klotzsch, Allg. Gartenzeitung (Otto & Dietrich) 2(4): 27 (1834); Hook. f., Fl. Brit. India 5: 239 (1887); Gamble, Fl. Pres. Madras 1278 (1925).

Habit: Shrub
Habitat: Grown in gardens
Morphology: Shrub; leaves alternate; cyathea in terminal pedunculate cluster; stamens many; ovary trigonous, 3-loculed; ovule solitary in each cell.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: August-January
Distribution: Common
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Pothumala, 15 October 2017, *Jabeena & Maya 678* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2985* (GVCH); Pothupara, 11 January 2020, *Jabeena & Maya 3654* (GVCH).

Euphorbia rothiana Spreng., Syst. Veg., ed. 16 [Sprengel] 3: 796 (1826); Hook. f., Fl. Brit. India 5: 263 (1887); Gamble, Fl. Pres. Madras 1278 (1925).

Habit: Shrub
Habitat: Margins of Evergreen forests and Grasslands
Morphology: Shrub; stems erect, umbellately branched above; leaves petioled, glabrous; glands of involucre without a petaloid limb; cyathea in terminal panicled cyme; stamens many; capsule globose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1051* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2395* (GVCH).

Euphorbia santapaui A. N. Henry, Bull. Bot. Surv. India 6: 329 (1965).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves minute; cyathea above spines; male flowers 5-6; ovary 3-loculed; style connate; capsule glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: January-May
Distribution: Rare
Altitude: 1100-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1051* (GVCH).

Euphorbia thymifolia L., Sp. Pl. 1: 454 (1753); Hook. f., Fl. Brit. India 5: 252 (1887); Gamble, Fl. Pres. Madras 1276 (1925); Vajr., Fl. Palghat Dist. 429 (1990).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaves opposite, distichous; cyathea in axillary cluster; involucre campanulate; male flowers 1-4; female flowers solitary; ovary hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: November-May
Distribution: Occasional
Altitude: 300-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 005* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5064* (GVCH).

Euphorbia vajravelui Binojk. & N.P.Balakr., Cact. Succ. J. (Los Angeles) 63(5): 229 (1991).

Habit: Shrub
Habitat: Rocky areas in Evergreen forests
Morphology: Shrub; leaves minute; cyathea 2-5-together, sessile; involucre glabrous; male florets fascicled in 4-5 bundles; ovary glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Vulnerable
Phenology: March-April
Distribution: Occasional
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena*

& Maya 2107 (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4102* (GVCH).

Excoecaria L., Syst. Nat., ed. 10. 2: 1288 (1759)

Excoecaria oppositifolia* var. *crenulata (Wight) Chakrab. & M.Gangop., J. Econ. Taxon. Bot. 18(1): 208 (1994): (1994); *Excoecaria crenulata* Wight, Hook. f., Fl. Brit. India 5: 473 (1888); Gamble, Fl. Pres. Madras 1345 (1925); Vajr., Fl. Palghat Dist. 429 (1990).

Habit: Shrub
Habitat: Evergreen and Shola forests
Morphology: Tree; leaves simple, opposite; lateral nerves 10-22 pairs; inflorescence spicate; flowers unisexual; perianth lobes 3; stamens 2-3; ovary sub-globose, 3-loculed; ovules solitary in each cell; capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-April
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1563* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1623* (GVCH); Plate 29: Fig. a

Falconeria Royle, Ill. Bot. Himal. Mts. [Royle] 354, t. 84 a (1839)

Falconeria insignis Royle, Ill. Bot. Himal. Mts. [Royle] 354, t. 84 a (1839); *Sapium insigne* (Royle) Benth., Hook. f., Fl. Brit. India 5: 471 (1888); Gamble, Fl. Pres. Madras 1346 (1925); Vajr., Fl. Palghat Dist. 437 (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 10-18 pairs; inflorescence a terminal spike; flowers unisexual; perianth lobes 2; stamens 2, free; ovary ovoid, 3-loculed; ovules solitary in each cell; capsule sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-February
Distribution: Occasional
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4135* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3926* (GVCH); Plate 29: Fig. b.

Givotia Griff., Calcutta J. Nat. Hist. iv. (1844) 388

Givotia moluccana (L.) Sreem., Taxon 24(5-6): 696 (1975); *Givotia rottleriformis* Griff. ex Wight, Hook. f., Fl. Brit. India 5: 395 (1887); Gamble, Fl. Pres. Madras 1342 (1925); Vajr., Fl. Palghat Dist. 430 (1990).

Habit: Tree
Habitat: Dry and Moist Deciduous forests
Morphology: Tree; leaves simple, alternate, 5-nerved at base; inflorescence a panicle; flowers unisexual; perianth lobes 10; stamens many, free, unequal; ovary globose, 2-3-loculed; drupe ellipsoid.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: October-February

Distribution: Rare

Altitude: 100-300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020 *Jabeena & Maya 4142* (GVCH).

Hevea Aubl., Hist. Pl. Guiane 871 (t. 335) (1775)

Hevea brasiliensis (Willd. ex A.Juss.) Müll.Arg., Linnaea 34(2): 204 (1865); Gamble, Fl. Pres. Madras 1346 (1925); Vajr., Fl. Palghat Dist. 440 (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves trifoliate; lateral nerves 13-20 pairs; inflorescence a panicled raceme; flowers unisexual; perianth lobes 5; stamens 5-10, connate; ovary 3-loculed; capsule 3-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: February-June
Distribution: Occasional
Altitude: 200-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 1219* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5072* (GVCH).

Homonoia Lour., Fl. Cochinch. 2: 636 (1790)

Homonoia riparia Lour., Fl. Cochinch. 2: 637 (1790); Hook. f., Fl. Brit. India 5: 455 (1887); Gamble, Fl. Pres. Madras 1333 (1925); Vajr., Fl. Palghat Dist. 431 (1990).

Habit: Shrub
Habitat: Along stream sides and river banks
Morphology: Shrub; leaves simple, spiral; inflorescence a raceme; flowers unisexual; perianth lobes 2-5, ciliate; stamens many; ovary 3-loculed, hairy; capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: December-May
Distribution: Occasional
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 390* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2223* (GVCH); Plate 29: Fig. c.

Jatropha L., Sp. Pl. 2: 1008 (1753)

Perianth lobes free; stamens 8; capsule 3-lobed……..……..***J. gossypifolia***
Perianth lobes connate; stamens 10; capsule not lobed……...…..***J. curcas***

Jatropha curcas L., Sp. Pl. 2: 1006 (1753); Hook. f., Fl. Brit. India 5: 383 (1887); Gamble, Fl. Pres. Madras 1340 (1925); Vajr., Fl. Palghat Dist. 431 (1990).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; leaves 5-lobed; plant monoecious; inflorescence a panicled cyme; perianth lobes 10; stamens 10, unequal; ovule solitary in each cell; capsule ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: May-August
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 427* (GVCH).

Jatropha gossypiifolia L., Sp. Pl. 2: 1006 (1753); Hook. f., Fl. Brit. India 5: 383 (1887); Gamble, Fl. Pres. Madras 1340 (1925); Vajr., Fl. Palghat Dist. 431 (1990).

Habit: Shrub
Habitat: Grown as hedge plant
Morphology: Shrub; leaves spiral, 3-5-lobed; inflorescence a corymbose cyme; flowers unisexual; perianth lobes 5, free;

stamens 8-10; ovary 3-loculed; capsule 3-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: July-September
Distribution: Occasional
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1820* (GVCH); Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5078* (GVCH); Plate 29: Fig. d.

Macaranga Thouars, Gen. Nov. Madagasc. 26 (1806)

Macaranga peltata Müll. Arg., Prodr. [A. P. de Candolle] 15(2.2): 1010 (1866); Gamble, Fl. Pres. Madras 1326 (1925); Vajr., Fl. Palghat Dist. 432 (1990); *Macaranga roxburghii* Wight, Hook. f., Fl. Brit. India 5: 448 (1887).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; leaves simple, alternate; lateral nerves 7-8 pairs; inflorescence an axillary panicle; flowers unisexual; perianth lobes 3; stamens 2-8, free; ovary 2-6-loculed; capsule globose, hairy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-February
Distribution: Common
Altitude: 300-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 406* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 963* (GVCH); Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1148* (GVCH).

Mallotus Lour., Fl. Cochinch. 2: 635 (1790)

1.Capsule wall smooth…...……(2)
1.Capsule wall echinate or muricate.…….(4)
2.Fruit prominently red glandular……***M. philippensis***
2.Fruit not red glandular…...…..……(3)
3.Capsule 2-lobed; seeds hemispherical……....***M. atrovirens***
3.Capsule not lobed; seeds globose or ovoid…….……....***M. nudiflorus***
4.Leaves 5-ribbed from base……..***M. tetracoccus***
4.Leaves 1-ribbed from base…...……...(5)
5.Nerves 9 pairs; male raceme less than 4 cm long……...……...….***M. resinosus***
5.Nerves 5-6 pairs; male raceme more than 5 cm long…….……...***M. beddomei***

Mallotus atrovirens Müll.Arg., Linnaea 34(2): 195 (1865); Hook. f., Fl. Brit. India 5: 440. (1887); Gamble, Fl. Pres. Madras 1322 (1925).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Tree; leaves simple. opposite; lateral nerves 5-7 pairs; inflorescence a raceme; flowers unisexual; perianth 3-5-lobed; stamens many, free; ovary 2-4-loculed; ovules solitary in each cell; capsule 2-lobed, smooth.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Vulnerable
Phenology: January-July
Distribution: Occasional
Altitude: 300-600m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4816* (GVCH); Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4984* (GVCH).

Mallotus beddomei Hook.f., Fl. Brit. India [J. D. Hooker] 5(14): 438 (1887); Gamble, Fl. Pres. Madras 1323 (1925); Vajr., Fl. Palghat Dist. 433 (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 5-6 pairs; plant monoecious; inflorescence a raceme; perianth lobes 3-5, glabrous; stamens many; ovary 2-4-loculed; ovule solitary in each cell; capsule echinate.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-April
Distribution: Occasional
Altitude: 900-1300m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 893* (GVCH); Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4578* (GVCH).

Mallotus nudiflorus (L.) Kulju & Welzen, Blumea 52(1): 124 (2007); *Trewia nudiflora* L., Hook. f., Fl. Brit. India 5: 423 (1887); Gamble, Fl. Pres. Madras 1319 (1925); Vajr., Fl. Palghat Dist. 440 (1990); *Trewia polycarpa* Benth., Hook. f., Fl. Brit. India 5: 424 (1887); Gamble, Fl. Pres. Madras 1319 (1925); Vajr., Fl. Palghat Dist. 440 (1990).

Habit: Tree
Habitat: Along riverbanks in evergreen and semi-evergreen forests
Morphology: Tree; leaves simple, opposite; lateral nerves 3-6 pairs; inflorescence an axillary raceme; flowers unisexual; perianth lobes 3-5; stamens many; ovary 2-4-loculed; ovule solitary in each cell; capsule 3-4-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: May-November
Distribution: Occasional
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2749* (GVCH); Mannathypalam, 12 October 2020, *Jabeena & Maya 4161* (GVCH).

Mallotus philippensis (Lam.) Mull.Arg., Linnaea 34(2): 196 (1865); Hook. f., Fl. Brit. India 5: 442 (1887); Gamble, Fl. Pres. Madras 1322 (1925); Vajr., Fl. Palghat Dist. 433 (1990); *Mallotus philippensis* (Lam.) Muell.-Arg. var. *tomentosus* Gamble, Fl. Pres. Madras 1322 (1925).

Habit: Tree

Habitat: Semi-evergreen, moist deciduous, evergreen and dry deciduous forests

Morphology: Tree; leaves simple, 3-nerved at base; lateral nerves 4-6 pairs; inflorescence a terminal spicate panicle; flowers unisexual; perianth lobes 4; stamens upto 30; ovary 3-loculed, glandular; ovules solitary in each cell; capsule globose, 3-valved.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and Australian

IUCN category: Least Concern

Phenology: October-March

Distribution: Common

Altitude: 400-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 145* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1146* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4275* (GVCH).

Mallotus resinosus Merr., Sp. Blancoanae 222 (1918); *Mallotus resinosus* (Blanco) Merr., var. *resinosus* Ramach. & V.J. Nair, Vajr., Fl. Palghat Dist. 434 (1990).

Habit: Shrub

Habitat: Evergreen forests

Morphology: Shrub; leaves alternate, glandular; lateral nerves 6-9 pairs; inflorescence racemose; perianth lobes 4; stamens upto 30; ovary 2-4-loculed; ovule solitary in each cell; capsule spiny.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India

IUCN category: Least Concern

Phenology: December-March

Distribution: Occasional

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 552* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4095* (GVCH).

Mallotus tetracoccus Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42(4): 245 (1874); Vajr., Fl. Palghat Dist. 434 (1990); *Rottlera albus* var. *occidentalis* Hook. f., Fl. Brit. India 5: 429 (1887); Gamble, Fl. Pres. Madras 1321 (1925).

Habit: Tree

Habitat: Evergreen, semi-evergreen and shola forests

Morphology: Tree; leaves simple, alternate; lateral nerves 6-8 pairs; inflorescence a terminal spicate panicle; flowers unisexual; perianth lobes 4; stamens many; ovary 3-4-loculed, hairy; capsule globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: July-April

Distribution: Common

Altitude: 400-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 572* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 958* (GVCH); Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1226* (GVCH); Plate 29: Fig. e

Manihot Mill., Gard. Dict. Abr., ed. 4. [851] (1754)

Manihot carthagenensis (Jacq.) Müll.Arg., Prodr. [A. P. de Candolle] 15(2.2): 1073 (1866); *Manihot glaziovii* Muell.-Arg., Gamble, Fl. Pres. Madras 1346 (1925); Vajr., Fl. Palghat Dist. 440 (1990).

Habit: Tree

Habitat: Cultivated

Morphology: Tree; leaves peltate, 3-5-lobed; inflorescence terminal, racemose; perianth 5-lobed; stamens 10, didynamous; ovary smooth; capsule globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and South American

IUCN category: Least Concern

Phenology: October-January

Distribution: Occasional

Altitude: 100-500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3385* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5085* (GVCH).

Microstachys A.Juss., Euphorb. Gen. 48. t. 15 (1824)

Microstachys chamaelea (L.) Müll.Arg., Linnaea 32(1): 95 (1863); *Sebastiana chamaelea* (L.) Muell.-Arg., Hook. f., Fl. Brit. India 5: 475 (1888); Gamble, Fl. Pres. Madras 1344 (1925); Vajr., Fl. Palghat Dist. 438 (1990).
Habit: Herb
Habitat: Moist and Dry Deciduous forests and Grasslands
Morphology: Herb; leaves simple, alternate; plant monoecious; inflorescence an axillary spike; perianth lobes 5, connate; stamens 2-4; ovary 3-lobed, echinate; ovule solitary in each cell; capsule 3-lobed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 509* (GVCH); Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 892* (GVCH).

Paracroton Miq., Fl. Ned. Ind. 1(2): 382 (1859)

Raceme pendulous; seeds ovoid; capsule sub-globose……...……***P. pendulous***
Raceme erect or suberect; seeds mottled; capsule globose……....…***P. integrifolius***

Paracroton integrifolius (Airy Shaw) N.P.Balakr. & Chakrab., Kew Bull. 48(4): 718 (1993); *Ostodes zeylanicum* var. *minor* sensu Gamble, Fl. Pres. Madras 1336 (1925).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 10-13 pairs; inflorescence an axillary or terminal raceme; flowers unisexual; perianth lobes 10; stamens many, free; ovary 3-loculed, glabrous; ovules solitary in each cell; capsule 6-ribbed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1600* (GVCH); Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2130* (GVCH).

Paracroton pendulus **subsp.** ***zeylanicus*** (Thwaites) N.P.Balakr. & Chakrab., Kew Bull. 48(4): 719 (1993); *Ostodes zeylanica* (Thw.) Muell.-Arg., Hook. f., Fl. Brit. India 5: 400 (1887); Gamble, Fl. Pres. Madras 1336 (1925); *Fahrenheitia zeylanica* (Thw.) Airy Shaw, Vajr., Fl. Palghat Dist. 429 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 10-15 pairs; inflorescence a pendulous raceme; flowers unisexual; perianth lobes 10; stamens many; ovary 3-loculed; ovule solitary in each cell; capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 069* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4585* (GVCH).

Ricinus L., Sp. Pl. 2: 1007 (1753)

Ricinus communis L., Sp. Pl. 2: 1007 (1753); Hook. f., Fl. Brit. India 5: 457 (1887); Gamble, Fl. Pres. Madras 1335 (1925); Vajr., Fl. Palghat Dist. 440 (1990).

Habit: Shrub
Habitat: Cultivated; also runs in wild
Morphology: Shrub; leaves alternate, palmately 6-8-lobed; plant monoecious; inflorescence a terminal paniculate raceme; perianth 3-5-lobed, sub-equal; stamens connate; ovary globose, 3-loculed, echinate; ovule solitary in each cell; capsule 3-lobed, prickly without.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: May-June
Distribution: Common
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 06 July 2019, *Jabeena & Maya 2162* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3448* (GVCH); Koonampalam, 14 December 2019, *Jabeena & Maya 3468* (GVCH).

Tragia L., Sp. Pl. 2: 980 (1753)

Tragia involucrata L., Sp. Pl. 2: 980 (1753); Hook. f., Fl. Brit. India 5: 465 (1888); Gamble, Fl. Pres. Madras 1332 (1925).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; leaves simple, alternate; inflorescence an axillary spike; flowers unisexual; perianth lobes 3; stamens 3; ovary 3-loculed; ovule solitary in each cell; capsule 3-lobed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2955* (GVCH); Koonampalam, 14 December 2019, *Jabeena & Maya 3477* (GVCH).

LINACEAE

Linum L., Sp. Pl. 1: 277 (1753)

Linum mysurense B. Heyne ex Benth., Edwards's Bot. Reg. 16: sub t. 1326 (1830); Hook. f., Fl. Brit. India 1: 411 (1874); Gamble, Fl. Pres. Madras 125 (1915).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves alternate, glabrous; inflorescence a terminal paniculate cyme; sepals 5; petals 5; stamens 5, connate; ovary 5-loculed; ovule solitary in each cell; styles 5, free; capsule depressed-globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 630* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4287* (GVCH); Plate 29: Fig. f.

PHYLLANTHACEAE

1.Leaves 3-foliolate…….***Bischofia***
1.Leaves simple…...……..…(2)
2.Flowers densely clustered on the trunk……..…….***Baccaurea***
2.Flowers axillary or terminal…..……..(3)
3.Leaves opposite…...…….***Actephila***
3.Leaves alternate…...……...…….(4)
4.Leaves distichous...……...……..(5)
4.Leaves spirally alternating..…….(8)
5.Staminal filaments free…...…..***Flueggea***

5.Staminal filaments connate…….(6)
6.Stamens 5 or 7……..…….***Glochidion***
6.Stamens 3 or 4…….....(7)
7.Anthers adnate to the column.....***Breynia***
7.Anthers not adnate to the column...……..……***Phyllanthus***
8.Perianth biseriate...…..……***Bridelia***
8.Perianth uniseriate...……..…..(9)
9.Flowers solitary or in fascicles……..……....***Margaritaria***
9.Flowers in elongated raceme or panicles…..……...…(10)
10.Ovary one loculed……..…...***Antidesma***
10.Ovary 2-4 loculed…...……...***Aporosa***

Actephila Blume, Bijdr. Fl. Ned. Ind. 12: 581 (1826)

Actephila excelsa (Dalz.) Müll. Arg., Linnaea 32(1): 78 (1863); Gamble, Fl. Pres. Madras 1283 (1925).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves simple, opposite; inflorescence an axillary cluster; flowers unisexual; calyx 5-lobed, hairy; petals 5; stamens 3-6; ovary ovoid, 3-loculed; capsule depressed globose, 6-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: April-May
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1621* (GVCH); Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4594* (GVCH).

Antidesma Burm. ex L., Sp. Pl. 2: 1027 (1753)

1.Stamens 2……..…….....***A. acidum***
1.Stamens 3-5……(2)
2.Leaf lamina upto 15 cm long; flowers arranged in racemes……..…***A. montanum***
2.Leaf lamina upto 30 cm long; flowers arranged in spikes…...……***A. alexiteria***

Antidesma acidum Retz., Observ. Bot. (Retzius) v. 30 (1788); Vajr., Fl. Palghat Dist. 420. (1990); *Antidesma diandrum* (Roxb.) Spreng., Hook. f., Fl. Brit. India 5: 361 (1887); Gamble, Fl. Pres. Madras 1298 (1925).

Habit: Shrub
Habitat: Semi-evergreen and moist deciduous forests and sacred groves
Morphology: Shrub; leaves simple, alternate; inflorescence a terminal spike; flowers unisexual; perianth lobes 4, hairy inside; stamens 2; ovary obovoid, 1-loculed; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: July-December
Distribution: Occasional
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 1994* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2234* (GVCH); Plate 29: Fig. g.

Antidesma alexiteria L., Sp. Pl. 2: 1027 (1753); Hook. f., Fl. Brit. India 5: 359 (1887); *Antidesma zeylanicum* Lam., Gamble, Fl. Pres. Madras 1297 (1925).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 5-12 pairs; inflorescence spicate; perianth lobes 4-5; stamens 3; ovary ovoid, 1-loculed, glabrous; fruit a drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 046* (GVCH); Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 538* (GVCH).

Antidesma montanum Blume, Bijdr. Fl. Ned. Ind. 17: 1124. 1826; *Antidesma acuminatum* Wight, Hook. f., Fl. Brit. India 5: 363 (1887); *Antidesma moritzii* (Tul.) Muell.-Arg., Hook. f., Fl. Brit. India 5: 362 (1887); *Antidesma menasu* (Tul.) Miq. ex Muell.-Arg., Hook. f., Fl. Brit. India 5: 364 (1887); Gamble, Fl. Pres. Madras 1297 (1925); Vajr., Fl. Palghat Dist. 420 (1990).

Habit: Tree

Habitat: Evergreen, Shola forests and Sacred grooves

Morphology: Tree; leaves simple, alternate; lateral nerves 4-12 pairs; inflorescence a raceme; flowers unisexual; perianth lobes 3-4; stamens 3-4; ovary ovoid; 1-loculed; fruit a drupe.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Least Concern

Phenology: Throughout the year

Distribution: Common

Altitude: 600-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 21 April 2018, *Jabeena & Maya 1383* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2978* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3342* (GVCH); Plate 29: Fig. h.

Aporosa Blume, Bijdr. Fl. Ned. Ind. 10: 514

Tepals in male flowers 3; ovary 3-loculed; capsule globose..……*A. cardiosperma*

Tepals in male flowers 4; ovary 2-loculed; capsule ovoid…...……..…*A. bourdillonii*

Aporosa bourdillonii Stapf, Hooker's Icon. Pl. 23: t. 2204 (1892); Gamble, Fl. Pres. Madras 1309 (1925).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves alternate; lateral nerves 6-9 pairs; plant monoecious; inflorescence axillary spike; sepals 3; stamens 2-3; ovary ovoid, 3-loculed; capsule ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: March-April
Distribution: Rare
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4133* (GVCH).

Aporosa cardiosperma (Gaertn.) Merr., J. Arnold Arbor. 35: 139 (1954); *Aporosa lindleyana* (Wight) Baill., Hook. f., Fl. Brit. India 5: 349 (1887); Gamble, Fl. Pres. Madras 1309 (1925); Vajr., Fl. Palghat Dist. 421 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves simple, glabrous; lateral nerves 7-10; inflorescence an axillary spike; flowers unisexual; perianth lobes 4; stamens 2-3; ovary 2-loculed, capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Vulnerable
Phenology: December-June
Distribution: Occasional
Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4153* (GVCH); Mannathypalam, 12 October 2020, *Jabeena & Maya 4174* (GVCH).

Baccaurea Lour., Fl. Cochinch. 2: 651 (1790)

Baccaurea courtallensis (Wight) Müll. Arg., Prodr. [A. P. de Candolle] 15(2.2): 459 (1866); Hook. f., Fl. Brit. India 5: 367 (1887); Gamble, Fl. Pres. Madras 1310 (1925); Vajr., Fl. Palghat Dist. 421 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 4-7 pairs; inflorescence a raceme; flowers unisexual; perianth lobes 4-5; stamens 4-8; ovary sub-globose, 3-loculed; capsule ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: January-June
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1674* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3837* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4557* (GVCH).

Bischofia Blume, Bijdr. Fl. Ned. Ind. 17: 1168

Bischofia javanica Blume, Bijdr. Fl. Ned. Ind. 17: 1168; Hook. f., Fl. Brit. India 5: 345 (1887); Gamble, Fl. Pres. Madras 1312 (1925); Vajr., Fl. Palghat Dist. 422 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves alternate, trifoliate; lateral nerves 6-9 pairs; inflorescence a paniculate raceme; flowers unisexual; perianth lobes 5; stamens 5; ovary globose, 3-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: March-October
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4101* (GVCH); Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4558* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4101* (GVCH); Plate 30: Fig. a

Breynia J. R. Forst. & G. Forst., Char. Gen. Pl., ed. 2. [145] (1776)

1.Tepals gland-dotted…***B. quadrangularis***
1.Tepals not gland-dotted……..……(2)
2.Style elongated; fruit depressed globose……..……...……....***B. retusa***
2.Style short; fruit globose….***B. vitis-idaea***

Breynia quadrangularis (J. G. Klein ex Willd.) Chakrab. & N. P. Balakr., Bangladesh J. Pl. Taxon. 19(2): 121 (2012); *Sauropus quadrangularis* (Willd.) Muell.-Arg., Hook. f., Fl. Brit. India 5: 335 (1887); Gamble, Fl. Pres. Madras 1303 (1925); Vajr., Fl. Palghat Dist. 438 (1990); *Sauropus compressus* Muell.-Arg., Hook. f., Fl. Brit. India 5: 336 (1887).

Habit: Shrub
Habitat: Moist Deciduous, Semi-evergreen and Evergreen forests
Morphology: Shrub; leaves alternate; lateral nerves 4-5 pairs; flowers axillary, solitary; calyx 6-lobed; petals zero;

stamens 3; ovary globose, 3-loculed; capsule globose, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2963* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4796* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5059* (GVCH).

Breynia retusa (Dennst.) Alston, Ann. Roy. Bot. Gard. (Peradeniya) 11: 204 (1929); Vajr., Fl. Palghat Dist. 422 (1990); *Breynia patens* (Roxb.) Rolfe, Hook. f., Fl. Brit. India 5: 329 (1887); Gamble, Fl. Pres. Madras 1304 (1925).

Habit: Shrub
Habitat: Semi-evergreen and Deciduous forests
Morphology: Shrub; leaves alternate, distichous; flowers axillary, solitary; calyx 5-6-lobed; petals absent; stamens 3; ovary globose, 3-loculed; capsule depressed globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: February-September
Distribution: Occasional
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, *Jabeena & Maya 500* (GVCH); Kollengode range, Mattumala, 21 April 2018, *Jabeena & Maya 1391* (GVCH); Plate 30: Fig. b.

Breynia vitis-idaea (Burm.f.) C. E. C. Fisch., Bull. Misc. Inform. Kew 1932(2): 65 (1932).

Habit: Shrub
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Shrub; leaves alternate, glabrous; plant monoecious; male flowers in axillary fascicles; female flowers solitary; perianth campanulate, 5-lobed; stamens 3; ovary 3-loculed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: February-August
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Koonampalam, 14 December 2019, *Jabeena & Maya 3481* (GVCH); Victoria, 12 October 2020, *Jabeena & Maya 4179* (GVCH).

Bridelia Willd., Sp. Pl., ed. 4 [Willdenow] 4(2): 978 (1805)

Scandent shrub……..……***B. stipularis***
Tree……..……...***B. retusa***

Bridelia retusa A.Juss., Euphorb. Gen. 27, t. 7 (1824); Hook. f., Fl. Brit. India 5: 268 (1887); Gamble, Fl. Pres. Madras 1280 (1925); Vajr., Fl. Palghat Dist. 423 (1990); *Briedelia roxburghiana* (Muell.-Arg.) Gehrm., Gamble, Fl. Pres. Madras 1280 (1925).

Habit: Tree
Habitat: Semi-evergreen and Deciduous forests
Morphology: Tree; leaves alternate; lateral nerves 14-25 pairs; flowers in axillary or terminal panicles, unisexual; perianth 10; stamens 5, connate; ovary globose, 2-loculed; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: August-December
Distribution: Common
Altitude: 600-1000
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 707* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2447* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2754* (GVCH); Plate 30: Fig. c.

Bridelia stipularis Blume, Bijdr. Fl. Ned. Ind. 12: 597 (1826); Hook. f., Fl. Brit. India 5: 270 (1887); Gamble, Fl. Pres. Madras 1281 (1925); *Briedelia scandens* (Roxb.) Willd., Gamble, Fl. Pres. Madras 1281 (1925); Vajr., Fl. Palghat Dist. 424 (1990).

Habit: Shrub
Habitat: Semi-evergreen and moist deciduous forests and sacred groves
Morphology: Climbing shrub; leaves alternate, fulvous tomentose beneath; lateral nerves 10-12 pairs; plant monoecious; inflorescence an axillary fascicle; perianth 10, hairy; stamens 5, connate; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Least Concern
Phenology: December-February
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 861* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1147* (GVCH).

Flueggea Willd., Sp. Pl., ed. 4 [Willdenow] 4: 637, 757 ('Fluggea') (1806)

Plant unarmed; pistillodes 3.....…..***F. virosa***
Plant armed; pistillodes 2….***F. leucopyrus***

Flueggea leucopyrus Willd., Sp. Pl., ed. 4 [Willdenow] 4(2): 757 (1806); Hook. f., Fl. Brit. India 5: 328 (1887); Gamble, Fl. Pres. Madras 1296 (1925).

Habit: Shrub
Habitat: Dry Deciduous forests
Morphology: Shrub; branches armed; leaves alternate, distichous; lateral nerves 4-5 pairs; plant monoecious; inflorescence an axillary cluster; calyx 5-lobed; petals absent; stamens 5; ovary 3-loculed; capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Occasional
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1276* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4087* (GVCH).

Flueggea virosa (Roxb. ex Willd.) Royle, Ill. Bot. Himal. Mts. [Royle] 9: 328 (1836); Gamble, Fl. Pres. Madras 1296 (1925); *Flueggea microcarpa* Blume, Hook. f., Fl. Brit. India 5: 328 (1887); *Securinega virosa* (Roxb. ex Willd.) Baill., Vajr., Fl. Palghat Dist. 439 (1990).

Habit: Shrub
Habitat: Dry Deciduous, Moist Deciduous forests and Wastelands
Morphology: Shrub; branches unarmed; leaves alternate; inflorescence an axillary cluster; calyx 5-lobed; petals absent; stamens 5; pistillodes 3; ovary 3-loculed; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and Australian
IUCN category: Least Concern
Phenology: March-September
Distribution: Rare
Altitude: 200-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1192* (GVCH).

Glochidion J. R. Forst. & G. Forst., Char. Gen. Pl., ed. 2. [113] (1776)

Glochidion zeylanicum (Gaertn.) A. Juss., Euphorb. Gen. 107 (1824); *Glochidion zeylanicum* (Gaertn.) A. Juss., var. *zeylanicum* Hook. f., Fl. Brit. India 5: 310 (1887); Gamble, Fl. Pres. Madras 1306 (1925).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves alternate, glabrous; lateral nerves 8-12 pairs; inflorescence umbellate; perianth 5-6; stamens 4-8, connate; ovary sub-globose, 4-7-loculed; style glabrous; capsule beaked.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: March-May
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2691* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2774* (GVCH); Plate 30: Fig. d.

Margaritaria L.f., Suppl. Pl. 66 (428) (1782)

Margaritaria indica (Dalz.) Airy Shaw, Kew Bull. 20(3): 387 (1967); *Prosorus indicus* Dalz., Gamble, Fl. Pres. Madras 1294 (1925); *Phyllanthus indicus* (Dalz.) Muell.-Arg., Hook. f., Fl. Brit. India 5: 305 (1887).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Tree; leaves alternate, distichous; lateral nerves 6-10 pairs; plant monoecious; inflorescence an axillary fascicle; calyx 4-lobed; stamens 4, free; ovary 3-loculed; capsule 3-lobed, 6-seeded.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Rare
Altitude: 1000-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1362* (GVCH).

Phyllanthus L., Sp. Pl. [Linnaeus] 2: 981 (1753)

1.Disc present…...……...…..(2)
1.Disc absent……..…….(7)
2.Trees or shrubs…...…….***P. emblica***
2.Herbs or under shrubs…..……..……..(3)
3.Fruit baccate……....….....***P. reticulatus***
3.Fruit capsular……...……...……(4)
4.Perennial with woody rootstock…….***P. amarus***
4.Annuals…...……...…….(5)
5.Perianth 5-lobed…..……***P. virgatus***
5.Perianth 6-lobed……..…….(6)
6.Stipule lanceolate; sepals obovate……***P. rheedii***
6.Stipule ovate, decurrent on either sides; sepals ovate……...…...***P. gardnerianus***
7.Capsule crowned with the style column….……..….(8)
7.Capsule not crowned with the style column…….9)
8.Style truncate; leaf base obtuse…...……..***P. candolleanum***
8.Style conical; leaf base acute……...***P. assamicus***
9.Branchlets and petioles tomentose……...***P. velutinum***
9.Branchlets and petioles glabrous……....(10)
10.Tepals in female flowers cupular, 4-6 toothed; anther connectives not produced...……..***P. hohenackeri***
10.Tepals in female flowers 3+3, free or connate; anther connectives produced…...……...***P. bourdillonii***

Phyllanthus amarus Schumach. & Thonn., Beskr. Guin. Pl. 421 (1827); Vajr., Fl. Palghat Dist. 435 (1990); *Phyllanthus niruri* sensu Hook. f., Fl. Brit. India 5: 298 (1887) Gamble, Fl. Pres. Madras 1290 (1925).
Habit: Herb
Habitat: Degraded moist deciduous, forest plantations
Morphology: Herb; leaves alternate, distichous; flowers axillary, solitary; calyx 5-lobed; stamens 3; disc of male flowers glandular, that of female saucer shaped with erect lobes; ovary globose; style recurved; capsule globose, 6-seeded.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Occasional
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2829* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2934* (GVCH).

Phyllanthus assamicus Müll.Arg., Flora 48: 378 (1865); *Glochidion ellipticum* Wight, Hook. f., Fl. Brit. India 5: 321 (1887); Gamble, Fl. Pres. Madras 1308 (1925); Vajr., Fl. Palghat Dist. 430 (1990); *Glochidion malabaricum* (Muell.-Arg.) Bedd., Hook. f., Fl. Brit. India 5: 319 (1887); Gamble, Fl. Pres. Madras 1308 (1925).

Habit: Tree
Habitat: Evergreen and Shola forests
Morphology: Tree; leaves alternate, distichous; lateral nerves 5-12 pairs; plant monoecious; inflorescence an axillary cluster; perianth 6-lobed; stamens 3-4; ovary hairy; capsule depressed globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Least Concern
Phenology: January-July
Distribution: Occasional
Altitude: 1100-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1090* (GVCH); Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1316* (GVCH).

Phyllanthus bourdillonii (Gamble) Chakrab. & N.P.Balakr., J. Econ. Taxon. Bot. 33(3): 713 (2009); *Glochidion bourdillonii* Gamble, Gamble, Fl. Pres. Madras 1308 (1925).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate; lateral nerves 5-6 pairs; plant monoecious; inflorescence an axillary cluster; perianth 6-lobed; stamens 3, connate; ovary sub-globose, 4-5-loculed; style deltoid; capsule 4-5-loculed, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Vulnerable
Phenology: February-March
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4495* (GVCH).

Phyllanthus candolleanus (Wight & Arn.) Chakrab. & N.P.Balakr., J. Econ. Taxon. Bot. 33(3): 713 (2009); *Glochidion neilgherrense* Wight, Hook. f., Fl. Brit. India 5: 316 (1887); Gamble, Fl. Pres. Madras 1307 (1925); Vajr., Fl. Palghat Dist. 430 (1990); *Glochidion arboreum* Wight, Hook. f., Fl. Brit. India 5: 316 (1887); Gamble, Fl. Pres. Madras 1307 (1925).

Habit: Tree
Habitat: Evergreen and Shola forests

Morphology: Tree; branchlets pubescent; leaves alternate, hairy; lateral nerves 5-6 pairs; flowers in axillary clusters; anthers 3; style columnar; capsule 6-lobed, depressed at apex, crowned by the style-column.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 584* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4100* (GVCH); Plate 30: Fig. e.

Phyllanthus emblica L., Sp. Pl. 2: 982 (1753); Hook. f., Fl. Brit. India 5: 289 (1887); Vajr., Fl. Palghat Dist. 436 (1990); *Emblica officinalis* Gaertn., Gamble, Fl. Pres. Madras 1295 (1925).

Habit: Tree
Habitat: Moist, Dry Deciduous forests and also in cultivation
Morphology: Tree; branchlets distichous; leaves alternate; flowers in axillary fascicle; perianth 6-lobed; stamens 3, connate; disc in male flowers with minute glands; ovary 3-loculed; styles recurved; berry sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: July-February
Distribution: Common
Altitude: 100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 366* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2853* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3911* (GVCH).

Phyllanthus gardnerianus Baill. ex Müll.Arg., Linnaea 32(1): 33 (1863); Gamble, Fl. Pres. Madras 1290 (1925); Vajr., Fl. Palghat Dist. 436 (1990); *Phyllanthus simplex* Retz. var. *gardneriana* (Wight) Muell.-Arg., Hook. f., Fl. Brit. India 5: 295 (1887).

Habit: Herb
Habitat: Moist deciduous and semi-evergreen forests and grasslands
Morphology: Herb; stem glabrous; leaves alternate, distichous; lateral nerves 8-10 pairs; flowers axillary, solitary; perianth 5-6-lobed; stamens 3; capsule globose, rugose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1062* (GVCH); Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1514* (GVCH).

Phyllanthus hohenackeri Müll.Arg., Flora 48: 373 (1865); *Glochidion hohenackeri* (Muell.-Arg.) Bedd., var. *hohenackeri* Hook. f., Fl. Brit. India 5: 314 (1887); *Glochidion fagifolium* Bedd., Hook. f., Fl. Brit. India 5: 312 (1887); Gamble, Fl. Pres. Madras 1308 (1925).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; branchlets glabrous; leaves alternate; lateral nerves 3-10 pairs; plant monoecious; inflorescence an axillary cluster; perianth 6-lobed, pubescent; anthers 3-4; ovary depressed-globose, 3-6-loculed; capsules 3-5-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated

Phenology: March-May
Distribution: Rare
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3881* (GVCH).

Phyllanthus reticulatus Poir., Encycl. [J. Lamarck & al.] 5: 298 (1804); Hook. f., Fl. Brit. India 5: 288 (1887); *Kirganelia reticulata* (Poir.) Baill., Gamble, Fl. Pres. Madras 1294 (1925); Vajr., Fl. Palghat Dist. 432 (1990).

Habit: Shrub
Habitat: Stream banks and in moist deciduous and semi-evergreen forests
Morphology: Shrub; leaves alternate, distichous; flowers in axillary clusters; perianth 5-lobed; stamens 5, in two series; ovary globose, 5-12-loculed; styles 3, bifid; berry fleshy, globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: August-December
Distribution: Occasional
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1138* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2830* (GVCH).

Phyllanthus rheedei Wight, Icon. Pl. Ind. Orient. [Wight] t. 1895; Hook. f., Fl. Brit. India 5: 293 (1887); Gamble, Fl. Pres. Madras 1289 (1925); Vajr., Fl. Palghat Dist. 436 (1990).

Habit: Herb
Habitat: Moist deciduous, semi-evergreen and shola forests, also in forest plantations
Morphology: Herb; stem glabrous; stipules decurrent; leaves alternate, glabrous; lateral nerves 7-9 pairs; male flowers fascicled; female flowers solitary; calyx 6-lobed; stamens 3, free; ovary globose; capsule glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Common
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 148* (GVCH); Manpara, 29 July 2017, *Jabeena & Maya 220* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3872* (GVCH); Plate 30: Fig. f.

Phyllanthus velutinus Müll.Arg., Flora 48: 387 (1865); *Glochidion heyneanum* (Wight & Arn.) Wight, Hook. f., Fl. Brit. India 5: 323 (1887); *Glochidion velutinum* Wight, Hook. f., Fl. Brit. India 5: 322 (1887); Gamble, Fl. Pres. Madras 1307 (1925).

Habit: Tree
Habitat: Evergreen, Shola forests and Grasslands
Morphology: Tree; leaves alternate, distichous; lateral nerves 4-8 pairs; plant monoecious; inflorescence an axillary cluster; perianth 6-lobed; stamens 3, connate; ovary sub-globose, 3-6-loculed; capsule depressed-globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: March-November

Distribution: Occasional

Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1353* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1661* (GVCH).

Phyllanthus virgatus G.Forst., Pred. 65; *Phyllanthus virgatus* G. Forst., var. *virgatus* Vajr., Fl. Palghat Dist. 437 (1990); *Phyllanthus simplex* Retz., Hook. f., Fl. Brit. India 5: 295 (1887); Gamble, Fl. Pres. Madras 1289 (1925).
Habit: Herb
Habitat: Moist and dry deciduous forests and grasslands
Morphology: Herb; leaves alternate, distichous; stipule peltate; flowers axillary, solitary; perianth 5-lobed; stamens 3; ovary 3-loculed; capsule depressed-globose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 452* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2269* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3793* (GVCH).

MYRTALES

COMBRETACEAE

1.Petals 4-5……..…***Combretum***
1.Petals absent…….……...……(2)
2.Erect trees or shrubs; calyx lobes deciduous..……..…..***Terminalia***
2.Straggling shrubs; calyx limb persistent & accrescent in fruit…….……***Getonia***

Combretum Loefl., Iter Hispan. 308 (1758)

Combretum latifolium Blume, Bijdr. Fl. Ned. Ind. 13: 641 (1826); Vajr., Fl. Palghat Dist. 195 (1990); *Combretum extensum* Roxb. ex G. Don, Hook. f., Fl. Brit. India 2: 458 (1878); Gamble, Fl. Pres. Madras 469 (1919).
Habit: Climber
Habitat: Semi-evergreen and evergreen forests, also in sacred groves
Morphology: Climber; leaves opposite; plant polygamo-dioecious, spicate, spikes panicled; calyx-tube above the ovary funnel-shaped, 4-lobed; petals 4; stamens 8; ovary inferior, linear, 1-loculed; ovules 2-5, pendulous; drupe winged.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1522* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3792* (GVCH); Plate 30: Fig. g.

Getonia Roxb., Pl. Coromandel 1(4): 61, t. 87 (1798)

Getonia floribunda Roxb., Pl. Coromandel 1(4): 61, t. 87 (1798); *Calycopteris floribunda* Lam., Hook. f., Fl. Brit. India 2: 449 (1878); Gamble, Fl. Pres. Madras 467 (1919); Vajr., Fl. Palghat Dist. 195 (1990).

Habit: Climber
Habitat: Moist Deciduous forests and Scrub jungles
Morphology: Shrub; leaves opposite, pubescent; inflorescence an axillary raceme; calyx tube 5-lobed; petals absent; stamens 10; ovary inferior, 1-loculed; ovules 3, pendulous; fruit 5-ribbed, 1-seeded.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-May
Distribution: Occasional
Altitude: 100-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4131* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5052* (GVCH); Plate 30: Fig. h.

Terminalia L., Mant. Pl. 21 (1767)

1.Flowers in capitate heads……..***T. anogeissiana***
1.Flowers in spikes or racemes...……....(2)
2.Fruit winged…...……..(3)
2.Fruit not winged……...……...…….(4)
3.Fruit with 3 unequal wings……***T. paniculata***
3.Fruit with 5-7 equal wings…....***T. arjuna***
4.Leaves not clustered at the top of branchlets…….…...***T. travancorensis***
4.Leaves clustered at the top of branchlets…...……...……..(5)
5.Ovule 1; drupe 3-7 cm long, ovoid or ellipsoid, glabrous……....***T. cattappa***
5.Ovules 2-3; drupe upto 2.5 cm long, obovoid softly tomentose….....***T. bellerica***

Terminalia anogeissiana Gere & Boatwr., Bot. J. Linn. Soc. 184(3): 319 (2017); *Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Guill. & Perr., Hook. f., Fl. Brit. India 2: 450 (1878); Gamble, Fl. Pres. Madras 466 (1919); Vajr., Fl. Palghat Dist. 195 (1990).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves alternate; lateral nerves 4-11 paired; inflorescence a globose head; calyx tube 2 winged, 5-lobed; petals absent; stamens 10; ovary inferior, 1-loculed, pubescent; drupe 2-winged, beaked.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-December
Distribution: Occasional
Altitude: 100-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 19 August 2017, *Jabeena & Maya 346* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5062* (GVCH).

Terminalia arjuna (Roxb. ex DC.) Wight & Arn., Prodr. Fl. Ind. Orient. 1: 314 (477) (1834); Hook. f., Fl. Brit. India 2: 447 (1878); Gamble, Fl. Pres. Madras 465 (1919); Vajr., Fl. Palghat Dist. 196 (1990).

Habit: Tree
Habitat: Dry Deciduous forests
Morphology: Tree; leaves simple; lateral nerves 10-17 pairs; inflorescence an axillary spike; calyx tube pubescent, 5-lobed; petals absent; stamens 10; ovary ovoid, inferior, 1-loculed; drupe winged.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-June
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4156* (GVCH); Plate 31: Fig. a

Terminalia bellirica (Gaertn.) Roxb., Pl. Coromandel 2(4): 54, t. 198 (1805); Hook. f., Fl. Brit. India 2: 445 (1878); Gamble, Fl. Pres. Madras 463 (1919); Vajr., Fl. Palghat Dist. 196 (1990).

Habit: Tree
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Tree; leaves simple; lateral nerves 7-10 pairs; inflorescence an axillary spike; calyx tubular, 5-lobed, pubescent; petals absent; ovary inferior, 1-loculed, pubescent; drupe obovoid, 5-ridged.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1179* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1670* (GVCH).

Terminalia catappa L., Mant. Pl. 128 (1767); Hook. f., Fl. Brit. India 2: 444 (1878); Gamble, Fl. Pres. Madras 463 (1919).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves alternate; stipule absent; lateral nerves 6-13 pairs; inflorescence an axillary raceme; calyx tubular, pubescent, 5-lobed; petals absent; stamens 10; ovary inferior, 1-loculed; ovule pendulous; drupe inflated.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American
IUCN category: Least Concern
Phenology: March-January
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4083* (GVCH); Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3106* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3300* (GVCH).

Terminalia paniculata Roth, Nov. Pl. Sp. 383 (1821); Hook. f., Fl. Brit. India 2:448 (1878); Gamble, Fl. Pres. Madras 465 (1919); Vajr., Fl. Palghat Dist. 197 (1990).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves simple; lateral nerves 5-15 pairs; inflorescence an axillary or terminal panicle; calyx tubular, 5-lobed, pubescent; petals absent; stamens 10; ovary inferior, 1-loculed; ovules pendulous; drupe tomentose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: August-February
Distribution: Common
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2960* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3407* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5054* (GVCH).

Terminalia travancorensis Wight & Arn., Prodr. Fl. Ind. Orient. 1: 314 (1834); Gamble, Fl. Pres. Madras 464 (1919); *Terminalia angustifolia* sensu Roxb., Hook. f., Fl. Brit. India 2: 449 (1878).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple; lateral nerves 12-18 pairs; inflorescence an axillary or terminal paniculate spikes; calyx tubular, 5-lobed, pubescent; petals absent; stamens 10; ovary inferior, tomentose; drupe ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: May-December
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2040* (GVCH).

LYTHRACEAE

1.Trees or shrubs……..……..(2)
1.Herbs or subshrubs…..……..…(3)
2.Petals clawed…...…….***Lagerstroemia***
2.Petals not clawed…...……...***Lawsonia***
3.Plant flaccid; stamens in a single whorl……....***Rotala***
3.Plant not flaccid; stamens in 2 whorls…….....***Cuphea***

Cuphea P. Browne, Civ. Nat. Hist. Jamaica 216 (-217) (1756)

Cuphea hyssopifolia Kunth, Nov. Gen. Sp. [H.B.K.] vi. 199 (1824).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves sub-sessile, single-nerved; flowers axillary, solitary; calyx 6-toothed; petals 6; stamens included; ovary globose; capsule oblong.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: May-September
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 247* (GVCH); Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3101* (GVCH).

Lagerstroemia L., Syst. Nat., ed. 10. 2: 1068, 1076, 1372 (1759)

Lagerstroemia microcarpa Wight, Icon. Pl. Ind. Orient. [Wight] 1(4-5): no. IV (1838); Vajr., Fl. Palghat Dist. 205 (1990); *Lagerstroemia lanceolata* Wall. ex Clarke Hook. f., Fl. Brit. India 2: 576 (1879); Gamble, Fl. Pres. Madras 513 (1919); *Lagerstroemia thomsonii* Koehne, Gamble, Fl. Pres. Madras 513 (1919).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; leaves opposite, distichous; stipules 2; lateral nerves 6-10 pairs; inflorescence an axillary or terminal panicle; calyx 6-lobed; petals 6, clawed; stamens many; ovary half-inferior, 4-6-loculed; capsule ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: June-February
Distribution: Occasional
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2619* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4234* (GVCH).

Lawsonia L., Sp. Pl. 1: 349 (1753)

Lawsonia inermis L., Sp. Pl. 1: 349 (1753); Gamble, Fl. Pres. Madras 514 (1919); Vajr., Fl. Palghat Dist. 206 (1990); *Lawsonia alba* Lam., Hook. f., Fl. Brit. India 2: 573 (1879).

Habit: Shrub
Habitat: Grown as hedge plant
Morphology: Shrub; branches glabrous; leaves opposite, sub-sessile; inflorescence a terminal panicle; calyx 4-lobed; petals 4, wrinkled, crenate; stamens 8; anthers oblong; ovary globose, 4-loculed; capsule globose, 1-loculed.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Least Concern

Phenology: December-May

Distribution: Occasional

Altitude: 200-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3535* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5051* (GVCH); Plate 31: Fig. b.

Rotala L., Mant. Pl. Altera 143, 175 (1771)

Calyx lobes 3, appendages 3; petals 3; stamens 3…….....***R. malampuzhensis***

Calyx lobes 4, appendages absent; petals absent; stamens 2……....***R. mexicana***

Rotala malampuzhensis R.V.Nair ex C.D.K.Cook, Boissiera 29: 98, with type (1979).

Habit: Herb
Habitat: Stream banks
Morphology: Herb; leaves simple, opposite; flowers axillary, solitary, sessile; calyx tubular, 3-lobed; petals 3; stamens 3; ovary globose; stigma capitate; capsule globose, 3-valved.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Least Concern
Phenology: July-September
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1131* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3851* (GVCH); Mira Flores, 19 November 2020, *Jabeena & Maya 4392* (GVCH).

Rotala mexicana Cham. & Schltdl., Linnaea 5(4): 567 (1830); *Ammannia pygmaea* S. Kurz, Hook. f., Fl. Brit. India 2: 568 (1879).

Habit: Herb
Habitat: In Streams
Morphology: Herb; leaves whorled; flowers axillary, solitary, sessile; calyx tubular, 4-lobed; petals absent; stamens 2; ovary globose; stigma capitate; capsule globose, 2-3 valved.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Least Concern

Phenology: July-November

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3107*(GVCH).

ONAGRACEAE

Ludwigia L., Sp. Pl. [Linnaeus] 1: 118 [1204] (1753)

1.Plant hirsute……..……..***L. peruviana***
1.Plant glabrous or puberulous…….....(2)
2.Stamens 4……...…..***L. perennis***
2.Stamens 8……...……..***L. hyssopifolia***

Ludwigia hyssopifolia (G.Don) Exell, Garcia de Orta v. 471 (1957); Vajr., Fl. Palghat Dist. 208 (1990); *Jussiaea linifolia* Vahl, Gamble, Fl. Pres. Madras 1875 (1936).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; branchlets winged; leaves simple, glabrous; flowers axillary, solitary; calyx tubular, 4-lobed, persistent; petals 4; stamens 8, unequal; ovary 4-loculed; capsule linear, 8-ribbed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: August-December
Distribution: Common
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1728* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2197* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3097* (GVCH).

Ludwigia perennis L., Sp. Pl. 1: 119 (1753); Vajr., Fl. Palghat Dist. 208 (1990); *Ludwigia parviflora* Roxb., Hook. f., Fl. Brit. India 2: 588 (1879); Gamble, Fl. Pres. Madras 517 (1919).

Habit: Herb

Habitat: Water logged areas in Grasslands
Morphology: Herb; leaves alternate; flowers axillary, solitary; calyx tubular, 4-lobed; petals 4; stamens 4; ovary inferior, 4-5-loculed; capsule inflated, smooth.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and Australian
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 769* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2254* (GVCH).

Ludwigia peruviana (L.) H.Hara, J. Jap. Bot. 28: 293 (1953); Vajr., Fl. Palghat Dist. 208 (1990); *Jussiaea speciosa* Ridley, Gamble, Fl. Pres. Madras 1875 (1936).

Habit: Shrub
Habitat: Marshy areas
Morphology: Shrub; leaves alternate; flowers axillary, solitary; calyx 4-5-lobed, pubescent; petals 4; stamens 8-10, sub-equal; ovary inferior, 4-5-loculed; capsule 4-angled, villous.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated

Phenology: March-April

Distribution: Common

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1231* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3007* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3096* (GVCH); Plate 31: Fig. c.

MYRTACEAE

1.Leaves alternate...……....(2)
1.Leaves opposite…...……..…..(3)
2.Petals free……...…….....***Melaleuca***
2.Petals fused…...…….....***Eucalyptus***
3.Calyx limb closed in bud; ovary many loculed…….……....***Psidium***
3.Calyx limb open in bud; ovary 2 loculed……...……....(4)
4.Inflorescence cymose; calyx tube produced beyond the ovary…….***Syzygium***
4.Inflorescence solitary, fascicled or racemose; calyx tube not produced beyond the ovary…….……..…….***Eugenia***

Eucalyptus L'Hér., Sert. Angl. 18 (1788)

Fruit sessile; flowers axillary, solitary…..……....***E. globulus***
Fruit pedicelled; flowers in axillary umbels……..……***E. tereticornis***

Eucalyptus globulus Labill., Voy. Rech. Pérouse 1: 153, t. 13 (1800).

Habit: Tree
Habitat: Raised in plantations
Morphology: Tree; leaves opposite, sessile, glabrous, pellucid-punctate; lateral nerves many; flowers axillary, solitary; hypanthium ribbed; stamens many, free; anthers obovoid; ovary inferior, 3-5-loculed; capsule sessile, globose, 4-ribbed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Least Concern
Phenology: September-December
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1431* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4089* (GVCH).

Eucalyptus tereticornis Sm., Spec. Bot. New Holland 4: 41 (1795).

Habit: Tree
Habitat: Raised in plantations
Morphology: Tree; leaves alternate; lateral nerves many; inflorescence an axillary umbel; hypanthium campanulate; stamens many, unequal; ovary inferior, 3-4-loculed; capsule globular.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Australian
IUCN category: Least Concern
Phenology: March-September
Distribution: Common
Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2696* (GVCH); Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3518* (GVCH); Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3700* (GVCH).

Eugenia L., Sp. Pl. [Linnaeus] 1: 470 (1753)

1.Ovules in pendulous placentation……..***E. wynadensis***
1.Ovules in axile placentation…….....(2)
2.Young branchlets glabrous.....***E. uniflora***
2.Young branchlets hairy……...…...….(3)
3.Sepals ovate……...……..……(4)
3.Sepals not ovate…...……..……..(5)
4.Leaves spathulate or obovate…….***E.mabaeoides***
4.Leaves neither spathulate nor obovate.(5)
5.Petals orbicular, ciliate on margins……...…….***E. sp.nov.***
5.Petals elliptic, not ciliate on margins……...***E.roxburghii***
6.Sepals and petals oblong or elliptic……..……...….***E. mooniana***
6.Sepals and petals orbicular or suborbicular……..……..…(6)
7.Lateral nerves 5-6 pairs; fruit rusty tomentose……...…...***E. indica***
7.Lateral nerves 10-11 pairs; fruit glabrous…….……...***E. discifera***

Eugenia agasthiyamalayana Gopalan & Murugan, Indian J. Forest. 31(4): 641 (-642; fig. 1) (2008).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite; lateral nerves 10-12 pairs; inflorescence a raceme; calyx 4-lobed; petals 4, ciliate; 5-nerved at base; disc pubescent; stamens many, unequal; ovary inferior, 2-loculed; fruit a globose berry.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: February-June

Distribution: Rare

Altitude: 1300-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 12 January 2021, *Jabeena & Maya 4723* (GVCH); Plate 31: Fig. d.

Eugenia indica (Wight) Chithra, Fl. Tamil Nadu Ind., Ser I: Analysis 1: 153 (1983); *Eugenia jossinia* Duthie, Hook.f., Fl. Brit. India 2: 500 (1879); Gamble, Fl. Pres. Madras 484 (1919).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite, pellucid-dotted; flowers axillary, solitary or paired, pubescent; calyx campanulate, 4-lobed, tomentose; petals 4-lobed; stamens numerous; berry globose, crowned with persistent calyx.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: March-May
Distribution: Rare
Altitude: 1300-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1369* (GVCH).

Eugenia mabaeoides Wight, Ill. Ind. Bot. ii. 13. (1850); Hook. f., Fl. Brit. India 2: 503 (1879).
Habit: Shrub
Habitat: Shola forests
Morphology: Shrub; leaves opposite, pellucid-dotted; flowers axillary, solitary; calyx campanulate, 4-lobed, pubescent; petals 4; stamens many; ovary 2-loculed; berry ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Occasional
Altitude: 1100-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1610* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2547* (GVCH).

Eugenia mooniana Wight, Ill. Ind. Bot. 2: 13 (1841); Hook. f., Fl. Brit. India 2: 505 (1879); Gamble, Fl. Pres. Madras 484 (1919); *Eugenia thwaitesii* Duthie, Hook. f., Fl. Brit. India 2: 506 (1879).

Habit: Shrub
Habitat: Semi-evergreen and evergreen forests
Morphology: Shrub; stem glabrous; leaves opposite, ovate; flowers axillary or lateral, solitary or paired; calyx 4-lobed; petals 4, glandular; berry globose, glabrous, crowned by persistent calyx.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 557* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3013* (GVCH).

Eugenia roxburghii DC., Prodr. [A. P. de Candolle] 3: 271 (1828); *Eugenia bracteata* (Willd.) Raeusch. ex Roxb., Hook. f., Fl. Brit. India 2: 502 (1879); Gamble, Fl. Pres. Madras 484 (1919).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, coriaceous, pellucid-punctate, glabrous, margins recurved; inflorescence an axillary cyme; calyx 4-lobed; petals 4, glandular; stamens many; ovary 2-loculed; fruit a globose berry.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2100* (GVCH); Keshavanpara, 06 July 2019, *Jabeena & Maya 2171* (GVCH).

Eugenia sp. nov. Jabeena, K. M. P. Kumar, Naveen & Maya

Habit: Shrub
Habitat: Growing along the margins of grasslands
Morphology: Shrub; branches terete, young parts brown pubescent, glabrous when mature; leaves petiolate, petiole pubescent, lamina entire at margin, lateral veins parallel, obscure, 10–12 pairs, intra-marginal nerve 1-tiered; inflorescence axillary solitary or paired, sometimes clustered at the tip of branches; flowers white, tinged with red at apex, bisexual, pedicels stout, pubescent; bracts 2, equal,

fulvous tomentose; bracteoles 2, equal, fulvous tomentose; calyx lobes 4, unequal, fulvous tomentose outside, glabrous inside, non-persistent; petals 4, white with red tinge at apex, orbicular, ciliate on margin, reflexed; stamens many, unequal; anthers dorsifixed; disc villous; ovary inferior, hypanthium conical, 2–locular, densely fulvous tomentose; ovules 2 in each locule; style glabrous; stigma simple; fruit a succulent berry without persistent sepals. Seed one or two.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1016* (GVCH).

Eugenia uniflora L., Sp. Pl. 1: 470 (1753); Hook. f., Fl. Brit. India 2: 505 (1879).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; leaves opposite, pellucid-punctuate; lateral nerves 4-5 pairs; flowers in an axillary 1-3-flowered cymes; calyx 4-lobed; petals 4; stamens many; fruit prominently ribbed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: South American
IUCN category: Least Concern
Phenology: March-July
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3089* (GVCH); Mira Flores, 19 November 2020, *Jabeena & Maya 4391* (GVCH).

Eugenia wynadensis Bedd., Madras J. Lit. Sci. Ser. III, i. (1864) 47; Hook. f., Fl. Brit. India 2: 506 (1879); *Meteoromyrtus wynaadensis* (Bedd.) Gamble, Gamble, Fl. Pres. Madras 485 (1919).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite; lateral nerves many; flowers axillary, solitary; calyx campanulate, 4-lobed; petals 4, pellucid punctate; stamens many; ovary 2-loculed; fruit ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Critically Endangered
Phenology: February-August
Distribution: Common
Altitude: 800-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 156* (GVCH); Manpara, 29 July 2017, *Jabeena & Maya 202* (GVCH); Nelliyampathy range, Keshavanpara, *Jabeena & Maya 2176* (GVCH).

Melaleuca L., Mant. Pl. 14 (1767)

Melaleuca citrina (Curtis) Dum. Cours., Bot. Cult. 3: 282 (1802).

Habit: Tree
Habitat: Cultivated as ornamental tree
Morphology: Tree; leaves alternate, glandular punctate; inflorescence a spike; calyx 5-lobed, pubescent; petals 5, glandular; stamens many, connate; ovary 3-loculed; stigma simple.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Australian

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range,

Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4049* (GVCH).

Psidium L., Sp. Pl. 1: 470 (1753)

Psidium guajava L., Sp. Pl. 1: 470 (1753); Hook. f., Fl. Brit. India 2: 468 (1878); Gamble, Fl. Pres. Madras 472 (1919); Vajr., Fl. Palghat Dist. 201 (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves opposite; inflorescence an axillary 1-3-flowered cyme; calyx 4-lobed; petals 4; stamens many; ovary globose, many-loculed; ovules numerous; inflorescence a globose berry, crowned by persistent calyx lobes.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: March-May
Distribution: Common
Altitude: 100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 094* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2204* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2982* (GVCH).

Syzygium P. Browne ex Gaertn., Fruct. Sem. Pl. 1: 166 (1788)

1.Calyx tube funnel shaped or tubular…(2)
1.Calyx tube turbinate……..……..(4)
2.Peioles 10-20 mm long....***S. aromaticum***
2.Petioles less than 0.6 mm long…….....(3)
3.Petals free, deciduous; leaves elliptic…….***S. lanceolatum***
3.Petals calyptrate; leaves obovate……....***S. palghatense***
4.Flowers more than 3 cm across...……(5)
4.Flowers less than 1 cm across…...…..(7)
5.Leaf base cordate…...…..***S. mundagum***
5.Leaf base not cordate…...……..…..(6)
6.Flowers white; pedicel upto 2 cm long……..…***S. jambos***
6.Flowers crimson or yellow; pedicel 2-5 cm long……..……..***S. laetum***
7.Leaves membranous; cymes slender……...***S. gardneri***
7.Leaves coriaceous; cymes stout…….....(8)
8.Leaves upto 9 cm long; inflorescence a terminal panicle..……....***S. densiflorum***
8.Leaves upto 18 cm long; inflorescence cymose from leaf scars……...***S. cumini***

Syzygium aromaticum (L.) Merr. & L.M.Perry, Mem. Amer. Acad. Arts 18: 196 (1939); *Eugenia caryophyllata* Thunb., Hook. f., Fl. Brit. India 2: 506 (1879).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves opposite; lateral nerves many; inflorescence cymose; calyx tubular, 4-toothed; petals 4; stamens many; ovary inferior, 2-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2929* (GVCH); Victoria, 12 October 2020, *Jabeena & Maya 4178* (GVCH).

Syzygium cumini (L.) Skeels, Bull. Bur. Pl. Industr. U.S.D.A. 25: 248 (1912); Vajr., Fl. Palghat Dist. 199 (1990); *Eugenia jambolana* Lam., Hook. f., Fl. Brit. India 2: 499 (1879); *Syzygium jambolanum* (Lam.) DC., Gamble, Fl. Pres. Madras 481 (1919).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite, gland-dotted; lateral nerves many; inflorescence paniculate; calyx tubular, 4-lobed; petals 4; stamens many; berry obovoid.
Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: December-April
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1870* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3972* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5048* (GVCH).

Syzygium densiflorum Wall. ex Wight & Arn., Prodr. Fl. Ind. Orient. 329 (1834); *Syzygium arnottianum* (Wight) Walp., Gamble, Fl. Pres. Madras 475 (1919); *Eugenia arnottiana* Wight, Hook. f., Fl. Brit. India 2: 483 (1878); *Eugenia benthamiana* Wight ex Duthie Hook. f., Fl. Brit. India 2: 484 (1878); *Eugenia arnottiana* (Walp.) Wight *var. benthamiana* Wight ex Duthie Hook. f., Fl. Brit. India 2: 484 (1878); *Syzygium benthamianum* (Wight ex Duthie) Gamble, Fl. Pres. Madras 478 (1919).

Habit: Tree
Habitat: Evergreen and Shola forests
Morphology: Tree; branches tetragonous; leaves opposite, sessile, glandular punctate; lateral nerves many; inflorescence a corymb of umbellules; calyx tubular, 4-lobed; petals 4; stamens many; ovary inferior, 2-loculed; berry ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Vulnerable
Phenology: April-June
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2543* (GVCH).

Syzygium gardneri Thwaites, Enum. Pl. Zeyl. [Thwaites] 117 (1859); Gamble, Fl. Pres. Madras 479 (1919); *Eugenia gardneri* (Thw.) Bedd., Hook. f., Fl. Brit. India 2: 489 (1878); *Eugenia cymosa* Lam. var. *rostrata* Duthie, Hook. f., Fl. Brit. India 2: 482 (1878).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite, glabrous; lateral nerves many; inflorescence an axillary or terminal trichotomous cyme; calyx tubular, 4-lobed; petals 4; stamens many; ovary inferior, 2-loculed; stigma simple; berry ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Common
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1784* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4104* (GVCH); Karassuri, 12 January 2021, *Jabeena & Maya 4731* (GVCH); Plate 31: Fig. e.

Syzygium jambos (L.) Alston, Handb. Fl. Ceylon 6(Suppl.): 115 (1931); Vajr., Fl. Palghat Dist. 200 (1990); *Eugenia jambos* L., Hook. f., Fl. Brit. India 2: 474 (1878); *Jambosa vulgaris* DC., Gamble, Fl. Pres. Madras 474 (1919).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves opposite; lateral nerves 10-16 pairs; inflorescence a terminal cyme; calyx tubular, 4-lobed, sub-equal; petals 4; stamens many, unequal; ovary inferior, 2-loculed; berry oblong.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Least Concern
Phenology: October-January

Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2739* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3098* (GVCH); Plate 31: Fig. f.

Syzygium laetum (Buch.-Ham.) Gandhi, Fl. Hassan Dist. [Saldanha & Nicolson] 282 (1976); Vajr., Fl. Palghat Dist. 200 (1990); *Eugenia laeta* Buch.-Ham., Hook. f., Fl. Brit. India 2: 479 (1878); *Jambosa laeta* (Buch.-Ham) Blume, Gamble, Fl. Pres. Madras 474 (1919).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite, glabrous, pellucid-punctate; lateral nerves 10-15 pairs; flowers in terminal corymbose cyme; calyx tubular, 4-lobed, persistent; petals 4; stamens many; ovary inferior, 2-loculed; berry oblong.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: December-July
Distribution: Occasional
Altitude: 900-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3552* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3888* (GVCH).

Syzygium lanceolatum Wight & Arn., Prodr. Fl. Ind. Orient. 1: 330 (1834); Vajr., Fl. Palghat Dist. 200 (1990); *Syzygium wightianum* Wall. ex Wight & Arn., Fl. Pres. Madras 478 (1919); *Eugenia wightiana* (Wall. ex Wight & Arn.) Wight, Hook. f., Fl. Brit. India 2: 485 (1878).

Habit: Tree
Habitat: Evergreen and Shola forests
Morphology: Tree; leaves opposite, glabrous, pellucid-dotted; lateral nerves many; inflorescence a few-flowered axillary raceme; calyx tubular, elongate, funnel-shaped, 4-lobed; petals 4; stamens many; ovary 2-loculed; berry ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Occasional
Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1625* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1088* (GVCH); Plate 31: Fig. g.

Syzygium mundagam (Bourd.) Chithra, Fl. Tamil Nadu Ind., Ser I: Analysis 1: 157 (1983); Vajr., Fl. Palghat Dist. 200 (1990); *Jambosa mundagam* (Bourd.) Gamble, Fl. Pres. Madras 473 (1919).

Habit: Tree

Habitat: Evergreen forests

Morphology: Tree; leaves opposite; lateral nerves 18-22 pairs; inflorescence corymbose; calyx tubular, 4-lobed; petals 4; stamens many; ovary inferior, 2-loculed; ovules many; berry ovoid.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: February-March

Distribution: Occasional

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1340* (GVCH); Nelliyampathy

range, Mattumala, 17 January 2020, *Jabeena & Maya 3788* (GVCH).

Syzygium palghatense Gamble, Bull. Misc. Inform. Kew 1918(7): 240 (1918); Gamble, Fl. Pres. Madras 480 (1919).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite, margin reflexed, prominently glandular; lateral nerves many; inflorescence a lax terminal or axillary cyme; calyx tubular, 4-lobed; petals 4; stamens many; ovary inferior, 2-loculed; berry obconic, crowned by persistent calyx.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Critically Endangered
Phenology: January-June
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 996* (GVCH); Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1487* (GVCH).

MELASTOMATACEAE

1.Leaves penni-nerved……....***Memecylon***
1.Leaves 3 or more ribbed at base…....(2)
2.Flowers trimerous……...***Sonerila***
2.Flowers tetra or pentamerous…..……....(3)
3.Habitat Epiphytic……..……....***Medinilla***
3.Habitat Terrestrial……...…..…..(4)
4.Plant climbing……..……...***Heterotis***
4.Plant erect……..……....(5)
5.Stamens equal……....***Osbeckia***
5.Stamens unequal……..…....***Melastoma***

Heterotis Benth., Niger Fl. [W. J. Hooker]. 347 (1849)

Heterotis rotundifolia (Sm.) Jacq.-Fél., Adansonia sér. 2, 20(4): 417 (1981).

Habit: Climber
Habitat: Grown in Gardens
Morphology: Climber; stem pubescent; leaves 3-nerved at base, pubescent; sepals lanceolate with sharp bristles externally; petals 5; stamens unequal; anthers spurred; ovary inferior, 3-loculed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: African
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Rare
Altitude: 800-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2803* (GVCH).

Medinilla Gaudich., Voy. Uranie, Bot. 484, t. 106 (1830)

Medinilla beddomei C.B.Clarke, Fl. Brit. India [J. D. Hooker] 2(6): 548 (1879); Gamble, Fl. Pres. Madras 496 (1919); Vajr., Fl. Palghat Dist. 202 (1990).

Habit: Shrub
Habitat: Moist Deciduous, Semi-evergreen and Evergreen forests
Morphology: Shrub; leaves simple, opposite, 3-ribbed; inflorescence an axillary 1-3-flowered cyme; calyx tube ovoid; petals 4-5; stamens 10; anthers acuminate, spurred at base.

Raunkiaer's life-form: Epiphyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: May-June

Distribution: Common

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 11 January 2020, *Jabeena & Maya 3585* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3917* (GVCH);

Chandramala, 03 November 2019, *Jabeena & Maya 2757* (GVCH).

Melastoma L., Sp. Pl. 1: 389 (1753)

Melastoma malabathricum L., Sp. Pl. 1: 390 (1753); Hook. f., Fl. Brit. India 2: 523 (1879); Gamble, Fl. Pres. Madras 495 (1919).

Habit: Shrub
Habitat: Stream banks and Marshy areas
Morphology: Shrub; stem bristly; leaves opposite, 3-7-ribbed; inflorescence a terminal cluster; calyx campanulate, 5-lobed, covered with strigose hairs; petals 5; stamens 10, unequal; ovary ovoid, 5-loculed; ovules many; capsule ovoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 300-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5047* (GVCH); Plate 31: Fig. h.

Memecylon L., Sp. Pl. 1: 349 (1753)

1.Leaves sessile or sub-sessile...……(2)
1.Leaves petioled…...……(4)
2.Branchlets tetragonous……***M. wallichii***
2.Branchlets terete or subterete…....…(3)
3.Leaves oblong-lanceolate, acuminate at apex; calyx saucer shaped above the ovary...……...….***M. randerianum***
3.Leaves ovate, obtusely acute at apex; calyx campanulate above the ovary……...***M. heyneanum***
4.Berry yellow……..……....(5)
4.Berry blue or purple...……...…..(6)
5.Leaves upto 5 cm long; flowers distinctly pedicelled……...***M. umbellatum***
5.Leaves upto 15 cm long; flowers sessile……....***M. talbottianum***
6.Leaves linear-lanceolate; calyx above the ovary saucer shaped…....***M. angustifolium***
6.Leaves elliptic; calyx above ovary campanulate……..……...***M. bremerii***

Memecylon angustifolium Wight, Ill. Ind. Bot. i. 215 (1840); Hook. f., Fl. Brit. India 2: 562 (1879); Gamble, Fl. Pres. Madras 504 (1919).

Habit: Shrub
Habitat: Along stream banks in Evergreen forests
Morphology: Shrub; leaves opposite, petioled; inflorescence a branched cyme of umbellules; calyx campanulate, 4-lobed; petals 4; stamens 8, equal; ovary 1-loculed; berry globose, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 990* (GVCH); Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1310* (GVCH).

Memecylon bremeri M.B.Viswan., Nordic J. Bot. 21(3): 256 (2001).

Habit: Tree
Habitat: Semi-evergreen and Shola forests
Morphology: Tree; leaves opposite; lateral nerves 4-6 pairs; inflorescence an axillary fascicle; calyx 4-lobed; petals 4; stamens 8, equal; ovary 1-loculed; ovules many; berry globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to South India

IUCN category: Not Evaluated

Phenology: December-April

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1321* (GVCH).

Memecylon heyneanum Benth. ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 319 (1834); Hook. f., Fl. Brit. India 2: 560 (1879); Gamble, Fl. Pres. Madras 503 (1919); Vajr., Fl. Palghat Dist. 202 (1990).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, petioled; lateral nerves 10-16 pairs; flowers in axillary fascicles; calyx campanulate, 4-lobed; petals 4; stamens 8, equal; ovary 1-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: February-September
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1795* (GVCH).

Memecylon randerianum S.M.Almeida & M.R.Almeida, J. Bombay Nat. Hist. Soc. 85(3): 521 (1989); *Memecylon malabaricum* (Clarke) Cogn., Gamble, Fl. Pres. Madras 505 (1919); *Memecylon amplexicaule* Roxb. var. *malabarica* Clarke, Hook. f., Fl. Brit. India 2: 559 (1879).

Habit: Shrub
Habitat: Evergreen, Semi-evergreen forests and also in Sacred grooves
Morphology: Shrub; leaves opposite, sessile; inflorescence a many-flowered cyme; calyx campanulate; petals 4; stamens 8, equal; style subulate; ovary 1-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: February-May
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 06 July 2019, *Jabeena & Maya 2169* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1617* (GVCH); Plate 32: Fig. a

Memecylon talbotianum D.Brandis, in W.A. Talbot, Trees, Shrubs, Woody Climbers Bombay appendix (1902); Gamble, Fl. Pres. Madras 503 (1919).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves petioled, intramarginal nerve and about 6 branching nerves visible; peduncle short, fascicled, axillary or lateral; flowers sessile in umbels; calyx campanulate, 4-lobed; petals 4; stamens 8; ovary 1-loculed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: February-May
Distribution: Rare
Altitude: 1400-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1106* (GVCH).

Memecylon umbellatum Burm.f., Fl. Ind. (N. L. Burman) 87 (1768); Gamble, Fl. Pres. Madras 504 (1919); Vajr., Fl. Palghat Dist. 202 (1990); *Memecylon edule* Roxb., Hook. f., Fl. Brit. India 2: 563 (1879); Gamble, Fl. Pres. Madras 504 (1919).

Habit: Shrub
Habitat: Semi-evergreen, shola and moist deciduous forests
Morphology: Shrub; leaves petioled; lateral nerves 8-10 pairs forming an intra-marginal nerve; cymes branched, lateral, the ultimate branches umbellulate; calyx campanulate, 4-lobed; petals 4; stamens 8, equal; ovary 1-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-March
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1618* (GVCH); Mattumala, 02 July 2017, *Jabeena & Maya 150* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 894* (GVCH); Plate 32: Fig. b.

Memecylon wallichii Ridl., Journ. Straits Br. Roy. As. Soc. No. 79, 74 (1918); *Memecylon depressum* Benth. ex Triana, Gamble, Fl. Pres. Madras 505 (1919); Vajr., Fl. Palghat Dist. 202 (1990).

Habit: Shrub
Habitat: Evergreen and semi-evergreen forests
Morphology: Shrub; leaves sessile; lateral nerves 10-12 pairs; flowers fascicled on axillary or lateral small tubercles; calyx-tube above the ovary suddenly widened to saucer-shape; petals 4; stamens 8, equal; ovary 1-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Vulnerable
Phenology: January-March
Distribution: Occasional
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2025* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2106* (GVCH).

Osbeckia L., Sp. Pl. 1: 345 (1753)

1.Flower tetramerous……..…….……..(2)
1.Flower pentamerous...……...…….(4)
2.Calyx tube covered with simple hairs only……...…….…….***O. gracilis***
2.Calyx tube covered with simple and stellate hairs…….……...(3)
3.Calyx lobes lanceolate; petals white with pink blotches; capsule urceolate…...……...***M. brachystemon***
3.Calyx lobes triangular; petals pink; capsule globose……..……...…***O. muralis***
4.Calyx tube with few large peltatescales or hairs…….……...…***O. virgata***
4.Calyx tube densely bristled or hairy…...……...…..(5)
5.Leaves 3-ribbed……***O. aspera***
5.Leaves 5-7 ribbed...…….(6)
6.Leaves 5-ribbed; flowers 3-5 together…….....***O. wightiana***
6.Leaves 7-ribbed; flowers 5-15 together….……***O. travancorica***

Osbeckia aspera Blume, Flora 14: 474 (1831); *Osbeckia aspera* (L.) Blume, var. *aspera* Hook. f., Fl. Brit. India 2: 519 (1879); Gamble, Fl. Pres. Madras 492 (1919); Vajr., Fl. Palghat Dist. 203 (1990); *Osbeckia kleinii* Wight & Arn., Gamble, Fl. Pres. Madras 492 (1919); *Osbeckia courtallensis* Gamble, Gamble, Fl. Pres. Madras 492 (1919); *Osbeckia lawsonii* Gamble, Gamble, Fl. Pres. Madras 503 (1919);

Habit: Shrub
Habitat: Evergreen forests and grasslands
Morphology: Shrub; branchlets scabrous; leaves opposite, 5-ribbed at base; inflorescence a terminal cyme; calyx campanulate, 5-lobed, stellately bristled at apex; petals 5; stamens 10; ovary half-inferior, 4-5-loculed, hairy at apex; capsule ovoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-April
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2472* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2623*

(GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4201* (GVCH); Plate 32: Fig. c.

Osbeckia brachystemon Naudin, Ann. Sci. Nat., Bot. sér. 3, 14: 57 (1850); *Osbeckia truncata* D. Don ex Wight & Arn., Hook. f., Fl. Brit. India 2: 514 (1879); Gamble, Fl. Pres. Madras 494 (1919); *Osbeckia cupularis* D. Don ex Wight & Arn., Gamble, Fl. Pres. Madras 494 (1919).

Habit: Herb
Habitat: Moist deciduous forests and grasslands
Morphology: Herb; leaves opposite, 3-ribbed at base; inflorescence an axillary or terminal cyme; calyx tubular, 4-lobed, each with a stellate clusters of bristles at tip; petals 4; stamens 8; ovary 4-loculed; capsule urceolate.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1866* (GVCH).

Osbeckia gracilis Bedd., Madras J. Lit. Sci. Ser. 3, i. (1864) 45; et in Trans. Linn. Soc. xxv. (1865)216; Hook. f., Fl. Brit. India 2: 518 (1879); Gamble, Fl. Pres. Madras 494 (1919); *Osbeckia sublaevis* Cogn., Gamble, Fl. Pres. Madras 492 (1919); *Osbeckia lineolata* Gamble, Gamble, Fl. Pres. Madras 492 (1919).

Habit: Shrub
Habitat: Moist deciduous and shola forests
Morphology: Shrub; leaves opposite, 3-ribbed at base; inflorescence a terminal cyme; calyx tubular, 5-lobed, covered with simple bristles only; petals 5, ciliate; stamens 10; ovary 5-loculed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 952* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2467* (GVCH); Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3578* (GVCH).

Osbeckia muralis Naudin, Ann. Sci. Nat., Bot. sér. 3, 14: 56 (1850); *Osbeckia truncata* D. Don ex Wight & Arn., Hook. f., Fl. Brit. India 2: 514 (1879); Gamble, Fl. Pres. Madras 494 (1919); *Osbeckia truncata* var. *kurzii* Clarke, Hook.f., Fl. Brit. India 2: 514 (1879).
Habit: Herb
Habitat: Rocky areas in moist deciduous forests
Morphology: Herb; leaves opposite, 3-ribbed at base; inflorescence a terminal cymose cluster; calyx campanulate, 4-lobed, covered with simple hairs only; petals 4; stamens 8; ovary 4-loculed; capsule globose.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats

IUCN category: Not Evaluated

Phenology: September-December

Distribution: Occasional

Altitude: 700-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4260* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4286* (GVCH).

Osbeckia travancorica Bedd. ex Gamble, Bull. Misc. Inform. Kew 1919(10): 404 (1919); Gamble, Fl. Pres. Madras 493 (1919).

Habit: Shrub
Habitat: Grasslands
Morphology: Shrub; branches bristly; leaves opposite, 7-ribbed; inflorescence a terminal cyme; calyx cupular, 5-lobed, covered with stalked bristles; petals 5; stamens 10; ovary half-inferior, 5-loculed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4284* (GVCH).

Osbeckia virgata D.Don ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 323 (1834); *Osbeckia octandra* sensu Clarke, Hook.f., Fl. Brit. India 2: 521 (1879); Gamble, Fl. Pres. Madras 493 (1919).

Habit: Shrub
Habitat: Grassy areas in evergreen and moist deciduous forests
Morphology: Shrub; leaves 3-ribbed at base; inflorescence a terminal cluster; calyx tubular, 5-lobed, stellate hairy; petals 5; stamens 10; ovary 5-loculed; hairy; capsule sub-globose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-March
Distribution: Occasional
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 942* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2029* (GVCH); Plate 32: Fig. d.

Osbeckia wightiana Benth., Numer. List [Wallich] n. 4060 (1831); Hook. f., Fl. Brit. India 2: 519 (1879); Gamble, Fl. Pres. Madras 493 (1919); *Osbeckia aspera* (L.) Blume var. *wightiana* (Benth. ex Wight & Arn.) Trimen, Vajr., Fl. Palghat Dist. 203 (1990).

Habit: Shrub
Habitat: Evergreen and moist deciduous forests and grasslands
Morphology: Shrub; leaves opposite, 5-ribbed at base; inflorescence a terminal cluster; calyx tubular, densely hairy; petals 5; stamens 10; ovary 5-loculed.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India

IUCN category: Not Evaluated

Phenology: November-April

Distribution: Occasional

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1052* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4480* (GVCH).

Sonerila Roxb., Fl. Ind. (Carey & Wallich ed.) 1: 180 (1820)

1.Caulescent herb…..……..….***S. nairii***

1.Acaulescent herbs...……...……..(2)

2.Leaves 9 ribbed from base……...***S. veldcampiana***

2.Leaves 1-3 ribbed from base…..…....(3)

3.Inflorescence one per plant, 1-3 flowered cyme…….……..……...…***S. victoriae***

3.Inflorescence 2 per plant, 3-17 flowered cyme……...……...***S. wallichii***

Sonerila nairii M.Soumya & Maya, PhytoKeys 62: 16 (2016).

Habit: Herb
Habitat: Shady rock surfaces within moist loose soils and under the evergreen canopies
Morphology: Herb; stem translucent; leaves opposite, 3-ribbed at base; inflorescence a terminal, 1-2-flowered cyme; calyx 3-lobed; petals 3; stamens 3; stigma capitate; capsule campanulate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2593* (GVCH); Plate 32: Fig. e.

Sonerila veldkampiana Ratheesh, Mini & Sivad., Phytotaxa 110(1): 56 (2013).

Habit: Herb
Habitat: On rocky slopes in Grasslands
Morphology: Acualescent herb; leaves radical, 9-ribbed at base; inflorescence a scorpioid cyme; sepals 3, triangular; petals 3; stamens 3; capsule campanulate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 July 2017, *Jabeena & Maya 326* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2230* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2454* (GVCH).

Sonerila victoriae M.Soumya & Maya, Phytotaxa 324(2): 188 (2017).

Habit: Herb
Habitat: High altitude shady rock surfaces with moist loose soils
Morphology: Acaulescent herb; leaves radical; inflorescence a terminal, 1-3-flowered cyme; calyx 3-lobed, triangular; petals 3; stamens 3; ovary 3-loculed; capsule campanulate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2587* (GVCH); Nelliyampathy range, Victoria, 12 October 2020, *Jabeena & Maya 4180* (GVCH); Plate 32: Fig. f.

Sonerila wallichii Benn., Pl. Jav. Rar. 215 (1844); Hook. f., Fl. Brit. India 2: 538 (1879); Gamble, Fl. Pres. Madras 500 (1919).

Habit: Herb
Habitat: Wet rocks in Grasslands
Morphology: Acaulescent herb; leaves radical, 3-ribbed at base; inflorescence a 4-6 flowered cyme; sepals 3, triangular, hairy; petals 3, glabrous; stamens 3; capsule hemispheric.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Occasional
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 665* (GVCH); Nelliyampathy range,

Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 690* (GVCH).

CROSSOSOMATALES

STAPHYLEACEAE

Turpinia Vent., Choix Pl. 31 (t. 31) (1807)

Turpinia malabarica Gamble, Bull. Misc. Inform. Kew 1916(5): 135 (1916); *Turpinia nepalensis* Wall. ex Wight & Arn., Gamble, Fl. Pres. Madras 241 (1918); Vajr., Fl. Palghat Dist. 128 (1990); *Turpinia pomifera* sensu Hiern, Hook.f., Fl. Brit. India 1: 698 (1875).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite, imparipinnate; leaflets 3-7, opposite; lateral nerves 4-7 pairs; inflorescence an axillary or terminal panicle; sepals 5, ciliate; petals 5; stamens 5; ovary sessile, 3-loculed; berry sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4574* (GVCH); Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4971* (GVCH).

SAPINDALES

BURSERACEAE

Stamens connate into a tube…..***Canarium***
Stamens free…...……..…....***Garuga***

Canarium L., Amoen. Acad., Linnaeus ed. 4: 121, 143 (1759)

Canarium strictum Roxb., Hort. Bengal. 49; Fl. Ind. iii. 138; Hook. f., Fl. Brit. India 1: 534 (1875); Gamble, Fl. Pres. Madras 172 (1915); Vajr., Fl. Palghat Dist. 107 (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate, imparipinnate; leaflets 7-11, opposite; lateral nerves 10-20 pairs; inflorescence a terminal or axillary panicle; calyx campanulate, 3-lobed, pubescent; petals 3; stamens 6, sub-equal; ovary 3-loculed; drupe ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 905* (GVCH); Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4560* (GVCH).

Garuga Roxb., Pl. Coromandel 3(1): 5 (1811)

Garuga pinnata Roxb., Hort. Bengal. 33; Pl. Corom. t. 208. (1811); Hook. f., Fl. Brit. India 1: 528 (1875); Gamble, Fl. Pres. Madras 169 (1915); Vajr., Fl. Palghat Dist. 107 (1990).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; leaves alternate, imparipinnate; leaflets 11-21, opposite; lateral nerves 12-18 pairs; inflorescence an axillary panicle; calyx campanulate, 5-lobed, pubescent; petals 5; stamens 10; ovary globose, 5-loculed; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-August
Distribution: Occasional

Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1202* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4249* (GVCH).

ANACARDIACEAE

1.Leaves compound…...……..…..(2)
1.Leaves simple……..…….…(3)
2.Ovary one loculed……...…….***Lannea***
2.Ovary 5 loculed……..….***Spondias***
3.Petiole appendaged…….…….***Holigarna***
3.Petiole not appendaged……..……(4)
4.Drupe on fleshy hypocarp....***Anacardium***
4.Drupe not on fleshy hypocarp…...…..(5)
5.Stamens 1 or 2 fertile…...…...***Mangifera***
5.Stamens all fertile……...….***Nothopegia***

Anacardium L., Sp. Pl. 1: 383 (1753)

Anacardium occidentale L., Sp. Pl. 1: 383 (1753); Hook. f., Fl. Brit. India 2: 20 (1876); Gamble, Fl. Pres. Madras 260 (1918); Vajr., Fl. Palghat Dist. 135 (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves simple, alternate; lateral nerves 10-15 pairs; inflorescence a terminal panicle; calyx 5-lobed; petals 5, recurved; stamens 8-10; ovary obovoid, 1-loculed; fruit a reniform nut seated on a fleshy body formed of the enlarged disc and top of the peduncle.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: November-April
Distribution: Common
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothundy-Kaikatty, 29 July 2017, *Jabeena & Maya 319* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3086* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4126* (GVCH).

Holigarna Buch.-Ham. ex Roxb., Pl. Coromandel 3(4): 79 (1820)

1.Leaves pubescent or tomentose beneath; petiole spurs persistent……...(2)
1.Leaves glabrous; petiole spurs deciduous……...…(3)
2.Calyx 5-fid; fruit not oblique; spurs 1 pair…….……***H. beddomei***
2.Calyx shortly 5 toothed; fruit oblique; spurs 2 pairs……...***H. grahamii***
3.Leaf apex obtusely acute; fruit ellipsoid……***H. arnottiana***
3.Leaf apex emarginate; fruit obovoid……...(4)
4.Petals rounded; leaves obovate……..***H. ferruginea***
4.Petals acute; leaves spathulate....***H. nigra***

Holigarna arnottiana Hook.f., Fl. Brit. India [J. D. Hooker] 2(4): 36 (1876); Gamble, Fl. Pres. Madras 268 (1918); Vajr., Fl. Palghat Dist. 136 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 10-20 pairs; inflorescence an axillary panicle; calyx cupular, 5-lobed; petals 5; stamens 5; ovary inferior, 1-loculed; drupe oblique.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-July
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mannathypalam, 12 October 2020, *Jabeena & Maya 4172* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4570* (GVCH).

Holigarna beddomei Hook.f., Fl. Brit. India [J. D. Hooker] 2(4): 36 (1876); Gamble, Fl. Pres. Madras 269 (1918).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 20-30 pairs; calyx 5-lobed, tomentose; petals 5; stamens 5; ovary inferior, 1-loculed; drupe oblique.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-March
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 188* (GVCH).

Holigarna ferruginea Marchand, Rev. Anacard. 171 (1868); Hook. f., Fl. Brit. India 2: 37 (1876); Gamble, Fl. Pres. Madras 268 (1918).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 7-12 pairs; inflorescence an axillary or terminal panicle of raceme; calyx campanulate, 5-lobed; petals 5; stamens 5; ovary inferior, 1-loculed; drupe obovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4571* (GVCH); Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 547* (GVCH).

Holigarna grahamii Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 41(4): 305 (1872); Hook. f., Fl. Brit. India 2: 37 (1876); Gamble, Fl. Pres. Madras 268 (1918); Vajr., Fl. Palghat Dist. 136 (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves many; inflorescence a terminal panicle; calyx campanulate, 5-lobed; petals 5; stamens 5; ovary inferior, 1-loculed; drupe ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 885* (GVCH).

Holigarna nigra Bourd., Indian Forester 30: 95 (1904); Gamble, Fl. Pres. Madras 268 (1918); Vajr., Fl. Palghat Dist. 137 (1990).

Habit: Tree
Habitat: Evergreen trees
Morphology: Tree; leaves simple, alternate; lateral nerves 6-9 pairs; inflorescence a terminal or axillary panicle; calyx campanulate, 5-lobed; petals 5; stamens 5; ovary inferior, 1-loculed; drupe obovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1603* (GVCH); Nelliyampathy

range, Mattumala, 17 January 2020, *Jabeena & Maya 3784* (GVCH).

Lannea A. Rich. in Guill., Fl. Seneg. Tent. 153 (1831)

Lannea coromandelica (Houtt.) Merr., J. Arnold Arbor. 19: 353 (1938); Vajr., Fl. Palghat Dist. 137 (1990); *Odina wodier* Roxb., Hook. f., Fl. Brit. India 2: 37 (1876); Gamble, Fl. Pres. Madras 263 (1918).

Habit: Tree
Habitat: Deciduous forests
Morphology: Tree; leaves alternate, imparipinnate; leaflets 7-11, opposite; lateral nerves 10-16 pairs; flowers in terminal panicled raceme; calyx 4-lobed, persistent; petals 4, reflexed, imbricate; stamens 8, unequal; ovary sub-globose; styles 4; ovules pendulous; drupe ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: January-May
Distribution: Occasional
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1673* (GVCH); Nelliyampathy range, exact location, 646m, 26 January 2018, *Jabeena & Maya 4982* (GVCH); Plate 32: Fig. g.

Mangifera L., Sp. Pl. 1: 200 (1753)

Mangifera indica L., Sp. Pl. 1: 200 (1753); Hook. f., Fl. Brit. India 2: 13 (1876); Gamble, Fl. Pres. Madras 259 (1918); Vajr., Fl. Palghat Dist. 138 (1990).

Habit: Tree
Habitat: Evergreen and semi-evergreen forests and also in cultivation
Morphology: Tree; leaves simple, alternate; lateral nerves 14-28 pairs; inflorescence a terminal panicle; calyx 4-5-lobed, hairy; petals 4-5; stamens 4-5; ovary oblique, 1-loculed; ovule pendulous; style lateral; drupe oblong-reniform.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Data Deficient
Phenology: January-May
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3404* (GVCH); Koonampalam, 14 December 2019, *Jabeena & Maya 3463* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4579* (GVCH); Plate 32: Fig. h.

Nothopegia Blume, Mus. Bot. 1(13): 203 (1850)

Nothopegia colebrookiana (Wight) Blume, Mus. Bot. 1(13): 203 (1850); Hook. f., Fl. Brit. India 2: 40 (1876); Gamble, Fl. Pres. Madras 265 (1918).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 15-21 pairs; inflorescence an axillary raceme; flowers polygamous; calyx 4-lobed, persistent; petals 4, hairy; stamens 4; ovary sessile, ovoid, 1-loculed; ovule pendulous; drupe globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: March-May

Distribution: Rare

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2198* (GVCH).

Spondias L., Sp. Pl. 1: 371 (1753)

Spondias pinnata (L.f.) Kurz, Prelim. Rep. Forest Pegu 44 (1875); Vajr., Fl. Palghat Dist. 139 (1990); *Spondias mangifera* Willd., Hook. f., Fl. Brit. India 2: 42 (1876); Gamble, Fl. Pres. Madras 261 (1918).

Habit: Tree
Habitat: Moist deciduous and semi-evergreen forests
Morphology: Tree; leaves alternate, imparipinnate; lateral nerves many; inflorescence a terminal panicle; calyx 5-lobed; petals 5, glabrous; stamens 10; ovary ovoid, 5-loculed; ovule pendulous; fruit a fleshy drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-December
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1227* (GVCH); Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1945* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2368* (GVCH).

SAPINDACEAE

1.Plant climbing...…..…...***Cardiospermum***
1.Plant erect……...……...…..(2)
2.Leaves trifoliate...……..…….***Allophylus***
2.Leaves more than 3-foliate……..(3)
3.Leaf rachis winged…...……...***Filicium***
3.Leaf rachis not winged…...……..(4)
4.Petals absent……...……...….(5)
4.Petals present…...……...…(6)
5.Ovary 3-loculed; calyx lobes 5……...***Schleichera***
5.Ovary 2-4-loculed; calyx lobes 6…..……..…...***Otonephelium***
6.Fruit an inflated capsule...…....***Harpullia***
6.Fruit not as above……..……...….(7)
7.Fruit tubercled...……...…...***Dimocarpus***
7.Fruit smooth....……...…..(8)
8.Petals clawed……....***Lepisanthes***
8.Petals not clawed…...……***Sapindus***

Allophylus L., Sp. Pl. 1: 348 (1753)

1.Leaves glabrous...……...***A. concannicus***
1.Leaves pubescent or tomentose……...(2)
2.Thyrsus branched……...……***A. cobbe***
2.Thyrsus not branched…….***A. serratus***

Allophylus cobbe (L.) Forsyth f., Bot. Nomencl. col. 226 (1794); Hook. f., Fl. Brit. India 1: 673 (1875); Vajr., Fl. Palghat Dist. 129 (1990); *Allophylus rheedei* (Wight) Radlk., Gamble, Fl. Pres. Madras 246 (1918).

Habit: Shrub
Habitat: Moist deciduous and semi-evergreen forests, also in sacred groves
Morphology: Shrub; leaves trifoliolate; axillary thyrses longer than leaves, branched; flowers polygamous; sepals 4 in opposite pairs; petals 4, unequal; stamens 8; ovary 2-loculed; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 062* (GVCH); Hilltop, 20 January 2018, *Jabeena & Maya 964* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 1999* (GVCH); Plate 33: Fig. a

Allophylus concanicus Radlk., Sitzungsber. Math.-Phys. Cl. Bayer. Akad. Wiss. xx. (1890) 230; Gamble, Fl. Pres. Madras 246 (1918); Vajr., Fl. Palghat Dist. 129 (1990); *Allophylus concanicus* Radlk. var. *lanceolatus* Gamble, Fl. Pres. Madras 246 (1918).

Habit: Shrub
Habitat: Evergreen and Shola forests

Morphology: Shrub; leaves trifoliate; axillary thyrsus longer than leaves; sepals 4, ciliate; petals 4, hairy inside; stamens 8; ovary 2-loculed; fruit sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4331* (GVCH).

Allophylus serratus Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 44(3): 185 (1876); Gamble, Fl. Pres. Madras 246 (1918); *Allophylus cobbe* forma *serratus* (Roxb.) Hiern., Hook. f., Fl. Brit. India 1: 673 (1875).

Habit: Shrub
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Shrub; leaves trifoliate; lateral nerves 12-13 pairs; axillary thyrsus shorter than leaves, unbranched; sepals 4, cucullate; petals 4; stamens 8; ovary 2-loculed; drupe pubescent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Occasional
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 527* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2366* (GVCH).

Cardiospermum L., Sp. Pl. 1: 366 (1753)

Cardiospermum halicacabum L., Sp. Pl. 1: 366 (-367) (1753); Hook. f., Fl. Brit. India 1: 670 (1875); Gamble, Fl. Pres. Madras 244 (1918); Vajr., Fl. Palghat Dist. 130 (1990).

Habit: Climber
Habitat: Moist deciduous forests, also in scrub jungles
Morphology: Climber; stem tendrillate; leaves alternate, bi-ternate; inflorescence an axillary raceme; sepals 4; petals 4, unequal; stamens 8; ovary 3-loculed; ovule solitary in each cell; capsule inflated, winged.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: July-February
Distribution: Occasional
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 002* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2924* (GVCH).

Dimocarpus Lour., Fl. Cochinch. 1: 233 (1790)

Dimocarpus longan Lour., Fl. Cochinch. 1: 233 (1790); Vajr., Fl. Palghat Dist. 131 (1990); *Nephelium longana* (Lam.) Camp., Hook. f., Fl. Brit. India 1: 688 (1875); Gamble, Fl. Pres. Madras 252 (1918).
Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves alternate, paripinnate; leaflets 8-20; lateral nerves 14-17 pairs; inflorescence an axillary or terminal panicle; calyx cupular, 4-6-lobed, hairy; petals 4-6; stamens 8-10; ovary ovoid, 2-loculed; ovule solitary in each cell; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Near Threatened
Phenology: March-August
Distribution: Occasional
Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4154* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4564* (GVCH).

Filicium Thwaites, Enum. Pl. Zeyl. [Thwaites] 408 (1864)

Filicium decipiens (Wight & Arn.) Thwaites, Enum. Pl. Zeyl. [Thwaites] 408 (1864); Hook. f., Fl. Brit. India 1: 539 (1875); Gamble, Fl. Pres. Madras 249 (1918).

Habit: Tree
Habitat: Evergreen and semi-evergreen forests, also grown as ornamental tree
Morphology: Tree; leaves alternate, imparipinnate; leaflets 10-21; lateral nerves many; inflorescence an axillary panicle; flowers polygamous; calyx 5-lobed; petals 5; stamens 5; ovary globose; ovules pendulous; drupe ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: October-December
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2977* (GVCH); Mannathypalam, 12 October 2020, *Jabeena & Maya 4169* (GVCH).

Harpullia Roxb., Fl. Ind. (Carey & Wallich ed.) 2: 441 (1824)

Harpullia arborea (Blanco) Radlk., Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 16(3): 404 (1887); Vajr., Fl. Palghat Dist. 131 (1990); *Harpullia cupanoides* sensu Hiern, Hook. f., Fl. Brit. India 1: 692 (1875); *Harpullia imbricata* (Blume) Thw., Gamble, Fl. Pres. Madras 253 (1918);

Habit: Tree
Habitat: Semi-evergreen and evergreen forests
Morphology: Tree; leaves alternate, paripinnate; leaflets 8-12; lateral nerves 7-12 pairs; inflorescence a drooping panicle; flowers polygamous; sepals 5, free; petals 5, clawed; stamens 5-8; ovary ovoid, 2-loculed; capsule 2-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Least Concern
Phenology: January-April
Distribution: Occasional
Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1283* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2927* (GVCH); Plate 33: Fig. b.

Lepisanthes Blume, Bijdr. Fl. Ned. Ind. 5: 237 (1825)

Capsule triangular; flower zygomorphic……...…..***L. tetraphylla***
Capsule trilobed; flower actinomorphic……...***L. erecta***

Lepisanthes erecta (Thwaites) Leenh., Blumea xvii. 69 (1969); Vajr., Fl. Palghat Dist. 131 (1990); *Sapindus erecta* (Thw.) Hiern, Hook. f., Fl. Brit. India 1: 683 (1875); *Thraulococcus erectus* (Thw.) Radlk., Gamble, Fl. Pres. Madras 251 (1918).

Habit: Shrub
Habitat: Evergreen and semi-evergreen forests
Morphology: Shrub; leaves alternate, paripinnate; leaflets 4 pairs; lateral nerves 10-13 pairs; inflorescence a terminal panicle; sepals 5, unequal, pubescent; petals 5, clawed; stamens 8; ovary 2-3-loculed; ovules solitary in each cell; capsule oblong.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated
Phenology: October-January
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3501* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4575* (GVCH).

Lepisanthes tetraphylla Radlk., Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München viii. 276 (1878); *Hemigyrosa canescens* (Roxb.) Blume, Hook. f., Fl. Brit. India 1: 671 (1875); *Lepisanthes deficiens* (Wight & Arn.) Radlk., Gamble, Fl. Pres. Madras 247 (1918).

Habit: Tree
Habitat: Semi-evergreen and evergreen forests, also in the sacred groves
Morphology: Tree; leaves alternate, paripinnate; leaflets 4-8; lateral nerves 6-13 pairs; inflorescence an axillary or terminal panicle; flowers polygamous; sepals 5; petals 4-5, sub-equal; stamens 8; ovary globose, 3-loculed; ovules solitary in each cell; drupe trigonous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: February-July
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4136* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2116* (GVCH).

Otonephelium Radlk., Sapind. Holland-Ind. Nachtr. 71 (1879)

Otonephelium stipulaceum Radlk., Sapind. Holland-Ind. Nachtr. 71 (1879); Gamble, Fl. Pres. Madras 252 (1918); *Nephelium stipulaceum* Bedd., Hook. f., Fl. Brit. India 1: 690 (1875); Gamble, Fl. Pres. Madras 252 (1918).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves alternate, paripinnate; leaflets 4-8; lateral nerves 9-10 pairs; plant monoecious; inflorescence an axillary or terminal panicle; calyx copular, 6-lobed; petals absent; stamens 8; ovary superior, 2-4-loculed; drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: February-July
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4583* (GVCH).

Sapindus L., Sp. Pl. 1: 367 (1753)

Sapindus trifoliatus L., Sp. Pl. 1: 367 (1753); Hook. f., Fl. Brit. India 1: 682 (1875); *Sapindus laurifolius* Vahl, Gamble, Fl. Pres. Madras 250 (1918); Vajr., Fl. Palghat Dist. 132 (1990).

Habit: Tree
Habitat: Semi-evergreen and moist deciduous forests
Morphology: Tree; leaves alternate, paripinnate; leaflets 4-6; lateral nerves 6-17 pairs; inflorescence an axillary or terminal panicle; flowers polygamous; sepals 5, unequal; petals 5; stamens 8; ovary 2-3-loculed, tomentose; ovule solitary in each cell; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Common
Altitude: 400-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 872* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2935* (GVCH); Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3065* (GVCH); Plate 33: Fig. c.

Schleichera Willd., Sp. Pl., ed. 4 [Willdenow] 4(2): 892, 1096 (1806)

Schleichera oleosa (Lour.) Oken, Allg. Naturgesch. iii. (2) 1341 (1841); fide Merrill in Journ. Arn. Arb. xxxi.284 (1950); Vajr., Fl. Palghat Dist. 133 (1990); *Schleichera trijuga* Willd., Hook. f., Fl. Brit. India 1: 681 (1875); Gamble, Fl. Pres. Madras 248 (1915).

Habit: Tree

Habitat: Semi-evergreen and moist deciduous forests

Morphology: Tree; leaves alternate, paripinnate; leaflets 4-6; lateral nerves 10-23; inflorescence an axillary spicate panicle; flowers polygamous; calyx 5-lobed; petals absent; stamens 7-8, free; ovary 3-loculed; ovule solitary in each cell; drupe echinate.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Least Concern

Phenology: March-June

Distribution: Common

Altitude: 400-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4231* (GVCH); Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4981* (GVCH); Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 879* (GVCH).

RUTACEAE

1.Petiole winged……..……..(2)
1.Petiole not winged……...…....(3)
2.Leaves 1-foliate; stamens 20-60; filaments irregularly polyadelphous……...***Citrus***
2.Leaves 3 to more foliate; stamens 8-10; filaments free……..…....***Naringi***
3.Leaves simple…...……...(4)
3.Leaves compound…...…….....(6)
4.Plant climbing…...……...***Paramignya***
4.Plant erect……...……**…..*Atalantia***
5.Seeds exalbuminous; flowers usually hermaphrodite…….....(6)
5.Seeds albuminous; flowers usually polygamous or monoecious……....(8)
6.Anthers tipped with glands…..***Glycosmis***
6.Anthers eglandular…...……..…..…..(7)
7.Filaments dilated below.……...***Clausena***
7.Filaments subulate…..……....***Murraya***
8.Plant climbing……..…….....***Toddalia***
8.Plant erect……...……...….(9)
9.Fruit dehiscent……...(10)
9.Fruit indehiscent……(11)
9.Leaves opposite…..……...***Melicope***
9.Leaves alternate……. ***Zanthoxylum***
11.Petals usually 2; fruit 2-loculed; leaves 3-foliolate……..……..….....***Vepris***
11.Petals usually 4; fruit-loculed; leaves 1-foliolate……***Acronychia***

Acronychia J. R. Forst. & G.Forst., Char. Gen. Pl., ed. 2. 53 (1776)

Acronychia pedunculata Miq., Fl. Ned. Ind., Eerste Bijv. 3: 532 (1861); Vajr., Fl. Palghat Dist. 102 (1990); *Acronychia laurifolia* Blume, Hook. f., Fl. Brit. India 1: 498 (1875); Gamble, Fl. Pres. Madras 152 (1915); *Acronychia barberi* Gamble, Gamble, Fl. Pres. Madras 152 (1915).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Tree; leaves unifoliolate, opposite; lateral nerves 9-15 pairs; inflorescence an axillary corymbose cyme; calyx 4-lobed; petals 4; stamens 8, unequal; ovary 4-loculed; berry sub-globose.

Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: March-November
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 065* (GVCH); Hilltop, 20 January 2018, *Jabeena & Maya 937* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2011* (GVCH); Plate 33: Fig. d.

Atalantia Corrêa, Ann. Mus. Natl. Hist. Nat. 6: 383, 385-386 (1805)

1.Stamens free……....***A. wightii***
1.Stamens combined in a tube……...…(2)
2.Flowers in umbel or corymb; calyx cupular……***A. monophylla***
2.Flowers in raceme; calyx not cupular…….……...***A. racemosa***

Atalantia monophylla (L.) DC., Prodr. [A. P. de Candolle] 1: 535 (1824); Hook. f., Fl. Brit. India 1: 511 (1875); Gamble, Fl. Pres. Madras 159 (1915).

Habit: Shrub
Habitat: Deciduous forests
Morphology: Shrub; leaves alternate, unifoliate; inflorescence an axillary raceme; calyx 4-5-lobed; petals 4-5; stamens 8-10, unequal; ovary 4-loculed; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1601* (GVCH); Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5050* (GVCH).

Atalantia racemosa Wight & Arn., Prodr. Fl. Ind. Orient. 1: 91 (1834); *Atalantia racemosa* Wight var. *racemosa* Hook. f., Fl. Brit. India 1:512 (1875); Gamble, Fl. Pres. Madras 159 (1915).

Habit: Shrub
Habitat: Evergreen, Semi-evergreen and Dry Deciduous forests
Morphology: Tree; leaves unifoliolate; lateral nerves 8-12 pairs; inflorescence an axillary raceme; calyx 3-5-lobed, ciliate; petals 4, glandular; stamens 8; ovary 2-loculed; berry sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1419* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 589* (GVCH).

Atalantia wightii Tanaka, Bull. Soc. Bot. France 75: 714 (1928); Gamble, Fl. Pres. Madras 160 (1915); Vajr., Fl. Palghat Dist. 103 (1990).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; leaves simple, alternate; inflorescence an axillary raceme; sepals 4-5, ciliate; petals 4-5; stamens 8; berry ellipsoid, glandular.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-June
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1611* (GVCH).

Citrus L., Sp. Pl. 2: 782 (1753)

1.Flowers small, 2.0-2.5 cm across; fruit upto 5 cm in diameter…..***C. aurantifolium***
1.Flowers large, 4.0-4.5 cm across; fruit more than 6 cm in diameter……....(2)
2.Fruit 10-20 cm in diameter; mesocarp very thick….……..***C. maxima***
2.Fruit upto 8 cm in diameter; mesocarp scanty….……..***C. aurantium***

Citrus aurantiifolia (Christm.) Swingle, J. Wash. Acad. Sci. 3: 465 (1913); *Citrus medica* L. var. *acida* (Roxb.) Hook.f., Fl. Brit. India 1: 515 (1875).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; branches armed; petioles winged; inflorescence an axillary 2-7-flowered raceme; calyx cupular, 4-lobed, glandular; petals 4, glandular; stamens many; ovary depressed-globose; fruit oblong.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-December
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3736* (GVCH); Nelliyampathy range, Mannathypalam, 12 October 2020, *Jabeena & Maya 4165* (GVCH); Plate 33: Fig. e.

Citrus × ***aurantium*** L., Sp. Pl. 2: 782 (1753); Hook. f., Fl. Brit. India 1: 515 (1875); Gamble, Fl. Pres. Madras 162 (1915).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves alternate, unifoliolate; petioles winged; inflorescence an axillary few-flowered cyme; sepals 4-5, ciliate; petals 4-5, glandular; stamens many; ovary ovoid; fruit sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Common
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy, Pullukaadu, 30 November 2019, *Jabeena & Maya 2922* (GVCH); Kollengode range, Pulayampara, 19 November 2020, *Jabeena & Maya 4405* (GVCH).

Citrus maxima (Burm.) Merr., Interpr. Herb. Amboin. 296 (1917).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves alternate, unifoliolate; petiole winged; lateral nerves 7-10 pairs; flowers axillary, solitary or in clusters; calyx 5- lobed; petals 5; stamens many, polyadelphous; ovary 10-14-loculed, glabrous.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Least Concern

Phenology: April-November

Distribution: Occasional

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3033* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3500* (GVCH).

Clausena Burm.f., Fl. Ind. (N. L. Burman) 87, 243, t. 29, fig. 2 (1768)

1.Flower tetramerous…...……...***C. anisata***

1.Flower pentamerous...…….(2)

2.Inflorescence a corymb……....***C. indica***

2.Inflorescence a thyroid panicle……***C. austroindica***

Clausena anisata (Willd.) Hook.f., Niger Fl. [W. J. Hooker]. 256 (1849); *Clausena willdenowii* Wight & Arn., Hook. f., Fl. Brit. India 1: 506 (1875); Gamble, Fl. Pres. Madras 155 (1915); *Clausena willdenowii* Wight & Arn. var. *pubescens* (Wight & Arn.) Hook.f., Fl. Brit. India 1: 506 (1875).

Habit: Shrub
Habitat: Moist Deciduous and Evergreen forests
Morphology: Shrub; leaves imparipinnate; inflorescence an axillary raceme; calyx 4-lobed; petals 4-lobed; stamens 8, unequal; ovary 4-partite; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: March-June
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 867* (GVCH); Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1200* (GVCH).

Clausena austroindica B.C.Stone & K.Narayanan, Nordic J. Bot. 14(5): 491 (1994); *Clausena heptaphylla* auct. non (Roxb.) Wight & Arn. ex Steud., Hook. f., Fl. Brit. India 1: 504 (1875); Gamble, Fl. Pres. Madras 155 (1915); Vajr., Fl. Palghat Dist. 103 (1990).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; leaves alternate; leaflets 5-9; lateral nerves 6-12 pairs; inflorescence a panicle; calyx 4-5-lobed, glabrous; petals 4-5; stamens 10; ovary sub-globose, 5-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Rare
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1360* (GVCH).

Clausena indica Oliv., J. Proc. Linn. Soc., Bot. 5(Suppl. 2): 36 (1861); Hook. f., Fl. Brit. India 1: 505 (1875); Gamble, Fl. Pres. Madras 155 (1915); Vajr., Fl. Palghat Dist. 103 (1990).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; leaves alternate, imparipinnate; leaflets 7-13; lateral nerves 5-8 pairs; inflorescence a terminal corymb; calyx 5-lobed, ciliate; petals 5-lobed, gland-dotted; stamens 10; ovary sub-globose, 3-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Common
Altitude: 800-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 21 April 2018, *Jabeena & Maya 1393* (GVCH); Seetharkundu, 11 June 2018, *Jabeena & Maya 1561* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 1988* (GVCH).

Glycosmis Corrêa, Ann. Mus. Natl. Hist. Nat. 6: 384 (1805)

Ovary 3-loculed.....***G. nelliyampathiensis***
Ovary 5-loculed..…..……..***G. pentaphylla***

Glycosmis nelliyampathiensis Jabeena & Maya, *Phytotaxa* 496 (3): 269–274 (2021).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Small tree up to 4 m high;

stem terete, younger parts minutely hairy; leaves born on an articulated petiole, unifoliolate (rarely 2-3 foliolate), up to 5-leaflets in juvenile shoots; leaflets alternate; petiolule 0.3–0.5 cm, grooved above; lamina 7–9 × 3–4 cm, elliptic, acute at base, entire at margin, obtuse at apex, minutely hairy beneath, glabrous above, pellucid gland dotted, midrib prominent, lateral veins obscure; flowers in axillary 1–4-flowered monochasial cyme, actinomorphic, 0.7–0.8 × 0.4–0.5 cm, bisexual, pentamerous, fragrant; sepals 5, green, gamosepalous, ca. 0.1 cm long, ovate, acute at apex, outer surface with rusty puberulent hairs, imbricate; petals 5, 0.5 × 0.2 cm, ovate, obtuse at apex with hyaline hairs, white, imbricate; stamens 10, all fertile, outer longer 0.3–0.4 × 0.08–0.12 cm, inner shorter 0.15–0.23 × 0.08–0.12 cm; anthers oblong, yellow, adnate, with an apical gland; filaments broad, white, glabrous; ovary 3-loculed, seated on a swollen gynophore broader than the ovary, ca. 2×1.5 mm, ovoid, gland-dotted, glabrous; style thick, small; stigma sub-capitate; ovule 1 in each locule, pendulous fruit a berry with a remnant persistent style, 1-seeded, ca. 1 × 0.7 cm, ellipsoid-oblong, gland dotted, creamy turning pink, glabrous; seed ca. 0.8 × 0.5 cm, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2062* (GVCH); Kollengode range, Mattumala, 15 January 2019, *Jabeena & Maya 1794* (GVCH).

Glycosmis pentaphylla (Retz.) DC., Prodr. [A. P. de Candolle] 1: 538 (1824); Hook. f., Fl. Brit. India 1: 499 (1875); *Glycosmis arborea* (Roxb.)DC., Vajr., Fl. Palghat Dist. 104 (1990); *Glycosmis cochinchinensis* Gamble, Fl. Pres. Madras 153 (1915).

Habit: Shrub
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Shrub; leaves imparipinnate; leaflets 3-7; inflorescence an axillary or terminal spiciform panicle; sepals 4-5-lobed, ciliate; petals 4-5, gland-dotted; stamens 8-10; ovary ovoid, 5-loculed; berry ovoid.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Least Concern

Phenology: September-April

Distribution: Common

Altitude: 100-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 884* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3894* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4282* (GVCH).

Melicope J. R. Forst. & G. Forst., Char. Gen. Pl., ed. 2. 55 (1776)

Melicope lunu-ankenda (Gaertn.) T. G. Hartley, Sandakania 4: 61 (1994); *Euodia lunu-ankenda* (Gaertn.) Merr., Gamble, Fl. Pres. Madras 148 (1915); Vajr., Fl. Palghat Dist. 104 (1990); *Euodia roxburghiana* (Cham.) Benth., Hook. f., Fl. Brit. India 1: 487 (1875).
Habit: Tree
Habitat: Moist Deciduous, Semi-evergreen and Evergreen forests
Morphology: Tree; leaves trifoliate; lateral nerves 8-20 pairs; inflorescence an axillary paniculate cyme; sepals 4, connate; petals 4, glabrous; stamens 4; staminodes 4; ovary sub-globose, 4-loculed; capsule ovoid.

Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: May-July
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4228* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4593* (GVCH).

Murraya J. Koenig, Mant. Pl. Altera [Linnaeus] 554, 563 (1771)

Inflorescence axillary, few-flowered; berry red……..……..…***M. paniculata***
Inflorescence terminal, many-flowered; berry black……..……***M. koenigii***

Murraya koenigii (L.) Spreng., Syst. Veg., ed. 16 [Sprengel] 2: 315 (1825); Hook. f., Fl. Brit. India 1: 503 (1875); Gamble, Fl. Pres. Madras 156 (1915).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; leaves imparipinnate; leaflets 15-25; inflorescence a terminal panicle; sepals 5; petals 5, glandular; stamens 10; ovary globose; berry sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: March-July
Distribution: Rare
Altitude: 300-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4811* (GVCH).

Murraya paniculata (L.) Jack, Malayan Misc. i. (1820) n. v. 31. (1820); Vajr., Fl. Palghat Dist. 105 (1990); *Murraya exotica* L., Hook. f., Fl. Brit. India 1: 502 (1875); Gamble, Fl. Pres. Madras 155 (1915).

Habit: Shrub
Habitat: Evergreen and semi-evergreen forests
Morphology: Shrub; leaves 3-7-foliolate; inflorescence an axillary panicle; calyx 5-lobed; petals 5; stamens 10; ovary 2-loculed; ovules solitary in each cell; berry ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: March-September
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1253* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2745* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3880* (GVCH).

Naringi crenulata (Roxb.) Nicolson, Fl. Hassan Dist. [Saldanha & Nicolson] 387 (1976).

Habit: Tree
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Tree; leaves alternate, imparipinnate; leaflets 3-7; lateral nerves 4-10 pairs; inflorescence a few-flowered axillary raceme; sepals 4; petals 4, glabrous; stamens 8; ovary 4-loculed, glandular; ovules solitary in each cell; berry sub-globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: June-December

Distribution: Occasional

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena*

& Maya 2919 (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3861* (GVCH).

Paramignya Wight, Ill. Ind. Bot. i. 108. t. 42 (1838)

Paramignya monophylla Wight, Ill. Ind. Bot. i. 109. t. 42. (1840); Hook. f., Fl. Brit. India 1: 510 (1875); Gamble, Fl. Pres. Madras 158 (1915).

Habit: Climber
Habitat: Evergreen forests
Morphology: Climber; branches armed; leaves simple, alternate; inflorescence a 1-3-flowered axillary fascicle; calyx 5-lobed, pubescent; petals 5; stamens 10; ovary pubescent; berry sub-globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1937* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4277* (GVCH).

Toddalia Juss., Gen. Pl. [Jussieu] 371 (1789)

Toddalia asiatica (L.) Lam., Tabl. Encycl. 2: 116 (1797); Gamble, Fl. Pres. Madras 150 (1915); *Toddalia aculeata* (Smith) Pers., Hook. f., Fl. Brit. India 1: 497 (1875); *Toddalia asiatica* (L.) Lam. var. *floribunda* (Wall.) Kurz, Gamble, Fl. Pres. Madras 151 (1915); *Toddalia asiatica* (L.) Lam., var. *obtusifolia* Gamble, Fl. Pres. Madras 151 (1915); *Toddalia asiatica* (L.) Lam. var. *gracilis* Gamble, Fl. Pres. Madras 151 (1915.

Habit: Climber
Habitat: Evergreen and shola forests, also in scrub jungles
Morphology: Climber; branches armed; leaves trifoliolate; inflorescence an axillary panicle; flowers unisexual; sepals 5; petals 5, glandular; stamens 5; fruit sub-globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: September-July
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2921* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4196* (GVCH).

Vepris Comm. ex A.Juss., Mém. Mus. Hist. Nat. 12: 509 (1825)

Vepris bilocularis Engl., Nat. Pflanzenfam. [Engler & Prantl] iii. IV. 178 (1896); Gamble, Fl. Pres. Madras 151 (1915); *Toddalia bilocularis* Wight & Arn., Hook. f., Fl. Brit. India 1: 497 (1875).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves trifoliate; inflorescence an axillary or terminal panicle; calyx 2-3-lobed; petals 2-4, glandular; stamens 6; ovary globose, 2-4-loculed; berry globose, 2-loculed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: February-May
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1327* (GVCH).

Zanthoxylum L., Sp. Pl. 1: 270 (1753)

Zanthoxylum ovalifolium Wight, Ill. Ind. Bot. i. 169 (1839); Hook. f., Fl. Brit. India 1: 492 (1875); Gamble, Fl. Pres. Madras 150 (1915); Vajr., Fl. Palghat Dist. 106 (1990).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves trifoliate; lateral nerves 15-18; inflorescence an axillary panicle; sepals 4; petals 4; stamens 4; staminodes 4 in male flowers; capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: May-October
Distribution: Common
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 126* (GVCH); Seetharkundu, 11 June 2018, *Jabeena & Maya 1546* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3969* (GVCH); Plate 33: Fig. f.

SIMAROUBACEAE

Ailanthus Desf., Hist. Acad. Roy. Sci. Mém. Math. Phys. (Paris, 4°) 1786(Mém.): 265 (1788)

Leaflets toothed; petals reflexed; filaments shorter than anthers……...***A. excelsus***
Leaflets entire; petals erect; filaments longer than anthers…...……...***A. triphysus***

Ailanthus excelsus Roxb., Pl. Coromandel 1(1): t. 23 (1795); Hook. f., Fl. Brit. India 1: 518 (1875); Gamble, Fl. Pres. Madras 163 (1915).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves alternate, imparipinnate; leaflets 13-29; lateral nerves 12-20 pairs; inflorescence a subterminal panicle; flowers polygamous; sepals 5, pubescent; petals 5; stamens 10; ovary 2-5-loculed; ovule solitary in each cell; fruit a samara.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-July
Distribution: Occasional
Altitude: 300-900m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1800* (GVCH); Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5046* (GVCH).

Ailanthus triphysus (Dennst.) Alston, in Trimen, Hand-Book Fl. Ceylon vi. Suppl., 41 (1931); *Ailanthus malabarica* DC., Hook. f., Fl. Brit. India 1: 158 (1875); Gamble, Fl. Pres. Madras 163 (1915).

Habit: Tree

Habitat: Semi-evergreen forests

Morphology: Tree; leaves alternate, imparipinnate; leaflets 11-23; lateral nerves 8-16 pairs; inflorescence an axillary panicle; flowers polygamous; sepals 5, pubescent; petals 5, glabrous; stamens 10; ovary 5-loculed; ovules solitary in each cell; fruit a samara.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and Australian

IUCN category: Not Evaluated

Phenology: January-May

Distribution: Rare

Altitude: 400-600m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4129* (GVCH); Plate 33: Fig. g.

MELIACEAE

1.Petiole winged...…..……...***Naregamia***
1.Petiole not winged……...……....(2)
2.Seeds winged…...……....(3)
2.Seeds not winged…...……..…(5)
3.Filaments free……***Toona***
3.Filaments united…...…….……..(4)
4.Staminal tube urceolate; disc annular; seeds winged at the upper end.....***Swietenia***
4.Staminal tube cylindric; disc absent; seeds winged below only…...…***Chukrasia***
5.Undershrubs...…….....***Munronia***
5.Trees or woody shrubs……...…..…(6)
6.Leaflets entire……...…….…..(7)
6.Leaflets toothed….....……..……(11)
7.Leaves with domantia in nerve axils….……..…***Reinwardtiodendron***
7.Leaves without domantia in nerve axils…….(8)
8.Staminal tube with bilobed appendages...…….…***Heynea***
8.Staminal tube without bilobed appendages…….….(9)
9.Disc obscure…...……...***Aglaia***
9.Disc prominent...……..…….(10)
10.Petals 3; panicle drooping……***Aphanamixis***
10.Petals 5; panicle erect……..***Dysoxylum***
11.Ovary 5-loculed……..……...***Cipadessa***
11.Ovary 3-loculed……..…...***Azadirachta***

Aglaia Lour., Fl. Cochinch. 1: 98, 173 (1790)

1.Anthers exerted from the staminal tube…..……...…..***A. edulis***

1.Anthers included in the staminal tube…...…….……(2)

2.Anthers 6-10……...…….……***A. lawii***

2.Anthers 5……...……..……(3)

3.Leaf rachis stellate tomentose; stigma sub-globose; fruit a capsule……...***A. tomentosa***

3.Leaf rachis covered with peltate scales; stigma ovoid; fruit a berry…...***A. perviridis***

Aglaia edulis (Roxb.) Wall., Report on Calcutta Bot. Gard. to G.A. Bushby 26 (1840): (1840); Hook. f., Fl. Brit. India 1: 556 (1875); *Nyalelia racemosa* Dennst., Hook. f., Fl. Brit. India 1: 554 (1875); *Beddomea indica* Hook.f. Hook. f., Fl. Brit. India 1: 566 (1875); Gamble, Fl. Pres. Madras 184 (1915); *Aglaia khasiana* Hiern Hook.f., Fl. Brit. India 1: 554 (1875).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate, imparipinnate; leaflets 5-13; lateral nerves 7-16 pairs; inflorescence an axillary panicle; flowers polygamous; calyx copular, 4-6-lobed; petals 4-6; staminal tube globose; anthers 5-6; ovary 3-loculed; capsule sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Near Threatened
Phenology: May-June
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1607* (GVCH).

Aglaia lawii (Wight) C.J.Saldanha, Fl. Hassan Dist. [Saldanha & Nicolson] 392 (1976); ajr., Fl. Palghat Dist. 109 (1990); *Amoora lawii* (Wight) Bedd., Hook. f., Fl. Brit. India 1: 561 (1875); Gamble, Fl. Pres. Madras 181 (1915); *Aglaia andamanica* Hiern., Hook.f., Fl. Brit. India 1: 555 (1875); *Amoora canarana* (Turcz.) Hiern., Hook.f., Fl. Brit. India 1: 560 (1875); Gamble, Fl. Pres. Madras 182 (1915).

Habit: Tree
Habitat: Evergreen and semi-evergreen forests
Morphology: Tree; leaves alternate, imparipinnate; leaflets 3-5; lateral nerves 7-18 pairs; flowers polygamous; female flowers and bisexuals in spikes and males in; calyx 4-lobed; petals 4; stamens 8-10; ovary 3-loculed; ovules solitary in each cell; capsule obovoid.

Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: December-February
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4552* (GVCH).

Aglaia perviridis Hiern, Fl. Brit. India [J. D. Hooker] 1(3): 556 (1875); *Aglaia maiae* Bourd., Gamble, Fl. Pres. Madras 180 (1915); *Aglaia canarensis* Gamble, Fl. Pres. Madras 180 (1915).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate, imparipinnate; leaflets 7-13; lateral nerves 12-19 pairs; inflorescence an axillary panicle; flowers polygamous; calyx 5-lobed; petals 5; anthers 5; ovary depressed globose, 1-loculed; berry ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Vulnerable
Phenology: April-September
Distribution: Rare
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2229* (GVCH).

Aglaia tomentosa Teijsm. & Binn., Natuurk. Tijdschr. Ned.-Indië 27: 43 (1864); *Aglaia minutiflora* Bedd., Gamble, Fl. Pres. Madras 181 (1915); Vajr., Fl. Palghat Dist. 109 (1990); *Aglaia minutiflora* Bedd. var. *travancorica* Hiern Hook. f., Fl. Brit. India 1: 557 (1875); *Aglaia cordata* Hiern Hook. f., Fl. Brit. India 1: 557 (1875).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate, imparipinnate; leaflets 9-13; lateral nerves 10-25 pairs; inflorescence an axillary panicle; flowers polygamous; calyx 5-lobed, ciliate; petals 5, glabrous; anthers 5; ovary depressed-globose, 1-loculed; ovule solitary in each cell; capsule sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Australia
IUCN category: Least Concern
Phenology: August-September
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, 12 October 2019, *Jabeena & Maya 2524* (GVCH); Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4553* (GVCH).

Aphanamixis Blume, Bijdr. Fl. Ned. Ind. 4: 165 (1825)

Aphanamixis polystachya (Wall.) R.Parker, Indian Forester 57: 486 (1931); Vajr., Fl. Palghat Dist. 110 (1990); *Amoora rohituka* (Roxb.) Wight & Arn., Hook. f., Fl. Brit. India 1: 559 (1875); Gamble, Fl. Pres. Madras 181 (1915).

Habit: Tree
Habitat: Evergreen, semi-evergreen and shola forests, also in sacred groves
Morphology: Tree; leaves alternate, imparipinnate; leaflets 7-15; lateral nerves 7-13 pairs; inflorescence an axillary drooping panicle; flowers polygamous; sepals 5; petals 5; staminal tube globose; anthers 6; ovary ovoid, 3-loculed, pubescent; capsule 3-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: January-December
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya*

2188 (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 556* (GVCH).

Azadirachta A.Juss., Bull. Sci. Nat. Geol. 23: 236 (1830)

Azadirachta indica A.Juss., Mém. Mus. Hist. Nat. 19: 221 (1830); Gamble, Fl. Pres. Madras 177 (1915); Vajr., Fl. Palghat Dist. 113 (1990); *Melia azadirachta* L., Hook. f., Fl. Brit. India 1: 544 (1875).

Habit: Tree
Habitat: Dry Deciduous forests
Morphology: Tree; leaves imparipinnate; leaflets 7-15; lateral nerves 10-18; inflorescence an axillary panicles; sepals 5, ciliate; petals 5, free; anthers 10; ovary globose, 3-loculed; drupe ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: February-September
Distribution: Occasional
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 848* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5042* (GVCH); Plate 33: Fig. h.

Chukrasia A.Juss., Mém. Mus. Hist. Nat. 19(sheet 32): 251, t. 22

Chukrasia tabularis A.Juss., Bull. Sci. Nat. Geol. 23(no. 140): 241 (1830); Hook. f., Fl. Brit. India 1: 568 (1875); Gamble, Fl. Pres. Madras 186 (1915); Vajr., Fl. Palghat Dist. 110 (1990).

Habit: Tree
Habitat: Semi-evergreen, moist deciduous, evergreen and shola forests
Morphology: Tree; leaves paripinnate; leaflets 10-20; lateral nerves 6-8 pairs; inflorescence a panicle; calyx 5-lobed, pubescent; petals 5, pubescent; anthers 10; ovary 4-loculed, stalked, pubescent; fruit a 4-5 valved capsule.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: May-March
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4128* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2917* (GVCH).

Cipadessa Blume, Bijdr. Fl. Ned. Ind. 4: 162 (1825)

Cipadessa baccifera Miq., Ann. Mus. Bot. Lugduno-Batavi 4: 6 (1868); Gamble, Fl. Pres. Madras 176 (1915); Vajr., Fl. Palghat Dist. 110 (1990); *Cipadessa fruticosa* Blume, Hook. f., Fl. Brit. India 1: 545 (1875).

Habit: Shrub
Habitat: Moist deciduous and semi-evergreen forests, also in the sacred groves
Morphology: Shrub; leaves imparipinnate; leaflets opposite; inflorescence an axillary peduncled panicle; calyx 5-lobed, pubescent; petals 5; stamens 10; ovary 5-loculed; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: November-July
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 369* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 866* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1291* (GVCH); Plate 34: Fig. a

Dysoxylum Blume, Bijdr. Fl. Ned. Ind. 4: 172 (1825)

Dysoxylum malabaricum Bedd. ex C.DC., Monogr. Phan. [A.DC. & C.DC.] 1: 491 (1878); Hook. f., Fl. Brit. India 1: 548 (1875); Gamble, Fl. Pres. Madras 178 (1915).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves imparipinnate; leaflets 7-11, alternate; lateral nerves 6-20 pairs; inflorescence a panicle; calyx 4-lobed; petals 4, pubescent; anthers 8; ovary 4-loculed, pubescent; capsule pyriform.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: February-June
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4207* (GVCH).

Heynea Roxb., Hort. Bengal. 33 (1814); et in Bot. Mag. t. 1738 (1815)

Heynea trijuga Roxb., Hort. Bengal. 33; et in Sims, Bot. Mag. t. 1738. (1815); Hook. f., Fl. Brit. India 1: 565 (1872); Gamble, Fl. Pres. Madras 183 (1915); *Trichilia connaroides* (Wight & Arn.) Bentv., Vajr., Fl. Palghat Dist. 112 (1990).

Habit: Tree
Habitat: Evergreen, semi-evergreen and shola forests
Morphology: Tree; leaves imparipinnate; leaflets 5-11, opposite; lateral nerves 7-10 pairs; inflorescence an axillary corymbose panicle; calyx 5-lobed, pubescent; petals 5; stamens 10; ovary 2-loculed; capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: March-September
Distribution: Occasional
Altitude: 800-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pulayampara, 19 August 2017, *Jabeena & Maya 358* (GVCH); Mannathypalam, *Jabeena & Maya 4170* (GVCH); Plate 34: Fig. b.

Munronia Wight, Ill. Ind. Bot. i. 147. I. 54 (1839)

Munronia pinnata (Wall.) W.Theob., Burmah [Mason], ed. 3. 2: 581 (1883); Vajr., Fl. Palghat Dist. 111 (1990); *Munronia wallichii* Wight, Hook. f., Fl. Brit. India 1: 543 (1875); Gamble, Fl. Pres. Madras 175 (1915).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves imparipinnate; leaflets 10-14, opposite; inflorescence an axillary cyme; calyx 5-lobed; petals 5; anthers 10, apiculate; ovary 5-loculed; capsule depressed globose, 5-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: September-May
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothumala, 12 October 2019, *Jabeena & Maya 2562* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3787* (GVCH); Plate 34: Fig. c.

Naregamia Wight & Arn., Prodr. Fl. Ind. Orient. 1: 116 (1834)

Naregamia alata Wight & Arn., Prodr. Fl. Ind. Orient. 1: 117 (1834); Hook. f., Fl. Brit. India 1: 542 (1875); Gamble, Fl. Pres. Madras 175 (1915); Vajr., Fl. Palghat Dist. 111 (1990).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaves alternate, tri-foliolate; petiole winged; flowers axillary, solitary; calyx 5-lobed; petals 5; anthers 10, appendaged at apex; ovary 3-loculed; ovules collateral; capsule ovoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacifiic
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 501* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2915* (GVCH).

Reinwardtiodendron Koord., Meded. Lands Plantentuin 19: 389 (1898)

Reinwardtiodendron anamalaiense (Bedd.) Mabb., Malaysian Forester 45(3): 452 (1982); *Lansium anamallayanum* Bedd., Hook. f., Fl. Brit. India 1: 558 (1875); Gamble, Fl. Pres. Madras 182 (1915); *Aglaia anamallayana* (Bedd.) Kosterm., Vajr., Fl. Palghat Dist. 109 (1990).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Tree; leaves imparipinnate; leaflets 5-9, alternate; lateral nerves 8-10 pairs; plant polygamo-dioecious; male flowers in axillary panicles; female flowers in axillary spikes or racemes; sepals 5, ciliate; petals 5; anthers 10 in two rows; ovary globose, 3-5-loculed; berry 1-5 loculed.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: March-November

Distribution: Rare

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4137* (GVCH).

Swietenia Jacq., Enum. Syst. Pl. 4 (1760)

Swietenia macrophylla King in Hook., Hooker's Icon. Pl. 16: pl. 1550 (1886).

Habit: Tree

Habitat: Grown as avenue tree

Morphology: Tree; leaves paripinnate; leaflets 4-10, alternate; lateral nerves 7-12 pairs; inflorescence an axillary panicle; sepals 5; petals 5; stamens 10; ovary 5-loculed; capsule globose, 5-valved.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: South American

IUCN category: Vulnerable

Phenology: April-March

Distribution: Occasional

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4157* (GVCH); Mannathypalam, 12 October 2020, *Jabeena & Maya 4163* (GVCH).

Toona (Endl.) M.Roem., Fam. Nat. Syn. Monogr. 1: 131, 139 (1836)

Toona hexandra M.Roem., Fam. Nat. Syn. Monogr. 1: 139 (1846); *Cedrela toona* Roxb. ex Rottl. & Willd., Hook. f., Fl. Brit. India 1: 568 (1875); Gamble, Fl. Pres. Madras 186 (1915); *Toona ciliata* Roem., Vajr., Fl. Palghat Dist. 112 (1990).

Habit: Tree
Habitat: Semi-evergreen and evergreen forests
Morphology: Tree; leaves imparipinnate; leaflets 20-30; lateral nerves 10-15 pairs; inflorescence a drooping panicle; calyx 5-lobed; petals 5; stamens 4-6; ovary sessile on a disc, 5-loculed; stigma discoid; capsule 5-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: February-May
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3882* (GVCH); Mannathypalam, 12 October 2020, *Jabeena & Maya 4166* (GVCH).

MALVALES

MUNTINGIACEAE

Muntingia L., Sp. Pl. 1: 509 (1753)

Muntingia calabura L., Sp. Pl. 1: 509 (1753).

Habit: Tree
Habitat: Grown as ornamental plant
Morphology: Tree; leaves simple, alternate, lateral nerves 3-5 pairs; stipule hairy; flower axillary, solitary; sepals 5, pubescent; petals 5, clawed; stamens many; ovary 5-loculed; berry sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3542* (GVCH); Plate 34: Fig. d.

MALVACEAE

1.Filaments free……..…(2)
1.Filaments united…...……..….(5)
2.Trees or erect shrubs……...…(3)
2.Herbs or under shrubs…….…….(4)
3.Inflorescence paniculate…...….***Microcos***
3.Inflorescence not paniculate…....***Grewia***
4.Fruit a prickly or bristly capsule……...***Triumfetta***
4.Fruit a siliquose or globose unarmed capsule…...…….…...***Corchorus***
5.Anthers 2-celled……...(6)
5.Anthers 1-celled…….(13)
6.Flowers unisexual……..…..(7)
6.Flowers bisexual…….…….(9)
7.Leaves with peltate scales...…..***Heritiera***
7.Leaves without peltate scales…..…….(8)
8.Seeds winged……..……..***Pterygota***
8.Seeds not winged……...……***Sterculia***
9.Staminal tube adnate to the gynophore……....……(10)
9.Staminal tube not adnated to the carpels……...(11)
10.Fruit of spirally twisted follicles; seeds not winged……...…...***Helicteres***
10.Fruit of 5-valved capsule; seeds winged….……...***Pterospermum***
11.Staminodes absent...……..….***Melochia***
11.Staminodes 5-10……..(12)
12.Anthers 15; fruit many seeded…….….***Guazuma***
12.Anthers 10; fruit one seeded…….....***Leptonychia***
13.All herbaceous parts covered with peltate scales…….……...….(14)
13.Plants without peltate scales…..…..(15)
14.Flowers axillary, solitary...…....***Azanza***

14.Flowers densely clustered on old wood……...……..***Cullenia***
15.Leaves digitate…….....(16)
15.Leaves simple……..…(17)
16.Capsule thick, woody……..…***Bombax***
16.Capsule thin, leathery...…....…...***Ceiba***
17.Fruit a schizocarp…….(18)
17.Fruit a capsule……..……...….(21)
18.Staminal column filamentiferous at apex……...…(19)
18.Staminal tube 5-toothed at apex…..(20)
19.Mericarp one seeded……..….***Sida***
19.Mericarp 2 or more seeded.....***Abutilon***
20.Leaves with a large gland at the base of midrib below…….……..…..***Urena***
20.Leaves without a gland at the base of midrib….……..…***Malvaviscus***
21.Calyx symmetrical, persistent in fruit……..…….....***Hibiscus***
21.Calyx asymmetrical, deciduous in fruit……....***Abelmoschus***

Abelmoschus Medik., Malvenfam. 45 (1787)

1.Plants prickly armed……...***A. angulosus***
1.Plants unarmed……..……..……(2)
2.Stipules linear or filiform; seeds reniform……..***A. moschatus***
2.Stipules ovate-lanceolate; seeds globose…..……....***A. esculentus***

Abelmoschus angulosus Wight & Arn., Prodr. Fl. Ind. Orient. 1: 53 (1834); *Abelmoschus angulosus* Wall. ex Wight & Arn., var. *angulosus* Vajr., Fl. Palghat Dist. 77 (1990); *Hibiscus angulosus* (Wall. ex Wight & Arn.) Steud., Hook. f., Fl. Brit. India 1: 341 (1874); Gamble, Fl. Pres. Madras 97 (1915).

Habit: Shrub
Habitat: Moist Deciduous, Semi-evergreen and Shola forests
Morphology: Shrub; stem prickly; leaves 3-7-lobed; flower solitary; epicalyx 4-5-partite; calyx hairy; petals glabrous; staminal column glabrous; ovary ovoid, hispid; capsule hispid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Least Concern
Phenology: October-February
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 907* (GVCH).

Abelmoschus esculentus (L.) Moench., Methodus (Moench) 617 (1794); Hibiscus esculentus L., Hook. f., Fl. Brit. India 1: 343 (1874).

Habit: Herb
Habitat: Cultivated
Morphology: Herb; stem hairy; leaves alternate, 3-7 lobed; stipule hairy; flower axillary, solitary; epicalyx 7-10-lobed; calyx spathaceous; staminal column glabrous; ovary ovoid, 5-6-loculed; stigma discoid; capsule 5-angled, hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5041* (GVCH).

Abelmoschus moschatus Medik., Malvenfam. 46 (1787); Vajr., Fl. Palghat Dist. 77 (1990); *Hibiscus abelmoschus* L., Hook. f., Fl. Brit. India 1: 342 (1874); Gamble, Fl. Pres. Madras 87 (1915).

Habit: Shrub
Habitat: Rocky areas in Moist Deciduous forests
Morphology: Shrub; stem with stellate hairs; leaves 3-5-lobed; stipule hairy; flowers axillary, solitary; epicalyx 7-10-lobed, hispid; calyx splitting at one side, stellate tomentose; petals ciliate; staminal

column glabrous; ovary ovoid, hairy at apex; capsule hispid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 300-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 680* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4204* (GVCH).

Abutilon Mill., Gard. Dict. Abr., ed. 4. [23] (1754)

1.Style and mericarp five…….***A. persicum***
1.Style and mericarp more than five…...(2)
2.Ovary globose; petals obovate; leaves 5-7-nerved…...……...…….***A. indicum***
2.Ovary sub-globose; petals ovate; leaves 7-9-nerved……..……..….***A. guineense***

Abutilon guineense (Schumach.) Baker f. & Exell, J. Bot. 74(Suppl. [II]): 22 (1936).

Habit: Shrub
Habitat: Deciduous forests and scrub jungles
Morphology: Shrub; stem stellate hairy; leaves 7-9-nerved at base; stipule hairy; flowers axillary, solitary; calyx campanulate, 5-lobed, pubescent; petals glabrous; staminal column antheriferous at apex; ovary sub-globose, hairy; mericarps 17-20; seeds reniform.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and Australian
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Rare
Altitude: 200-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1232* (GVCH).

Abutilon indicum (L.) Sweet, Hort. Brit. [Sweet] 1: 54 (1826); *Abutilon indicum* (L.) Sweet, var. *indicum* Hook. f., Fl. Brit. India 1: 326 (1874); Gamble, Fl. Pres. Madras 91 (1915); Vajr., Fl. Palghat Dist. 78 (1990).

Habit: Shrub
Habitat: Wasteland and Scrub jungles
Morphology: Shrub; stem stellate hairy; leaves 5-7-nerved at base; flowers axillary, solitary; calyx hairy; staminal column antheriferous at apex; ovary globose; stigma capitate; mericarps 15-20.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: September-April
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 388* (GVCH).

Abutilon persicum (Burm.f.) Merr., Philipp. J. Sci. 19: 364 (1921); Vajr., Fl. Palghat Dist. 78 (1990); *Abutilon polyandrum* (Roxb.) Wight & Arn. ex Wight, Hook. f., Fl. Brit. India 1: 325 (1874); Gamble, Fl. Pres. Madras 91 (1915).

Habit: Shrub
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Shrub; stem hairy; leaves stellate-hairy, 5-9-nerved at base; calyx cupular, hairy; staminal column stellate-hairy above; ovary cylindric, pubescent; mericarps 5.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: November-April
Distribution: Occasional
Altitude: 500-900m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1668* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3335* (GVCH); Plate 34: Fig. e.

Azanza Alef., Bot. Zeitung (Berlin) 19: 298 (1861)

Azanza lampas Alef., Bot. Zeitung (Berlin) 19: 297 (1861); *Thespesia lampas* (Cav.) Dalz. & Gibs., Hook. f., Fl. Brit. India 1: 345 (1874); Vajr., Fl. Palghat Dist. 84 (1990); *Hibiscus lampas* Cav., Gamble, Fl. Pres. Madras 98 (1915).

Habit: Shrub
Habitat: Moist Deciduous forests
Morphology: Shrub; young parts stellate-tomentose; leaves 3-5-lobed; flower solitary axillary or terminal raceme; hypanthium obconic; epicalyx 5-lobed; calyx cupular, stellate hairy; corolla campanulate, glandular hairy; staminal column glabrous; ovary conic; capsule 5-valved.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 855* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3064* (GVCH).

Bombax L., Sp. Pl. 1: 511 (1753)

Capsule glabrous; leaves sessile……..***B. insigne***
Capsule velvety; leaves petioled……...***B. ceiba***

Bombax ceiba L., Sp. Pl. 1: 511 (1753); Vajr., Fl. Palghat Dist. 86 (1990); *Bombax malabaricum* DC., Prodr. 1: 479. 1824; Hook. f., Fl. Brit. India 1: 349. 1874; Gamble, Fl. Pres. Madras 99(71). 1915.

Habit: Tree
Habitat: Moist Deciduous forests and Semi-evergreen forests
Morphology: Tree; branches prickly; leaves compound, 5-7-foliolate, glabrous; flowers solitary or 1-3 together, pubescent; calyx campanulate, 3-5-lobed, silky-hairy inside; petals puberulous; stamens many; ovary ovoid, 5-loculed, glabrescent; capsule tomentose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: January-April
Distribution: Occasional
Altitude: 300-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1199* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1806* (GVCH); Plate 34: Fig. f.

Bombax insigne Wall., Pl. Asiat. Rar. (Wallich). 1: 74, t. 79 et 80 (1830); Hook. f., Fl. Brit. India 1: 349 (1784); Gamble, Fl. Pres. Madras 100 (1915); Vajr., Fl. Palghat Dist. 87 (1990).

Habit: Tree
Habitat: Rocky areas in Evergreen, Semi-evergreen and Moist Deciduous forests
Morphology: Tree; branches armed with conic prickles; leaves 7-9-foliolate; stipule lateral; lateral nerves 15-18 pairs; flowers axillary, solitary, pubescent; calyx tubular, 3-5-lobed, woolly inside; petals 5; stamens numerous in 5 bundles; ovary ovoid; stigma exserted from stamens; capsule elongate, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated
Phenology: November-March
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyamapthy range, Hilltop, 20 January 2018, *Jabeena & Maya 982* (GVCH); Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1413* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1771* (GVCH).

Ceiba Mill., Gard. Dict. Abr., ed. 4. [287] (1754)

Ceiba pentandra (L.) Gaertn., Fruct. Sem. Pl. 2: 244 (1791); Vajr., Fl. Palghat Dist. 87 (1990); *Eriodendron anfractuosum* DC., Hook. f., Fl. Brit. India 1: 350 (1874); *Eriodendron pentandrum* (L.) Kurz, Gamble, Fl. Pres. Madras 100 (1915).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves 5-9-foliolate, glabrous; lateral nerves 10-14 pair; flowers clustered in axils; calyx campanulate, 4-5 lobed; petals 5, villous; staminal tube conic, glabrous; ovary globose, 5-loculed; 5-locular, stigma capitate; capsule indehiscent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: February-June
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3581* (GVCH); Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3704* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3712* (GVCH).

Corchorus L., Sp. Pl. 1: 529 (1753)

Corchorus aestuans L., Syst. Nat., ed. 10. 2: 1079 (1759); Vajr., Fl. Palghat Dist. 92 (1990); *Corchorus acutangulus* Lam., Hook. f., Fl. Brit. India 1: 398 (1874); Gamble, Fl. Pres. Madras 121 (1915).

Habit: Herb
Habitat: Degraded forests and wastelands
Morphology: Herb; branches pilose; leaves 3-5-nerved; stipule hairy; inflorescence 2-3-flowered cyme; bracts filiform; sepals apiculate; petals with a glandular claw; stamens many; ovary 3-loculed; capsule glabrous, 6-angled.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-February
Distribution: Occasional
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 506* (GVCH); Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 854* (GVCH); Plate 34: Fig. g.

Cullenia Wight, Icon. Pl. Ind. Orient. [Wight] tt. 1761, 1762 (1852)

Cullenia exarillata A.Robyns, Bull. Jard. Bot. Natl. Belg. 40: 249 (1970); Vajr., Fl. Palghat Dist. 87 (1990); *Cullenia excelsa* Wight, Hook. f., Fl. Brit. India 1: 350 (1874); Gamble, Fl. Pres. Madras 101 (1915).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; branchlets peltate scaly; leaves coriaceous, glabrous; flowers in fascicles, arising from older branches; calyx tubular; corolla absent; staminal tube 5-lobed; ovary 5-loculed; stigma capitate; capsule globose.
Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-November
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1808* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1909* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2035* (GVCH).

Grewia L., Sp. Pl. 2: 964 (1753)

1.Leaves 5-ribbed at base…...…***G. tilifolia***
1.Leaves 3-ribbed at base…….....……(2)
2.Scandent shrub……..……..(3)
2.Erect shrub or tree……..……..(4)
3.Leaves densely pubescent beneath; fruit subglabrous; pedicels few together.....***G. gamblei***
3.Leaves sub-glabrous; fruit glabrous; pedicels many together..…..***G. umbellifera***
4.Drupe stellate tomentose...……..…(5)
4.Drupe glabrous...……....(7)
5.Petals deeply lobed at apex; anthers and style pilose……..…***G .flavescence***
5.Petals obtuse at apex; anthers and style glabrous……..……..…....***G. abutilifolia***
6.Petiole 3-6 mm long; leaf apex acute; petals oblong…...……..…..***G. polygama***
6.Petiole upto 15 mm long; leaf apex acuminate; petals ovate……....***G. serrulata***

Grewia abutilifolia Vent. ex Juss., Ann. Mus. Natl. Hist. Nat. iv. (1804) 92; Vajr., Fl. Palghat Dist. 93 (1990); Grewia aspera Roxb., Gamble, Fl. Pres. Madras 119 (1915).

Habit: Shrub
Habitat: Moist Deciduous forests and in forest plantations
Morphology: Shrub; leaves stellate-tomentose, 5-nerved; flowers in axillary umbelled cyme, tomentose; sepals woolly outside; petals ciliate; receptacle 5-angled; stamens many, unequal; ovary sub-globose, hairy; fruit a sub-globose drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 371* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 868* (GVCH).

Grewia flavescens Juss., Ann. Mus. Natl. Hist. Nat. iv. (1804) 91; Gamble, Fl. Pres. Madras 119 (1915); *Grewia carpinifolia* sensu Mast., Hook.f., Fl. Brit. India 1: 387 (1874).

Habit: Shrub
Habitat: Moist and Dry Deciduous forests
Morphology: Shrub; leaves tomentose, 3-nerved; flowers in axillary cyme; bracts puberulous; sepals tomentose; petals spathulate; receptacle obconic; stamens many; ovary ovoid, pilose; stigma bifid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: November-March
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1892* (GVCH).

Grewia gamblei J. R. Drumm. ex Dunn, Fl. Madras 1(1): 115, 117 (1915); Gamble, Fl. Pres. Madras 117 (1915).

Habit: Shrub
Habitat: Moist Deciduous and Evergreen forests
Morphology: Shrub; leaves tomentose, 3-nerved; flowers in axillary or extra-axillary

umbelled cyme; buds tomentose; sepals tomentose; petals oblong; glands ovoid; ovary sub-globose, hirsute.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: April-November
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 137* (GVCH).

Grewia polygama Roxb., Hort. Bengal. 42; Fl. Ind. ii. 588; Gamble, Fl. Pres. Madras 119 (1915).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Tree; leaves tomentose, 3-nerved; flowers in axillary cyme; flowers polygamous; petals oblong; limb twice the length of the gland; stamens 16-20; style glabrous; stigma laciniate; drupe glabrescent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology:
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 361* (GVCH); Karassuri, 20 October 2019, *Jabeena & Maya 2669* (GVCH).

Grewia serrulata DC., Prodr. [A. P. de Candolle] 1: 510 (1824); *Grewia disperma* sensu Dunn., Gamble, Fl. Pres. Madras 118 1915; *Grewia laevigata* sensu Mast., Hook. f., Fl. Brit. India 1: 389 (1874); *Grewia glabra* Blume, Vajr., Fl. Palghat Dist. 94 (1990).

Habit: Tree
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Tree; branchlets glabrous; leaves 3-nerved, flowers in axillary umbelled cyme, tomentose; sepals 5, tomentose; petals 5; glands slightly shorter than petals; stamens many; filaments glabrous; ovary pilose; drupe 2-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3975* (GVCH).

Grewia tiliifolia Vahl, Symb. Bot. (Vahl) 1: 35 (1790); Hook. f., Fl. Brit. India 1: 386 (1874); Gamble, Fl. Pres. Madras 118 (1915); Vajr., Fl. Palghat Dist. 94 (1990).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; leaves 5-7-nerved; flowers 3-6, in axillary umbels; buds tomentose; sepals 5, tomentose; petals 5, ciliate; receptacle glabrous except at apex; samens many; ovary globose, hirsute; drupe 2-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3020* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4213* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4276* (GVCH).

Grewia umbellifera Bedd., Fl. Sylv. S. India Forester's Man. Bot.: p. xxxvii (1871); Hook. f., Fl. Brit. India 1: 393 (1874); Gamble, Fl. Pres. Madras 117 (1915).

Habit: Climber
Habitat: Evergreen forests
Morphology: Scandent shrub; leaves 3-nerved at base; inflorescence an umbelled cyme; buds pubescent; sepals pubescent; petals oblong; receptacle pubescent; drupe 4-lobed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 233* (GVCH).

Guazuma Mill., Gard. Dict. Abr., ed. 4. (1754)

Guazuma ulmifolia Lam., Encycl. [J. Lamarck & al.] 3(1): 52 (1789); *Guazuma tomentosa* HBK, Hook. f., Fl. Brit. India 1: 375 (1874); Gamble, Fl. Pres. Madras 111 (1915).

Habit: Tree
Habitat: Grown as avenue tree
Morphology: Tree; leaves stellate-pubescent; inflorescence an axillary or terminal cyme; sepals sub-equal, tomentose; petals obovate; staminodes petaloid; ovary globose; capsule sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: South American
IUCN category: Least Concern
Phenology: February-September
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3540* (GVCH).

Helicteres L., Sp. Pl. 2: 963 (1753)

Helicteres isora L., Sp. Pl. 2: 963 (1753); Hook. f., Fl. Brit. India 1: 365 (1874); Gamble, Fl. Pres. Madras 107 (1915); Vajr., Fl. Palghat Dist. 89 (1990).

Habit: Shrub
Habitat: Deciduous forests and in plantations
Morphology: Tree; leaves 3-5-ribbed, tomentose; flowers in axillary fascicles, hairy; calyx tubular, stellate tomentose; petals unequal; staminal tube cupular; anthers 10 in a ring; staminodes 5; ovary conic on a gynophore, 5-loculed; follicles of 5 spirally twisted carpels.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Not Evaluated
Phenology: September-March
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 439* (GVCH); Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 511* (GVCH); Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1157* (GVCH).

Heritiera J. F. Gmel., Syst. Nat., ed. 13[bis]. 2(1): 113 (1791)

Heritiera papilio Bedd., Fl. Sylvat. t. 218. (1872); Hook. f., Fl. Brit. India 1: 363 (1874); Gamble, Fl. Pres. Madras 104 (1915).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; branchlets tomentose; leaves 3-ribbed from base; stipule lateral; inflorescence an axillary, lax, pubescent

panicle; calyx campanulate; petals absent; anthers 5 in a regular ring on an androgynophore topped by a sterile ovary in male flowers; carpels 5 in female flowers; fruit a samaroid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-May
Distribution: Common
Altitude: 800-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3224* (GVCH); Nelliyampathy range, Valiya Govindamala, *Jabeena & Maya 4549* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4569* (GVCH).

Hibiscus L., Sp. Pl. [Linnaeus] 2: 693 (1753)

1.Epicalyx absent…..……...…***H. lobatus***
1.Epicalyx present...……..(2)
2.Stem armed……..(3)
2.Stem unarmed……...……..(4)
3.Ovary ovoid; stipule lanceolate……***H. hispidissimus***
3.Ovary subconical; stipule ovate-orbicular…...……...……..***H. surattensis***
4.Flowers small, upto 3 cm long….……*H. micranthus***
4.Flowers large, more tham 10 cm long…….(5)
5.Stem glabrous……....***H. rosa-sinensis***
5.Stem pubescent with stellate hairs…….……...……***H. lunarifolius***

Hibiscus hispidissimus Griff., Not. Pl. Asiat. 4: 521 (1854); *Hibiscus aculeatus* Roxb., Vajr., Fl. Palghat Dist. 79 (1990); *Hibiscus furcatus* Roxb. ex DC., Hook. f., Fl. Brit. India 1: 335 (1874); Gamble, Fl. Pres. Madras 97 (1915).

Habit: Shrub
Habitat: Moist and Dry Deciduous forests
Morphology: Shrub; stem armed with long prickles with glandular base and simple hairs; leaves 3-5-lobed; flowers axillary, solitary; calyx deeply 5-partite; petals 5; staminal column antheriferous throughout; ovary ovoid; stigma villous; capsule hairy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: September-March
Distribution: Occasional
Altitude: 300-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4144* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5045* (GVCH); Plate 34: Fig. h.

Hibiscus lobatus (Murray) Kuntze, Revis. Gen. Pl. 3[3]: 19 (1898); Vajr., Fl. Palghat Dist. 79 (1990); *Hibiscus solandra* L' Herit., Hook. f., Fl. Brit. India 1: 336 (1874); Gamble, Fl. Pres. Madras 98 (1915).

Habit: Shrub
Habitat: Moist and Dry Deciduous forests
Morphology: Shrub; stem hairy; leaves 3-5-lobed; stipule hairy; flowers axillary, solitary; epicalyx 6-8-lobed; calyx campanulate, hairy; petals glabrous; stamens many; ovary ovoid, glandular hairy; capsule stellate hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: July-January
Distribution: Common
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 595* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 825* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2755* (GVCH).

Hibiscus lunariifolius Willd., Sp. Pl., ed. 4 [Willdenow] 3(1): 811 (1800); Hook. f., Fl. Brit. India 1: 338 (1874); Gamble, Fl. Pres. Madras 98 (1915); Vajr., Fl. Palghat Dist. 79 (1990).

Habit: Shrub
Habitat: Moist and Dry Deciduous forests
Morphology: Shrub; stem hairy; leaves 3-5-lobed; flowers in axillary or terminal raceme; epicalyx 5-10-lobed; calyx campanulate, stellate-pubescent; ovary pubescent; capsule ovoid, stellate-hairy.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Occasional
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 784* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2961* (GVCH); Plate 35: Fig. a

Hibiscus micranthus L .f., Suppl. Pl. 308, 310 (1782); Hook. f., Fl. Brit. India 1: 335 (1874); Gamble, Fl. Pres. Madras 97 (1915).

Habit: Shrub
Habitat: Deciduous forests and Scrub jungles
Morphology: Shrub; leaves 3-lobed; stipule linear; flowers axillary, solitary; calyx lobes ovate; petals oblong; ovary 5-loculed; stylar branches 5; capsule sub-globose; seeds hairy.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 887* (GVCH).

Hibiscus rosa-sinensis L., Sp. Pl. 2: 694 (1753); *Hibiscus rosa-sinensis* L., var. *rosa-sinensis* Hook. f., Fl. Brit. India 1: 334 (1874).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves 3-5-ribbed from base; flower axillary, solitary; epicalyx 5-8-lobed; calyx campanulate; corolla infundibular; staminal column antheriferous in upper half.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2212* (GVCH); Koonampalam, 14 December 2019, *Jabeena & Maya 3466* (GVCH).

Hibiscus surattensis L., Sp. Pl. 2: 696 (1753); Hook. f., Fl. Brit. India 1: 334 (1874); Gamble, Fl. Pres. Madras 97 (1915) Vajr., Fl. Palghat Dist. 80 (1990).

Habit: Shrub
Habitat: Moist Deciduous forests
Morphology: Shrub; stem prickly; leaves 3-5-lobed; stipule foliaceous; flowers axillary, solitary, densely hairy towards apex; calyx campanulate, prickly; corolla stellate-pubescent; staminal column glandular hairy; ovary conic; stigma discoid; capsule ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Occasional
Altitude: 300-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena*

& Maya 1738 (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3323* (GVCH).

Leptonychia Turcz., Bull. Soc. Imp. Naturalistes Moscou 31(1): 222 (1858)

Leptonychia caudata Burret, Notizbl. Bot. Gart. Berlin-Dahlem 9: 729 (1926); *Leptonychia glabra* Turcz., Hook. f., Fl. Brit. India 1: 379 (1874); *Grewia acuminata* Bedd., Hook. f., Fl. Brit. India 1: 379 (1874); *Leptonychia moacurroides* Bedd., Hook. f., Fl. Brit. India 1:379 (1874); Gamble, Fl. Pres. Madras 112 (1915); Vajr., Fl. Palghat Dist. 89 (1990).

Habit: Shrub
Habitat: Evergreen and semi-evergreen forests
Morphology: Shrub; leaves glabrous; stipule caducous; flowers axillary, solitary or in a cyme; sepals 5, pubescent; petals 5, densely villous; stamens 10; ovary obovoid, 4-lobed; capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2113* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2312* (GVCH)

Malvaviscus Fabr., Enum. [Fabr.]. 155 (1759)

Malvaviscus penduliflorus DC., Prodr. [A. P. de Candolle] 1: 445 (1824).

Habit: Shrub
Habitat: Grown as garden plant; often found as an escape
Morphology: Shrub; leaves 3-angled, glabrous; stipule hairy; flower axillary, solitary; epicalyx 5-8-lobed, glabrous; calyx tubular, 5-lobed; petals auricled at base; staminal column antheriferous at tip; ovary hairy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2988* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3536* (GVCH).

Melochia L., Sp. Pl. 2: 674 [774] (1753)

Melochia corchorifolia L., Sp. Pl. 2: 675 (1753); Hook. f., Fl. Brit. India 1: 374 (1874); Gamble, Fl. Pres. Madras 110 (1915).

Habit: Herb
Habitat: Degraded forests and wastelands
Morphology: Herb; leaves 3-lobed; stipule ciliate; inflorescence a terminal, capitate cyme; calyx cupular, ciliate; petals hispid; stamens 5; ovary ovoid, pubescent; capsule globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: July-April
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2121* (GVCH); Keshavanpara, 06 July 2019, *Jabeena & Maya 2166* (GVCH)

Microcos L., Sp. Pl. 1: 514 (1753)

Fruit unlobed……..….***M. paniculata***

Fruit 4-lobed……..……...***M. heterotricha***

Microcos heterotricha Burret, Notizbl. Bot. Gart. Berlin-Dahlem 9: 733, 760 (1926); Hook.f., Fl. Brit. India 1: 385 (1874); Gamble, Fl. Pres. Madras 117 (1915); *Grewia ritchiei* Mast., Hook.f., Fl. Brit. India 1: 389 (1874); *Grewia umbellata* Mast., Hook.f., Fl. Brit. India 1: 385 (1874); *Grewia lawsoniana* Drumm. ex Dunn., Gamble, Fl. Pres. Madras 117 (1915); Vajr., Fl. Palghat Dist. 94 (1990).

Habit: Climber
Habitat: Evergreen forests
Morphology: Shrub; leaves tomentose, 3-nerved; inflorescence an umbelled cyme; buds tomentose; sepals pubescent; petals oblong; receptacle villous; ovary sub-globose, hairy; drupe 4-lobed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: March-December
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3539* (GVCH).

Microcos paniculata L., Sp. Pl. 1: 514 (1753); *Grewia microcos* L., Hook. f., Fl. Brit. India 1: 392 (1874); Gamble, Fl. Pres. Madras 116 (1915).

Habit: Shrub
Habitat: Semi-evergreen forests, sacred groves and scrub jungles
Morphology: Shrub; stem stellate pubescent; leaves 3-ribbed; inflorescence an axillary or terminal panicle; sepals hairy; petals 5; stamens many; ovary globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: August-April
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1936* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3340* (GVCH).

Pterospermum Schreb., Gen. Pl., ed. 8[a]. 461 (1791)

Leaf base equal; 5-7 ribbed from base……....***P. diversifolium***
Leaf base unequal; 3-5 ribbed from base……....***P. rubiginosum***

Pterospermum diversifolium Blume, Bijdr. Fl. Ned. Ind. 2: 88 (1825); Hook. f., Fl. Brit. India 1: 367 (1874); Gamble, Fl. Pres. Madras 108 (1915).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves distichous, coriaceous, 5-7-nerved from base; flowers axillary, solitary; calyx tubular, hairy; petals 5; stamens 15 in 5 bundles; staminodes 5; ovary 5-loculed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: December-April
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mannathypalam, 12 October 2020, *Jabeena & Maya 4164* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4587* (GVCH).

Pterospermum rubiginosum B.Heyne ex G.Don, Gen. Hist. 1: 538 (1831); Hook. f., Fl. Brit. India 1: 368 (1874); Gamble, Fl. Pres. Madras 109 (1915).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves coriaceous; 3-5-nerved at base, pubescent; stipule laciniate;

flowers axillary, solitary; calyx tubular, tomentose; petals 5; stamens 15 in 5 groups; staminodes 5; ovary superior, hairy, 5-loculed; capsule beaked.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: November-April
Distribution: Rare
Altitude: 300-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4808* (GVCH).

Pterygota Schott & Endl., Melet. 32 (1832)

Pterygota thwaitesii (Mast.) Alston, in Trimen, Hand-Book Fl. Ceylon vi. Suppl., 31 (1931); Gamble, Fl. Pres. Madras 104 (1915); Vajr., Fl. Palghat Dist. 91 (1990); *Sterculia alata* Roxb., Hook. f., Fl. Brit. India 1: 360 (1874).

Habit: Tree
Habitat: Evergreen and semi-evergreen forests
Morphology: Tree; leaves 5-7-ribbed from base; stipule lateral; panicles axillary, 9-10-flowered; calyx 5-lobed, tomentose; stamens in 4-5 groups of 4 anthers in male flowers; carpels 5 in female flowers; follicles 3-5.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mannathypalam, 12 October 2020, *Jabeena & Maya 4168* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4588* (GVCH).

Sida L., Sp. Pl. 2: 683 (1753)

1.Whole plant velvety…….***S. cordifolia***
1.Whole plant not velvety……..…….(2)
2.Plant prostrate or decumbent...***S. cordata***
2.Plant erect……....(3)
3.Mericarps 5……..……(4)
3.Mericarps 7-10……..…(5)
4.Leaves 3-nerved from base; ovary ovoid…..……..……..***S. acuta***
4.Leaves 5-7 nerved from base; ovary sub-globose…..……...……...***S. mysorensis***
5.Mericarps stellately hairy…..***S. scabrida***
5.Mericarps glabrous……..…(6)
6.Leaves emarginate at apex; mericarp dehiscent…..*****S.rhombifolia ssp.alnifolia***
6.Leaves acute at apex; mericarp indehiscent……..…..***S. rhombifolia***

Sida acuta Burm.f., Fl. Ind. (N. L. Burman) 147 (1768); Gamble, Fl. Pres. Madras 90 (1915); Vajr., Fl. Palghat Dist. 82 (1990); *Sida carpinifolia* sensu Mast., Hook.f., Fl. Brit. India 1: 323 (1874).

Habit: Shrub
Habitat: Dry and moist deciduous forests
Morphology: Shrub; leaves serrate at margins, sparsely hairy; petiole pulvinate; stipule unequal; flowers solitary, axillary; calyx campanulate, 5-lobed; petals as long as calyx; staminal column glandular hairy, antheriferous above; ovary ovoid; schizocarps glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Common
Altitude: 200-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 037* (GVCH); Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 476* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 571* (GVCH).

Sida cordata (Burm.f.) Borss. Waalk., Blumea xiv. 182 (1966); Vajr., Fl. Palghat Dist. 83 (1990); *Sida veronicaefolia* Lam., Gamble, Fl. Pres. Madras 89 (1915); *Sida humilis* Cav. var. *veronicaefolia* (Lam.) Mast., Hook. f., Fl. Brit. India 1: 322 (1874).

Habit: Herb
Habitat: All types of forests
Morphology: Herb; stem prostrate; plant stellate hairy; leaves 5-7-nerved from base; stipule hairy; flower axillary, solitary; calyx campanulate; lobes connate above middle; petals ciliate at base; staminal column antheriferous at apex; ovary globose; schizocarp globose, enclosed in persistent calyx.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Occasional
Altitude: 200-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 08 November 2017, *Jabeena & Maya 720* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4809* (GVCH); Plate 35: Fig. b.

Sida cordifolia L., Sp. Pl. 2: 684 (1753); Hook. f., Fl. Brit. India 1: 324 (1874); Gamble, Fl. Pres. Madras 89 (1915); Vajr., Fl. Palghat Dist. 83 (1990).

Habit: Shrub
Habitat: Roadsides, wastelands
Morphology: Shrub; plant velutinous, foetid; leaves 3-5 nerved from base, stellate hairy; flower solitary or in clusters of 2-5; calyx campanulate, 10-ribbed, hairy; petals ciliate at base; ovary conic, stellate-hairy; schizocarp pubescent at tip; mericarps with a pair of retrose-hairy awns at apex.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 300-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3032* (GVCH); Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4980* (GVCH).

Sida mysorensis Herb.Madr. ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 59 (1834).

Habit: Shrub
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Shrub; stem glandular hairy, aromatic; leaves 5-7-nerved from base; stipule hairy; flowers in axillary condensed racemes or panicles; calyx campanulate, stellate-hairy outside; petals glabrous; staminal column glabrous, antheriferous above; ovary sub-globose; mericarps tetragonous, 2-cuspidate and hairy at apex.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2872* (GVCH).

Sida rhombifolia L., Sp. Pl. 2: 684 (1753); Hook. f., Fl. Brit. India 1: 323 (1874); Gamble, Fl. Pres. Madras 90 (1915); Vajr., Fl. Palghat Dist. 84 (1990).

Habit: Shrub
Habitat: Degraded forest areas and wastelands
Morphology: Shrub; stem stellate hairy; leaves tomentose; flowers axillary, solitary or in 2-5-flowered clusters; calyx campanulate, lobes triangular, tomentose; petals oblique, cuneate at base; staminal

column glabrous; ovary conic, hairy; mericarps with 2 short awns at apex.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 144* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2954* (GVCH).

Sida rhombifolia* subsp. *alnifolia (L.) Ugbor., Bol. Soc. Brot. sér. 2, 54: 70 (1980); *Sida rhombifolia* L. var. *retusa* (L.) Mast., Hook. f., Fl. Brit. India 1: 324 (1874).

Habit: Shrub
Habitat: Moist deciduous forests
Morphology: Shrub; leaves pubescent; stipule linear; flowers axillary, solitary; calyx stellate hairy outside, 5-lobed; petals hairy at base; staminal column antheriferous above; ovary depressed globose; mericarps 7-10, enclosed in the calyx, mucronate at apex.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: September-December

Distribution: Common

Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 591* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1918* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2193* (GVCH); Plate 35: Fig. c.

Sida scabrida Wight & Arn., Prodr. Fl. Ind. Orient. 1: 57 (1834).

Habit: Shrub
Habitat: Moist Deciduous, Semi-evergreen and Evergreen forests
Morphology: Shrub; stem stellate hairy; leaves pubescent; stipule ciliate; flowers axillary, solitary or in 3-5 flowered clusters; calyx campanulate, 10-ribbed; staminal column stellate hairy; ovary ovoid; mericarps trigonous, enclosed in calyx, 2-awned.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3023* (GVCH).

Sterculia L., Sp. Pl. 2: 1007 (1753)

1.Leaves entire……..……..***S. guttata***
1.Leaves palmately lobed…..……..(2)
2.Calyx glabrous within…...…...***S. villosa***
2.Calyx pubescent or woolly within..…(3)
3.Lateral nerves upto 24 pairs; style deflexed……...……***S. foetida***
3.Lateral nerves upto 14 pairs; style not deflexed……..……***S. urens***

Sterculia foetida L., Sp. Pl. 2: 1008 (1753); Hook. f., Fl. Brit. India 1: 354 (1874); Gamble, Fl. Pres. Madras 105 (1915).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; branches whorled; leaves digitately 5-7-foliolate; leaflets glabrous; inflorescence an axillary or terminal panicle; calyx campanulate, 5-lobed, woolly inside; petals absent; staminal tube pubescent at base; anthers 10-15 in male flowers; ovary globose,

villous, 5-loculed; gynophore stout; staminodes sub-sessile; follicles 3-5-lobed, beaked.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: February-August
Distribution: Common
Altitude: 200-600m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1772* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2756* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4349* (GVCH); Plate 35: Fig. d.

Sterculia guttata Roxb., Hort. Bengal. 50 (1814); Hook. f., Fl. Brit. India 1: 355 (1874); Gamble, Fl. Pres. Madras 106 (1915); Vajr., Fl. Palghat Dist. 91 (1990).

Habit: Tree
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Tree; branchlets stellate-tomentose; leaves simple, 3-5-ribbed from base, stellate pubescent beneath; stipule caducous; inflorescence an axillary or terminal panicle, stellate tomentose; calyx campanulate, glandular inside; petals absent; stamens 10 in male and bisexual flowers; ovary globose, strigose, 5-loculed; gynophore curved; follicles 1-5.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-March
Distribution: Common
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2743* (GVCH); Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3696* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4115* (GVCH).

Sterculia urens Roxb., Pl. Coromandel 1(1): 25, t. 24 (1795); Hook. f., Fl. Brit. India 1: 355 (1874); Gamble, Fl. Pres. Madras 106 (1915); Vajr., Fl. Palghat Dist. 91 (1990).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves clustered at end of branchlets, palmately 3-5 lobed; stipule caducous; lamina 3-5-ribbed from base, lateral nerves 5-7 pairs; inflorescence a terminal panicle; calyx campanulate, glandular hairy inside; petals absent; stamens 10-15 in male and bisexual flowers; ovary globose, 5-loculed; follicles 4-6.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-April
Distribution: Occasional
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1153* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1672* (GVCH); Plate 35: Fig. e.

Sterculia villosa Roxb. ex Sm., Cycl. [A. Rees], (London ed.) 34: Sterculia no. 16 (1816); Hook. f., Fl. Brit. India 1: 355 (1874); Gamble, Fl. Pres. Madras 106 (1915).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; branches whorled; leaves clustered at ends of branchlets, palmately 5-7 lobed; 5-7-ribbed from the base; inflorescence a terminal drooping panicle; calyx campanulate, pubescent; petals absent; stamens 10 and staminal column recurved in male flowers; ovary

globose, stellate-pubescent in female flowers; follicles 2-7..
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-April
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 389* (GVCH).

Triumfetta L., Sp. Pl. 1: 444 (1753)

1.Leaves lobed...……..…..***T. rhomboidea***
1.Leaves not lobed……..(2)
2.Fruit hirsute; leaves tomentose beneath…….….***T. pilosa***
2.Fruit and leaves glabrous...…...***T. annua***

Triumfetta annua L., Mant. Pl. 73 (1767); Hook. f., Fl. Brit. India 1: 396 (1874); Gamble, Fl. Pres. Madras 120 (1915).

Habit: Herb
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Herb; stem hairy on one side; leaves 3-5-nerved; stipule hairy; cyme leaf-opposed, 3-flowered; sepals cucullate, awned at apex; petals postulate; stamens 10; carpels 4; ovary globose, hairy; capsule with bristles.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: August-March
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 906* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1640* (GVCH); Plate 35: Fig. f.

Triumfetta pilosa Roth, Nov. Pl. Sp. 223 (1821); Hook. f., Fl. Brit. India 1: 394 (1874); Gamble, Fl. Pres. Madras 120 (1915); Vajr., Fl. Palghat Dist. 95 (1990).

Habit: Shrub
Habitat: Evergreen, semi-evergreen and moist deciduous forests
Morphology: Shrub; stem hispid; leaves 3-5-nerved, stellate-hairy; stipule pilose; flowers in many-flowered cyme; sepals hairy; petals ciliate at base; stamens 10, unequal; carpels 4; ovary globose, hairy; capsule tomentose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3001* (GVCH); Nooradi, 14-12-2019, *Jabeena & Maya 3543* (GVCH); Plate 35: Fig. g.

Triumfetta rhomboidea Jacq., Enum. Syst. Pl. 22 (1760); Hook. f., Fl. Brit. India 1: 395 (1874); Gamble, Fl. Pres. Madras 120 (1915); Vajr., Fl. Palghat Dist. 95 (1990).

Habit: Shrub
Habitat: Degraded deciduous forests
Morphology: Shrub; stem hairy; leaves 3-5-lobed, 3-7-nerved; inflorescence a terminal or leaf-opposed cymes; sepals hairy; petals as long as sepals, hairy at base; stamens 8-15; carpels 2-3; ovary sub-globose, hairy; capsules setose; setae hooked at tip.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-January
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 08 November 2017, *Jabeena &*

Maya 722 (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3819* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4071* (GVCH).

Urena L., Sp. Pl. 2: 692 (1753)

Leaves entire or shallowly 3-5 lobed…..……....***U. lobata***
Leaves deeply lobed……..…....***U. sinuata***

Urena lobata L., Sp. Pl. 2: 692 (1753); *Urena lobata* L. ssp. *lobata* Hook. f., Fl. Brit. India 1: 329 (1874); Gamble, Fl. Pres. Madras 92 (1915); Vajr., Fl. Palghat Dist. 85 (1990).

Habit: Shrub
Habitat: Degraded forests
Morphology: Shrub; stems stellate-pubescent; leaves shallowly lobed, 4-nerved from base; stipule pubescent; flowers axillary, solitary, or in 2-3-flowered clusters; epicalyx 5-lobed, pubescent; calyx campanulate, 5-lobed; corolla stellate-hairy; staminal column declinate, glabrous; ovary sub-globose, hairy; schizocarp globose, glochidiate, stellate-hairy. Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: August-December
Distribution: Common
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 785* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1713* (GVCH); Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2144* (GVCH).

Urena sinuata L., Sp. Pl. 2: 692 (1753); Hook. f., Fl. Brit. India 1: 329 (1874); Gamble, Fl. Pres. Madras 92 (1915); *Urena lobata* L. ssp. *sinuata* (L.) Borss., Hook. f., Fl. Brit. India 1: 329 (1874); Vajr., Fl. Palghat Dist. 85 (1990).

Habit: Shrub
Habitat: Moist Deciduous forests
Morphology: Shrub; leaves palmately 5-lobed, upto 7-ribbed at base; flowers axillary, solitary or paired; epicalyx 5-lobed; calyx campanulate, 5-lobed; petals stellate-hairy; staminal column slightly curved; ovary globose, pubescent; mericarps 5.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1250* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3529* (GVCH); Plate 35: Fig. h.

BIXACEAE

Leaves entire; ovary covered with red bristles…….……....***Bixa***
Leaves palmately 3-5 lobed; ovary glabrate……..……***Cochlospermum***

Bixa L., Sp. Pl. 1: 512 (1753)

Bixa orellana L., Sp. Pl. 1: 512 (1753); Hook. f., Fl. Brit. India 1: 252 (1827); Gamble, Fl. Pres. Madras 51 (1915).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves alternate; lateral nerves 4-5 pairs; flowers in a corymb or panicle; sepals concave; petals unequal; stamens many; ovary covered with bristles; capsules globose, covered with bristles.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Least Concern
Phenology: June-November
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2992* (GVCH); Plate 36: Fig. a

Cochlospermum Kunth, Nov. Gen. Sp. [H.B.K.] 5: 297 (ed. qu.); 231 (ed. f.) (1822)

Cochlospermum religiosum (L.) Alston, Handb. Fl. Ceylon 6(suppl.): 14 (1931).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves palmately 3-5 lobed, 5-7 nerved from base; inflorescence a terminal raceme or panicle; sepals unequal, silky; petals 5; stamens unequal, slightly curved; ovary globose, glabrous; capsule 5-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-March
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothudy-Kaikatty, 14 December 2019, *Jabeena & Maya 3301* (GVCH).

DIPTEROCARPACEAE

1.Stipule amplexicaul...…...***Dipterocarpus***
1.Stipule not amplexicaul….....….…….(2)
2.Leaves with domantia in nerve axils…….……...……..***Hopea***
2.Leaves without domantia in nerve axils……..……..……***Vateria***

Dipterocarpus C.F.Gaertn., Suppl. Carp. 50 (1805)

1.Fruit globose; calyx tubular; leaves; leaves stellate hairy…….....***D. bourdillonii***
1.Fruit oblong; calyx cupular; leaves glabrous...……...…***D. indicus***

Dipterocarpus bourdillonii Brandis, Hooker's Icon. Pl. 25: t. 2403 (1895); Gamble, Fl. Pres. Madras 81 (1915).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 15-20; inflorescence a 3-5-flowered axillary raceme; calyx tubular, 5-winged; petals 5, pubescent; stamens 30; anthers hastate; ovary 3-loculed; nut glabrous, winged.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Critically Endangered
Phenology: January-June
Distribution: Rare
Altitude: 600-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3455* (GVCH).

Dipterocarpus indicus Bedd., in Conserv. For. Rep. (1864-65) 17; Gamble, Fl. Pres. Madras 81 (1915); Vajr., Fl. Palghat Dist. 74 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; young shoots appressed-tomentose; leaves simple, alternate, coriaceous; lateral nerves 10-15 pairs; stipule tomentose; flowers in axillary 3-8-flowered raceme; calyx 5-lobed, unequal; petals 5; stamens 30; ovary 3-loculed; nut winged.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Endangered
Phenology: February-July
Distribution: Rare
Altitude: 500-700m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4145* (GVCH); Plate 36: Fig. b.

Hopea Roxb., Pl. Coromandel 3(1): 7 (1811)

Panicle tomentose; petals glabrous……..…***H. parviflora***
Panicle glabrous; petals pubescent……..***H. ponga***

Hopea parviflora Bedd., Rep. Conservator Forests 1863-64: 31, unnumbered plate (1864); Hook. f., Fl. Brit. India 1: 308 (1874); Gamble, Fl. Pres. Madras 82 (1915); Vajr., Fl. Palghat Dist. 74 (1990).

Habit: Tree
Habitat: Evergreen, Semi-evergreen forests and in sacred grooves
Morphology: Tree; leaves glabrous; lateral nerves 8-12 pairs, domantia present; stipule lateral; inflorescence a terminal or upper axillary unilateral racemose panicle; sepals 5, tomentose; petals 5, glabrous; stamens 5 (-10); nut winged.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Least Concern
Phenology: January-June
Distribution: Rare
Altitude: 600-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4979* (GVCH).

Hopea ponga (Dennst.) Mabb., Taxon 28(5-6): 587 (1979); Vajr., Fl. Palghat Dist. 74 (1990); *Hopea wightiana* Wall.ex Wight & Arn., Hook. f., Fl. Brit. India 1: 309 (1874); Gamble, Fl. Pres. Madras 82 (1915).

Habit: Tree
Habitat: Evergreen, Semi-evergreen forests and in sacred groves
Morphology: Tree; leaves simple, glabrous; lateral nerves 5-10 pairs; inflorescence an axillary unilateral racemose panicle; sepals 5, glabrous; petals 5, pubescent; stamens 10 or 15; ovary superior, 3-loculed; nut ovoid, winged; wings 8-nerved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: March-June
Distribution: Rare
Altitude: 500-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4146* (GVCH); Plate 36: Fig. c.

Vateria L., Sp. Pl. 1: 515 (1753)

Vateria indica L., Sp. Pl. 1: 515 (1753); Hook. f., Fl. Brit. India 1: 313 (1874); Gamble, Fl. Pres. Madras 85 (1915); Vajr., Fl. Palghat Dist. 75 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves alternate, glabrous; lateral nerves 12-18 pairs; stipule lateral; inflorescence a puberulous terminal panicle; sepals 5, stellate hairy; petals 5; stamens many; ovary 3-loculed, tomentose; style glabrous; capsule; seed solitary.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Vulnerable
Phenology: March-August
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 19 August 2017, *Jabeena & Maya 345* (GVCH);

Pakuthipalam, 21 November 2020, *Jabeena & Maya 4590* (GVCH).

BRASSICALES

MORINGACEAE

Moringa Adans., Fam. Pl. (Adanson) 2: 318 (1763)

Moringa oleifera Lam., Encycl. [J. Lamarck & al.] 1(2): 398 (1785); Gamble, Fl. Pres. Madras 269 (1918); *Moringa pterygosperma* Gaertn., Hook. f., Fl. Brit. India 2: 45 (1876); Vajr., Fl. Palghat Dist. 140 (1990).

Habit: Tree
Habitat: Cultivated
Morphology: Tree; leaves compound, tri-pinnate; leaflets pubescent; inflorescence an axillary tomentose panicle; calyx lobes reflexed; petals unequal; stamens 5; staminodes 5-7; ovary 1-loculed, ovoid; pod 9-ribbed; seeds winged.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: November-March
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4807* (GVCH); Plate 36: Fig. d.

CARICACEAE

Carica L., Sp. Pl. 2: 1036 (1753)

Carica papaya L., Sp. Pl. 2: 1036 (1753); Hook. f., Fl. Brit. India 2: 599 (1879); Gamble, Fl. Pres. Madras 525 (1919); Vajr., Fl. Palghat Dist. 211 (1990).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; leaf deeply divided; flowers sessile, clustered; calyx and corolla 5-lobed; stamens 10; filaments papillose; anthers basifixed; stigma lobes fimbriate; fruit spherical; seeds enclosed in gelatinous membrane.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Data Deficient
Phenology: Throughout the year
Distribution: Occasional
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3449* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4805* (GVCH); Plate 36: Fig. e.

SALVADORACEAE

Azima Lam., Encycl. [J. Lamarck & al.] 1(1): 343 (1783)

Azima tetracantha Lam., Encycl. [J. Lamarck & al.] 1(1): 343 (1783); Hook. f., Fl. Brit. India 3: 620 (1882); Gamble, Fl. Pres. Madras 800 (1923).

Habit: Shrub
Habitat: Dry Deciduous forests
Morphology: Shrub; branchlets tetragonous; stem with axillary; leaves opposite, coriaceous; inflorescence an axillary or terminal spike; flowers unisexual; bracts pubescent; calyx campanulate, pubescent; petals 4; stamens 4; pistillode absent; ovary 2-loculed in female flowers; ovules 1-2, erect; fruit a globose berry.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: August-September
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2918* (GVCH); Plate 36: Fig. f.

CAPPARACEAE

Leaves 3-foliolate; stipule absent.***Crataeva***
Leaves simple; stipule present.....***Capparis***

Capparis L., Sp. Pl. 1: 503 (1753)

1.Flowers supra-axillary…..…***C. zeylanica***
1.Flowers axillary or terminal……..….(2)
2.Flowers solitary……..…***C. rheedei***
2.Flowers corymb or raceme…..…….(3)
3.Young branchlets hairy; leaves upto 12 cm long, obtuse at apex; inflorescence a raceme; berry ovoid…..…....***C. roxburghii***
3.Young branchlets glabrous; leaves upto 6 cm long, acute at apex; inflorescence a corymb; berry globose……...***C. moonii***

Capparis moonii Wight, Illustr. Ind. Bot. i. 35. (1840); Hook. f., Fl. Brit. India 1:175 (1872); Gamble, Fl. Pres. Madras 45 (1915); Vajr., Fl. Palghat Dist. 56 (1990).

Habit: Shrub
Habitat: Evergreen forests, also in sacred groves
Morphology: Shrub; leaves simple, glabrous; lateral nerves 6-16 pairs; flowers in 6-12-flowered corymb; sepals sub-equal, puberulous; petals unequal, hairy; stamens numerous; filaments glabrous; ovary ovoid, glabrous; berry globose, glabrous.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: February-October

Distribution: Occasional

Altitude: 1000-1400m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1609* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 594* (GVCH); Plate 36: Fig. g.

Capparis rheedei DC., Prodr. [A. P. de Candolle] 1: 246 (1824); *Capparis heyneana* Wall. ex Wight & Arn., Hook. f., Fl. Brit. India 1: 174 (1872); Gamble, Fl. Pres. Madras 45 (1915); *Capparis baducca* sensu Jacobs, Vajr., Fl. Palghat Dist. 55 (1990).

Habit: Shrub
Habitat: Semi-evergreen forests
Morphology: Shrub; branchlets tomentose; leaves coriaceous, glabrous; lateral nerves 2-5 pairs; flowers axillary, solitary; sepals villous inside; petals glabrous; stamens more than 80; ovary oblong, tetragonous, densely pubescent; berry ovoid, beaked.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4122* (GVCH).

Capparis roxburghii DC., Prodr. [A. P. de Candolle] 1: 247 (1824); Hook. f., Fl. Brit. India 1: 175 (1872); Gamble, Fl. Pres. Madras 45 (1915).

Habit: Climber
Habitat: Dry Deciduous forests
Morphology: Climber; thorns few or absent; leaves glabrous; inflorescence a raceme; flower buds glabrous; sepals 4, free; petals 4, sessile; stamens numerous; ovary stalked; berry ovoid.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-October
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4224* (GVCH).

Capparis zeylanica L., Sp. Pl., ed. 2. 1: 720 (1762); Gamble, Fl. Pres. Madras 46 (1915); *Capparis horrida* L.f., Hook. f., Fl. Brit. India 1: 178 (1872).

Habit: Shrub
Habitat: Dry Deciduous forests
Morphology: Shrub; stem armed with recurved thorns; branchlets leaves coriaceous, glabrous; lateral nerves 4-8 pairs; inflorescence supra-axillary; buds pubescent; sepals sub-equal; petals tomentose; stamens numerous; gynophore glabrous except at base; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Rare
Altitude: 900-1000
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 900* (GVCH).

Crateva L., Sp. Pl. 1: 444 (1753)

Crateva adansonii* subsp. *odora (Buch.-Ham.) Jacobs, Blumea 12: 198 (1964); Vajr., Fl. Palghat Dist. 57 (1990); *Crataeva religiosa* var. *roxburghii* (R. Br.) Hook.f. & Thoms., Hook.f., Fl. Brit. India 1: 172 (1872); *Crataeva religiosa* sensu Dunn., Gamble, Fl. Pres. Madras 47 (1918).

Habit: Tree
Habitat: Dry Deciduous forests
Morphology: Tree; bark petiole gland-tipped; leaves digitately trifloliate; lateral nerves 6-8 pairs; inflorescence a terminal corymb; sepals 4, free, petaloid; petals 4, clawed; stamens many, free; anthers basifixed; ovary ellipsoid, 1-2-loculed; berry.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-August
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1517* (GVCH).

CLEOMACEAE

Cleome L., Sp. Pl. 2: 671 (1753)

1.Leaves simple……...***C. monophylla***
1.Leaves 3-9 foliolate…….(2)
2.Petioles with scattered spikes on lower side…..……..…..***C. spinosa***
2.Petioles without spines……...…….(3)
3.Whole plant viscous……....***C. viscosa***
3.Whole plant not viscous……..(4)
4.Plant decumbent; sepals oblong; leaves petioled….***C.rutidosperma var.burmannii***
4.Plant erect; sepals subulate or lanceolate; leaves sub-sessile……..***C. speciosa***

Cleome monophylla L., Sp. Pl. 2: 672 (1753); Hook. f., Fl. Brit. India 1: 168 (1872); Gamble, Fl. Pres. Madras 41 (1915); Vajr., Fl. Palghat Dist. 57 (1990).

Habit: Herb
Habitat: Degraded deciduous forests
Morphology: Annual herb; stem glandular-pubescent; stem angled; leaves simple, ciliate at margins; inflorescence a terminal lax raceme; sepals acuminate; petals clawed at base; stamens 6; filaments unequal; ovary linear; capsule beaked, ribbed, glandular.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: February-August

Distribution: Occasional

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 003* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2926* (GVCH).

Cleome rutidosperma* var. *burmanni (Wight & Arn.) M.O.Siddiqui & S.N.Dixit, Pl. Sci. (Lucknow) 6: 68 (1974); *Cleome burmannii* Wight & Arn., Hook. f., Fl. Brit. India 1: 170 (1872); Gamble, Fl. Pres. Madras 41 (1915).

Habit: Herb
Habitat: Degraded Forest areas
Morphology: Annual herb; stem ribbed; leaves trifoliolate; leaflets webbed at base, glabrous; flowers solitary, axillary; sepals acuminate; petals obovate; stamens 6; ovary glabrous; capsule linear, beaked, glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-August
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 24 September 2019, *Jabeena & Maya 2504* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2771* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4322* (GVCH); Plate 36: Fig. h.

Cleome speciosa Raf., Fl. Ludov. 86 (1817); Vajr., Fl. Palghat Dist. 57 (1990).

Habit: Herb
Habitat: Grown as garden plant; also getting naturalized
Morphology: Annual herb; leaves 3-7 foliolate; lateral nerves 7-20 pairs; inflorescence a long raceme; bracts foliaceous; sepals ciliate; petals clawed; stamens 6; gynophore glabrous; ovary linear, glabrous; capsule linear.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and South American
IUCN category: Not Evaluated
Phenology: April-October
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3495* (GVCH).

Cleome spinosa Jacq., Enum. Syst. Pl. 26 (1760).

Habit: Herb
Habitat: Weed in moist localities
Morphology: Annual herb; stem glandular hairy; leaves 5-9 foliolate, mid veins spiny beneath; inflorescence a terminal raceme; bracts foliaceous; sepals lanceolate; petals clawed; stamens 6; ovary linear; capsule cylindric.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: March-December
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 382* (GVCH).

Cleome viscosa L., Sp. Pl. 2: 672 (1753); Hook. f., Fl. Brit. India 1: 170 (1872); Gamble, Fl. Pres. Madras 41 (1915); Vajr., Fl. Palghat Dist. 57 (1990).

Habit: Herb
Habitat: Weed among cultivated plants, wastelands, roadsides
Morphology: Annual herb; stem viscous; leaves 3-5-foliolate; leaflets ciliate at margins; inflorescence a terminal few-flowered lax raceme; sepals 4, glandular hairy without; petals 4; stamens 12-18; ovary sessile, glandular-hairy; capsule stalked, beaked at apex, glandular hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: March-July
Distribution: Common
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1273* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2017* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2114* (GVCH).

BRASSICACEAE

1.Pods flat……....***Lepidium***
1.Pods linear……..……..….(2)
2.Plant diffuse……...***Cardamine***
2.Plant erect……..….(3)
3.Seeds arranged in 2 rows…...….***Rorippa***
3.Seeds arranged in 1 row…….....***Brassica***

Brassica L., Sp. Pl. 2: 666 (1753)

Brassica juncea (L.) Czern., Conspect. Pl. Charc. 8 (1859); Hook. f., Fl. Brit. India 1: 157 (1872); Gamble, Fl. Pres. Madras 38 (1915); Vajr., Fl. Palghat Dist. 54 (1990).

Habit: Herb
Habitat: Cultivated
Morphology: Herb; stem glabrous; leaves simple, alternate; racemes many-flowered; sepals spreading; petals clawed; anthers beaked; capsule linear.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-July
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 755* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3088* (GVCH); Plate 37: Fig. a.

Cardamine L., Sp. Pl. 2: 654 (1753)

Petals clawed; sepals linear; stamens 6……..……..…***C. africana***
Petals not clawed; sepals oblong; stamens usually 4…….....…***C. hirsuta***

Cardamine africana L., Sp. Pl. 2: 655 (1753); Hook. f., Fl. Brit. India 1: 137 (1872); Gamble, Fl. Pres. Madras 38 (1915).

Habit: Herb
Habitat: Degraded Forest areas and plantations in high ranges
Morphology: Herb; stem sparsely hispid; leaves 3-foliolate; leaflets lyrate; racemes few flowered; sepals linear; petals clawed; stamens 6; filaments glabrous; pod tapering at both ends.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: African
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 180* (GVCH).

Cardamine hirsuta L., Sp. Pl. 2: 655 (1753); Hook. f., Fl. Brit. India 1: 158 (1872); Gamble, Fl. Pres. Madras 38 (1915).

Habit: Herb
Habitat: Moist areas
Morphology: Herb; basal leaves imparipinnate; leaflets 5-13; flowers in 10-20-flowered raceme; sepals oblong; petals cuneate; stamens 4 or 6; ovary glabrous; ovules many; fruit cylindric.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 900-1100
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3524* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2760* (GVCH).

Lepidium L., Sp. Pl. 2: 643 (1753)

Herb diffuse; seeds reniform...***L. didymum***
Herb erect; seeds ovoid……..***L. sativum***

Lepidium didymum L., Mant. Pl. 92 (1767); *Senebiera didyma* (L.) Pers., Gamble, Fl. Pres. Madras 39 (1915).

Habit: Herb
Habitat: Degraded Forest areas and weed in tea plantations
Morphology: Annual herb; stem angled; lower leaves pinnate, glabrous; flowers in 30-60-flowered raceme; sepals ovate; petals linear; fertile stamens 2; fruit notched at apex.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Occasional

Altitude: 900-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2782* (GVCH); Nooradi, 11 January 2020, *Jabeena & Maya 3589* (GVCH); Plate 37: Fig. b.

Lepidium sativum L., Sp. Pl. 2: 644 (1753).

Habit: Herb
Habitat: Cultivated
Morphology: Herb; stem glabrous; basal leaves pinnatifid; inflorescence an elongated raceme; sepals pubescent; petals spathulate; stamens 4; fruits broadly narrowly winged, notched at apex.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Holarctic

IUCN category: Not Evaluated

Phenology: December-March

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 11 January 2020, *Jabeena & Maya 3614* (GVCH).

Rorippa Scop., Fl. Carniol. 520 (1760)

Rorippa indica (L.) Hiern, Cat. Afr. Pl. (Hiern) pt. 1: [xxvi] (1896); Vajr., Fl. Palghat Dist. 54 (1990); *Nasturtium indicum* (L.) DC., Hook. f., Fl. Brit. India 1: 134 (1872); Gamble, Fl. Pres. Madras 37 (1915).

Habit: Herb

Habitat: Marshy areas

Morphology: Herb; stem glabrous; leaves alternate, lower leaves lobed; inflorescence a terminal raceme; sepals oblong; petals narrowly clawed at base; stamens 4; fruit stalked, beaked.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific, Holarctic and African

IUCN category: Not Evaluated

Phenology: March-April

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3709* (GVCH).

IV.1.9. Superasterids

SANTALALES

OLACACEAE

1.Staminodes absent…….....***Strombosia***

1.Staminodes present……..…(2)

2.Ovary 3-loculed……...…..***Olax***

2.Ovary 1-loculed……...***Erythropalum***

Erythropalum Blume, Bijdr. Fl. Ned. Ind. 15: 921 (1826)

Erythropalum scandens Blume, Bijdr. Fl. Ned. Ind. 15: 922 (1826); Hook. f., Fl. Brit. India 1: 578 (1875); *Erythropalum populifolium* (Arn.) Mast., Hook. f., Fl. Brit. India 1: 578 (1875); Gamble, Fl. Pres. Madras 191 (1915); Vajr., Fl. Palghat Dist. 113 (1990).

Habit: Climber
Habitat: Evergreen and Semi-evergreen forests
Morphology: Climber; leaves 3-nerved; inflorescence an axillary peduncled drooping cyme; calyx cupular, 5-toothed; petals 5, oblong; stamens 5; staminodes hairy; disc 5-lobed; ovary 1-loculed; fruit ovoid, glabrous; seed solitary.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: December-March
Distribution: Common
Altitude: 900-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 027* (GVCH); Keshavanpara, 21 November 2017, *Jabeena & Maya 734* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2002* (GVCH); Plate 37: Fig. c.

Olax L., Sp. Pl. 1: 34 (1753)

Olax imbricata Roxb., Hort. Bengal. 5; Fl. Ind. i. 164 (1820); Hook. f., Fl. Brit. India 1: 575 (1875); *Olax wightiana* Wall. ex Wight & Arn., Hook. f., Fl. Brit. India 1: 575 (1875); Gamble, Fl. Pres. Madras 190 (1915).

Habit: Shrub
Habitat: Moist Deciduous, Semi-evergreen and Evergreen forests
Morphology: Shrub; branchlets unarmed; leaves glabrous; lateral nerves 6-9 pairs; inflorescence an axillary many-flowered raceme; bracts concave; calyx cup truncate, glabrous; petals 3; stamens 3; staminodes 5-6; ovary ovoid, 3-loculed; drupe sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: January-April
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1886* (GVCH); Karassuri, 12 January 2021, *Jabeena & Maya 4724* (GVCH).

Strombosia Blume, Bijdr. Fl. Ned. Ind. 17: 1154

Strombosia ceylanica Gardner, Calcutta J. Nat. Hist. vi. (1846) 350; Hook. f., Fl. Brit. India 1: 579 (1875); Gamble, Fl. Pres. Madras 191 (1915).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves sub-equal at base, glabrous, pellucid-punctate; lateral nerves 5-8 pairs; inflorescence an axillary cyme; calyx 5-lobed; petals 5, recurved at tip; stamens 5; ovary half-inferior, imperfectly 4-5-loculed; drupe pyriform, sub-sessile; seed solitary.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: January-April

Distribution: Rare

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2182* (GVCH).

SANTALACEAE

Ovules 2-4, pendulous; plant semi-parasitic……...***Santalum***

Ovules 1, basal; plant epiphytic…...……...***Viscum***

Santalum L., Sp. Pl. 1: 349 (1753)

Santalum album L., Sp. Pl. 1: 349 (1753); Hook. f., Fl. Brit. India 5: 231 (1886); Gamble, Fl. Pres. Madras 1261 (1925); Vajr., Fl. Palghat Dist. 414 (1990).

Habit: Tree
Habitat: Dry Deciduous forests; also in cultivation
Morphology: Tree; leaves simple, opposite, glabrous; lateral nerves 8-13 pairs; inflorescence an axillary or terminal paniculate cyme; tepals 5, ciliate; disc concave; stamens 5; ovary globose, 1-loculed; stigma 3-lobed; drupe globose; seed solitary.

Raunkiaer's life-form: Vascular Semi-Parasite

Phytogeographical affinity: Indo-Pacific

IUCN category: Vulnerable

Phenology: November-December

Distribution: Rare

Altitude: 200-400m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 06 July 2019, *Jabeena & Maya 2332* (GVCH).

Viscum L., Sp. Pl. 2: 1023 (1753)

1.Leafy shrub..……...…..***V. heyneanum***

1.Leafless shrubs…...……...……..(2)

2.Internodes tetragonous; berry globose...……...……...***V. angulatum***

2.Internodes flattened; berry suborbicular……***V. articulatum***

Viscum angulatum B.Heyne ex DC., Prodr. [A. P. de Candolle] 4: 283 (1830); Hook. f., Fl. Brit. India 5: 225 (1886); Gamble, Fl. Pres. Madras 1259 (1925); Vajr., Fl. Palghat Dist. 413 (1990).

Habit: Shrub
Habitat: Semi-evergreen forests
Morphology: Shrub; branches tetragonous, drooping; flowers axillary, solitary or 3-together; perianth lobes 4, triangular; stamens 4; ovary obovoid; berry globose.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Occasional
Altitude: 1000-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4107* (GVCH); Mattumala, *Jabeena & Maya 4368* (GVCH).

Viscum articulatum Burm.f., Fl. Ind. (N. L. Burman) 311 (1768); Hook. f., Fl. Brit. India 5: 226 (1886); Gamble, Fl. Pres. Madras 1259 (1925); *Viscum articulatum* Burm. f. var. *dichotomum* Kurz, Hook. f., Fl. Brit. India 5: 226 (1886); Gamble, Fl. Pres. Madras 1259 (1925).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Herb; branches pendulous; internodes decussately flattened; Flower axillary, solitary; fruit suborbicular.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-April
Distribution: Rare
Altitude: 1200-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1031* (GVCH).

Viscum heyneanum DC., Prodr. [A. P. de Candolle] 4: 278 (1830); *Viscum verruculosum* Wight & Arn., Hook. f., Fl. Brit. India 5: 224 (1886); Gamble, Fl. Pres. Madras 1258 (1925); *Viscum orbiculatum* Wight, Hook. f., Fl. Brit. India 5: 224 (1886); Gamble, Fl. Pres. Madras 1258 (1925).

Habit: Herb
Habitat: Semi-evergreen forests
Morphology: Herb; branchlets terete; leaves 3-5 nerved, glandular; inflorescence an axillary 3-flowered cyme; flower sessile; berry ellipsoid.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 605* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4106* (GVCH); Plate 37: Fig. d.

LORANTHACEAE

1.Leaves alternate...……...***Taxillus***
1.Leaves opposite or sub-opposite...…..(2)
2.Petals five……..……..***Dendrophthoe***
2.Petals four……(3)
3.Flowers regular; petals free……....***Helixanthera***
3.Flowers irregular; petals united……...…..***Scurulla***

Dendrophthoe Mart., Flora 13(1): 109 (1830)

Dendrophthoe falcata (L.f.) Ettingsh., Denkschriften der Kaiselichen Akademie der Wissenschaften, Mathematisch-Naturwissenschaftliche Klasse 32 (1871); *Dendrophthoe falcata* (L. f.) Etting., var. *falcata* Vajr., Fl. Palghat Dist. 409 (1990); *Loranthus longiflorus* Desr., Hook. f., Fl. Brit. India 5: 214 (1886); Gamble, Fl. Pres. Madras 1253 (1925); *Loranthus longiflorus* Desr. var. *falcata* (L. f.) Kurz, Hook. f., Fl. Brit. India 5: 215 (1886); Gamble, Fl. Pres. Madras 1253 (1925); *Loranthus longiflorus* Desr. var. *amplexifolia* (DC.) Thw., Hook. f., Fl. Brit. India 5: 215 (1886); Gamble, Fl. Pres. Madras 1253 (1925).

Habit: Shrub
Habitat: Moist and dry deciduous forests
Morphology: Herb; branches terete; leaves simple, sub-sessile; flowers in axillary or lateral, many-flowered; calyx truncate; corolla tube curved; lobes recurved; ovary ovoid; berry oblong.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: December-May
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 570* (GVCH); Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 757* (GVCH); Plate 37: Fig. e.

Helixanthera Lour., Fl. Cochinch. 1: 142 (1790)

Leaves upto 12 cm long; petals upto 7 mm long…….……...……***H. wallichiana***
Leaves upto 7 cm long; petals upto 18 mm long…….……..……***H. intermedia***

Helixanthera intermedia Danser, Bull. Jard. Bot. Buitenzorg ser. III, x. 317 (1929); Vajr., Fl. Palghat Dist. 410 (1990); *Loranthus intermedius* Wight, Hook. f., Fl. Brit. India 5: 205 (1886); Gamble, Fl. Pres. Madras 1251 (1925).

Habit: Shrub
Habitat: Evergreen and moist deciduous forests

Morphology: Shrub; stem glabrous; leaves simple, alternate; inflorescence an axillary many-flowered raceme; buds tetragonous; calyx truncate; corolla 4-lobed; stamens 4; ovary globose.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: February-March
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1557* (GVCH).

Helixanthera wallichiana Danser, Bull. Jard. Bot. Buitenzorg ser. III, x. 319 (1929); Vajr., Fl. Palghat Dist. 410 (1990); *Loranthus wallichianus* Schult., Hook. f., Fl. Brit. India 5: 205 (1886); Gamble, Fl. Pres. Madras 1251 (1925).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; stem terete; leaves simple, glabrous; lateral nerves 2-3 pairs; inflorescence an axillary raceme; bract ciliate; calyx globose; corolla lobes 4, glabrous; berry ovoid.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: August-September
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 24 September 2019, *Jabeena & Maya 2511* (GVCH).

Scurrula L., Sp. Pl. 1: 110 (1753)

Scurrula parasitica L., Sp. Pl. 1: 110 (1753); Vajr., Fl. Palghat Dist. 412 (1990); *Loranthus buddleioides* Desr., Gamble, Fl. Pres. Madras 1251 (1925); *Loranthus scurrula* L., Hook. f., Fl. Brit. India 5: 208 (1886).

Habit: Shrub
Habitat: Moist and Dry Deciduous forests
Morphology: Shrub; stem rusty tomentose; leaves simple, tomentose; inflorescence an axillary fascicle or shortly peduncled cyme; bract tomentose; calyx copular, tomentose; corolla 4-lobed, densely tomentose; stamens 4, glabrous; berry obovoid, hairy.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4097* (GVCH); Karassuri, 12 January 2021, *Jabeena & Maya 4730* (GVCH).

Taxillus Tiegh., Bull. Soc. Bot. France 42: 256 (1895)

1.Branchlets and young leaves glabrous..……..***T. cuneatus***
1.Branchlets and young leaves pubescent or tomentose……..……..…..(2)
2.Fruit an oblong drupe; petiole upto 5 mm long…..…….....***T. tomentosus***
2.Fruit a sub-globose berry; petiole upto 15 mm long……..…….....***T. recurvus***

Taxillus cuneatus Danser, Bull. Jard. Bot. Buitenzorg ser. III, x. 354 (1929); *Loranthus cuneatus* Heyne ex Roth, Hook. f., Fl. Brit. India 5: 214 (1886); Gamble, Fl. Pres. Madras 1253 (1925).

Habit: Shrub
Habitat: Semi-evergreen and dry deciduous forests
Morphology: Shrub; stem glabrous; leaves simple, alternate; inflorescence an axillary fascicle; calyx pubescent; corolla 5-ribbed;

stamens as many as and opposite at the petals; berry ovoid.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothumala, 15 October 2017, *Jabeena & Maya 555* (GVCH).

Taxillus recurvus (Wall. ex DC.) Tiegh., Bull. Soc. Bot. France 42: 256 (1895); *Loranthus recurvus* Wall. ex DC., Hook. f., Fl. Brit. India 5: 213 (1886); Gamble, Fl. Pres. Madras 1252 (1925).

Habit: Shrub
Habitat: Shola forests
Morphology: Shrub; branchlets rusty tomentose; leaves pubescent; inflorescence 5-6-flowered cyme; bracts ovate; calyx 5-toothed; corolla 5-lobed, rusty-villous; stamens 5; drupe oblong.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Occasional
Altitude: 1000-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1341* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1613* (GVCH); Plate 37: Fig. f.

Taxillus tomentosus (B.Heyne ex Roth) Tiegh., Bull. Soc. Bot. France 42: 256 (1895); Vajr., Fl. Palghat Dist. 412 (1990); *Loranthus tomentosus* Heyne ex Roth, Hook. f., Fl. Brit. India 5: 212 (1886); Gamble, Fl. Pres. Madras 1252 (1925).

Habit: Shrub
Habitat: Evergreen, moist deciduous and shola forests
Morphology: Shrub; leaves simple, to glabrous; lateral nerves 4-5 pairs; inflorescence a 3-8-flowered fascicle; calyx 5-lobed, tomentose; corolla 5-angled, hairy; stamens 5; style bulbous at the middle; berry sub-globose, tomentose.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 04 November 2020, *Jabeena & Maya 4361* (GVCH).

CARYOPHYLLALES

PLUMBAGINACEAE

Plumbago L., Sp. Pl. 1: 151 (1753)

Plumbago zeylanica L., Sp. Pl. 1: 151 (1753); Hook. f., Fl. Brit. India 3: 480 (1882); Gamble, Fl. Pres. Madras 744 (1921); Vajr., Fl. Palghat Dist. 262 (1990).

Habit: Shrub
Habitat: Deciduous forests
Morphology: Shrub; leaves alternate; petiole auricled at base; inflorescence a terminal panicled raceme; calyx tubular, covered with stalked glands; corolla 5-lobed; stamens 5, free; anthers oblong, dorsifixed; ovary ellipsoid, 1-loculed; capsule circumciss at base; seed solitary.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 532* (GVCH); Plate 37: Fig. g.

POLYGONACEAE

Persicaria (L.) Mill., Gard. Dict. Abr., ed. 4. [1054] (1754)

1.Plant scandent…..……***P. chinensis***
1.Plant erect……..……..(2)
2.Nutlets trigonous; style arms three; perianth white…….……***P. barbata***
2.Nutlets biconvex; style arms 2; petals rose coloured……..…..…***P. glabra***

Persicaria barbata (L.) H.Hara, Fl. E. Himalaya 70 (1966); *Polygonum barbatum* L., Hook. f., Fl. Brit. India 5: 37 (1886); Gamble, Fl. Pres. Madras 1189 (1925); Vajr., Fl. Palghat Dist. 390 (1990).

Habit: Herb
Habitat: Along stream sides
Morphology: Herb; leaves simple, opposite, glabrous except at the margins and midribs; ocrea tubular, strigose, long ciliate at mouth; inflorescence a terminal spike; bracts ciliate on the margins; perianth lobes 5; stamens 5; nutlets trigonous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: August-March
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1530* (GVCH).

Persicaria chinensis (L.) H. Gross, Bot. Jahrb. Syst. 49(2): 269 (1913); *Polygonum chinense* L., Hook. f., Fl. Brit. India 5: 44 (1886); Gamble, Fl. Pres. Madras 1190 (1925); Vajr., Fl. Palghat Dist. 390 (1990).

Habit: Shrub
Habitat: Moist Deciduous, Semi-evergreen and Evergreen forests
Morphology: Shrub; leaves simple, opposite; ochrea membranous; inflorescence capitateheads in corymbose terminal panicles; bracts glabrous; perianth lobes 5; stamens 5; ovary trigonous.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Common

Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1689* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2542* (GVCH); Nelliyampathy range, Kaikatty, 14 December 2019, *Jabeena & Maya 3441* (GVCH); Plate 37: Fig. h.

Persicaria glabra (Willd.) M.Gomez, Anales Inst. Segunda Enseñ. 2: 278 (1896); *Polygonum glabrum* Willd., Hook. f., Fl. Brit. India 5: 34 (1886); Gamble, Fl. Pres. Madras 1189 (1925); Vajr., Fl. Palghat Dist. 391 (1990).

Habit: Herb
Habitat: Moist areas in forests
Morphology: Herb; leaves acuminate; ocrea tubular, glabrous, truncate at mouth closely embracing the stem; inflorescence terminal raceme; bracts glabrous, ciliate or not; perianth tubular, lobes 5; stamens 5; nutlets biconvex.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Least Concern

Phenology: August-December

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3706* (GVCH); Plate 38: Fig. a.

DROSERACEAE

Drosera L., Sp. Pl. 1: 281 (1753)

1.Leaves radical……..……***D. burmanni***
1.Leaves cauline…...……..……(2)
2.Rootstock bulbous; leaves semi lunate..……...……..***D. peltata***
2.Rootstock not bulbous; leaves linear……..…***D. indica***

Drosera burmanni Vahl, Symb. Bot. (Vahl) 3: 50 (1794); Hook. f., Fl. Brit. India 2: 424 (1878); Gamble, Fl. Pres. Madras 452 (1919); Vajr., Fl. Palghat Dist. 193 (1990).

Habit: Herb
Habitat: Marshy areas in grasslands and degraded deciduous forests
Morphology: Herb; leaves radical, in a rosette, upper surface with viscid stipitate glands; inflorescence axillary raceme; scape glabrous; bracts 3-lobed, gland-tipped; sepals connate at base; petals spathulate; stamens 5; ovary globose; capsule obovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: August-December
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4267* (GVCH).

Drosera indica L., Sp. Pl. 1: 282 (1753); Hook. f., Fl. Brit. India 2: 424 (1878); Gamble, Fl. Pres. Madras 452 (1919); Vajr., Fl. Palghat Dist. 193 (1990).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; stem glandular-pubescent; leaves cauline, alternate, glandular hairy; stipule absent; inflorescence extra-axillary, glandular racemes; sepals glandular; petals spathulate; stamens 5; ovary obovoid; capsule oblong, beaked.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Least Concern

Phenology: August-November

Distribution: Common

Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 622* (GVCH); Karassuri, 20 October 2019, *Jabeena & Maya 2667* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2846* (GVCH); Plate 38: Fig. b.

Drosera peltata Thunb., Drosera 7 (-8) (1797); Hook. f., Fl. Brit. India 2: 424 (1878); Gamble, Fl. Pres. Madras 452 (1919); Vajr., Fl. Palghat Dist. 193 (1990).

Habit: Herb

Habitat: Grasslands

Morphology: Herb; stem glabrous; basal leaves rosulate; petiole glabrous; leaf blade peltately attached, semicircular, viscid stipitate glands; inflorescence terminal unbranched, few-flowered; bracts caudate; sepals glandular at margin; petals spathulate; ovary globose; capsule ovoid.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific, Holarctic and Australian

IUCN category: Least Concern

Phenology: December-March

Distribution: Rare

Altitude: 1200-1400m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 543* (GVCH).

ANCISTROCLADACEAE

Ancistrocladus Wall., Numer. List [Wallich] n. 1052 (1829)

Ancistrocladus heyneanus Wall. ex J.Graham, Cat. Pl. Bombay [Graham] 28 (1839); Hook. f., Fl. Brit. India 1: 299 (1874); Gamble, Fl. Pres. Madras 86 (1915); Vajr., Fl. Palghat Dist. 76 (1990).

Habit: Climber
Habitat: Evergreen forests
Morphology: Climber; branches hooked; leaves simple, sessile, glabrous; flowers in dichotomously branched panicles; sepals 5, unequal; petals 5, sub-equal; stamens 10; ovary 1-loculed; nut covered by large wing like sepals.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1309* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, Jabeena *& Maya 1987* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3962*(GVCH); Plate 38: Fig. c.

CARYOPHYLLACEAE

1.Stipules absent; leaves ovate…..***Stellaria***
1.Stipules present; leaves linear-subulate to obovate…..…….……(2)
2.Leaves orbicular; 3-5 veined....***Drymaria***
2.Leaves linear; 1-veined.……***Polycarpon***

Drymaria Willd. ex Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 5: xxxi, 406 (1819).
Plant glabrous……..……...***D. cordata***
Plant villous……...……***D. villosa***

Drymaria cordata (L.) Willd. ex Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 5: 406 (1819); *Drymaria cordata* (L.) Willd. ex Roem. & Schult. ssp. *diandra* (Blume) Duke, Vajr., Fl. Palghat Dist. 67 (1990); *Drymaria cordata* Edgew. & Hook.f., Hook.f., Fl. Brit. India 1: 244 (1874); Gamble, Fl. Pres. Madras 63 (1915).

Habit: Herb
Habitat: Weed in tea plantations, wastelands
Morphology: Herb; branches rooting at nodes; leaves opposite, glabrous, 3-7-ribbed; stipule lacerate; inflorescence a lax cyme; sepals 5, 3-ribbed, glandular-papillose on nerves; petals 3-5; stamens 2-3; ovary globose; capsule oblong.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 107* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 877* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2019* (GVCH); Plate 38: Fig. d.

Drymaria villosa Cham. & Schltdl., Linnaea 5(2): 232 (1830).

Habit: Herb
Habitat: Moist and shady areas
Morphology: Herb; stem villous; leaves opposite; inflorescence an axillary 5-15-flowered cyme; sepals 5; petals 5, bifid; stamens 2-4; staminode absent; ovary ovoid; capsule ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Rare
Altitude: 900-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3860* (GVCH).

Polycarpon Loefl., Syst. Nat., ed. 10. 2: 881, 1360 (1759)

Polycarpon tetraphyllum (L.) L., Syst. Nat., ed. 10. 2: 881 (1759).

Habit: Herb
Habitat: Growing as a weed in tea plantations and roadsides in the High Ranges
Morphology: Herb; stem glabrous; leaves in whorls of 4, glabrous; stipule scarious; inflorescence a dichotomous cyme; sepals scarious; petals emarginated; stamens 3-5; capsule ovoid.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2838* (GVCH).

Stellaria L., Sp. Pl. 1: 421 (1753)

Stellaria media (L.) Vill., Hist. Pl. Dauphiné (Villars) 3: 615 (1789); Hook. f., Fl. Brit. India 1: 230 (1874); Gamble, Fl. Pres. Madras 62 (1915).

Habit: Herb

Habitat: Degraded Forest areas in High ranges

Morphology: Herb; stem hairy; leaves opposite, glabrous; intramarginal vein present; flowers solitary; sepals hairy; petals 5, bifid to base; stamens 10, free; ovary 1-loculed; capsule ovoid.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Occasional

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3512* (GVCH); Kollengode range, Pulayampara, 19 November 2020, *Jabeena & Maya 4404* (GVCH).

AMARANTHACEAE

1.Perianth membranous……..(2)
1.Perianth scarious……..(3)
2.Perianth four……..***Spinacea***
2.Perianth five……...……***Dysphania***
3.Leaves opposite…...……(4)
3.Leaves alternate……...……(8)
4.Inflorescence an elongated spike…..…(5)
4.Inflorescence not as above…...……(7)
5.Bracteole spinescent……...***Achyranthes***
5.Bracteole not spinescent…….…….(6)
6.Ovary ovoid; perianth of sterile flowers not reduced to hooked awn……....***Pupalia***
6.Ovary obovoid; perianth of sterile flowers reduced to hooked awn....***Cyathula***
7.Plant prostrate or decumbent; anther one celled.……...***Alternanthera***
7.Plant erect; anther two celled……...….***Gomphrena***
8.Inflorescence a head…...…....***Allmannia***
8.Inflorescence a spike…...……(9)
9.Spike simple……....***Celosia***
9.Spike paniculate or in clusters..…….(10)
10.Spike in axillary clusters…...…...***Aerva***
10.Spike paniculate……..…….(11)
11.Flowers unisexual…...…..***Amaranthus***
11.Flowers bisexual...…….....***Indobanalia***

Achyranthes L., Sp. Pl. 1: 204 (1753)

Leaves upto 10 cm long; tepals unequal…..***A.aspera* var. *porphyristachya***
Leaves upto 6 cm long; tepals equal…….....***A. aspera***

Achyranthes aspera L., Sp. Pl. 1: 204 (1753); *Achyranthes aspera* L., var. *aspera* Hook. f., Fl. Brit. India 4: 730 (1885); Gamble, Fl. Pres. Madras 1176 (1925); Vajr., Fl. Palghat Dist. 385 (1990).

Habit: Herb
Habitat: Dry Deciduous forests and forest plantations
Morphology: Herb; stem hairy; leaves simple, opposite; lateral nerves 6 pairs; inflorescence a hispid simple spike; bracts and bracteoles aristate; wings of the bracteole nearly half as long as the spine; tepals 4-5, glabrous, equal; stamens 2-5; filaments filiform; staminodes truncate, fimbriate; ovary truncate at apex; achene ovoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 787* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2979* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3744* (GVCH); Plate 38: Fig. e.

Achyranthes aspera* var. *porphyristachya (Wall. ex Moq.) Hook.f., Fl. Brit. India [J. D. Hooker] 4(12): 730 (1885); Hook. f., Fl. Brit. India 4: 730 (1885); Gamble, Fl. Pres. Madras 1176 (1925).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaves decussate, pubescent; inflorescence a simple spike; bracts spine-tipped; tepals 5, unequal, 1-3 ribbed; stamens 5; ovary 1-loculed; ovule solitary.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Rare
Altitude: 1200-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3235* (GVCH).

Allmania R.Br. ex Wight, J. Bot. (Hooker) 1: 226 (1834)

Allmania nodiflora (L.) R.Br. ex Wight, J. Bot. (Hooker) 1: 226 (1834); Gamble, Fl. Pres. Madras 1167 (1925); *Allmania longipedunculata* (Trimen) Gamble, Fl. Pres. Madras 1168 (1925).

Habit: Herb
Habitat: Deciduous forests and wastelands
Morphology: Herb; leaves simple, alternate, glabrous; inflorescence a globose cyme; bracts filiform; tepals 5, equal, glabrous; stamens 5, glabrous; ovary obovoid, 1-loculed; ovule solitary; achene ellipsoid.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: July-October

Distribution: Common

Altitude: 900-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 120* (GVCH); Manpara, 29 July 2017, *Jabeena & Maya 270* (GVCH); Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2124* (GVCH).

Alternanthera Forssk., Fl. Aegypt.-Arab. 28 (lix) (1775)

1.Tepals glabrous……..……..***A. sessile***
1.Tepals villous……..…….(2)
2.Pseudostaminodes exceeding the stamen….……...***A. brasiliana***
2.Pseudostaminodes as long as stamen…….***A. bettzickiana***

Alternanthera bettzickiana (Regel) G.Nicholson, Ill. Dict. Gard. 1: 59 (1884).

Habit: Herb
Habitat: Degraded Deciduous forests and wastelands
Morphology: Herb; stem villous; leaves opposite; inflorescence axillary, globose head; tepals 3-ribbed, unequal; stamens 2-5, connate in a short cup; ovary ovoid; ovule solitary; fruit compressed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Occasional
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4143* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5040* (GVCH)

Alternanthera brasiliana (L.) Kuntze, Revis. Gen. Pl. 2: 537 (1891).

Habit: Herb
Habitat: Grown as garden plant, now getting established elsewhere
Morphology: Herb; stem villous; leaves sessile, villous; inflorescence head globose; bracts keeled; tepals villous; stamens 5; fruit ellipsoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1319* (GVCH).

Alternanthera sessilis (L.) DC., Cat. Pl. Horti Monsp. 77 (1813); Vajr., Fl. Palghat Dist. 386 (1990); *Alternanthera triandra* Lam., Gamble, Fl. Pres. Madras 1179 (1925).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; leaves simple, opposite, glabrous; inflorescence a sessile; bracts glabrous; tepals equal, glabrous, 3-ribbed; stamens 3; achenes obovoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Common
Altitude: 300-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 08 November 2017, *Jabeena & Maya 729* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3306* (GVCH); Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3711* (GVCH); Plate 38: Fig. f.

Amaranthus L., Sp. Pl. 2: 989 (1753)

1.Plants armed; tepals and stamens five……...…..***A. spinosum***
1.Plants unarmed; tepals and stamens three……...……(2)
2.Bracteoles equally or longer than perianth lobes……***A. tricolor***
2.Bracteoles shorter than perianth lobes……..…….……(3)
3.Leaf apex acute; tepals obovate……***A. viridis***
3.Leaf apex obtuse; tepals oblong..……...…….***A. blitum***

Amaranthus blitum L., Sp. Pl. 2: 990 (1753); *Amaranthus blitum* L. var. *oleracea* (L.) Hook. f., Fl. Brit. India 4: 721 (1885).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; stem glabrous; leaves alternate, glabrous; inflorescence a spike or cluster; perianth lobes 3; fruit an indehiscent utricle.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-June
Distribution: Occasional
Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1264* (GVCH); Pothupara, 11 January 2020, *Jabeena & Maya 3664* (GVCH).

Amaranthus spinosus L., Sp. Pl. 2: 991 (1753); Hook. f., Fl. Brit. India 4: 718 (1885); Gamble, Fl. Pres. Madras 1170 (1925); Vajr., Fl. Palghat Dist. 387 (1990).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; leaves simple; inflorescence a spike or cluster; tepals 5, unequal; stamens 5; ovary 1-loculed; ovules solitary.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: June-December
Distribution: Occasional
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 06 July 2019, *Jabeena & Maya 2163* (GVCH); Oothukkuzhi, 30-11-2019, *Jabeena & Maya 3090* (GVCH).

Amaranthus tricolor L., Sp. Pl. 2: 989 (1753); *Amaranthus mangostanus* L., Hook. f., Fl. Brit. India 4: 720 (1885); Gamble, Fl. Pres. Madras 1171 (1925); *Amaranthus gangeticus* L., Hook. f., Fl. Brit. India 4: 719 (1885); Gamble, Fl. Pres. Madras 1171 (1925).

Habit: Herb
Habitat: Cultivated
Morphology: Herb; leaves glabrous; flowers in globose; bracts and bracteoles deltoid; tepals 3; stigmas 3; capsule ovoid-urceolate, circumscissile, membranous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Rare
Altitude: 100-200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5044* (GVCH).

Amaranthus viridis L., Sp. Pl., ed. 2. 2: 1405 (1763); Hook. f., Fl. Brit. India 4: 720 (1885); Gamble, Fl. Pres. Madras 1171 (1925); Vajr., Fl. Palghat Dist. 387 (1990).

Habit: Herb
Habitat: Wastelands and Degraded forests
Morphology: Herb; stem glabrous; leaves alternate; lateral nerves 3-6 pairs; flowers in axillary and terminal panicled slender spikes, unisexual; bracteoles awned, shorter than the perianth lobes; perianth lobes 3, obovate; stamens 3, free; ovary obovoid; utricle prominently rugose, indehiscent.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Koonampalam, 14 December 2019,

Jabeena & Maya 3470 (GVCH); Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3697* (GVCH).

Celosia L., Sp. Pl. [Linnaeus] 1: 205 (1753)

Celosia argentea L., Sp. Pl. 1: 205 (1753); Hook. f., Fl. Brit. India 4: 714 (1885); Gamble, Fl. Pres. Madras 1166 (1925); Vajr., Fl. Palghat Dist. 387 (1990).

Habit: Herb
Habitat: Weed in cultivated areas and wastelands
Morphology: Herb; leaves glabrous; flowers in dense stout imbricate spikes; bracts hyaline; tepals 5, calycine; stamens 5; filaments connate below in a membranous hypogynous cup; ovary 1-loculed, ovoid; utricle globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American
IUCN category: Least Concern
Phenology: November-December
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 11 January 2020, *Jabeena & Maya 3593* (GVCH).

Cyathula Blume, Bijdr. Fl. Ned. Ind. 11: 548 (1826)

Cyathula prostrata Blume, Bijdr. Fl. Ned. Ind. 11: 549 (1826); Hook. f., Fl. Brit. India 4: 722 (1885); Gamble, Fl. Pres. Madras 1172 (1925).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Herb; leaves opposite, petioled, entire; flowers hermaphrodite, fascicles with 1-2 perfect flowers and others imperfect, the fascicles in spikes; bracts pubescent; perianth 5-lobed, calycine; lobes with hooked awns; stamens 5; filaments connate in a membranous cup; staminodes fimbriate; ovary ovoid, 1-loculed; utricle ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: September-April
Distribution: Common
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 874* (GVCH); Greenland, 11 January 2020, *Jabeena & Maya 3720* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3823* (GVCH); Plate 38: Fig. g.

Dysphania R.Br., Prodr. Fl. Nov. Holland. 411 (1810)

Dysphania ambrosioides (L.) Mosyakin & Clemants, Ukrayins'k. Bot. Zhurn. 59(4): 382 (2002); *Chenopodium ambrosioides* L., Hook. f., Fl. Brit. India 5: 4 (1886); Gamble, Fl. Pres. Madras 1181 (1925); Vajr., Fl. Palghat Dist. 389 (1990).

Habit: Herb
Habitat: Degraded forests and wastelands
Morphology: Herb; stem aromatic, glandular-pubescent; leaves alternate, glabrous; flowers in slender axillary or terminal spikes, sessile; tepals 5; stamens 5, free; ovary 1-loculed; ovule solitary; stigmas 5; utricle membranous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3998* (GVCH).

Gomphrena L., Sp. Pl. 1: 224 (1753)

Gomphrena globosa L., Sp. Pl. 1: 224 (1753); Gamble, Fl. Pres. Madras 1179 (1925).

Habit: Herb
Habitat: Grown as ornamental plant
Morphology: Herb; stem hairy; leaves pubescent; inflorescence solitary, globose head; bracts deltoid; tepals 5; staminal tube 5; stigma divergent; capsule compressed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: August-June
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 015* (GVCH).

Indobanalia A. N. Henry & B. Roy, Bull. Bot. Surv. India 10: 274 (1969)

Indobanalia thyrsiflora (Moq.) A. N. Henry & B.Roy, Bull. Bot. Surv. India 10: 274 (1969); Vajr., Fl. Palghat Dist. 388 (1990); *Banalia thyrsiflora* Moq., Gamble, Fl. Pres. Madras 1167 (1925).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; stem glabrous; leaves alternate, membranous; lateral nerves 8 pairs; flowers hermaphrodite, in clusters in axillary or terminal spikes; bracts and bracteoles hyaline; perianth segments 5, calycine, 3-nerved; stamens 5; filaments united below in a cup; ovary ovoid, compressed; stigma papillose; ovule solitary, pendulous; fruit globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3874* (GVCH).

Ouret Adans., Fam. Pl. (Adanson) 2: 268 (1763)

Ouret lanata (L.) Kuntze, Revis. Gen. Pl. 2: 544 (1891); Hook. f., Fl. Brit. India 4: 728 (1885); Gamble, Fl. Pres. Madras 1178 (1925); Vajr., Fl. Palghat Dist. 385 (1990).

Habit: Herb
Habitat: Deciduous forests and Wastelands
Morphology: Herb; stem woolly tomentose; leaves simple, alternate, pubescent, membranous; flowers in axillary panicled spike; bracts ovate; perianth calycine, 5-lobed; stamens 5; filaments subulate; ovary ovoid, 1-loculed; ovule pendulous; utricle membranous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: September-April
Distribution: Rare
Altitude: 100-200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5049* (GVCH).

Pupalia Juss., Ann. Mus. Natl. Hist. Nat. 2: 132 (1803)

Pupalia lappacea (L.) Juss., Ann. Mus. Natl. Hist. Nat. 2: 132 (1803); *Pupalia lappacea* (L.) Juss., var. *lappacea* Hook. f., Fl. Brit. India 4: 724 (1885); Gamble, Fl. Pres. Madras 1173 (1925); Vajr., Fl. Palghat Dist. 389 (1990).

Habit: Herb
Habitat: Moist Deciduous forests

Morphology: Herb; stem tomentose; leaves fulvous tomentose; petiole with hooked bristles; flowers fascicled in clusters; bracts and bracteoles awned; perianth lobes 5, calycine; stamens 5; filaments subulate; staminodes absent; ovary ovoid, compressed, 1-loculed; ovule solitary, pendulous; utricle enclosed in the perianth.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: September-November
Distribution: Occasional
Altitude: 100-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 502* (GVCH); Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 693* (GVCH); Plate 38: Fig. h.

Spinacia L., Sp. Pl. 2: 1027 (1753)

Spinacia oleracea L., Sp. Pl. 2: 1027 (1753); Hook. f., Fl. Brit. India 5: 6 (1886); Gamble, Fl. Pres. Madras 1185 (1925).

Habit: Herb
Habitat: Cultivated
Morphology: Herb; stem simple; leaves alternate; perianth segments 4; filaments filiform; anthers without an appendage; bracts compressed, with a thornlike appendage on each side; stigmas exserted; utricle ovoid, compressed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2256* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5053* (GVCH).

AIZOACEAE

Trianthema L., Sp. Pl. 1: 223 (1753)

Trianthema portulacastrum L., Sp. Pl. 1: 223 (1753); Gamble, Fl. Pres. Madras 550 (1919); Vajr., Fl. Palghat Dist. 221 (1990); *Trianthema monogyna* L., Hook. f., Fl. Brit. India 2: 660 (1879).

Habit: Herb
Habitat: Moist areas
Morphology: Herb; stem pubescent; leaves petioled, opposite, unequal; petiole sheathing; flowers axillary, solitary or clustered; calyx 5-lobed; petals absent; stamens 5-15; ovary free, sessile; capsule bilobed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: April-June
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017*Jabeena & Maya 416* (GVCH); Plate 39: Fig. a

PETIVERIACEAE

Rivina L., Sp. Pl. 1: 121 (1753)

Rivina humilis L., Sp. Pl. 1: 121 (1753); *Rivina laevis* L., Hook. f., Fl. Brit. India 5: 21 (1888).

Habit: Herb
Habitat: Along roadsides and wastelands
Morphology: Herb; stem pubescent; leaves alternate; lateral nerves 8-12 pairs; inflorescence a lax raceme; tepals 4, oblong; stamens 4; anthers unequal; ovary globose; fruit globose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Occasional

Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3515* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4592* (GVCH); Plate 39: Fig. b.

NYCTAGINACEAE

1.Scandent shrub……..…...***Bougainvillea***
1.Erect herb…….……(2)
2.Root tuberous; ovary not oblique……..……...***Mirabilis***
2.Root not tuberous; ovary oblique……...……..***Boerhaavia***

Boerhavia L., Sp. Pl. 1: 3 (1753)

Leaf apex acute to apiculate; capsule clavate……..……...…***B. diffusa***
Leaf apex obtuse; capsule obconical…..……..…..***B. erecta***
Boerhavia diffusa L., Sp. Pl. 1: 3 (1753); Gamble, Fl. Pres. Madras 1162 (1925); Vajr., Fl. Palghat Dist. 383 (1990); *Boerhavia repens* L., Hook. f., Fl. Brit. India 4: 709 (1885).

Habit: Herb
Habitat: Moist and Dry Deciduous forests
Morphology: Herb; stem tomentose; leaves thick in unequal pairs, glabrous abovewhite beneath; lateral nerves 3-4 pairs; flowers sessile in panicles of subcapitate umbels; bracts 5, glandular; perianth urceolate; stamens 3; capsule 5-ribbed, viscidly glandular on ribs.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 100-500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 09 March 2021, *Jabeena & Maya 484* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1281* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5033* (GVCH); Plate 39: Fig. c.

Boerhavia erecta L., Sp. Pl. 1: 3 (1753); Vajr., Fl. Palghat Dist. 384 (1990).

Habit: Herb
Habitat: Dry Deciduous forests and wastelands
Morphology: Herb; leaves unequal; inflorescence axillary and terminal panicle; perianth 5; stamens 1 or 3; fruit obovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2770* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3545* (GVCH).

Bougainvillea Comm. ex Juss., Gen. Pl. [Jussieu] 91 (1789)

Bougainvillea spectabilis Willd., Sp. Pl., ed. 4 [Willdenow] 2(1): 348 (1799); Gamble, Fl. Pres. Madras 1164 (1925).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; stem armed; leaves alternate; lateral nerves 5-6 pairs; Flowers in triads in axillary panicles; bract petaloid; staminal filaments unequal; ovary 1-loculed; ovule single; fruit indehiscent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: November-June
Distribution: Common
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Keshavanpara, 21 November 2017, *Jabeena & Maya 758*

(GVCH); Nelliyampathy range, Nooradi, 11 January 2020, *Jabeena & Maya 3610* (GVCH); Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3715* (GVCH).

Mirabilis L., Sp. Pl. 1: 177 (1753)

Mirabilis jalapa L., Sp. Pl. 1: 177 (1753); Vajr., Fl. Palghat Dist. 384 (1990).

Habit: Herb
Habitat: Grown as garden plant and also found as escape
Morphology: Herb; root tuberous; leaves opposite; lateral nerves 5-7 pairs; flowers in a terminal, capitate cluster; perianth 5-lobed; stamens 3-6; ovary globose.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated

Phenology: August-April

Distribution: Rare

Altitude: 800-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3714* (GVCH).

MOLLUGINACEAE

Inflorescence a cyme or panicle……***Trigastrotheca***
Inflorescence an axillary cluster.....***Glinus***

Glinus Loefl. ex L., Sp. Pl. 1: 463 (1753)

Plant glabrous……...***G. oppositifolius***
Plant covered with stellate hairs……***G. lotoides***

Glinus lotoides L., Sp. Pl. 1: 463 (-464) (1753); Vajr., Fl. Palghat Dist. 220 (1990); *Mollugo lotoides* (L.) O. Ktze., Gamble, Fl. Pres. Madras 552 (1919); *Mollugo hirta* Thunb., Hook. f., Fl. Brit. India 2: 662 (1879).

Habit: Herb
Habitat: Deciduous forests
Morphology: Herb; stem tomentose; leaves whorled, stellate-hairy; flowers in axillary fascicle; sepals 5, tomentose; stamens 10-15; ovary 3-loculed; capsule glabrous.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American

IUCN category: Not Evaluated

Phenology: April-May

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1568* (GVCH).

Glinus oppositifolius Aug.DC., Bull. Herb. Boissier Ser. II. i. 559; Vajr., Fl. Palghat Dist. 220 (1990); *Mollugo oppositifolia* L., Gamble, Fl. Pres. Madras 552 (1919); *Mollugo spergula* L., Hook. f., Fl. Brit. India 2: 662 (1879).

Habit: Herb

Habitat: Open areas and stream banks

Morphology: Herb; stem glabrous; leaves whorled, unequal; inflorescence an axillary fascicle; sepals 5, glabrous; stamens 5; staminodes bifid; ovary ellipsoid, 3-loculed; capsule oblong.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Least Concern

Phenology: February-April

Distribution: Rare

Altitude: 100-300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5012* (GVCH); Plate 39: Fig. d.

Trigastrotheca F.Muell., Hooker's J. Bot. Kew Gard. Misc. 9: 16 (1857)

Trigastrotheca pentaphylla (L.) Thulin, Taxon 65(4): 784 (2016); *Mollugo stricta* sensu Clarke, Hook. f., Fl. Brit. India 2: 663 (1879); *Mollugo pentaphylla* L., Gamble, Fl. Pres. Madras 553 (1919); Vajr., Fl. Palghat Dist. 221 (1990).

Habit: Herb
Habitat: Open areas and along banks of streams, also in deciduous forests
Morphology: Herb; stem quadrangular, glabrous; leaves whorled, unequal; flowers in terminal corymbose branched cymes; pedicels filiform; sepals 5; stamens 3-5; ovary 3-loculed; capsule globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Occasional
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2152* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2217* (GVCH); Plate 39: Fig. e.

PORTULACACEAE

Portulaca L., Sp. Pl. 1: 445 (1753)

Portulaca grandiflora Hook., Bot. Mag. 56: t. 2885 (1829).

Habit: Herb
Habitat: Cultivated as garden plant
Morphology: Herb; leaves alternate, pubescent; flowers in capituli; sepals 5, keeled; petals 5; stamens numerous; capsule globose.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Holarctic and South American

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Occasional

Altitude: 100-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2802* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4804* (GVCH); Plate 39: Fig. f.

IV.1.10. Asterids

CORNALES

NYSSACEAE

Mastixia Blume, Bijdr. Fl. Ned. Ind. 13: 654 (1826)

Mastixia arborea C.B.Clarke, Fl. Brit. India [J. D. Hooker] 2(6): 745 (1879); Hook. f., Fl. Brit. India 2: 745 (1879); Gamble, Fl. Pres. Madras 573 (1919).

Habit: Tree
Habitat: Shola and Evergreen forests
Morphology: Tree; leaves simple, alternate; lateral nerves 4-10 pairs; inflorescence a terminal corymbose panicles; calyx campanulate, 5-lobed; petals 5, ovate; stamens 5; ovary 1-loculed; ovule solitary, pendulous; drupe ovoid.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats

IUCN category: Least Concern

Phenology: February-May

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4580* (GVCH); Plate 39: Fig. g.

CORNACEAE

Alangium Lam., Encycl. [J. Lamarck & al.] 1: 174 (1783)

Alangium salviifolium (L.f.) Wangerin, Pflanzenr. (Engler) IV. 220B(Heft 41):9 (1910); *Alangium salviifolium* (L. f.) Wang. ssp. *salviifolium* Gamble, Fl. Pres. Madras 572 (1919); Vajr., Fl. Palghat Dist. 224 (1990); *Alangium lamarckii* Thw., Hook. f., Fl. Brit. India 2: 741 (1879); *Alangium salviifolium* (L.f.) Wang. ssp. *hexapetalum* (Lam.) Wang., Gamble, Fl. Pres. Madras 572 (1919); *Alangium salviifolium* var. *hexapetalum* (Lam.) Gamble, Fl. Madras 3: 572 (1919).

Habit: Climber
Habitat: Semi-evergreen forests and sacred groves
Morphology: Climber; leaves alternate; lateral nerves 5 pairs; inflorescence an axillary fascicle; calyx cupular, 7-lobed, tomentose; petals 7, tomentose; stamens 14; ovary inferior, 1-loculed; ovule solitary; berry tomentose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: March-August
Distribution: Occasional
Altitude: 200-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4134* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4803* (GVCH); Plate 39: Fig. h.

BALSAMINACEAE

Impatiens L., Sp. Pl. 2: 937 (1753)

1.Acaulescent herbs……..…….(2)
1.Caulescent herbs……...……...……(3)
2.Lateral petals with a band of petaline papillae on the base……..…...….***I. minae***
2.Lateral petals without a band of petaline papillae on the base…….....***I. scapiflora***
3.Plant epiphytic……..***I. parasitica***
3.Plant terrestrial…….……(4)
4.Leaves opposite...……..…..(5)
4.Leaves alternate...……..……(11)
5.Stem and pedicel viscid glandular……..***I. viscosa***
5.Stem and pedicel not as above…….....(6)
6.Spur of the lip less than 5 mm long….(7)
6.Spur of the lip more than 10 mm long…….……(9)
7.Stem semi-circular at base, quadrangular above…..……..***I. oppositifolia***
7.Stem cylindric……..……(8)
8.Lateral sepal and dorsal petal glabrous...……..…..***I. sasidharanii***
8.Lateral sepal and dorsal petal pubescent...…...***I.sasidharanii var. hirsuta***
9.Leaves with 2 glands on the petiole……....***I. minor***
9.Leaves eglandular…….….(10)
10.Seeds hairy…...……..***I. gardneriana***
10.Seeds glabrous……..***I. diversifolia***
11.Plant shrubby……...….***I. maculata***
11.Plant herbaceous……..…(12)
12.Capsule tomentose……...…….…..(13)
12.Capsule glabrous……..…(14)
13.Capsule ellipsoid; seeds tubercled……....***I. balsamina***
13.Capsule ovoid; seeds Hirtullose...…….....***I. trichocarpa***
14.Lobes of wing petals equal; standard petal keeled on dorsal side…....***I. flaccida***
14.Lobes of wing petals sub-equal; standard petal not keeled.….***I. dasysperma***

Impatiens balsamina L., Sp. Pl. 2: 938 (1753); Hook. f., Fl. Brit. India 1: 453 (1874); Gamble, Fl. Pres. Madras 142 (1915).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem pubescent; leaves alternate; petioles glandular; inflorescence an axillary fascicle; lateral sepals ovate; lip cymbiform; spur incurved; standard petal ovate; wing petals deeply notched; auricles rounded; capsule ellipsoid, tomentose; seeds globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated
Phenology: March-October
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2567* (GVCH); Nelliyampathy range, Kaikatty, 14 December 2019, *Jabeena & Maya 3442* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3879* (GVCH).

Impatiens dasysperma Wight, Madras J. Lit. Sci. Ser. I, v. (1837) 7; Hook. f., Fl. Brit. India 457 (1874); Gamble, Fl. Pres. Madras 143 (1915); *Impatiens lucida* Heyne ex Hook. f., Fl. Brit. India 1: 451 (1874); Gamble, Fl. Pres. Madras 142 (1915).

Habit: Herb
Habitat: Evergreen forests and Grasslands
Morphology: Herb; leaves hairy; flowers axillary, solitary or paired; sepals ovate, hairy; standard petal keeled; wing petals bilobed; spur hairy; capsule glabrous; seeds hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 451* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 667* (GVCH); Plate 40: Fig. a

Impatiens diversifolia Wall. ex Wight & Arn., Prodr. Fl. Ind. Orient. 1: 139 (1834); Hook. f., Fl. Brit. India 1: 446 (1874); Gamble, Fl. Pres. Madras 140 (1915).

Habit: Herb
Habitat: Moist areas
Morphology: Herb; leaves opposite; stipule glandular; pedicels pubescent; flowers axillary, solitary or paired; lateral sepals linear; lip cymbiform; spur curved, filiform; standard petal ovate; capsule ellipsoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: June-November
Distribution: Occasional
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, 23 September 2017, *Jabeena & Maya 450* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 716* (GVCH).

Impatiens flaccida Arn., Companion Bot. Mag. 1: 322 (1836); Hook. f., Fl. Brit. India 1: 457 (1874); Gamble, Fl. Pres. Madras 143 (1915).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; stem glabrous; leaves alternate, minutely pubescent; flowers axillary, solitary or 2-3-clustered; sepals 3, imbricate; standard petal keeled, bilobed; wing petals obovate; spur filiform; stamens 5; ovary 5-loculed; ovules many; capsule ellipsoid; seeds glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 696* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2791* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4246* (GVCH).

Impatiens gardneriana Wight, Icon. Pl. Ind. Orient. [Wight] t. 1050; Hook. f., Fl. Brit. India 1: 445 (1874); Gamble, Fl. Pres. Madras 141 (1915); Vajr., Fl. Palghat Dist. 99 (1990); *Impatiens setosa* Hook.f. & Thoms., Hook. f., Fl. Brit. India 1: 445 (1874).

Habit: Herb
Habitat: Along margins of Evergreen forests
Morphology: Herb; leaves opposite, serrate; peduncles glabrous; flowers axillary, solitary or in clusters; lateral sepals ciliate; lip cymbiform; spur curved upwards; standard petals keeled; wing petals bilobed; capsule ellipsoid; seeds hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: July-November
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02-07-2017, *Jabeena & Maya 063* (GVCH); Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 458* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2425* (GVCH).

Impatiens maculata Wight, Madras J. Lit. Sci. Ser. I, v. (1837) 12.; Hook. f., Fl. Brit. India 1: 465 (1875); Gamble, Fl. Pres. Madras 145 (1915).
Habit: Herb
Habitat: Along streams and marshes in Evergreen forests
Morphology: Herb; stem deeply furrowed, hairy; leaves long-petioled, serrate, pubescent; inflorescence an axillary raceme;; bracts ovate; flowers large; lip conical; spur slender, elongated; fruit ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1317* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2443* (GVCH); Plate 40: Fig. b.

Impatiens minae Ratheesh, Anil Kumar & Sivad., Bangladesh J. Pl. Taxon. 18(2): 142, figs. 1-3 (2011).

Habit: Herb
Habitat: Grassy slopes
Morphology: Stemless herb; leaves radical, hairy; inflorescence a many-flowered raceme; bracts ovate; lateral sepals 2; spur recurved; dorsal petals saccate; stamens 5, connate; ovary elliptic, glabrous; capsule glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 221* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 457* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2232* (GVCH).

Impatiens minor (DC.) Bennet, Indian J. Forest. 2(3): 283 (1979); *Impatiens kleinii* Wight & Arn., Hook. f., Fl. Brit. India 1: 445 (1874); Gamble, Fl. Pres. Madras 140 (1915); Vajr., Fl. Palghat Dist. 100 (1990).

Habit: Herb
Habitat: Moist deciduous and semi-evergreen forests, also scrub jungles and in sacred groves

Morphology: Herb; leaves opposite with a pair of stalked glands at the base; sepals linear; spur recurved; standard petal orbicular; wing petals clawed; capsule linear.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 600-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 109* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 29 July 2017, *Jabeena & Maya 321* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2264* (GVCH).

Impatiens oppositifolia L., Sp. Pl. 2: 937 (1753); Hook. f., Fl. Brit. India 1: 448 (1874); Gamble, Fl. Pres. Madras 141 (1915); *Impatiens rupicola* Hook. f., Gamble, Fl. Pres. Madras 140 (1915); *Impatiens nataliae* Hook. f., Gamble, Fl. Pres. Madras 141 (1915).

Habit: Herb
Habitat: Evergreen forests and Grasslands
Morphology: Herb; leaves opposite; lateral nerves 4-5 pairs; inflorescence 2-3 flowered clusters; bracts glabrous; lateral sepals linear; standard petal keeled; keel petals mucronate; wing petals 2-lobed; lip saccate; spur curved; ovary glabrous; capsule ellipsoid; seeds glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Rare
Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 24 September 2019, *Jabeena & Maya 2503* (GVCH).

Impatiens parasitica Bedd., Madras J. Lit. Sci. Ser. II, xx. (1859) 66; Gamble, Fl. Pres. Madras 139 (1915); *Impatiens jerdoniae* Wight var. *parasitica* (Bedd.) Hook. f., Fl. Brit. India 1: 460 (1874).

Habit: Herb
Habitat: Shola forests
Morphology: Epiphytic herb; plant succulent; leaf scars prominent; leaves alternate, usually fascicled at apex; inflorescence 2-4-flowered axillary cyme; sepals linear, green; standard petal broadly winged; wing petals 2-lobed; spur striate.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: June-November
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1484* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2470* (GVCH).

Impatiens sasidharanii K.M.P.Kumar, Omalsree, Hareesh & V. B. Sreek., Phytotaxa 238(3): 258 (2015).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem glabrous; leaves opposite, glabrous; inflorescence a 2-4-flowered axillary fascicle; lateral sepal linear, glabrous; keel mucronate; lateral petals 2 lobed; lower sepal glabrous; spur cylindrical, straight; stamens curved; ovary oblong capsule glabrous; seeds glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Common
Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2581* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3207* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4200* (GVCH).

Impatiens sasidharanii* var. *hirsuta K. M. P. Kumar, Omalsree, Hareesh & V. B. Sreek., Phytotaxa 238(3): 258 (2015).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem pubescent; leaves puberulous above; inflorescence a 2-4-flowered axillary fascicles; lateral sepal pubescent; dorsal petal ovate, pubescent; keel mucronate; lateral petals 2-lobed; lip saccate; spur cylindrical, straight, pubescent; stamens curved; ovary oblong; capsule ellipsoid; seeds glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: Endemic to Kerala
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1107* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2439* (GVCH).

Impatiens scapiflora Wight & Arn., Prodr. Fl. Ind. Orient. 1: 137, partim (1834); Hook. f., Fl. Brit. India 1: 443 (1874); Gamble, Fl. Pres. Madras 138 (1915); Vajr., Fl. Palghat Dist. 101 (1990).

Habit: Herb
Habitat: Wet rocks in Evergreen forests and Grasslands
Morphology: Scapigerous herb; leaves radical, glabrous; flowers pseudo-umbelled; bracts ovate; lip obtuse; spur curved, glabrous; standard petal concave; wing petals sub-equally lobed; throat of corolla glabrous; capsule ellipsoid; seeds glandular-hairy.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats

IUCN category: Not Evaluated

Phenology: July-December

Distribution: Occasional

Altitude: 600-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2148* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3384* (GVCH).

Impatiens trichocarpa Hook. f., Hooker's Icon. Pl. 30: t. 2914 (1910); Gamble, Fl. Pres. Madras 142 (1915).

Habit: Herb

Habitat: Among rocks in grasslands

Morphology: Herb; leaves alternate, pubescent; stalked glands in the petiole; inflorescence 2-5-flowered axillary clusters; lip saccate; spur pubescent; capsule ovoid, tomentose; seeds hairy.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: August-December

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2009* (GVCH).

Impatiens viscosa Bedd., Madras J. Lit. Sci. Ser. II, xx. (1859) 68. t. 7. f. 7; Hook. f., Fl. Brit. India 1: 453 (1874); Gamble, Fl. Pres. Madras 144 (1915); Vajr., Fl. Palghat Dist. 101 (1990); *Impatiens ballardii* Bedd., Hook. f., Fl. Brit. India 1: 482 (1874).

Habit: Herb
Habitat: Along margins of Shola forests and Grasslands
Morphology: Herb; leaves opposite, glabrous; flowers fascicled in an axillary long peduncle; lip ovate; sepals ovate; standard petals concave; wing petals 2-lobed; dorsal petals auricled; spur curved; capsule glabrous; seeds hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 06 July 2019, *Jabeena & Maya 2160* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3123* (GVCH); Kollengode range, Minnampara, *Jabeena & Maya 3214* (GVCH); Plate 40: Fig. c.

LECYTHIDACEAE

Stamens slightly connate at base; ovary inferior……..……..***Careya***
Stamens fused into a curved spathulate androphore; ovary half-inferior……....***Couropita***

Careya Roxb., Pl. Coromandel 3(1): 13 (1811)

Careya arborea Roxb., Pl. Coromandel 3(1): 14, t. 218 (1811); Hook. f., Fl. Brit. India 2: 511 (1879); Gamble, Fl. Pres. Madras 488 (1919); Vajr., Fl. Palghat Dist. 201 (1990).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves alternate, membranous, glabrous; lateral nerves 10-12 pairs; flowers in racemes or interrupted spikes; bracts unequal; calyx tube campanulate; limb 4-lobed; petals 4, imbricate; stamens numerous; ovary inferior, 4-5-loculed, crowned by an annular disc; stigma capitate; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: February-July
Distribution: Occasional
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17-01-2020, *Jabeena & Maya 3840* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4341* (GVCH); Plate 40: Fig. d.

Couroupita Aubl., Hist. Pl. Guiane 2: 708, t. 282 (1775)

Couroupita guianensis Aubl., Hist. Pl. Guiane 2: 708, t. 282 (1775).

Habit: Tree
Habitat: Grown in gardens
Morphology: Tree; leaves alternate, glabrous, coriaceous; petiole glabrous; lateral nerves 10-11 pairs; inflorescence cauliflorous, racemose; sepals ovate; stamens many, fused into an androphore; ovary half-inferior; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: South American
IUCN category: Least Concern
Phenology: January-October
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4050* (GVCH).

SAPOTACEAE

1.Calyx lobes 1 seriate……..……..(2)
1.Calyx lobes 2 seriate……..……..…(3)
2.Staminodes alternating the stamen……...***Xantolis***
2.Staminodes absent……...……....***Donella***
3.Calyx lobes 4……..…….(4)
3.Calyx lobes 6-8……..…..(5)
4.Stamens 8……..…..***Isonandra***
4.Stamens 12 or more……..***Madhuca***
5.Staminodes subpetaloid……...***Mimusops***
5.Staminodes absent……..***Palaquium***

Donella Pierre ex Baill., Hist. Pl. (Baillon) 11: 294 (1891)

Donella lanceolata (Blume) Aubrév., Fl. Cambodge, Laos & Vietnam Fasc. 3, 64 (1963); *Chrysophyllum roxburghii* G.Don., Hook. f., Fl. Brit. India 3: 535 (1882); Gamble, Fl. Pres. Madras 758 (1921); Vajr., Fl. Palghat Dist. 265 (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate, coriaceous; lateral nerves parallel; inflorescence an axillary fascicle; calyx lobe 5-6; sepals concave; corolla campanulate, 5-6 lobed; stamens 5-6; ovary hairy, 5-6-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: April-November
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 1996* (GVCH).

Isonandra Wight, Icon. Pl. Ind. Orient. [Wight] ii. 4. tt. 359, 360 (1840); et tt. 1219, 1220

Isonandra lanceolata Wight, Icon. Pl. Ind. Orient. [Wight] tt. 359, 360; Hook. f., Fl. Brit. India 3: 539 (1882); Gamble, Fl. Pres. Madras 761 (1921); Vajr., Fl. Palghat Dist. 266 (1990); *Isonandra wightiana* A. DC. in DC., Hook. f., Fl. Brit. India 3: 539 (1882); *Isonandra lanceolata* Wight var. *anfractuosa* Clarke, Hook.f., Fl. Brit. India 3: 539 (1882); Gamble, Fl. Pres. Madras 761 (1921); *Isonandra lanceolata* Wight forma *anfractuosa* (Clarke) Jeuken, Vajr., Fl. Palghat Dist. 266 (1990).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; branchlets slender; leaves glabrous; lateral veins 10-13 pairs; inflorescence an axillary fascicle; calyx 4-lobed pubescent; corolla campanulate; stamens 8; ovary 4-loculed, pubescent; berry ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: August-October
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 19 August 2017, *Jabeena & Maya 342* (GVCH); Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4572* (GVCH); Plate 40: Fig. e.

Madhuca J.F.Gmel., Syst. Nat., ed. 13[bis]. 2(1): 799 (1791)

Madhuca longifolia J.F.Macbr., Contr. Gray Herb. 53: 17 (1918); *Madhuca longifolia* (Koenig) J.F. Macbr., var. *longifolia* Vajr., Fl. Palghat Dist. 266 (1990); *Bassia longifolia* Koenig, Hook. f., Fl. Brit. India 3: 544 (1882); Gamble, Fl. Pres. Madras 763 (1921).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; leaves chartaceous, with slender petioles; lateral nerves 12-15 pairs; flowers axillary, solitary; pedicels glabrous; sepals ovate, rusty-pubescent;

corolla 8-12-lobed; anthers hairy on the back, cordate at base, connective apiculate; fruit oblong.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-June
Distribution: Occasional
Altitude: 500-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1571* (GVCH); Pothundy-Kaikatty, 06 July 2019, *Jabeena & Maya 2327* (GVCH).

Mimusops L., Sp. Pl. 1: 349 (1753)

Mimusops elengi L., Sp. Pl. 1: 349 (1753); Hook. f., Fl. Brit. India 3: 548 (1882); Gamble, Fl. Pres. Madras 765 (1921).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves alternate, elliptic, glabrous; lateral nerves forming intramarginal nerves; inflorescence a 1-3-flowered axillary fascicle; calyx lobes 8, pubescent; petals 24; stamens 8; staminodes fimbriate, pilose; ovary ovoid, hairy; ovule solitary in each cell; berry ovoid; seed solitary.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: December-August
Distribution: Occasional
Altitude: 100-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 682* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4800* (GVCH).

Palaquium Blanco, Fl. Filip. [F.M. Blanco] 403; ed. 2, 282 (1845) (1837)

Fruit ellipsoid; staminal filaments hairy; lateral nerves upto 12 pairs….***P. ellipticum***
Fruit obovoid; staminal filaments glabrous; lateral nerves upto 8 pairs……..***P.ravii***

Palaquium ellipticum (Dalz.) Baill., Traite Bot. Méd. Phan. 1500 (1884); Gamble, Fl. Pres. Madras 764 (1921); Vajr., Fl. Palghat Dist. 267 (1990); *Dichopsis elliptica* (Dalz.) Benth., Hook. f., Fl. Brit. India 3: 542 (1882).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate, elliptic; lateral nerves 7-12 pairs; inflorescence an axillary fascicle; sepals 6; corolla 6-lobed; stamens 12-18; anthers apiculate, hairy at apex; ovary 6-loculed, hairy; berry ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: February-July
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1665* (GVCH); Nelliyampathy range, Pakuthipalam, 21 November 2020, *Jabeena & Maya 4584* (GVCH).

Palaquium ravii Sasidh. & Vink, Blumea 35(2): 385 (1991).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate, coriaceous; stipule pubescent; lateral nerves 5-8 pairs; inflorescence a 2-8 flowered axillary cluster; sepals 6, pubescent; corolla 6-lobed; stamens 12; anthers bifid at apex; ovary globose, 6-loculed, hairy; berry obovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated

Phenology: April-February
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2186* (GVCH).

Xantolis Raf., Sylva Tellur. 35 (1838)

Xantolis tomentosa Raf., Sylva Tellur. 35 (1838); *Sideroxylon tomentosum* Roxb., Hook. f., Fl. Brit. India 3: 538 (1882); Gamble, Fl. Pres. Madras 759 (1921); *Sideroxylon tomentosum* Roxb. var. *elengioides* (A. DC.) Gamble, Fl. Pres. Madras 759 (1923); *Xantolis tomentosa* (Roxb.) Rafin. var. *elengioides* (A. DC.) Vajr., Vajr., Fl. Palghat Dist. 267 (1990).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate, coriaceous; stipule absent; lateral nerves 10-12 pairs; flowers in fascicles; sepals 6, hairy; corolla campanulate, 5-6-lobed; stamens 6; filaments hairy at base; staminodes alternating with the stamens; ovary 5-loculed, villous; berry ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 242* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4062* (GVCH).

EBENACEAE

Diospyros L., Sp. Pl. 2: 1057 (1753)

1.Leaves ciliate on margins….***D. buxifolia***
1.Leaves not ciliate on margins…….(2)
2.Calyx 5-lobed.....***D. candolleana***
2.Calyx 4-lobed……..…(3)
3.Leaf apex acute; corolla urceolate……...***D. montana***
3.Leaf apex obtuse, emarginate; corolla tubular…...……...…***D. ebenum***

Diospyros buxifolia (Blume) Hiern, Trans. Cambridge Philos. Soc. 12: 218 (1873).

Habit: Tree
Habitat: Evergreen and Semi-evergreen forests
Morphology: Tree; leaves alternate, coriaceous; petiole hairy; lateral nerves 2-3 pairs; flowers unisexual; male inflorescence a 1-4-flowered axillary cyme and female is solitary; calyx 4-lobed, hairy; corolla campanulate, 4-lobed; stamens 16; pistillode hairy in male flowers; staminodes absent in female flowers; ovary ovoid, 4-loculed, hairy; berry oblong.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Occasional
Altitude: 200-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4799* (GVCH); Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4978* (GVCH).

Diospyros candolleana Wight, Icon. Pl. Ind. Orient. [Wight] t. 1221; Hook. f., Fl. Brit. India 3: 566 (1882); Gamble, Fl. Pres. Madras 773 (1923); Vajr., Fl. Palghat Dist. 269 (1990).

Habit: Tree
Habitat: Evergreen, Semi-evergreen and Moist Deciduous forests
Morphology: Tree; leaves alternate, coriaceous, glabrous; stipule absent; lateral nerves 9-11 pairs; flowers unisexual; inflorescence an axillary tomentose fascicle; calyx 5-lobed; corolla 5-lobed, hairy; stamens 10; staminodes 4-5 in

female flowers; ovary 4-loculed, hairy; berry conical.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Vulnerable
Phenology: April-March
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3906* (GVCH).

Diospyros ebenum J. Koenig, Physiogr. Salsk. Handl. 1: 176 (1776); Hook. f., Fl. Brit. India 3: 558 (1882); Gamble, Fl. Pres. Madras 775 (1923).

Habit: Tree
Habitat: Evergreen and Dry Deciduous forests
Morphology: Tree; leaves alternate, glabrous; lateral nerves 4-7 pairs; flowers unisexual; male inflorescence an axillary cyme, female solitary; calyx 4-lobed, glabrous; corolla 4-lobed, tomentose; stamens 36; ovary 8-loculed; ovule solitary in each cell; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Data Deficient
Phenology: February-August
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2634* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4085* (GVCH); Nelliyampathy range, Pakuthipalam, 21-11-2020, *Jabeena & Maya 4565* (GVCH); Plate 40: Fig. f.

Diospyros montana Roxb., Pl. Coromandel 1(2): 37, t. 48 (1795); Hook. f., Fl. Brit. India 3: 555 (1882); Gamble, Fl. Pres. Madras 776 (1923).

Habit: Tree
Habitat: Evergreen, Moist Deciduous and Dry Deciduous forests
Morphology: Tree; leaves alternate; stipule absent; lateral nerves 5-10 pairs; flowers unisexual; male inflorescence an axillary umbel, female solitary; calyx 4-lobed, ovate; corolla 4-lobed, glabrous; stamens 16; pistillode conical in male flowers; staminodes 4 in female flowers; ovary globose, 8-loculed; ovule solitary in each cell; berry.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: April-February
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 926* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2119* (GVCH).

PRIMULACEAE

1.Plant herbaceous……***Lysimachia***
1.Plant shrubby……..…(2)
2.Fruit many-seeded…….....***Maesa***
2.Fruit one-seeded…...……..(3)
3.Anthers ovate-oblong…..……..***Embelia***
3.Anthers sagittate……...***Ardisia***

Ardisia Sw., Prodr. [O. P. Swartz] 3, 48 (1788)

Ardisia elliptica Thunb., Nov. Gen. Pl. [Thunberg] 8: 119 (1798); *Ardisia littoralis* Andr., Gamble, Fl. Pres. Madras 756 (1921); *Ardisia humilis* sensu Clarke, Hookf. f, Hook. f., Fl. Brit. India 2: 529 (1882).

Habit: Shrub
Habitat: Evergreen forests and Mangrove swamps
Morphology: Shrub; leaves coriaceous; flowers in axillary umbels; calyx 5-lobed, persistent; corolla 5-lobed, gland-dotted; stamens 5; anthers sagittate; ovary globose; berry globose.

Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-September
Distribution: Rare
Altitude: 1400-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1093* (GVCH).

Ardisia pauciflora B.Heyne ex Roxb., Fl. Ind. ed. Carey ii. 279 (1824); Hook. f., Fl. Brit. India 3: 529 (1882); Gamble, Fl. Pres. Madras 755 (1928); Vajr., Fl. Palghat Dist. 263 (1990).

Habit: Shrub
Habitat: Evergreen and Shola forests
Morphology: Shrub; branchlets gland-dotted; leaves glandular-punctate; inflorescence an axillary umbellate raceme; sepals 5, ovate, punctate; corolla 5-lobed, glabrous; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-May
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2632* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2967* (GVCH).

Embelia Burm.f., Fl. Ind. (N. L. Burman) 62 (1768)

Embelia ribes Burm.f., Fl. Ind. (N. L. Burman) 62, t. 23 (1768); Hook. f., Fl. Brit. India 3:513 (1882); Gamble, Fl. Pres. Madras 752 (1921); Vajr., Fl. Palghat Dist. 264 (1990).

Habit: Climber
Habitat: Evergreen, Semi-evergreen and Shola forests
Morphology: Climber; leaves alternate, gland-dotted; inflorescence an axillary or terminal panicle; sepals 5, tomentose; petals 5, tomentose; stamens 5; ovary ovoid; berry globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-August
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Pothumala, 15 October 2017, *Jabeena & Maya 558* (GVCH); Kollengode range, Mattumala, 24 September 2019, *Jabeena & Maya 2506* (GVCH).

Lysimachia L., Sp. Pl. 1: 146 (1753)

Lysimachia ovalis (Ruiz & Pav.) U.Manns & Anderb., Willdenowia 39(1): 52 (2009); *Anagallis pumila* Sw., Gamble, Fl. Pres. Madras 747 (1921); *Centunculus tenellus* Duby, Hook. f., Fl. Brit. India 3: 506 (1882).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves alternate; flowers axillary, solitary; bracts absent; calyx 5-lobed; corolla campanulate, 5-lobed; stamens 5, free; ovary globose, 1-loculed; placentation free central; capsule circumscissile, globose.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated

Phenology: July-December

Distribution: Occasional

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2974* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4295* (GVCH); Plate 40: Fig. g.

Maesa Forssk., Fl. Aegypt.-Arab. 66 (1775)

Maesa indica (Roxb.) Sweet, Hort. Brit. [Sweet] [2]: 268 (1826); Vajr., Fl. Palghat Dist. 264 (1990); *Maesa indica* (Roxb.) DC. var. *perrottetiana* (A. DC.) Clarke, Hook. f., Fl. Brit. India 3:509 (1882); *Maesa dubia* (Wall.) DC., Hook. f., Fl. Brit. India 3: 510 (1882); Gamble, Fl. Pres. Madras 749 (1921); *Maesa perrottetiana* A. DC., Gamble, Fl. Pres. Madras 749 (1921).

Habit: Shrub
Habitat: Evergreen, Moist Deciduous, Shola forests and Grasslands
Morphology: Shrub; leaves alternate, glandular; lateral veins 8-10 pairs; inflorescence an axillary raceme; calyx tube adnate to the ovary, 5-lobed; corolla 5-lobed; stamens 5; ovary 1-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-May
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 089* (GVCH); Manpara, 29 July 2017, *Jabeena & Maya 189* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 961* (GVCH); Plate 40: Fig. h.

THEACEAE

Camellia L., Sp. Pl. 2: 698 (1753)

Camellia sinensis (L.) Kuntze, Trudy Imp. S.-Peterburgsk. Bot. Sada 10: 195 (1887); Vajr., Fl. Palghat Dist. 73 (1990); Camellia theifera Griff., Hook. f., Fl. Brit. India 1: 292 (1874); Camellia thea Link, Gamble, Fl. Pres. Madras 80 (1915).

Habit: Tree
Habitat: Raised in Plantations
Morphology: Tree; leaves elliptic, margin serrate; flowers axillary, solitary; bracts 2-3; sepals 5; petals 5, polypetalous, connate with outer whorl of stamen; stamens numerous; ovary 3-loculed, hairy; capsule sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Data Deficient
Phenology: June-January
Distribution: Common
Altitude: 800-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2818* (GVCH); Pullukaadu, 03 November 2019, *Jabeena & Maya 2986* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3513* (GVCH); Plate 41: Fig. a

SYMPLOCACEAE

Symplocos Jacq., Enum. Syst. Pl. 5, 24 (1760)

1.Drupe globose…….***S. acuminata***
1.Drupe ovoid or oblong……..…….(2)
2.Drupe glabrous…….***S. racemosa***
2.Drupe not glabrous…..……..(3)
3.Calyx lobes obtuse; drupe minutely hispid towards apex; lateral nerves 10-12 pairs…...……..…***S. macrophylla***
3.Calyx lobes acute; drupe densely hairy; lateral nerves 5-8 pairs...……..***S. obtusa***

Symplocos acuminata Miq., Fl. Ned. Ind. 1(2): 467 (1859); *Symplocos spicata* Roxb., Fl. Ind. 2: 542 (1832); Hook. f., Fl. Brit. India 3: 573 (1882; *Symplocos spicata* Roxb. var. *malasica* Clarke, Hook. f., Fl. Brit. India 3: 573 (1882); *Symplocos spicata* Roxb. var. *attenuata* (A.DC.) Clarke, Hook. f., Fl. Brit. India 3: 573 (1882); *Symplocos cochinchinensis* (Lour.) Moore ssp. *laurina* (Retz.) Nooteb., Vajr., Fl. Palghat Dist. 271 (1990).

Habit: Tree

Habitat: Evergreen, Semi-evergreen and Shola forests
Morphology: Tree; leaves alternate, glabrous; lateral nerves 6-10 pairs; inflorescence an axillary spike; calyx 5-lobed; corolla 5-lobed, lobes recurved; stamens many; ovary globose, 2-3-loculed; ovules pendulous; drupe globose, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1101* (GVCH); Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2633* (GVCH).

Symplocos macrophylla Wall. ex DC., Prodr. [A. P. de Candolle] 8: 257 (1844); *Symplocos macrophylla* Wall. ex A. DC. ssp. *macrophylla* Hook. f., Fl. Brit. India 3: 578 (1882); *Symplocos gardneriana* Wight, Hook. f., Fl. Brit. India 3: 582 (1882); Gamble, Fl. Pres. Madras 782 (1921).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate, coriaceous, hairy beneath; lateral nerves 10 -12 pairs; inflorescence an axillary spike; flowers sessile; calyx 5-lobed, hairy; corolla lobes 5; stamens many; ovary globose, hairy; ovules pendulous; drupe oblong, hairy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: February-May
Distribution: Rare
Altitude: 1300-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1082* (GVCH).

Symplocos obtusa Wall. ex G.Don, Gen. Hist. 4(1): 3 (1837); Gamble, Fl. Pres. Madras 783 (1923); *Symplocos laeta* var. *pedicellata* Clarke, Hook. f., Fl. Brit. India 3: 583 (1882).

Habit: Shrub
Habitat: Shola forests
Morphology: Shrub; leaves alternate glabrous, coriaceous; lateral nerves 6-9 pairs; inflorescence an axillary raceme; calyx 5-lobed, hairy; corolla 5-lobed; stamens many; ovary globose; drupe sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-November
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2621* (GVCH).

Symplocos racemosa Roxb., Hort. Bengal. 40; Fl. Ind. ii. 539 (1832); Hook. f., Fl. Brit. India 3: 576 (1882); *Symplocos beddomei* Clarke, Hook. f., Fl. Brit. India 3: 582 (1882); Gamble, Fl. Pres. Madras 783 (1921); *Symplocos candolleana* Brand., Gamble, Fl. Pres. Madras 782 (1921).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate, glabrous, coriaceous; lateral nerves 8-12 pairs; inflorescence a spike; calyx 5-lobed, glabrous; corolla 5-lobed; stamens many; ovary globose; drupe ovoid, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-February
Distribution: Common
Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 181* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1015* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2226* (GVCH); Plate 41: Fig. b.

ICACINALES

ICACINACEAE

1.Plant erect……...….***Mappia***
1.Plant climbing…….……(2)
2.Flowers in panicled heads…....***Miquelia***
2.Flowers in elongate spikes...***Sarcostigma***

Mappia Jacq., Pl. Rar. Hort. Schoenbr. 1: 22 (1797)

Mappia nimmoniana (J.Graham) Byng & Stull, Global Fl. 4: 145 (2018); *Mappia foetida* (Wight) Miers, Gamble, Fl. Pres. Madras 196 (1915); *Mappia wightiana* Miers, Gamble, Fl. Pres. Madras 197 (1915); *Mappia tomentosa* Miers, Hook. f., Fl. Brit. India 1: 589 (1875); Gamble, Fl. Pres. Madras 196 (1915); *Mappia ovata* Miers, Hook. f., Fl. Brit. India 1: 589 (1852); Gamble, Fl. Pres. Madras 197 (1915).

Habit: Shrub

Habitat: Moist Deciduous, Evergreen and Shola forests

Morphology: Tree; leaves alternate, simple, penni-nerved, coriaceous; stipule absent; lateral nerves 6-10 pairs; inflorescence a terminal panicle; calyx 5-lobed; petals 5, polypetalous, hairy inside; stamens 5; ovary ovoid, pubescent, 1-loculed; drupe ellipsoid.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: June-September

Distribution: Common

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2242* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2452* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4084* (GVCH); Plate 41: Fig. c.

Miquelia Meisn., Pl. Vasc. Gen. [Meisner] 1: 152; 2: 109 (1838)

Miquelia dentata Bedd., Madras J. Lit. Sci. Ser. III, i. (1864) 38; Hook. f., Fl. Brit. India 1: 593 (1875); Gamble, Fl. Pres. Madras 197 (1915); Vajr., Fl. Palghat Dist. 114. (1990).

Habit: Climber

Habitat: Evergreen and Semi-evergreen forests

Morphology: Climbing shrub; stem glabrous; leaves alternate, palminerved; flowers sub-capitate in supra-axillary peduncles; calyx 4-lobed; petals 4, inflexed; stamens 4-5; ovary sessile, 1-loculed; stigma cupular; ovules pendulous from the apex of cell; drupe ovoid.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: April-September

Distribution: Rare

Altitude: 600-700m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4462* (GVCH).

Sarcostigma Wight & Arn., Edinburgh New Philos. J. xiv. (1853) 299

Sarcostigma kleinii Wight & Arn., Edinburgh New Philos. J. xiv. (1833) 299; Hook. f., Fl. Brit. India 1: 594 (1875); Gamble, Fl. Pres. Madras 199 (1915); Vajr., Fl. Palghat Dist. 115 (1990).

Habit: Climber
Habitat: Evergreen and semi-evergreen forests, also in sacred groves
Morphology: Climber; leaves alternate; plant dioecious, in sessile fascicles on pendulous lateral spike; calyx cup-shaped, 5-lobed; petals 5, reflexed; stamens 5, hypogynous; staminodes 5; ovary 1-loculed, pubescent; stigma discoid; drupe ovoid.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-June
Distribution: Occasional
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3017* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5031* (GVCH).

GENTIANALES

RUBIACEAE

1.Shrubs, trees or lianas……..….(2)
1.Herbs or herbaceous climbers……....(25)
2.Flowers in globose heads……..…..(3)
2.Flowers not a globose head……..…..(6)
3.Calyx tube confluent……..***Morinda***
3.Calyx tube not confluent……..……(4)
4.Bracts absent……..…..***Neolamarckia***
4.Bracts present…...……..…..(5)
5.Calyx lobed…….……....***Haldina***
5.Calyx entire……....***Mitragyna***
6.Leaves whorled...…….....***Wendlandia***
6.Leaves opposite…...……..…..(7)
7.Cells of ovary one ovuled…...…….(8)
7.Cells of ovary many ovuled…..……..(18)
8.Inflorescence axillary…...……..….(9)
8.Inflorescence terminal…...……....(13)
9.Corolla lobes valvate in bud……..(10)
9.Corolla lobes twisted in bud……..…(12)
10.Ovary 3 or more loculed....***Lasianthus***
10.Ovary 2 loculed……..…(11)
11.Style 2 or more times longer than the corolla……....***Psydrax***
11.Style equal to the length of corolla…..……....***Canthium***
12.Corolla lobes 4……..***Nostolachma***
12.Corolla lobes 5…….……...***Coffea***
13.Corolla lobes valvate in bud…...…(14)
13.Corolla lobes twisted in bud……....(16)
14.Flowers solitary or few in cymes…….....***Saprosma***
14.Flowers in corymbs or panicles…...(15)
15.Corolla curved……....***Chassalia***
15.Corolla straight……***Psychotria***
16.Corolla 5-lobed……....***Tarenna***
16.Corolla 4-lobed……....(17)
17.Stigma entire……..***Pavetta***
17.Stigma bilobed……...……...***Ixora***
18.Seeds winged…….…...***Hymenodictyon***
18.Seeds not winged...……(19)
19.One calyx lobe enlarged, petaloid…..…….….***Mussaenda***
19.Calyx lobes equal…….(20)
20.Plant climbing……....***Oxyceros***
20.Plant erect…...……...…….(21)
21.Plants unarmed……(22)
21.Plants armed with spines…...……..(23)
22.Ovary one loculed……....***Gardenia***
22.Ovary two loculed……....***Pentas***
23.Spine solitary……..***Catunaregam***
23.Spine one or two pairs……..…(24)
24.Flowers solitary at the end of branchlets…….....***Tamilnadia***
24.Flowers axillary corymbose cymes…..…….….***Benkara***
25.Leaves whorled…...……....***Rubia***
25.Leaves opposite…...……...….(26)
26.Prostrate herb, rooting at nodes…….....….***Geophila***
26.Erect or diffuse herbs……...…(27)
27.Cells of ovary one ovuled……...….(28)
27.Cells of ovary 2 or more ovuled…..(31)
28.Flowers terminal……..…(29)
28.Flowers axillary…...……...(30)

29.Plant procumbent; fruit a 3-loculed capsule……..…..***Richardia***
29.Plant erect; fruit a 2 semi-terete, indehiscent mericarps……..***Knoxia***
30.Fruit dehiscing apically…..***Spermacoce***
30.Fruit dehiscing circumscissile ……....***Mitracarpus***
31.Fruit a fleshy berry or a schizocarp…….....(32)
31.Fruit a capsule..……....(33)
32.Fruit a schizocarp…...…….***Diodella***
32.Fruit a berry……..….***Mycetia***
33.Flowers in axillary pendulous racemes…..……...***Neurocalyx***
33.Flowers not as above……...…(34)
34.Leaves upto 3 pairs..…….....***Argostemma***
34.Leaves many……....(35)
35.Calyx lobes five…...…....***Ophiorrhiza***
35.Calyx lobes four……...……(36)
36.Capsule upto 5 seeded…..…...***Neanotis***
36.Capsule many seeded…...……...(37)
37.Capsule indehiscent……...….***Exallage***
37.Capsule dehiscent……..……..(38)
38.Stamens and stigma included in the corolla tube…...……..***Oldenlandia***
38.Stamens and stigma exerted from corolla tube……...…..…….***Scleromitrion***

Adina Salisb., Parad. Lond. t. 115 (1807)

Adina cordifolia (Roxb.) Hook.f. & Benth., Forest Fl. N.W. India [Brandis] 263 (1874); Hook. f., Fl. Brit. India 3: 24 (1880); Gamble, Fl. Pres. Madras 584 (1921); *Haldina cordifolia* (Roxb.) Ridsd., Vajr., Fl. Palghat Dist. 231 (1990).

Habit: Tree
Habitat: Deciduous forests
Morphology: Tree; leaves opposite, 5-7-nerved at base; stipule cauducous; inflorescence an axillary globose head; calyx 5-lobed; corolla 5-lobed, throat glabrous; stamens 5, on the mouth of corolla; ovary 2-loculed; fruit a cluster of capsules each separating into 2 follicular cocci.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 12 October 2019, *Jabeena & Maya 3072* (GVCH).

Argostemma Wall., Fl. Ind. (Carey & Wallich ed.) 2: 324 (1824)

Argostemma courtallense Arn., Ann. Nat. Hist. 3(14): 22 (1839); Hook. f., Fl. Brit. India 3: 42 (1880); Gamble, Fl. Pres. Madras 590 (1921); Vajr., Fl. Palghat Dist. 227 (1990).

Habit: Herb
Habitat: Evergreen and semi-evergreen forests
Morphology: Herb; root tuberous; leaves in pairs or pseudo-whorls; flowers in peduncled cyme or umbel; calyx 4-lobed; corolla rotate, 4-lobed, glabrous; stamens 4; ovary 2-loculed; stigma capitellate; fruit a 2-loculed capsule.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Rare
Altitude: 400-700m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4347* (GVCH); Plate 41: Fig. d.

Benkara Adans., Fam. Pl. (Adanson) 2: 85 (1763)

Benkara malabarica (Lam.) Tirveng., Taxon 32(3): 440 (1983); *Randia malabarica* Lam., Hook. f., Fl. Brit. India 3: 111 (1880); Gamble, Fl. Pres. Madras 616 (1921).

Habit: Shrub
Habitat: Moist Deciduous forests and Scrub jungles
Morphology: Shrub; stem armed with axillary spines; leaves coriaceous,

glabrous; inflorescence an axillary corymbose cyme; calyx 5-toothed; corolla 5-lobed, reflexed; stamens 5; berry sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-May
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1441* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1758* (GVCH).

Canthium Lam., Encycl. [J. Lamarck & al.] 1(2): 602 (1785)

Stamens four…..…....***C. coromandelicum***
Stamens five……..…….***C. rheedii***

Canthium coromandelicum (Burm.f.) Alston, in Trimen, Hand-Book Fl. Ceylon vi. Suppl., 152 (1931); *Canthium parviflorum* Lam., Hook. f., Fl. Brit. India 3: 136 (1880); *Plectronia parviflora* (Lam.) Bedd., Gamble, Fl. Pres. Madras 625 (1921).

Habit: Shrub
Habitat: Moist, Dry Deciduous forests and in Scared groves
Morphology: Shrub; branchlets armed; spines supra-axillary; leaves opposite; inflorescence an axillary sessile cyme; calyx 4-lobed; corolla 4-lobed, reflexed; stamens 4; fruit a sub-globose drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-June
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1541* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1798* (GVCH); Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2143* (GVCH); Plate 41: Fig. e.

Canthium rheedei DC., Prodr. [A. P. de Candolle] 4: 474 (1830); Hook. f., Fl. Brit. India 3: 134 (1880); Vajr., Fl. Palghat Dist. 229 (1990); *Plectronia rheedei* (DC.) Bedd., Gamble, Fl. Pres. Madras 625 (1921).

Habit: Shrub
Habitat: Evergreen forests and sacred groves
Morphology: Shrub; branchlets armed; leaves opposite; inflorescence an axillary fascicle; calyx 5-lobed; corolla 5-lobed, reflexed; stamens 5; ovary 2-loculed; fruit a compressed drupe.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: March-June
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 864* (GVCH); Seetharkundu, 11 June 2018, *Jabeena & Maya 1518* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1900* (GVCH).

Catunaregam Wolf, Gen. Pl. 75 (1776); vide Ross in Acta Bot. Neerl. xv. 156 (1966)

Catunaregam spinosa (Thunb.) Tirveng., Bull. Mus. Natl. Hist. Nat., Sér. 3, Bot. 35: 13 (1978); Vajr., Fl. Palghat Dist. 230 (1990); *Randia spinosa* (Thunb.) Poir., Hook. f., Fl. Brit. India 3:110 (1880); *Randia dumetorum* (Retz.) Poir. var. *floribunda* (DC.) Gamble, Fl. Pres. Madras 616 (1921); *Randia brandisii* Gamble, Fl. Pres. Madras 616 (1921).

Habit: Shrub
Habitat: Moist Deciduous forests

Morphology: Shrub; stem armed with axillary spines; leaves opposite; flowers terminal, solitary; 5-lobed, hairy; corolla 5-lobed, hairy inside; stamens 5; filaments absent; ovary 2-6-loculed; berry obovoid, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: April-December
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1011* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1624* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1675* (GVCH).

Chassalia Comm. ex Poir., Dict. Sci. Nat., ed. 2. [F. Cuvier] 8: 198, nomen alternativum (1817)

Chassalia curviflora* var. *ophioxyloides (Wall.) Deb & B.Krishna, Bull. Bot. Surv. India 24(1-4): 222 (1983); *Chassalia ophioxyloides* (Wall. ex Kurz) Craib, Vajr., Fl. Palghat Dist. 230 (1990).

Habit: Shrub
Habitat: All types of forests
Morphology: Shrub; leaves opposite; lateral nerves 9-12 pairs; inflorescence a terminal panicled cyme; calyx 5-lobed; 5-lobed, glabrous; stamens 5; ovary 2-loculed; ovule solitary in each locule; drupe globose, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-February
Distribution: Occasional
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1898* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2000* (GVCH).

Coffea L., Sp. Pl. 1: 172 (1753)

Drupe oblong; calyx lobes equaling the tube……***C. liberica***
Drupe obovoid; calyx lobes longer than the tube……..…….....***C. arabica***

Coffea arabica L., Sp. Pl. 1: 172 (1753); Hook. f., Fl. Brit. India 3: 153 (1880); Gamble, Fl. Pres. Madras 636 (1921); Vajr., Fl. Palghat Dist. 245 (1990).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; stem glabrous; leaves opposite; lateral nerves 6-10 pairs; inflorescence an axillary fascicle; calyx 5-lobed; corolla tube slender, 5-lobed; fruit obovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: African
IUCN category: Endangered
Phenology: March-December
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2946* (GVCH); Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 367* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1799* (GVCH); Plate 41: Fig. f.

Coffea liberica W.Bull ex Hiern, Trans. Linn. Soc. London, Bot. 1(4): 171 (-172; t. 24) (1876).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; leaves opposite; stipule connate at base; inflorescence an axillary fascicle; calyx 5-lobed; corolla 5-lobed; stamens 5; drupe oblong.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: African
IUCN category: Least Concern

Phenology: Throughout the year
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3895* (GVCH).

Exallage Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2. 48(2): 25, 140 (1952)

Exallage auricularia (L.) Bremek., Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Sect. 2. 48(2): 142 (1952); *Hedyotis auricularia* L., Hook. f., Fl. Brit. India 3: 58 (1880); *Oldenlandia auricularia* (L.) K. Schum., Gamble, Fl. Pres. Madras 597 (1921); Vajr., Fl. Palghat Dist. 239 (1990).

Habit: Herb
Habitat: Degraded forest areas
Morphology: Herb; stem tetrangular, diffuse; leaves glabrous; lateral nerves 4-5 pairs; stipule pectinate; inflorescence an axillary fascicle; calyx lobes 4; corolla campanulate, 4-lobed, reflexed; stamens 4, included; fruit an indehiscent globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1928* (GVCH).

Gardenia J. Ellis, Philos. Trans. 51: 935, t. 23 (1761)

Gardenia jasminoides J. Ellis, in Phil. Trans. li. II. 935 (1761); Gamble, Fl. Pres. Madras 619 (1921).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; stem unarmed; leaves opposite; stipule connate; flowers lateral, solitary; calyx tube ovoid; corolla 5-lobed; stamens 5; ovary one loculed; ovules numerous; berry ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-May
Distribution: Occasional
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1100* (GVCH); Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1212* (GVCH).

Geophila D. Don, Prodr. Fl. Nepal. 136 (1825)

Geophila repens (L.) I. M. Johnst., Sargentia 8: 281 (1949); Vajr., Fl. Palghat Dist. 231 (1990); *Geophila reniformis* D. Don, Hook. f., Fl. Brit. India 3:178 (1880); Gamble, Fl. Pres. Madras 643 (1921).

Habit: Herb
Habitat: Moist Deciduous, Semi-evergreen forests and in Sacred groves
Morphology: Herb; stem prostrate; leaves simple, 5-7-nerved at base; stipule entire; flower solitary or umbelled; calyx tube obovoid, 4-7-lobed; corolla throat hairy, lobes 5-7; stamens 5; ovary 2-loculed; ovule solitary in a cell; berry globose.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: October-April
Distribution: Rare
Altitude: 600-700m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4350* (GVCH).

Hexasepalum Bartl. ex DC., Prodr. [A. P. de Candolle] 4: 561 (1830)

Hexasepalum teres (Walter) J. H. Kirkbr., J. Bot. Res. Inst. Texas 8(1): 17 (2014).

Habit: Herb
Habitat: Wastelands and Scrub jungles
Morphology: Herb; leaves sessile, opposite; lateral veins 4-5 pairs; stipule connate; inflorescence axillary fascicle; calyx 4-lobed, hairy; corolla campanulate, 4-lobed, pubescent; stamens 4; stigma bilobed; fruit hispid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2013* (GVCH); Keshavanpara, 06 July 2019, *Jabeena & Maya 2158* (GVCH)

Hymenodictyon Wall., Fl. Ind. (Carey & Wallich ed.) 2: 148 (1824)

Hymenodictyon obovatum Wall., Fl. Ind. (Carey & Wallich ed.) 2: 153 (1824); Hook. f., Fl. Brit. India 3: 36 (1880); Gamble, Fl. Pres. Madras 589 (1921); Vajr., Fl. Palghat Dist. 232 (1990).

Habit: Tree
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Tree; leaves opposite; stipule interpetiolar; lateral nerves 5-8 pairs; inflorescence a terminal raceme; calyx 5-lobed, puberous; corolla 5-lobed, glabrous; stamens 5; ovary 2-loculed; capsule 2-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: June-October
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1524* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4147* (GVCH).

Ixora L., Sp. Pl. 1: 110 (1753)

1.Peduncles more than 10 cm long……..…….***I. elongata***
1.Peduncles less than 5 cm long...……..(2)
2.Calyx lobes equal to the tube…….....(3)
2.Calyx lobes smaller than the tube..…..(5)
3.Corolla tube 3-4 cm long…....***I. coccinea***
3.Corolla tube upto 2 cm long……....(4)
4.Leaves less than 10 cm long, ovate, rounded at base; flowers upto 1 cm long, 3-together…….....***I. ravikumarii***
4.Leaves upto 14 cm long, elliptic, acute at base; flowers upto 2 cm long, 3-9 together……....***I. cuneifolia***
5.Calyx 4-lobed……***I. nigricans***
5.Calyx 4-toothed……...……(6)
6.Flower buds ellipsoid...…..….***I. pavetta***
6.Flower buds globose……..…***I. brachiata***

Ixora brachiata Roxb., Hort. Bengal. [10]; Fl. Ind. i. 381; Hook. f., Fl. Brit. India 3: 142 (1880); Gamble, Fl. Pres. Madras 631 (1921); Vajr., Fl. Palghat Dist. 233 (1990).

Habit: Tree
Habitat: Semi-evergreen forests and Sacred groves
Morphology: Tree; leaves opposite, glabrous; stipule interpetiolar; lateral nerves 6-20; inflorescence a terminal panicled cyme; flowers sessile; calyx 4-toothed; corolla 4-lobed, recurved; stamens 4; ovary 2-loculed; ovules solitary in each cell; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: January-May
Distribution: Common

Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1323* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1594* (GVCH); Nelliyampathy range, Kurissumala, 22-06-2019, *Jabeena & Maya 1991* (GVCH).

Ixora coccinea L., Sp. Pl. 1: 110 (1753); Hook. f., Fl. Brit. India 3: 145 (1880); Gamble, Fl. Pres. Madras 631 (1921); Vajr., Fl. Palghat Dist. 233 (1990).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves opposite, sessile; inflorescence a corymb; calyx 4-toothed, pubescent; corolla lobes 4, pubescent; stamens 4; ovary globose; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3451* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5039* (GVCH).

Ixora cuneifolia Roxb., Hort. Bengal. [10]; Fl. Ind. i. 380; Hook. f., Fl. Brit. India 3: 144 (1880); Gamble, Fl. Pres. Madras 631 (1921); Vajr., Fl. Palghat Dist. 234 (1990).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; stem glabrous; leaves opposite, glabrous; lateral nerves 6-9 pairs; stipule glabrous; inflorescence a trichotomously branched cyme; flowers sessile; calyx 4-lobed, hispid; corolla lobes 4, pubescent; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 265* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1001* (GVCH); Plate 41: Fig. g.

Ixora elongata B.Heyne & G.Don, Gen. Hist. 3: 571, descr. (1834); Hook. f., Fl. Brit. India 3: 141 (1880); Gamble, Fl. Pres. Madras 630 (1921); Vajr., Fl. Palghat Dist. 234 (1990).

Habit: Shrub

Habitat: Semi-evergreen and evergreen forests

Morphology: Shrub; leaves opposite, glabrous; lateral nerves 12-15 pairs; inflorescence a corymb; calyx 4-lobed, pubescent; corolla lobes 4, reflexed; stamens 4 on the mouth of the corolla; ovary 2-loculed; ovules solitary in each cell; berry globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to India

IUCN category: Not Evaluated

Phenology: November-February

Distribution: Occasional

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1534* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3380* (GVCH); Plate 41: Fig. h.

Ixora nigricans R.Br. ex Wall., Numer. List [Wallich] n. 6154; Hook. f., Fl. Brit.

India 3: 148 (1880); Gamble, Fl. Pres. Madras 631 (1921); Vajr., Fl. Palghat Dist. 234 (1990).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; stem glabrous; leaves opposite; lateral nerves 8-10 pairs; inflorescence a trichotomously branched cyme; calyx 4-lobed, lobes persistent; corolla lobes 4, reflexed; stamens 4; ovary 2-loculed; ovule solitary in each cell.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1092* (GVCH); Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2628* (GVCH).

Ixora pavetta Andrews, Bot. Repos. 2(1): t. 78 (1799); *Ixora parviflora* Vahl, Hook. f., Fl. Brit. India 2: 142 (1880); Gamble, Fl. Pres. Madras 631 (1921).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves opposite, glabrous, coriaceous; lateral nerves 10-15 pairs; inflorescence a terminal panicle; calyx 4-toothed; corolla lobes 4, recurved; stamens 4; ovary 2-loculed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-March
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4977* (GVCH).

Ixora ravikumarii Kottaim., Phytotaxa 263(1): 79 (2016); *Ixora monticola* Gamble, Gamble, Fl. Pres. Madras 631 (1921); Vajr., Fl. Palghat Dist. 234 (1990).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; stem glabrous; leaves opposite; lateral nerves 8-10 pairs; inflorescence a trichotomously branched cyme; flowers sessile; calyx 4-lobed, puberulous; corolla lobes 4, deflexed; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1086* (GVCH).

Knoxia L., Sp. Pl. 1: 104 (1753)

Stipules with short blade furnished with subulate bristles……..***K. sumatrensis***
Stipules with rounded blade and short glabrous teeth……..…...***K. wightiana***

Knoxia sumatrensis (Retz.) DC., Prodr. [A. P. de Candolle] 4: 569 (1830); Vajr., Fl. Palghat Dist. 235 (1990); *Knoxia corymbosa* Willd., Hook. f., Fl. Brit. India 3: 129 (1880); Gamble, Fl. Pres. Madras 622 (1921); *Knoxia mollis* Wight & Arn., Hook. f., Fl. Brit. India 3: 129 (1880); Gamble, Fl. Pres. Madras 622 (1921); Vajr., Fl. Palghat Dist. 235 (1990).

Habit: Herb
Habitat: All types of forests
Morphology: Herb; leaves opposite; lateral veins 7-10 pairs; stipule connate with the petiole in a sheath; flowers in a terminal corymbose cyme; calyx 4-toothed; corolla lobes 4, pubescent; stamens 4; ovary 2-loculed; capsule 2-seeded.
Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: August-September
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 112* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 477* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2400* (GVCH); Plate 42: Fig. a

Knoxia wightiana Wall. & G.Don, Gen. Hist. 3: 629. 1834; Wight & Arn. Prodr. 440 (1834); Hook. f., Fl. Brit. India 3: 129 (1880); Gamble, Fl. Pres. Madras 622 (1921).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem glabrous; leaves opposite, glabrous; stipule ovate; inflorescence a peduncled cyme; flowers sessile; calyx 4-lobed; corolla hairy inside; capsule glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Rare
Altitude: 1400-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3213* (GVCH).

Lasianthus Jack, Trans. Linn. Soc. London 14(1): 125 (1823)

1.Cyme peduncled……...***L. acuminatus***
1.Cyme sessile…….……...(2)
2.Bracts conspicuous, larger than flowers..……..…...***L. jackianus***
2.Bracts minute, shorter than flowers……..…...***L. rostratus***

Lasianthus acuminatus Wight, Calcutta J. Nat. Hist. vi. (1846) 511; Hook. f., Fl. Brit. India 3: 185 (1880); Gamble, Fl. Pres. Madras 647 (1921); *Lasianthus coffeoides* Fyson, Gamble, Fl. Pres. Madras 647 (1921).

Habit: Shrub
Habitat: Evergreen and shola forests
Morphology: Shrub; leaves opposite, glabrous; lateral nerves 3-6 pairs; flowers in axillary clustered sessile cyme; calyx 4-lobed, villous; corolla lobes 4, villous; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: May-November
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1342* (GVCH).

Lasianthus jackianus Wight, Calcutta J. Nat. Hist. vi. (1846) 502; Hook. f., Fl. Brit. India 3: 180 (1880); Gamble, Fl. Pres. Madras 646 (1921); Vajr., Fl. Palghat Dist. 235 (1990).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, coriaceous; lateral nerves 6-8 pairs; stipule coriaceous; inflorescence an axillary sessile cyme; calyx 4-lobed, tomentose; corolla lobes 4, pubescent; stamens 4; ovary obovoid, 4-loculed; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: NOt Evaluated
Phenology: November-March
Distribution: Rare
Altitude: 1100-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1638* (GVCH).

Lasianthus rostratus Wight, Calcutta J. Nat. Hist. vi. (1846) 510; Gamble, Fl. Pres. Madras 647 (1921); *Lasianthus ciliatus* Wight var. *rostratus* (Wight) Hook.f., Fl. Brit. India 3: 185 (1880).
Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, tomentose below, lateral nerves 7-8 pairs; inflorescence an axillary fascicle; flower sessile; calyx 4-lobed, hairy; corolla lobes 4, tomentose; ovary 3-loculed; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Vulnerable
Phenology: April-May
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1095* (GVCH); Kollengode range, Karassuri, 12 January 2021, *Jabeena & Maya 4728* (GVCH).

Mitracarpus Zucc., Mant. 3 (Schultes & Schultes f.) 210 (text), 319 (index) (1827)

Mitracarpus hirtus DC., Prodr. [A. P. de Candolle] 4: 572 (1830); Vajr., Fl. Palghat Dist. 236 (1990).

Habit: Herb
Habitat: Degraded Deciduous forests and wastelands
Morphology: Herb; stem pubescent; leaves opposite, sessile; flowers verticillate in axillary fascicles; calyx 4-lobed; corolla lobes 4; stamens 4; ovary 2-loculed; ovule solitary in each cell; capsule ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Common
Altitude: 200-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 079* (GVCH); Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 598* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1735* (GVCH).

Mitragyna Korth., Observ. Naucl. Indic. 19 (1839)

Mitragyna parvifolia Korth., Obs. Naucl. Ind. 19; Gamble, Fl. Pres. Madras 585 (1921); Vajr., Fl. Palghat Dist. 236 (1990); *Stephegyne parvifolia* (Roxb.) Korth., Hook. f., Fl. Brit. India 3: 25 (1880).

Habit: Tree

Habitat: Moist Deciduous forests

Morphology: Tree; leaves opposite, petioled; stipule membranous; lateral nerves 6-10 pairs; inflorescence a terminal head; calyx 5-toothed; corolla lobes 5, reflexed; stamens 5; ovary 2-loculed; fruit a globose head of capsule.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: March-December

Distribution: Occasional

Altitude: 400-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 067* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1666* (GVCH); Plate 42: Fig. b.

Morinda L., Sp. Pl. 1: 176 (1753)

Morinda coreia Buch.-Ham., Trans. Linn. Soc. London 13(2): 537 (1822); *Morinda tinctoria* Roxb., Hook. f., Fl. Brit. India 3: 156 (1880); Gamble, Fl. Pres. Madras 651 (1921); *Morinda pubescens* J. E. Smith, Vajr., Fl. Palghat Dist. 237 (1990).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves opposite, pubescent; stipule connate into a sheath; lateral nerves 7-12 pairs; inflorescence a terminal globose head; calyx tube urceolate; corolla 4-lobed, recurved; stamens 4; ovary 2-loculed; pyrene without an empty ventral cavity.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-June
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1170* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5030* (GVCH).

Mussaenda L., Sp. Pl. 1: 177 (1753)

Mussaenda frondosa L., Sp. Pl. 1: 177 (1753); Hook. f., Fl. Brit. India 3: 89 (1880); Gamble, Fl. Pres. Madras 610 (1921); *Mussaenda laxa* (Hook. f.) Hutch. ex Gamble, Fl. Pres. Madras 610 (1921); *Mussaenda frondosa* L. var. *laxa* Hook. f., Fl. Brit. India 3: 89 (1880); *Mussaenda belilla* Buch.-Ham., Vajr., Fl. Palghat Dist. 237 (1990).

Habit: Shrub
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Shrub; leaves opposite, white-tomentose beneath; stipule with two erect teethes on abroad base; bracts large, leafy; inflorescence a terminal cyme; calyx 5-lobed, pubescent; corolla lobes 5; stamens 5; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: September-March
Distribution: Common
Altitude: 400-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1288* (GVCH); Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1547* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1899* (GVCH); Plate 42: Fig. c.

Mycetia Reinw., Syll. Pl. Nov. ii. (1828) 9

Mycetia acuminata Kuntze, Revis. Gen. Pl. 1: 289 (1891); Gamble, Fl. Pres. Madras 612 (1921); Vajr., Fl. Palghat Dist. 238 (1990); *Adenosacme lawii* Hook. f., Fl. Brit. India 3: 96 (1880).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, membranous, many-nerved; stipule large, interpetiolar, membranous; inflorescence an axillary panicled cyme; bracts glandular; calyx 5-lobed, persistent; corolla lobes 5; stamens 5; ovary 2-6 loculed; ovules; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: August-January
Distribution: Rare
Altitude: 800-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Ravi Varma Estate, *Jabeena & Maya 4356* (GVCH).

Neanotis W.H.Lewis, Ann. Missouri Bot. Gard. liii. 34 (1966)

1.Capsule septicidal….....***N. monosperma***
1.Capsule loculicidal……..…….....(2)
2.Flowers clustered…...……...***N. tubulosa***
2.Flowers in cymes…….……(3)
3.Cymes dense flowered, cyme branches tomentose……..……...***N. indica***
3.Cymes loose flowered, cyme branches glabrous….……....(4)
4.Stem terete; perennials…….***N. decipiens***
4.Stem quadrangular; annuals….***N. rheedii***

Neanotis decipiens (Hook.f.) W.H.Lewis, Ann. Missouri Bot. Gard. liii. 37 (1966); *Anotis decipiens* Hook. f., Fl. Brit. India 3: 72 (1880); Gamble, Fl. Pres. Madras 604 (1921).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; stem procumbent, glabrous; leaves opposite, pubescent; lateral nerves 6-7 pairs; inflorescence a terminal cyme; flowers sub-sessile; calyx 4-lobed, ciliate; corolla 4-lobed, villous; stamens 4 on the mouth of corolla; ovary 2-loculed; capsule sub-globose, cells 1-3-seeded.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4319* (GVCH); Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3244* (GVCH).

Neanotis indica (DC.) W.H.Lewis, Ann. Missouri Bot. Gard. liii. 38 (1966); *Anotis leschenaultiana* (Wall. ex Wight & Arn.) Hook.f., Fl. Brit. India 3: 72 (1880); Gamble, Fl. Pres. Madras 604 (1921); *Anotis leschenaultiana* (Wall. ex Wight & Arn.) Hook.f. var. *affinis* (Wall. ex Wight & Arn.) Hook.f., Fl. Brit. India 3: 72 (1880); Gamble, Fl. Pres. Madras 604 (1921).

Habit: Herb
Habitat: Evergreen and Shola forests
Morphology: Herb; stem straggling; leaves ovate; stipule villous; cymes dense-flowered, strigosely villous; calyx 4-lobed, recurved; corolla lobes 4, hairy; stamens 4; ovary 2-loculed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 20 October 2019, *Jabeena & Maya 2699* (GVCH).

Neanotis monosperma (Wall. ex Wight & Arn.) W.H.Lewis, Ann. Missouri Bot. Gard. liii. 39 (1966); *Anotis monosperma* (Wall. ex Wight & Arn.) Hook. f., Fl. Brit. India 3: 75 (1880); Gamble, Fl. Pres. Madras 605 (1921).

Habit: Herb
Habitat: Shola forests and Grasslands
Morphology: Herb; stem prostrate, hairy; leaves opposite; inflorescence a corymbose cyme; calyx 4-lobed; corolla lobes 4; stamens 4; capsule dehiscing septicidally, 1-2 seeds per cell, glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4324* (GVCH);

Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2629* (GVCH); Plate 42: Fig. d.

Neanotis rheedei (Wall. ex Wight & Arn.) W.H.Lewis, Ann. Missouri Bot. Gard. liii. 40 (1966); *Anotis rheedei* (Wall. ex Wight & Arn.) Benth. & Hook.f., Hook. f., Fl. Brit. India 3: 73 (1880); Gamble, Fl. Pres. Madras 605 (1921).

Habit: Herb
Habitat: Rocky places
Morphology: Herb; stem erect, glabrous; leaves opposite; stipule membranous; inflorescence a lax cyme; bracts fimbriate; calyx 4-lobed; corolla lobes 4; stamens 4; capsule dehiscing longitudinally, many-seeded.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2451* (GVCH); Mattumala, 24 September 2019, *Jabeena & Maya 2502* (GVCH).

Neanotis tubulosa (G.Don) Mabb., Bot. Hist. Hort. Malabaricus 92 (1980); *Anotis quadrilocularis* (Thw.) Hook. f., Fl. Brit. India 3: 74 (1880); Gamble, Fl. Pres. Madras 605 (1921).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem procumbent, glabrous; leaves ovate; stipule membranous; flowers in clusters; calyx 4-lobed, glabrous; corolla lobes 4, ovate; stamens 4; capsule 3-loculed, glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2609* (GVCH); Karassuri, 20 October 2019, *Jabeena & Maya 2697* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2953* (GVCH); Plate 42: Fig. e.

Neolamarckia Bosser, Bull. Mus. Natl. Hist. Nat., B, Adansonia Sér. 4, 6(3): 247 (1985)

Neolamarckia cadamba (Roxb.) Bosser, Bull. Mus. Natl. Hist. Nat., B, Adansonia Sér. 4, 6(3): 247 (1985); *Anthocephalus cadamba* (Roxb.) Miq., Hook. f., Fl. Brit. India 3: 23 (1880); *Anthocephalus indicus* Gamble, Fl. Pres. Madras 583 (1921).

Habit: Tree

Habitat: Along banks of rivers and streams in evergreen forests

Morphology: Tree; leaves petioled, ovate; leaves opposite, glabrous; lateral nerves 10-14 pairs; flowers crowded in terminal globose head; calyx 5-lobed; corolla 5-lobed, glabrous; stamens 5, on the throat of corolla; anthers sagittate; ovary 4-loculed above, 2-loculed below; capsule membranous.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific, Holarctic and Australian

IUCN category: Not Evaluated

Phenology: April-August

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3031* (GVCH).

Neurocalyx Hook., Icon. Pl. 2: t. 174 (1837)

Neurocalyx calycinus B.L.Rob., Proc. Amer. Acad. Arts xlv. 402 (1910); Vajr., Fl. Palghat Dist. 238 (1990); *Neurocalyx wightii* Arn., Hook. f., Fl. Brit. India 3: 47 (1880); Gamble, Fl. Pres. Madras 591 (1921).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; leaves membranous, crowded at the ends of the stems; lateral nerves upto 18 pairs; stipule bifid; inflorescence an axillary raceme; calyx-tube globose, lobes 5; corolla rotate without tube, lobes 5; stamens 5; ovary 2-loculed; ovules many.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-August
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1492* (GVCH); Manpara, 01 December 2018, *Jabeena & Maya 1639* (GVCH).

Nostolachma T.Durand, Index Gen. Phan. 182 (1888)

Nostolachma crassifolia (Gamble) Deb & J.Lahiri, Bull. Bot. Surv. India 17(1-4): 162 (1978); *Coffea crassifolia* Gamble, Fl. Pres. Madras 637 (1921).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves elliptic, coriaceous; stipule triangular, acuminate; inflorescence an axillary cyme; calyx 4-lobed; corolla tube short, 4-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Endangered
Phenology: January-October
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1588* (GVCH).

Oldenlandia L., Sp. Pl. 1: 119 (1753)

1.Stem prostrate……..……...***O. corymbosa***
1.Stem erect……..……..(2)
2.Accessory calyx teeth present…….***O. vasudevanii***
2.Accessory calyx teeth absent...……***O. herbacea***

Oldenlandia corymbosa L., Sp. Pl. 1: 119 (1753); *Oldenlandia corymbosa* L., var. *corymbosa* Hook. f., Fl. Brit. India 3: 64 (1880); Gamble, Fl. Pres. Madras 600 (1921); Vajr., Fl. Palghat Dist. 239 (1990).

Habit: Herb
Habitat: Degraded forest areas
Morphology: Herb; stem diffuse, tetrangular; leaves opposite, linear; stipule sheathing; inflorescence a 1-4-flowered corymb; flowers pedicelled, usually in pairs or three; calyx 4-lobed; corolla tube short, throat of corolla hairy; stamens 4; capsule sub-globose.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Least Concern

Phenology: April-September

Distribution: Common

Altitude: 200-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2845* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2928* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3409* (GVCH); Plate 42: Fig. f.

Oldenlandia herbacea (L.) Roxb., Hort. Bengal. 11, adnot. 11 (1814); Gamble, Fl. Pres. Madras 601 (1921); Vajr., Fl. Palghat Dist. 240 (1990); *Oldenlandia heynei* R. Br. ex G. Don, Hook. f., Fl. Brit. India 3: 65 (1880).

Habit: Herb
Habitat: Grasslands and Moist Deciduous forests
Morphology: Herb; stem erect, tetrangular; leaves opposite, sessile; flowers solitary or binate; calyx 4-lobed; corolla 4-lobed; stamens 4; stigma bifid; capsule sub-globose, loculicidally dehiscent.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: July-December
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4242* (GVCH); Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 623* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2384* (GVCH); Plate 42: Fig. g.

Oldenlandia vasudevanii M.Soumya & Maya, Phytotaxa 305(1): 44 (2017).

Habit: Herb
Habitat: Exposed rock surfaces
Morphology: Herb; stem puberulous; stipule with 2 bristles; leaves sub-sessile; flowers solitary or binate; hypanthium sub-globose; calyx 4-lobed; corolla campanulate, 4-lobed; stamens 4; ovules numerous; stigma bilobed; capsule sub-globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karassuri, 24 September 2019, *Jabeena & Maya 2450* (GVCH).

Ophiorrhiza L., Sp. Pl. 1: 150 (1753)

1.Plant procumbent…***rugosa var.prostrata***
1.Plant erect……..….(2)
2.Flowers pink…...…….....***O. pectinata***
2.Flowers white……...……...(3)
3.Capsue glabrous...……..…***O. mungos***
3.Capsule pubescent...…...***O. trichocarpos***

Ophiorrhiza mungos L., Sp. Pl. 1: 150 (1753); Hook. f., Fl. Brit. India 3: 77 (1880); Gamble, Fl. Pres. Madras 607 (1921); Vajr., Fl. Palghat Dist. 241 (1990).

Habit: Herb
Habitat: Semi-evergreen forests
Morphology: Herb; leaves opposite, elliptic; stipule bifid; inflorescence a terminal scorpioid cyme; calyx 5-lobed, persistent; corolla 5-lobed; stamens 5; anther linear; ovary 2-loculed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3245* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3382* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4226* (GVCH).

Ophiorrhiza pectinata Arn., Nova Acta Phys.-Med. Acad. Caes. Leop.-Carol. Nat. Cur. 18(1): 338 (1836); Hook. f., Fl. Brit. India 3: 81 (1880); Gamble, Fl. Pres. Madras 608 (1921).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; stem erect, glabrous;

leaves elliptic; lateral nerves 6-8 pairs; inflorescence a dichotomous cyme; bracteoles large, persistent; calyx 5-lobed, glabrous; corolla 5-lobed; capsule winged.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Rare
Altitude:900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 889* (GVCH).

Ophiorrhiza rugosa* var. *prostrate (D.Don) Deb & Mondal, Bull. Bot. Surv. India 24(1-4): 228 (1983); *Ophiorrhiza prostrata* D. Don, Vajr., Fl. Palghat Dist. 241 (1990); *Ophiorrhiza harrisiana* Heyne ex G. Don, Hook. f., Fl. Brit. India 3: 78 (1880); Gamble, Fl. Pres. Madras 607 (1921).
Habit: Herb
Habitat: Semi-evergreen and Evergreen forests
Morphology: Herb; stem procumbent; leaves ovate; lateral nerves 4-6 pairs; stipule hairy; inflorescence a dichotomous cyme; calyx 5-lobed; corolla 5-lobed; capsule compressed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude:
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2042* (GVCH); Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2612* (GVCH); Plate 42: Fig. h.

Ophiorrhiza trichocarpos Blume, Bijdr. Fl. Ned. Ind. 16: 977 (1827).

Habit: Herb
Habitat: Semi-evergreen and Secondary forests
Morphology: Herb; stem erect, pubescent; leaves ovate; lateral nerves 6-7; flowers in axillary or terminal dichotomous cyme; calyx 5-lobed, pubescent; corolla 5-lobed, pubescent; stamens 5; ovary obovoid; capsule pubescent.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: May-October

Distribution: Rare

Altitude: 1000-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4261* (GVCH).

Oxyceros Lour., Fl. Cochinch. 1: 96, 150-151 (1790)

Oxyceros rugulosus (Thwaites) Tirveng., Nordic J. Bot. 3(4): 466 (1983); *Randia rugulosa* (Thw.) Hook.f., Fl. Brit. India 3: 113 (1880); Gamble, Fl. Pres. Madras 617 (1921).

Habit: Climber

Habitat: Semi-evergreen forests

Morphology: Climber; leaves elliptic, glabrous; lateral nerves 8-10 pairs; inflorescence an axillary or terminal cyme; calyx 5-toothed; corolla 5-lobed, deflexed; stamens 5; ovary 2-loculed; fruit a berry.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: February-May

Distribution: Rare

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1925* (GVCH).

Pavetta L., Sp. Pl. 1: 110 (1753)

Leaves hispid below; calyx upto 2 mm long, obovoid……..…….***P. zeylanica***
Leaves glabrous; calyx minutely 4 toothed……..……...…***P. indica***

Pavetta indica L., Sp. Pl. 1: 110 (1753); *Pavetta indica* L. var. *indica* Hook. f., Fl. Brit. India 3: 150 (1880); Gamble, Fl. Pres. Madras 633 (1921); Vajr., Fl. Palghat Dist. 242 (1990).

Habit: Shrub
Habitat: Evergreen forests, scrub jungles and sacred groves
Morphology: Shrub; leaves opposite, glabrous; inflorescence a terminal corymb; calyx 4-lobed; corolla 4-lobed, hairy within; stamens 4; ovary 2-loculed; ovule solitary; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-July
Distribution: Occasional
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 123* (GVCH); Karassuri, 12 January 2021, *Jabeena & Maya 4729* (GVCH).

Pavetta zeylanica Gamble, Fl. Madras 633 (1921); *Pavetta hispidula* Wight & Arn. var. *zeylanica* Hook. f., Fl. Brit. India 3: 151 (1880); *Pavetta calophylla* Bremek., Gamble, Fl. Pres. Madras 1879 (1936).

Habit: Shrub
Habitat: Evergreen and Moist Deciduous forests
Morphology: Shrub; leaves elliptic; lateral nerves 9 pairs; flowers in corymbose cyme; calyx 4-lobed, ciliate; corolla 4-lobed, hairy inside; stamens 4 on the mouth of corolla; ovary 2-loculed; ovule solitary in each cell.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evluated
Phenology: August-March
Distribution: Common
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16-02-2020, *Jabeena & Maya 4057* (GVCH); Nelliyampathy range, Mattumala, 19 November 2020, *Jabeena & Maya 4377* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4798* (GVCH); Plate 43: Fig. a

Pentas Benth., Bot. Mag. 70: t. 4086 (1844)

Pentas lanceolata (Forssk.) Deflers, Voyage Yemen 142 (1889).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Tree; stem glabrous; leaves elliptic; lateral nerves 3-4 pairs; stipule ovate; flowers in axillary globose head; drupe obovoid, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: African
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 008* (GVCH).

Psychotria L., Syst. Nat., ed. 10. 2: 929, 1364 (1759)

1.Leaves in whorls of 3...***P. anamallayana***
1.Leaves opposite...……...….(2)
2.Leaves with domantia…....***P. nilgiriensis***
2.Leaves without domantia……...……..(3)
3.Flowers in a globose head……...***P. globicephala***
3.Flowers not a globose head...…...…..(4)
4.Branches of inflorescence opposite.....(5)
4.Branches of inflorescence whorled…..(6)
5.Flowers in a racemiform panicle……***P. nervosa***

5.Flowers in corymbose cyme.....***P. flavida***
6.Coroll glabrous within.……***P. nudiflora***
6.Corolla villous or woolly within.....…..(7)
7.Lateral nerves 12-20 pairs; inflorescence branches glabrous…….....***P. dalzelli***
7.Lateral nerves 8-10 pairs; inflorescence branches hirsute…….....***P. macrocarpa***

Psychotria anamallayana Bedd., Icon. Pl. Ind. Or. [Beddome] 57, t. 235 (1868-1874); Hook. f., Fl. Brit. India 3:171 (1880); Gamble, Fl. Pres. Madras 641 (1921).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves long-petioled, oblanceolate, glabrous, coriaceous; lateral nerves 8-12 pairs; inflorescence a terminal corymbose cyme; flowers sessile; calyx 4-toothed, valvate; corolla 4-lobed; stamen as many as corolla lobes; ovary 2-loculed; ovules solitary in each cell; drupe obovoid, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: March-July
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2233* (GVCH).

Psychotria dalzellii Hook.f., Fl. Brit. India [J. D. Hooker] 3(7): 163 (1880); Gamble, Fl. Pres. Madras 640 (1921).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, glabrous; lateral nerves 12-20 pairs; stipule hairy at base; flowers in a terminal, paniculate cyme; bracts and bracteoles persistent; calyx campanulate, 5-lobed, glabrous; corolla 5-lobed; stamens 5; ovary globose, glabrous; fruit sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: March-November
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 975* (GVCH).

Psychotria flavida Talbot, Syst. List Trees Bombay 113 (1894); Gamble, Fl. Pres. Madras 641 (1921).

Habit: Shrub
Habitat: Evergreen forests and sacred groves
Morphology: Shrub; leaves opposite, glabrous; lateral nerves 9-12 pairs; inflorescence a terminal corymbose cyme; calyx campanulate, 5-lobed; corolla 5-lobed, hairy at throat; stamens 5; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: April-July
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1897* (GVCH); Manpara, 01-12-2018, *Jabeena & Maya 1627* (GVCH).

Psychotria globicephala Gamble, Bull. Misc. Inform. Kew 1920(7): 249 (1920); Gamble, Fl. Pres. Madras 640 (1921)

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves oblanceolate; lateral nerves 12-18 pairs; stipule with long hairs within; inflorescence globular-capitate, pedunculate; flowers mixed with rufous hairs; calyx 5-lobed, ciliate; corolla

5-lobed; stamens 5; stigma bifid; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: August-January
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1334* (GVCH).

Psychotria macrocarpa Hook.f., Fl. Brit. India [J. D. Hooker] 3(7): 162 (1880); Gamble, Fl. Pres. Madras 641 (1921).

Habit: Shrub
Habitat: Evergreen and Moist Deciduous forests
Morphology: Shrub; leaves opposite; lateral nerves 8-10 pairs; inflorescence a panicle; flowers not mixed with rufous hairs; calyx truncate, 5-lobed; corolla woolly within; stamens 5; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: October-November
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1952* (GVCH).

Psychotria nervosa Sw., Prodr. [O. P. Swartz] 43 (1788); Hook. f., Fl. Brit. India 3: 163 (1880); *Psychotria elongata* Hook.f., Gamble, Fl. Pres. Madras 641 (1921).

Habit: Shrub
Habitat: Evergreen and semi-evergreen forests
Morphology: Shrub; leaves oblanceolate, coriaceous; lateral nerves 10-20 pairs; inflorescence a terminal racemiform panicle; calyx 5-lobed, ciliate; corolla campanulate, 5-lobed; ovary globose; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: April-August
Distribution: Common
Altitude: 900-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1953* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2397* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3229* (GVCH).

Psychotria nilgiriensis Deb & M. Gangop., Taxon 31(3): 546 (1982); *Psychotria congesta* (Wight & Arn.) Hook.f., Fl. Brit. India 3: 162 (1880); Gamble, Fl. Pres. Madras 640 (1921); Vajr., Fl. Palghat Dist. 242 (1990).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves obovate; lateral nerves 8-12 pairs; stipule densely woolly within; inflorescence a congested terminal cyme; calyx 5-lobed, ciliate; corolla 5-lobed, villous within; fruit ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 199* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2586* (GVCH).

Psychotria nudiflora Wight & Arn., Prodr. Fl. Ind. Orient. 1: 434 (1834); Hook. f., Fl. Brit. India 3:175 (1880); Gamble, Fl. Pres. Madras 641 (1921).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; leaves; lateral nerves 10-13 pairs; stipule ovate; inflorescence a terminal panicled cyme; flowers sessile; calyx 4-lobed; corolla 4-lobed; stamens as many as corolla lobes; ovary 2-loculed; ovules solitary in each cell.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Rare
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1664* (GVCH).

Psydrax Gaertn., Fruct. Sem. Pl. i. 125. t. 26 (1788)

Psydrax umbellatus (Wight) Bridson, Kew Bull. 48(4): 762 (1993); *Canthium umbellatum* Wight, Hook. f., Fl. Brit. India 3: 132 (1880); *Plectronia didyma* (Gaertn. f.) Kurz var. *umbellata* (Wight) Gamble, Fl. Pres. Madras 624 (1921); *Canthium dicoccum* (Gaertn.) Teijsm. & Binn. var. *umbellatum* (Wight) Sant. & Merch., Vajr., Fl. Palghat Dist. 229 (1990).

Habit: Tree
Habitat: Moist Deciduous forests and Scared groves
Morphology: Tree; branchlets unarmed; leaves opposite, glabrous, coriaceous; stipule connate; lateral nerves 3-6 pairs; inflorescence an axillary umbel; calyx 5-lobed; corolla 5-lobed, reflexed; stamens 5; ovary 2-loculed; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-August
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1526* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1827* (GVCH).

Richardia L., Sp. Pl. 1: 330 (1753)

Richardia scabra L., Sp. Pl. 1: 330 (1753).

Habit: Herb
Habitat: Degraded forest areas
Morphology: Herb; stem procumbent; leaves sub-sessile; stipule connate; inflorescence a terminal sessile cluster; calyx 4-6 lobed; corolla funnel-shaped, 4-6 lobed; stamens as many as corolla lobes; ovary sub-globose, 3-loculed; ovule solitary per cell; capsule 3-loculed, scabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: March-April
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 080* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2815* (GVCH); Kollengode range, Minnampara, 09 December 2019, 02 July 2017, *Jabeena & Maya 3232* (GVCH).

Rubia L., Sp. Pl. 1: 109 (1753)

Rubia cordifolia L., Syst. Nat., ed. 12. 2: 229 (1767); Hook. f., Fl. Brit. India 3: 202 (1880); Gamble, Fl. Pres. Madras 655 (1921); Vajr., Fl. Palghat Dist. 243 (1990).

Habit: Climber
Habitat: Moist Deciduous and Semi-evergreen forests

Morphology: Climber; stem tetragonous, hispid; leaves whorled, 3-5-nerved at base; inflorescence an axillary or terminal cyme; calyx tube globose, 4-lobed; corolla campanulate, 4-lobed; stamens alternate with the corolla lobes; ovary 2-loculed; fruit globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3825* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3928* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4078* (GVCH).

Saprosma Blume, Bijdr. Fl. Ned. Ind. 16: 956

Saprosma glomerata Bedd., Fl. Sylv. S. India Forester's Man. Bot.: p. cxxxiv/11 (1872); Vajr., Fl. Palghat Dist. 243 (1990); *Saprosma indicum* Dalz., Hook. f., Fl. Brit. India 3: 192 (1880); Gamble, Fl. Pres. Madras 649 (1921).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, sessile; lateral nerves 10-15 pairs; inflorescence a terminal cluster; calyx 4-lobed; corolla 4-lobed, hairy inside; stamens 4; berry globose; seed solitary.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: October-June
Distribution: Occasional
Altitude: 600-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 19 November 2020, *Jabeena & Maya 4390* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4530* (GVCH); Plate 43: Fig. b.

Scleromitrion (Wight & Arn.) Meisn., Pl. Vasc. Gen. [Meisner] 5(Tab. Diagn.): 160 (1838).

Scleromitrion diffusum (Willd.) R.J. R.J.Wang, J. Trop. Subtrop. Bot. 22(5): 440 (2014); *Oldenlandia diffusa* (Willd.) Roxb., Hook. f., Fl. Brit. India 3: 65 (1880); Gamble, Fl. Pres. Madras 601 (1921).

Habit: Herb
Habitat: Degraded forest areas
Morphology: Herb; leaves linear; stipule sheathing; flowers axillary, solitary or binate, sessile; calyx 4-lobed; corolla lobes 4; stamens 4, included; stigma papillate; capsule ovoid, terete.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 902* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3034* (GVCH).

Spermacoce L., Sp. Pl. 1: 102 (1753)

1.Plant diffuse……***S. alata***
1.Plant erect……...…(2)
2.Leaves whorled……...…….(3)
2.Leaves opposite….……..(4)
3.Stem glabrous; capsule ovoid...***S. pusilla***
3.Stem hispid along the angles; capsule globose……..……***S. ramanii***
4.Calyx lobes 2……..***S. verticillata***
4.Calyx lobes 4……...***S. ocymoides***

Spermacoce alata Aubl., Hist. Pl. Guiane 1: 60 (1775).

Habit: Herb
Habitat: Moist and dry deciduous forests
Morphology: Herb; stem diffuse, tetragonous; leaves elliptic; stipule sheathing; inflorescence an axillary cyme; calyx lobes 4, unequal; corolla 4-lobed, hairy at throat; stamens 4; capsule ellipsoid, pubescent.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 100* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3208* (GVCH); Nelliyampathy range, Nooradi, 11 January 2020, *Jabeena & Maya 3595* (GVCH); Plate 43: Fig. c.

Spermacoce lasiocarpa R.Br., Numer. List [Wallich] n. 832 (1829).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem tetragonous; leaves elliptic; lateral nerves 3-4 pairs; stipule connate; inflorescence an axillary or terminal head; calyx 4-lobed; corolla 4-lobed; stamens 4; stigma bifid; capsule globose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Occasional
Altitude: 1000-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3246* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4236* (GVCH).

Spermacoce ocymoides Burm.f., Fl. Ind. (N. L. Burman) 34 (1768); Hook. f., Fl. Brit. India 3: 200 (1881); *Borreria ocymoides* (Burm.f.) DC., Gamble, Fl. Pres. Madras 654 (1921).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; stem erect, pubescent; leaves opposite; lateral nerves 3-4 pairs; inflorescence an axillary cluster; calyx 4-lobed, unequal; corolla 4-lobed, glabrous; stamens 4; capsule truncate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothumala, 15 October 2017, *Jabeena & Maya 580* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2817* (GVCH); Mannathypalam, 12 October 2020, *Jabeena & Maya 4173* (GVCH).

Spermacoce pusilla Wall., Fl. Ind. (Carey & Wallich ed.) 1: 379 (1820); *Borreria pusilla* (Wall.) DC., Vajr., Fl. Palghat Dist. 228 (1990).

Habit: Herb
Habitat: Grasslands and Moist Deciduous forests
Morphology: Herb; stem erect, glabrous; leaves sessile; stipule 6-7-teethed; inflorescence an axillary cluster; calyx 4-lobed, glabrous; corolla 4-lobed; capsule ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Common
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2146* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2243* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2371* (GVCH).

Spermacoce verticillata L., Sp. Pl. 1: 102 (1753).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; stem tetragonous; leaves opposite, sessile; stipule connate; inflorescence a terminal or axillary head; calyx 2-lobed; corolla 4-lobed; stamens 4; ovary 2-loculed; capsule ovoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Not Evaluated
Phenology: May-August
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 766* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2925* (GVCH).

Tamilnadia Tirveng. & Sastre, Mauritius Inst. Bull. 8(4): 84 (1979)

Tamilnadia uliginosa (Retz.) Tirveng. & Sastre, Mauritius Inst. Bull. 8(4): 85 (1979); *Randia uliginosa* (Retz.) DC., Gamble, Fl. Pres. Madras 615 (1921); Hook. f., Fl. Brit. India 3: 110 (1880).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; branchlets armed, tetrangular; leaves opposite, glabrous; lateral nerves 5-10 pairs; flowers solitary; calyx 5-lobed; corolla 5-lobed; stamens 5; ovary 2-loculed; berry ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-March
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1433* (GVCH).

Tarenna Gaertn., Fruct. Sem. Pl. 1: 139 (1788)

Calyx hispid; drupe globose……...***T. monosperma***
Calyx glabrous; drupe sub-globose..……....***T. canarica***

Tarenna canarica (Bedd.) Bremek., Repert. Spec. Nov. Regni Veg. 37: 7, in obs., 189 (1934); *Stylocoryne canarica* (Bedd.) Gamble, Fl. Pres. Madras 635 (1921); *Webera canarica* (Bedd.) Hook.f., Fl. Brit. India 3: 106 (1880).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, oblanceolate; lateral nerves 10-12; inflorescence a terminal corymb; calyx 5-toothed; corolla tube cylindric with 5 imbricate lobes; stamens 5, inserted on the mouth of corolla-tube; ovary 2-loculed; berry sub-globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: November-January

Distribution: Rare

Altitude: 1100-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1098* (GVCH).

Tarenna monosperma (Wight & Arn.) D.C.S.Raju, Sci. & Cult. 32: 554 (1966); *Stylocoryne monosperma* Wight & Arn., Gamble, Fl. Pres. Madras 635 (1921); *Webera monosperma* (Wight & Arn.) Hook. f., Fl. Brit. India 3: 103 (1880).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves oblanceolate; nerves 12-14 pairs; inflorescence a terminal corymbose cyme; calyx 5-toothed; corolla tube cylindric, 5-lobed; ovary 2-loculed; ovules 2 in each cell; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: April-August
Distribution: Rare
Altitude: 800-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 06 July 2019, *Jabeena & Maya 2173* (GVCH).

Wendlandia Bartl. ex DC., Prodr. [A. P. de Candolle] 4: 411 (1830)

Wendlandia thyrsoidea Steud., Nomencl. Bot. [Steudel], ed. 2. ii. 786; *Wendlandia notoniana* Wall. ex Wight & Arn., Gamble, Fl. Pres. Madras 588 (1921); Hook. f., Fl. Brit. India 3: 40 (1880).

Habit: Tree
Habitat: Grasslands and Shola forests
Morphology: Tree; leaves whorled; stipule bifid; lateral nerves 5-12 pairs; inflorescence a dense terminal thyrsoid cyme; calyx 5-lobed, pubescent; corolla tube villous within, 5-lobed; stamens 5; ovary sub-globose, 2-loculed; capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1025* (GVCH); Mattumala, 02 April 2018, *Jabeena & Maya 1343* (GVCH); Seetharkundu, 11 June 2018, *Jabeena & Maya 1570* (GVCH); Plate 43: Fig. d.

GENTIANACEAE

1.Stipules present...……...…...***Fagraea***
1.Stipules absent……...…..(2)
2.Ovary 2-loculed…….....***Exacum***
2.Ovary 1-loculed……..(3)
3.Corolla lobes with pit depressions at the base…….....***Swertia***
3.Corolla lobes without pits or depressions at the base…….…….(4)
4.Calyx campanulate; stamens 1 perfect and 3 wanting……...….***Hoppea***
4.Calyx tubular; stamens 1 or 2 larger fertile/ 3 or 2 shorter sterile…....***Canscora***

Canscora Lam., Encycl. [J. Lamarck & al.] 1(2): 601 (-602) (1785)

1.Filaments of upper stamens broadened below the anther……..……(2)
1.Filaments of the upper stamens not broadened below the anther……....(4)
2.Bracts linear-lanceolate……..…..***C.alata***
2.Bracts perfoliate……...(3)
3.Calyx winged……...***C. perfoliata***
3.Calyx not winged……...***C. roxburghii***
4.Cymes dense; calyx without striations.……***C. diffusa***
4.Cymes lax; calyx striate…..***C. pauciflora***

Canscora alata (Roth) Wall., Numer. List [Wallich] n. 4363 (1831); *Canscora decussata* (Roxb.) Schult. & Schult. f., Gamble, Fl. Pres. Madras 879 (1923); Hook. f., Fl. Brit. India 4: 104 (1883).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; stem 4-winged; leaves ovate, sessile, 3-ribbed at base; inflorescence a dichasial cyme; calyx 4-

toothed, prominently winged; corolla 4-lobed; stamens 4; ovary oblong; capsule oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4188* (GVCH); Cheriya Govindamala, 03-11-2020, *Jabeena & Maya 4339* (GVCH).

Canscora diffusa (Vahl) R.Br. ex Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 3: 301 (1818); Gamble, Fl. Pres. Madras 878 (1923); Hook. f., Fl. Brit. India 4: 103 (1883); *Canscora decurrens* Dalz., Gamble, Fl. Pres. Madras 878 (1923).

Habit: Herb
Habitat: Along stream banks and Grasslands
Morphology: Herb; stem tetragonous; leaves opposite, 3-ribbed at base; inflorescence a terminal or axillary cyme; calyx not winged, 4-lobed; corolla 4-lobed; fertile stamens 2; staminodes 2; ovary 1-loculed; capsule oblong.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, Holarctic, African and Australian

IUCN category: Not Evaluated

Phenology: October-January

Distribution: Occasional

Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 863* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2565* (GVCH).

Canscora pauciflora Dalz., Hooker's J. Bot. Kew Gard. Misc. 2: 136 (1850); Gamble, Fl. Pres. Madras 878 (1923); Hook. f., Fl. Brit. India 4: 103 (1883).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; stem erect, tetrangular; leaves opposite, sessile, 3-ribbed at base; inflorescence a terminal or axillary dichotomously branched cyme; pedicel enlarged below the calyx; calyx 4-lobed, not winged; corolla 4-lobed; stamens 4, one longer; ovary 1-loculed; capsule linear.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Common
Altitude: 900-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1696* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2610* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4298* (GVCH).

Canscora perfoliata Lam., Encycl. [J. Lamarck & al.] 1(2): 601 (1785); Gamble, Fl. Pres. Madras 879 (1923); Hook. f., Fl. Brit. India 4: 1094 (1884).

Habit: Herb
Habitat: Wet areas in Moist Deciduous forests and Grasslands
Morphology: Herb; stem winged; leaves opposite, 3-ribbed at base, sessile; inflorescence a terminal or axillary cyme; calyx 4-lobed, prominently winged; corolla 4-; stamens four, unequal; ovules many; fruit oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: November-February

Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2964* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3121* (GVCH); Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3210* (GVCH).

Canscora roxburghii Arn. ex Miq., Anal. Bot. Ind. 3: 11 (1852); *Canscora wallichii* Clarke, Gamble, Fl. Pres. Madras 879 (1923); Hook. f., Fl. Brit. India 3: 105 (1883).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem narrowly winged; leaves sessile, 3-ribbed at base; inflorescence a terminal or lateral cyme; calyx not winged, striate, 4-lobed; corolla 4-lobed, unequal; stamens 1; staminodes 3; ovary 1-loculed; ovules many; fruit ellipsoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Rare
Altitude:
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4291* (GVCH).

Exacum L., Sp. Pl. 1: 112 (1753)

1.Petals bicoloured…….....***E. tetragonum***
1.Petals style coloured……..….(2)
2.Pedicels upto 1.5 cm; central flower drooping…….…….…….***E. sessile***
2.Pedicels 2-4.5 cm; flowers not drooping…….……..……..***E. lawii***

Exacum lawii C.B.Clarke, Fl. Brit. India [J. D. Hooker] 4(10): 98 (1883); Gamble, Fl. Pres. Madras 874 (1923).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; stem tetragonous; leaves elliptic, 3-nerved at base; flower solitary or a cyme, tetramerous; calyx 4-lobed, wingless, strongly nerved; corolla 4-lobed, lobes elliptic; stamens 4; ovary 2-loculed; ovules many; capsule globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: September-November
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2469* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2571* (GVCH); Plate 43: Fig. e.

Exacum sessile L., Sp. Pl. 1: 112 (1753); Gamble, Fl. Pres. Madras 874 (1923); Hook. f., Fl. Brit. India 4: 98 (1883).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; stem erect, winged; leaves opposite, sessile; inflorescence a terminal cyme; calyx 4-lobed, 3-nerved; corolla 4-lobed, lobes ovate; stamens 4, linear; ovary 2-loculed; capsule ovoid

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacfific

IUCN category: Not Evaluated

Phenology: August-October

Distribution: Common

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2572* (GVCH); Nooradi, 14 October 2019, *Jabeena & Maya 3567* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4290* (GVCH); Plate 43: Fig. f.

Exacum tetragonum Roxb., Hort. Bengal. [10]; Fl. Ind. i. 398; Gamble, Fl. Pres. Madras 873 (1923); Hook. f., Fl. Brit. India 4: 95 (1883); *Exacum bicolor* Roxb., Gamble, Fl. Pres. Madras 873 (1923); Hook. f., Fl. Brit. India 4: 96 (1883).

Habit: Herb
Habitat: Grasslands and scrub jungles
Morphology: Herb; stem tetragonous; leaves opposite, 3-nerved at base; inflorescence a terminal corymbose cyme; calyx 4-lobed, winged; corolla 4-lobed; stamens 4; ovary 2-loculed; capsule globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 632* (GVCH).

Fagraea Thunb., Kongl. Vetensk. Acad. Nya Handl. (1782) 125; et Nov. Gen. 34 (1782)

Fagraea ceilanica Thunb., Kongl. Vetensk. Acad. Nya Handl. (1782) 132; Nov. Gen. 35; Hook. f., Fl. Brit. India 4: 83 (1883); Gamble, Fl. Pres. Madras 865 (1923); Vajr., Fl. Palghat Dist. 294 (1990); *Fagraea obovata* Wall., Hook. f., Fl. Brit. India 4: 83 (1883); Gamble, Fl. Pres. Madras 865 (1923).

Habit: Shrub
Habitat: Moist deciduous, evergreen, semi-evergreen and shola forests, also in sacred groves
Morphology: Tree; leaves opposite, glabrous; flowers in terminal or axillary corymbose cyme; calyx 5-lobed, persistent; corolla 5-lobed; stamens 5; ovary 2-loculed; ovules many; berry ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-November
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4230* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4461* (GVCH).

Hoppea Willd., Neue Schriften Ges. Naturf. Freunde Berlin 3: 434 (1801)

Hoppea fastigiata (Griseb.) C. B. Clarke in Hook.f., Fl. Brit. India [J. D. Hooker] 4(10): 100 (1883); Gamble, Fl. Pres. Madras 877 (1923).

Habit: Herb
Habitat: Deciduous forests and grasslands
Morphology: Herb; stem 4-winged; leaves opposite; inflorescence an axillary or terminal cyme; calyx campanulate, 4-lobed; corolla tubular, 4-lobed, unequal; fertile stamens 1; staminodes 3; ovary 1-loculed; capsule globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-October
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4189* (GVCH); Plate 43: Fig. g.

Swertia L., Sp. Pl. 1: 226 (1753)

1.Fimbriae of nectariferous glands only at margins…….....***S. corymbosa***

1.Fimbriae of nectariferous glands covering them, but not on margins…….(2)

2.Cyme corymbose……..***S. lawii***

2.Cyme paniculate……...***S. angustifolia***

Swertia angustifolia Buch.-Ham. ex D.Don, Prodr. Fl. Nepal. 127. (1825); *Swertia angustifolia* Buch.-Ham. var. *pulchella* (Buch.-Ham. ex Clarke) Burkill, Gamble, Fl. Pres. Madras 880 (1923); *Swertia pulchella* Buch.-Ham. ex Clarke Hook.f., Fl. Brit. India 4: 125 (1883).

Habit: Herb

Habitat: Grasslands

Morphology: Herb; stem tetragonous; leaves sessile, 3-ribbed at base; inflorescence an elongate panicle; calyx 4-lobed; corolla 4-lobed; nectary basal, fimbriate at mouth; stamens 4; ovary 1-loculed; ovules many; stigma bilobed; fruit a sessile, 2-valved capsule.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: October-May

Distribution: Common

Altitude: 1000-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1043* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3865* (GVCH); Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4292* (GVCH); Plate 43: Fig. h.

Swertia corymbosa (Griseb.) Wight ex C. B. Clarke, Fl. Brit. India [J. D. Hooker] 4(10): 126 (1883); Gamble, Fl. Pres. Madras 881 (1923).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem tetragonous; leaves ovate, 3-nerved at base; inflorescence a terminal corymbose cyme; calyx 4-lobed, free; corolla 4-lobed, nectary near the base of the corolla-lobe covered with a fimbriate scale; stamens 4; ovary ovoid; capsule 2-valved.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1068* (GVCH); Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1331* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4190* (GVCH).

Swertia lawii Burkill, J. Proc. Asiat. Soc. Bengal 2: 379 (1906); Gamble, Fl. Pres. Madras 881 (1923); *Swertia corymbosa* Wight var. *lawii* Wight ex Clarke, Hook.f., Fl. Brit. India 4:126 (1883).

Habit: Herb

Habitat: Grasslands

Morphology: Herb; stem erect; leaves opposite, 3-ribbed at base; inflorescence a terminal cyme; calyx 4-lobed; corolla 4-lobed; nectary near the base of each corolla lobe, covered with a fimbriate scale; stamens 4; ovary 1-loculed; capsule 2-valved, sessile.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: November-January

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2570* (GVCH).

LOGANIACEAE

Strychnos L., Sp. Pl. 1: 189 (1753)

Strychnos wallichiana Steud. ex A.DC., Prodr. [A. P. de Candolle] 9: 13 (1845); Vajr., Fl. Palghat Dist. 296 (1990); *Strychnos colubrina* L., Hook. f., Fl. Brit. India 4: 87 (1883); Gamble, Fl. Pres. Madras 868 (1923); *Strychnos cinnamomifolia* Thw., var. *wightii* Hill, Gamble, Fl. Pres. Madras 869 (1923).

Habit: Climber
Habitat: Semi-evergreen and evergreen forests
Morphology: Climber; tendril simple; leaves opposite, 3-nerved at base; inflorescence an axillary or terminal cyme; calyx 4-lobed, ciliate; corolla 4-lobed, hairy inside; ovary pubescent; berry globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-July
Distribution: Rare
Altitude: 500-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, *Jabeena & Maya 5067* (GVCH); Plate 44: Fig. a

APOCYNACEAE

1.Nectaries located as alterni staminal on staminal feet or staminal tube; anther 2-4 locular; pollen shed as tetrads or gathered into a pollinia……..……....(2)
1.Nectaries usually absent, if present in ring around the base of the ovary; anthers 4 locular; pollen almost always shed as monads……....……(13)
2.Pollen masses granular...…….....(3)
2.Pollen masses waxy……...……..(5)
3.Corona processes connate with the stamens……...…….***Decalepis***
3.Corona processes connate with the corolla……...……..(4)
4.Corolla lobes valvate……...***Hemidesmus***
4.Corolla lobes imbricate…….....***Cryptolepis***
5.Erect herbs or shrubs…...……...…(6)
5.Twiners...…….…(7)
6.Leaves auricled at base…...….***Calotropis***
6.Leaves not auricled at base…...***Asclepias***
7.Plant epiphytic…….....***Hoya***
7.Plant terrestrial…….…(8)
8.Corolla tube inflated basally....***Ceropegia***
8.Corolla tube not inflated or absent…..(9)
9.Pollen masses pendulous……...…(10)
9.Pollen masses erect or horizontal…..(11)
10.Corona double...……...***Pergularia***
10.Corona single…...…….….***Cynanchum***
11.Corona connate with corolla…….....***Gymnema***
11.Corona adnate to staminal colum....(12)
12.Pollen masses horizontal…...***Tylophora***
12.Pollen masses erect…….....***Wattakaka***
13.Anthers free from the stigma……...(14)
13.Anthers adherent to the stigma…....(25)
14.Ovary of 2 wholly combined carpels……...(15)
14.Ovary of 2 distinct carpels……...(17)
15.Ovary 2-loculed.....***Carissa***
15.Ovary 1-loculed…….....(16)
16.Fruit a fleshy berry…….....***Chilocarpus***
16.Fruit a spinescent capsule....***Allamanda***
17.Leaves alternate……...…(18)
17.Leaves opposite or whorled…….(19)
18.Corolla funnel shaped; fruit indehiscent……...……...***Cascabela***
18.Corolla salver shaped; fruit dehiscent….…….***Plumeria***
19.Calyx glandular within……...…….(20)
19.Calyx not glandular…...……..(22)
20.Follicle few-seeded, baccate……..***Tabernaemontana***
20.Follicle many-seeded, linear……(21)
21.Tree; leaves opposite...…...***Holarrhena***
21.Climbing shrub; leaves 3-4 at nodes…..……..……..***Kammettia***
22.Fruit dehiscent...……..(23)
22.Fruit indehiscent……..…(24)
23.Herbaceous plants; leaves opposite...……...…***Catharanthus***
23.Shrubs or trees; leaves whorled……..***Alstonia***
24.Shrubs; leaves whorled; mericarps sessile.……..…***Rauvolfia***

24.Trees; leaves opposite; mericarps stalked…...……...***Hunteria***
25.Anthers exerted……....***Wrightia***
25.Anthers included……..(26)
26.Mouth of corolla with a ring of scales……...***Nerium***
26.Mouth of corolla naked……...…....(27)
27.Flowers more than 6 cm across…….……..***Chonemorpha***
27.Flowers less than 2 cm across…....(28)
28.Tips of corolla lobes deflexed or twisted….……...***Ichnocarpus***
28.Tips of corolla lobes not deflexed nor twisted……..……....(29)
29.Branchlets tomentose; corolla tube bearded..…….***Aganosma***
29.Branchlets glabrous; corolla tube not bearded……...***Anodendron***

Aganosma G.Don, Gen. Hist. iv. 77 (1837)

Aganosma cymosa (Roxb.) G.Don, Gen. Hist. 4: 77 (1837); Gamble, Fl. Pres. Madras 819 (1923); Hook. f., Fl. Brit. India 3: 663. (1882).

Habit: Climber
Habitat: Semi-evergreen forests
Morphology: Climber; leaves elliptic, glabrous; lateral nerves 5-8 pairs; inflorescence a terminal corymbose cyme; calyx divided nearly to the base in 5 lobes; corolla salver-shaped, 5-lobed; stamens inserted at the base of the corolla tube; disc 5-lobed; ovary hirsute; fruit of 2 follicular mericarps.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-December
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1510* (GVCH);Manpara, 01 December 2018, *Jabeena & Maya 1655* (GVCH).

Allamanda L., Mant. Pl. Altera 146 (214) (1771)

Allamanda cathartica L., Mant. Pl. Altera 214 (1771); Gamble, Fl. Pres. Madras 821 (1923).

Habit: Climber
Habitat: Grown as garden plant
Morphology: Climber; leaves whorled; lateral veins 12-14 pairs; inflorescence an axillary or terminal cyme; calyx 5-lobed; corolla funnel-shaped, 5-lobed; stamens 5; anthers sagittate; ovary 2-loculed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2794* (GVCH); Kollengode range, 16 February 2020, *Jabeena & Maya 4123* (GVCH).

Alstonia R.Br., Asclepiadeae 64 (1810)

Cymes umbellate; follicles terete……...***A. scholaris***
Cymes corymbose; follicles 2 angled...……...…..***A. vennenata***

Alstonia scholaris (L.) R.Br., Asclepiadeae 65 (1810); Gamble, Fl. Pres. Madras 810 (1923); Hook. f., Fl. Brit. India 3: 642 (1882).

Habit: Tree
Habitat: Moist Deciduous forests and Sacred groves
Morphology: Tree; leaves whorled, glabrous; inflorescence a terminal umbellate cyme; calyx 5-lobed, unequal; corolla salver shaped, 5-lobed; stamens 5; carpels 2, free; ovules many; fruit of two follicular mericarps.
Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Least Concern
Phenology: October-February
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1176* (GVCH); Kollengode range, 15 January 2019, *Jabeena & Maya 1757* (GVCH).

Alstonia venenata R. Br., Mem. Wern. Nat. Hist. Soc. i. (1809) 77; Gamble, Fl. Pres. Madras 810 (1923); Hook. f., Fl. Brit. India 3: 642 (1882).

Habit: Shrub
Habitat: Moist and Dry Deciduous forests
Morphology: Shrub; leaves linear, whorled; inflorescence a terminal corymbose cyme; calyx 5-lobed, ciliate; corolla tube hairy inside, 5-lobed; stamens 5; follicle angular.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: February-August
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 029* (GVCH); Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 857* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 1985* (GVCH); Plate 44: Fig. b.

Anodendron A.DC., Prodr. [A. P. de Candolle] 8: 443 (1844)

Anodendron parviflorum (Roxb.) I. M. Turner, *Webbia* 71(2): 227 (2016); Hook. f., Fl. Brit. India 3: 668 (1882); Gamble, Fl. Pres. Madras 820 (1923); Vajr., Fl. Palghat Dist. 279 (1990); *Anodendron rhinosporum* Thw., Vajr., Fl. Palghat Dist. 279 (1990).

Habit: Climber
Habitat: Evergreen, Semi-evergreen and deciduous forests
Morphology: Climber; leaves opposite; lateral nerves 10-13 pairs; inflorescence an axillary or terminal paniculate cyme; calyx 5-lobed, lobes alternating with 5 small glandular scales; corolla slaver-shaped, 5-lobed; stamens 5; anthers sagittate; carpels 2, free; ovules many; follicles divaricate.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-October
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2249* (GVCH); Pakuthipalam, 21 November 2020, *Jabeena & Maya 4591* (GVCH).

Asclepias L., Sp. Pl. 1: 214 (1753)

Asclepias curassavica L., Sp. Pl. 1: 215 (1753); Gamble, Fl. Pres. Madras 833 (1923); Hook. f., Fl. Brit. India 4: 18. (1883).

Habit: Herb
Habitat: Degraded forests and wastelands
Morphology: Herb; stem terete; leaves opposite; lateral nerves 8-13 pairs; inflorescence an axillary cyme; calyx 5-lobed; corolla 5-lobed, deflexed; stamens 5; follicle terete.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: February-November
Distribution: Common
Altitude: 900-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 759* (GVCH);

Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1919* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4051* (GVCH).

Calotropis R.Br., Asclepiadeae 28 (1810)

Calotropis gigantea (L.) W.T.Aiton, Hort. Kew., ed. 2 [W.T. Aiton] 2: 78 (1811); Gamble, Fl. Pres. Madras 832 (1923); Hook. f., Fl. Brit. India 4: 17. (1883).

Habit: Shrub
Habitat: Wastelands
Morphology: Shrub; leaves opposite; lateral nerves 5-7 pairs; inflorescence axillary cluster; calyx 5-lobed; corolla campanulate, lobes 5, recurved; corona scales 5; staminal corona of 5 vertical lobes; ovary of 2 distinct carpels; fruit of 2 inflated follicular mericarps.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 200-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 851* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5037* (GVCH).

Carissa L., Mant. Pl. 7 (1767)

Carissa spinarum L., Mant. Pl. Altera 559 (1771); *Carissa spinarum* L., var. *spinarum* Gamble, Fl. Pres. Madras 805 (1923); Hook. f., Fl. Brit. India 3: 631 (1882).

Habit: Shrub
Habitat: Dry Deciduous forests and Sacred groves
Morphology: Shrub; spine straight, stout; leaves ovate; lateral nerves 5-6 pairs; inflorescence a terminal 5-7-flowwered cyme; calyx 5-lobed; corolla 5-lobed, pubescent within; stamens 5; fruit a globose berry.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Least Concern

Phenology: April-July

Distribution: Occasional

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1602* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1960* (GVCH).

Cascabela Raf., Sylva Tellur. 162 (1838)

Cascabela thevetia (L.) Lippold, Feddes Repert. 91: 52 (1980); *Thevetia neriifolia* Juss ex Steud., Nomencl. Bot. (ed. 2) 2: 680. 1841; Gamble, Fl. Pres. Madras 821 (1923).

Habit: Shrub

Habitat: Grown as garden plant

Morphology: Shrub; leaves alternate, glabrous; inflorescence a sub-terminal cyme; calyx 5-lobed, unequal; corolla funnel-shaped, 5-lobed, hairy at throat; stamens 5; ovary conical; fruit a compressed drupe.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Least Concern

Phenology: Throughout the year

Distribution: Occasional

Altitude: 600-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3420* (GVCH); Nooradi, 11 January 2020, *Jabeena & Maya 3630* (GVCH).

Catharanthus G.Don, Gen. Hist. 4(1): 95 (1837)

Catharanthus roseus (L.) G.Don, Gen. Hist. 4(1): 95 (1837); *Vinca rosea* L., Hook. f., Fl. Brit. India 3: 640 (1882).

Habit: Herb
Habitat: Grown as garden plant
Morphology: Herb; leaves opposite, glabrous; lateral veins 8-10 pairs; flowers axillary, solitary or binate; calyx 5-lobed, sub-equal; corolla 5-lobed, pubescent; stamens 5; ovary oblong; follicles linear.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-January
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothupara, 11 January 2020, *Jabeena & Maya 3659* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3741* (GVCH).

Ceropegia L., Sp. Pl. 1: 211 (1753)

1.Stem erect from a tuberous root…...……..***C. fimbrifera***
1.Stem twining……(2)
2.Leaves ovate; base rounded or obtuse; corolla lobes ovate, sparsely hairy……..…***C. maculata***
2.Leaves linear-lanceolate; base attenuate; corolla lobes oblong, glabrous……***C. ensifolia***

Ceropegia ensifolia Bedd., Madras J. Lit. Sci. Ser. III, i. (1864) 52; Gamble, Fl. Pres. Madras 859 (1923); Hook. f., Fl. Brit. India 4: 75 (1883); *Ceropegia albiflora* Gamble, Fl. Pres. Madras 859 (1923); Hook. f., Fl. Brit. India 4: 75 (1885).

Habit: Climber
Habitat: Grasslands
Morphology: Climber; stem twining from a tuberous root, glabrous; leaves linear; flowers in fascicles on an elongated raceme; calyx 5-partite with 5 glandular scales within; corolla lobes as long as the base and neck of the tube; inner corona spathulate; staminal column included in the base of the tube; ovary of 2 carpels; fruit of 2 follicular mericarps.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: NOt Evaluated
Phenology: August-October
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 586* (GVCH).

Ceropegia fimbriifera Bedd., Madras J. Lit. Sci. Ser. III, i. (1864) 53; Hook. f., Fl. Brit. India 4: 66 (1883); Gamble, Fl. Pres. Madras 856 (1923).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem erect from a tuberous roo; leaves linear, 1-ribbed; flowers 1-3 together; calyx 5-lobed; corolla tube not inflated, the lobes about as long as the tube, 5-lobed; corona lobes 2-seriate; anther without appendages; ovaries 2; fruit of 2 follicular mericarp.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4485* (GVCH); Plate 44: Fig. c.

Ceropegia maculata Bedd., Madras J. Lit. Sci. Ser. III, i. (1864) 52.

Habit: Climber
Habitat: Semi-evergreen forests
Morphology: Herb; leaves ovate; lateral nerves 3 pairs; inflorescence sub-umbellate; calyx 5-partite, lobes narrow; corolla base inflated; outer corona of 5-lobed; staminal column included in the base of the tube; ovary of 2 carpels; fruit of 2 follicular mericarps.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-November
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 307* (GVCH).

Chilocarpus Blume, Cat. Gew. Buitenzorg (Blume) 22. 1823; et Bijdr. Fl. Ned. Ind. 16: 1025

Chilocarpus denudatus Blume, Bijdr. Fl. Ned. Ind. 16: 1025; *Chilocarpus atrovirens* (G. Don) Blume, Gamble, Fl. Pres. Madras 802 (1923); Hook. f., Fl. Brit. India 3:626 (1882);

Habit: Climber
Habitat: Evergreen forests
Morphology: Climber; leaves opposite; inflorescence axillary panicled cyme; calyx 5-lobed, e-glandular; corolla 5-lobed, glabrous; stamens 5; disc absent; ovary 1-loculed with 2 parietal placenta; ovules 2-seriate; fruit a fleshy berry.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-August
Distribution: Rare
Altitude: 800-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1255* (GVCH).

Chonemorpha G.Don, Gen. Hist. 4: 69, 76 (1837)

Chonemorpha fragrans Alston, Ann. Roy. Bot. Gard. (Peradeniya) xi. 203 (1929); *Chonemorpha macrophylla* (Roxb.) G. Don, Gamble, Fl. Pres. Madras 818 (1923); Hook. f., Fl. Brit. India 3: 661 (1882).

Habit: Climber
Habitat: Evergreen forests and sacred groves
Morphology: Climber; leaves opposite; inflorescence a paniculate cyme; calyx tubular with a ring of glands at the base; corolla salver-shaped, 5-lobed; stamens inserted on the corolla tube; ovary of 2 carpels; fruit of 2 follicular mericarps.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-December
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3406* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3862* (GVCH).

Cryptolepis R.Br., Mem. Wern. Nat. Hist. Soc. i. (1809) 69

Cryptolepis dubia (Burm.f.) M.R.Almeida, Fl. Maharashtra 3A: 221 (2001) (2001); *Cryptolepis buchananii* Roem. & Schult., Gamble, Fl. Pres. Madras 826 (1923); Hook. f., Fl. Brit. India 4: 5 (1883).

Habit: Climber
Habitat: Moist and Dry Deciduous forests
Morphology: Climber; leaves opposite; lateral nerves 10-15 pairs; flowers in lax axillary dichotomous cyme; calyx 5-lobed

with 5 scales within near the base; corolla 5-lobed; corona scales 5; carpels 2; ovules many; fruit of 2 divaricate follicular mericarps.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-August
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 873* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 956* (GVCH); Kollengode range, Mattumala, 21 April 2018, *Jabeena & Maya 1396* (GVCH); Plate 44: Fig. d.

Cynanchum L., Sp. Pl. 1: 212 (1753)

Cynanchum annularium (Roxb.) Liede & Khanum, Taxon 65(3): 477 (2016); *Holostemma annulare* (Roxb.) K. Schum., Gamble, Fl. Pres. Madras 834 (1923); *Holostemma rheedei* Spreng. ex Wall., Hook. f., Fl. Brit. India 4: 21 (1883).

Habit: Climber
Habitat: Deciduous forests and Scrub jungles
Morphology: Climber; leaves opposite; lateral nerves 4-7 pairs; inflorescence an axillary cyme; calyx lobes 5-partite, eglandular; corolla deeply 5-lobed; corona affixed to the base of staminal column; filaments connate into a 10-winged column; ovary of 2 distinct carpels.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-November
Distribution: Rare
Altitude: 400-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3075* (GVCH).

Decalepis Wight & Arn., Contr. Bot. India [Wight] 64 (1834)

Decalepis salicifolia (Bedd. ex Hook.f.) Bruyns, Taxon 65(3): 499 (2016); *Utleria salicifolia* Bedd. ex Hook. f., Gamble, Fl. Pres. Madras 827 (1923); Fl. Brit. India 4: 7 (1883).

Habit: Shrub
Habitat: Grasslands
Morphology: Shrub; leaves clustered at the end of branches; inflorescence an axillary dichotomous cyme; calyx 5-lobed, glandular; corolla rotate, 5-lobed; corona scales 5; stamens inserted at base of the corolla tube; ovary of 2 carpels; fruit of 2 divaricate follicular mericarps.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Critically Endangered

Phenology: June-July

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 315* (GVCH).

Gymnema R.Br., Mem. Wern. Nat. Hist. Soc. i. (1809) 33

1.Calyx lobes oblong……..…***G. latifolium***

1.Calyx lobes ovate……...….(2)

2.Corona ridges long; apical processes small; seeds broadly margined……...***G. sylvestre***

2.Corona ridges short; apical processes large; seeds narrowly margined…….***G. decaisneanum***

Gymnema decaisneanum Wight, Icon. Pl. Ind. Orient. [Wight] t. 1271; *Gymnema hirsutum* Wight & Arn., Gamble, Fl. Pres. Madras 839 (1923); Hook. f., Fl. Brit. India 4: 29 (1883).

Habit: Climber
Habitat: Evergreen forests
Morphology: Climber; leaves opposite; lateral nerves 3-4 pairs; inflorescence an axillary or lateral umbellate cyme; calyx 5-lobed, pubescent; corolla 5-lobed; stamens 5; carpels 2; ovules many; follicles oblong.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 626* (GVCH).

Gymnema latifolium Wall. ex Wight, Contr. Bot. India [Wight] 45. (1834).

Habit: Climber
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Climber; leaves opposite, pubescent; lateral nerves 5-6 pairs; inflorescence an axillary umbellate cyme; calyx 5-lobed; corolla campanulate, 5-lobed; corona adnate to the tube; ovary of 2 carpels.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: October-November
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2597* (GVCH).

Gymnema sylvestre (Retz.) R.Br. ex Sm., Cycl. [A. Rees], (London ed.) 17 (1): n. 4 (1811); Gamble, Fl. Pres. Madras 839 (1923); Hook. f., Fl. Brit. India 4: 29 (1883);

Habit: Climber
Habitat: Moist and Dry Deciduous forests
Morphology: Climber; leaves opposite, tomentose below; lateral nerves 3 pairs; inflorescence an umbellate cyme; calyx 5-partite; corolla campanulate; corona 5 vertical pairs of ridges; carpels 2; fruit of 2 follicular mericarps.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-January
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2059* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2481* (GVCH).

Hemidesmus R.Br., Asclepiadeae 45 (1810)

Hemidesmus indicus (L.) R.Br., Hort. Kew., ed. 2 [W.T. Aiton] 2: 75 (1811); *Hemidesmus indicus* (L.) R. Br. var. *indicus*, Gamble, Fl. Pres. Madras 825 (1923); Hook. f., Fl. Brit. India 4: 5 (1883).

Habit: Climber
Habitat: Deciduous forests and plantations
Morphology: Climber; leaves opposite; inflorescence an axillary cyme; calyx 5-partite with 5 minute scales at their bases within; corolla rotate, deeply 5-fid; corona scales 5; stamens 5, inserted at the base of the corolla tube; carpels 2; fruit of 2 divaricate follicular mericarps.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-December

Distribution: Occasional
Altitude: 700-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1193* (GVCH); Kollengode range, 15 May 2019, *Jabeena & Maya 1908* (GVCH); Plate 44: Fig. e.

Holarrhena R.Br., Mem. Wern. Nat. Hist. Soc. i. (1809) 62.

Holarrhena pubescens Wall. & G.Don, Gen. Hist. iv. 78 (1837); Vajr., Fl. Palghat Dist. 280 (1990); *Holarrhena antidysenterica* (Roth) A. DC., Hook. f., Fl. Brit. India 3: 644 (1882); Gamble, Fl. Pres. Madras 811 (1923).

Habit: Tree
Habitat: Moist deciduous and dry deciduous forests
Morphology: Tree; leaves opposite; lateral nerves 10-14 pairs; flowers in corymbose cyme; calyx 5-lobed, glandular within at the base; corolla salver-shaped, 5-lobed; stamens 5, near the base of the tube; anthers sagittate; ovary of 2 distinct carpels; fruit of 2 follicular mericarps.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: April-October
Distribution: Occasional
Altitude: 100-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 53* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4831* (GVCH).

Hoya R.Br., Prodr. Fl. Nov. Holland. 459 (1810)

Hoya pauciflora Wight, Icon. Pl. Ind. Orient. [Wight] t. 1269; Hook. f., Fl. Brit. India 4: 56 (1883); Gamble, Fl. Pres. Madras 849 (1923).

Habit: Climber
Habitat: Evergreen and Semi-evergreen forests
Morphology: Climber; leaves opposite; inflorescence an umbellate cyme; calyx 5-partite, with 5 glandular scales; corolla white rotate, 5-lobed; corona of 5 fleshy membranous processes adnate to the staminal column; ovary of 2 distinct carpels; fruit of 2 follicular mericarps.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 636* (GVCH); Mattumala, 04 November 2020, *Jabeena & Maya 4366* (GVCH).

Hunteria Roxb., Hort. Bengal. 84 (1814), nomen; Fl. Ind., ed. Carey & Wall., ii. 531 (1824); Fl.Ind., ed. Carey, i. 695 (1832)

Hunteria zeylanica Gardner ex Thwaites, Enum. Pl. Zeyl. [Thwaites] 191 (1860); *Hunteria corymbosa* Roxb., Gamble, Fl. Pres. Madras 808 (1923); Hook. f., Fl. Brit. India 3: 637 (1882).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves opposite, coriaceous; inflorescence a simple cyme; calyx 5-lobed, eglandular; corolla slaver-shaped; stamens 5; disc absent; ovary of 2 carpels; fruit of 2 stalked fleshy berries.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: February-June
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020,

Jabeena & Maya 4098 (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4151* (GVCH); Plate 44: Fig. f.

Ichnocarpus R.Br., Asclepiadaceae 50 (1810)

Ichnocarpus frutescens (L.) W.T.Aiton, Hort. Kew., ed. 2 [W.T. Aiton] 2: 69 (1811); Hook. f., Fl. Brit. India 3: 669 (1882); Gamble, Fl. Pres. Madras 820 (1923); Vajr., Fl. Palghat Dist. 281 (1990).

Habit: Climber
Habitat: Moist and dry deciduous forests
Morphology: Climber; leaves opposite; lateral nerves 5 pairs; inflorescence a paniculate cyme; calyx 5-lobed, pubescent; corolla salver-shaped, hairy inside; stamens inserted at the middle of the tube; ovary of 2 free carpels; fruit of 2 follicular mericarps.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: August-March
Distribution: Rare
Altitude: 400-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 684* (GVCH).

Kamettia Kostel., Allg. Med.-Pharm. Fl. 3: 1062 (1834)

Kamettia caryophyllata (Roxb.) Nicolson & Suresh, Taxon 35(2): 354 (1986); *Ellertonia rheedei* Wight, Gamble, Fl. Pres. Madras 811 (1923); Hook. f., Fl. Brit. India 3: 641 (1882).

Habit: Climber
Habitat: Evergreen, Semi-evergreen forests and Sacred groves
Morphology: Climber; leaves whorled; lateral nerves to 10-14 pairs; inflorescence a terminal cyme; calyx 5-lobed, glabrous; corolla salver-shaped, 5-lobed; stamens included; disc absent; ovary of 2 distinct carpels; fruit of 2 divaricate follicles.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: September-January

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 24 September 2019, *Jabeena & Maya 2501* (GVCH).

Nerium L., Sp. Pl. 1: 209 (1753)

Nerium oleander L., Sp. Pl. 1: 209 (1753); *Nerium odorum* Soland., Gamble, Fl. Pres. Madras 821 (1923); Hook. f., Fl. Brit. India 3: 655 (1882).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves lanceolate; flowers in terminal clusters; calyx 5-lobed; corolla hairy inside; corona of 5 scales; stamen included; ovary with two distinct carpels.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Least Concern

Phenology: November-May

Distribution: Occasional

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3423* (GVCH); Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3717* (GVCH).

Pergularia L., Mant. Pl. 8 (1767)

Pergularia daemia (Forssk.) Chiov., Res. Sci. Somalia Ital. 1: 115 (1916); *Pergularia extensa* (Jacq.) N. E. Br. Gamble, Fl. Pres. Madras 837 (1923); *Daemia extensa* (Jacq.) R. Br., Hook. f., Fl. Brit. India 4: 20 (1833).

Habit: Climber
Habitat: Dry Deciduous forests and Scrub jungles
Morphology: Shrub; leaves opposite; lateral nerves 4-5 pairs; inflorescence a corymbose cyme; calyx 5-partite, 5-glandular; corolla campanulate, 5-lobed; corona 2-seriate; stamens 5, adnate to the corolla tube; anther appendages inflexed; ovary of 2 distinct carpels; fruit of 2 recurved follicles.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: December-June
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5028* (GVCH).

Plumeria L., Sp. Pl. 1: 209 (1753)

Plumeria rubra L., Sp. Pl. 1: 209 (1753); *Plumeria rubra* L. forma *acutifolia* (Poir.) Woods. Hook. f., Fl. Brit. India 3: 641 (1882).

Habit: Tree
Habitat: Grown as garden plant
Morphology: Tree; leaves spiral, glabrous; lateral nerves many; inflorescence a terminal corymbose cyme; calyx 5-lobed, sub-equal; corolla 5-lobed; stamens 5, included; ovary globose; ovules many; stigma bilobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: November-April
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3422* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3551* (GVCH).

Rauvolfia L., Sp. Pl. 1: 208 (1753)

1.Drupes slightly connate…..***R. serpentina***
1.Drupes distinct……..……...…….(2)
2.Drupe ellipsoid…...……***R. verticillata***
2.Drupe globose…..……..***R. tetraphylla***

Rauvolfia serpentina Benth. ex Kurz., Forest Fl. Burma ii. 171. (1877); Gamble, Fl. Pres. Madras 807 (1923); Hook. f., Fl. Brit. India 3: 632 (1882).

Habit: Shrub

Habitat: Moist Deciduous forests

Morphology: Shrub; leaves whorled, glabrous; lateral nerves 9-12 pairs; inflorescence an axillary or terminal cyme; calyx 5-lobed, eglandular; corolla 5-lobed, hairy inside; stamens 5, included on the corolla tube; ovary of 2 distinct carpels; capsule ovoid.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: April-October

Distribution: Occasional

Altitude: 200-500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4976* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5032* (GVCH).

Rauvolfia tetraphylla L., Sp. Pl. 1: 208 (1753); *Rauvolfia canescens* L., Gamble, Fl. Pres. Madras 808 (1923).

Habit: Shrub
Habitat: Forest plantations
Morphology: Shrub; leaves whorled; inflorescence an umbellate cyme; calyx 5-lobed; corolla tube short; stamens 5; ovary of 2 distinct carpels; fruit globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 510* (GVCH).

Rauvolfia verticillata (Lour.) Baill., Hist. Pl. (Baillon) 10: 170 (1889); *Rauvolfia densiflora* (Wall.) Benth. ex Hook. f., Gamble, Fl. Pres. Madras 808 (1923); Fl. Brit. India 3: 633 (1882).

Habit: Shrub
Habitat: Semi-evergreen forests, shola openings and grasslands
Morphology: Shrub; leaves obovate; lateral nerves 10-14 pairs; inflorescence of axillary or terminal cyme; calyx 5-lobed, glabrous; corolla 5-lobed; fruit of 2 drupes.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-October
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 944* (GVCH); Kollengode range, Minnampara, 16 April2018, *Jabeena & Maya 1352* (GVCH).

Tabernaemontana L., Sp. Pl. 1: 210 (1753)

Lateral nerves 7 pairs….....***T. divaricata***
Lateral nerves 17 pairs……..***T. gamblei***

Tabernaemontana divaricata (L.) R.Br. ex Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 4: 427 (1819); *Ervatamia coronaria* (Jacq.) Stapf Gamble, Fl. Pres. Madras 813 (1923).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves opposite; lateral nerves 5-17 pairs; inflorescence pseudo-umbellate; sepals connate at the base; corolla 5-lobed; stamens attached below mouth of corolla tube; ovary ovoid; fruit of 2 mericarps.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2804* (GVCH).

Tabernaemontana gamblei Subr. & A. N. Henry, Bull. Bot. Surv. India 12(1-4): 5, nom. nov. (1972).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite; lateral nerves 6-7 pairs; inflorescence a terminal cyme; sepals 5, ovate; corolla 5-lobed, oblong; capsule 2 divaricate mericarps.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: April-September
Distribution: Occasional
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 231* (GVCH); Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4460* (GVCH).

Vincetoxicum Wolf, Gen. Pl. [Wolf] 130 (1776)

Vincetoxicum indicum (Burm.f.) Mabb., Mabberley's Pl.-Book 1102 (2017); *Tylophora asthmatica* (L. f.) Wight & Arn., Gamble, Fl. Pres. Madras 843 (1923); Hook. f., Fl. Brit. India 4: 44 (1883).

Habit: Climber
Habitat: Along bushes and thickets
Morphology: Climber; leaves opposite; inflorescence an umbellate cyme; calyx 5-lobed, hairy; corolla 5-lobed; corona single; ovary obconical; follicle glabrous.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-July
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1558* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1906* (GVCH).

Wattakaka Hassk., Flora 40: 99 (1857)

Wattakaka volubilis Stapf, Bot. Mag. 148: sub t. 8976 (1923); Vajr., Fl. Palghat Dist. 293 (1990); *Dragea volubilis* (L. f.) Benth. ex Hook. f., Fl. Brit. India 4: 46 (1883); *Marsdenia volubilis* (L. f.) Cooke, Gamble, Fl. Pres. Madras 846 (1923).

Habit: Climber
Habitat: Moist Deciduous forests and Scrub jungles
Morphology: Climber; leaves opposite, glabrous; inflorescence an axillary umbellate cyme; calyx 5-lobed, unequal; corolla campanulate; corona processes 5; staminal column arising from the base of corolla tube; ovary of 2 carpels; fruit of 2 follicular mericarps.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: March-July

Distribution: Rare

Altitude: 400-500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 06 July 2019, *Jabeena & Maya 2337* (GVCH).

Wrightia R.Br., Prodr. Fl. Nov. Holland. 467 (1810)

Wrightia tinctoria R.Br., Asclepiadeae 63 (-64) (1810); Gamble, Fl. Pres. Madras 815 (1923); Hook. f., Fl. Brit. India 3: 653 (1882).

Habit: Tree

Habitat: Moist and Dry Deciduous forests

Morphology: Tree; leaves opposite, glabrous; lateral nerves 5-10 pairs; inflorescence a terminal cyme; calyx 5-lobed, glandular; corolla salver-shaped, 5-lobed; stamens 5; anthers sagittate; disc absent; carpels 2; fruit of 2 follicular mericarps.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: February-November
Distribution: Occasional
Altitude: 100-600m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1145* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5029* (GVCH); Plate 44: Fig. g.

BORAGINALES

BORAGINACEAE

1.Fruit covered with glochidiate bristles….……..***Cynoglossum***
1.Fruit without glochidiate bristles.…....(2)
2.Plant prostrate...……....***Coldenia***
2.Plant erect……..……***Heliotropium***

Coldenia L., Sp. Pl. 1: 125 (1753)

Coldenia procumbens L., Sp. Pl. 1: 125 (1753); Gamble, Fl. Pres. Madras 892 (1923); Hook. f., Fl. Brit. India 4: 144 (1883).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; stem prostrate; leaves alternate; inflorescence an axillary cyme; calyx 4-lobed, ciliate; corolla 4-lobed; stamens 4, included; ovary imperfectly 4-loculed; ovule solitary in each cell; styles 2; stigmas capitate; fruit a drupe of 4 sub-connate pyrenes.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: March-May
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1567* (GVCH).

Cynoglossum L., Sp. Pl. [Linnaeus] 1: 134 (1753)

Cynoglossum zeylanicum (Sw. ex Lehm.) Thunb. ex Brand, Repert. Spec. Nov. Regni Veg. 13(no. 381-382): 546 (1915); *Cynoglossum furcatum* Wall., Gamble, Fl. Pres. Madras 900 (1923); Hook. f., Fl. Brit. India 4: 155 (1883); *Cynoglossum denticulatum* A.DC. var. *zeylanicum* (Vahl ex Hornem.) Clarke, Gamble, Fl. Pres. Madras 900 (1923); Hook. f., Fl. Brit. India 4: 157 (1883).

Habit: Herb
Habitat: Degraded Forest areas
Morphology: Herb; leaves alternate; nerves 4-5 pairs; flowers in elongated paniculate raceme; flowers sessile; calyx 5-lobed; corolla 5-lobed; stamens 5, included; ovary 4-lobed; fruit of 4 nutlets.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 050* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2132* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2453* (GVCH); Plate 44: Fig. h.

Heliotropium L., Sp. Pl. 1: 130 (1753)

1.Cyme upto 20 cm long…..….***H. indicum***
1.Cyme upto 2.5 cm long….....…(2)
2.Herb procumbent; calyx lobes deltoid; ovary 4-lobed..……..……***H. marifolium***
2.Herb decumbent; calyx lobes lanceolate; ovary ovoid……..….....***H. rottlerii***

Heliotropium indicum L., Sp. Pl. 1: 130 (1753); Gamble, Fl. Pres. Madras 896 (1923); Hook. f., Fl. Brit. India 4: 152 (1883).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; stem erect; leaves opposite; inflorescence a scorpioid cyme; flowers sessile; calyx 5-lobed; corolla 5-lobed; stamens 5, included; ovary imperfectly 4-loculed; ovule solitary in each cell; fruiting 4-lobed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated
Phenology: September-March
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5038* (GVCH).

Heliotropium marifolium J.Koenig ex Retz., Observ. Bot. (Retzius) ii. 8. (1781); Hook. f., Fl. Brit. India 4: 152 (1883); *Heliotropium scabrum* Retz., Gamble, Fl. Pres. Madras 897 (1923); Hook. f., Fl. Brit. India 4: 152 (1883).

Habit: Herb
Habitat: Moist and Dry Deciduous forests
Morphology: Herb; stem procumbent; leaves alternate, elliptic; inflorescence a simple cyme; calyx 5-lobed; corolla salver-shaped, 5-lobed; stamens 5, included; ovary 4-lobed; fruit 4-lobed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-June
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1910* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2855* (GVCH).

Heliotropium rottleri Lehm., Gött. Gel. Anz. 152: 1515 (1817) (1817); Gamble, Fl. Pres. Madras 897 (1923); Hook. f., Fl. Brit. India 4: 151 (1883).

Habit: Herb
Habitat: Dry Deciduous forests and Scrub jungle
Morphology: Herb; leaves alternate; inflorescence an axillary or terminal bracteates spike; calyx 5-lobed, sub-equal; corolla 5-lobed, hairy; stamens 5; ovary ovoid; fruit sub-globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2115* (GVCH); Keshavanpara, 06 July 2019, *Jabeena & Maya 2156* (GVCH)

SOLANALES

CONVOLVULACEAE

1.Plant leafless, parasitic…..……...***Cuscuta***

1.Plant leafy, not parasitic…...……...(2)

2.Style 2 or 3……...***Evolvulus***

2.Style one……..…(3)

3.Outer sepals accrescent and foliosus…….....***Hewittia***

3.Outer sepals not accrescent…….….(4)

4.Pollen grains spinulose……....(5)

4.Pollen grains smooth……...……...…(6)

5.Fruit dehiscent…...……***Ipomoea***

5.Fruit indehiscent…..……..***Argyreia***

6.Stem with paired auricle at nodes…...……..……...***Camonea***

6.Stem without paired auricle at nodes…….***Xenostegia***

Argyreia Lour., Fl. Cochinch. 1: 95, 134 (1790)

1.Ovary 2-loculed; leaves acute at base……...***A. elliptica***
1.Ovary 4-loculed; leaves cordate at base…….(2)
2.Stem glabrous; berry globose……..***A. populifolia***
2.Stem hirsute; berry depressed globose...…….....***A. hirsuta***

Argyreia elliptica (Roth) Choisy, Convolv. Orient. 35 (1834); *Lettsomia elliptica* (Roth) Wight, Gamble, Fl. Pres. Madras 911 (1923); Hook. f., Fl. Brit. India 4: 192 (1883).

Habit: Climber
Habitat: Margins of Shola forests
Morphology: Climber; leaves alternate; inflorescence a lax corymbose cyme; bracts deciduous; calyx 5-lobed, sub-equal; corolla funnel-shaped; stamens 5, included; ovary 2-loculed; fruit an indehiscent berry.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4090* (GVCH); Plate 45: Fig. a

Argyreia hirsuta Wight & Arn., Pug. Pl. Ind. Or. 38c (1837); Gamble, Fl. Pres. Madras 909 (1923); Hook. f., Fl. Brit. India 4: 189 (1883).

Habit: Climber
Habitat: Deciduous and Shola forests
Morphology: Climber; leaves alternate, tomentose; lateral nerves 6-12 pairs; inflorescence a cyme; bracts persistent; calyx 5-lobed, equal; corolla funnel-shaped; stamens 5, included; disc annular; ovary 4-loculed; ovules 4; berry globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pulayampara, 19 August 2017, *Jabeena & Maya 357* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 370* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 897* (GVCH).

Argyreia populifolia Choisy, Prodr. [A. P. de Candolle] 9: 329 (1845); Gamble, Fl. Pres. Madras 907 (1923); Hook. f., Fl. Brit. India 4:187 (1883).
Habit: Climber
Habitat: Degraded forests
Morphology: Climber; leaves alternate, pubescent; inflorescence an axillary corymbose cyme; calyx 5-lobed; corolla funnel-shaped, 5-lobed; stamens 5, included; ovary 4-loculed; berry globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 505* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3397* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3573* (GVCH).

Camonea Raf., Fl. Tellur. 4: 81 (1838)

Leaves entire; capsule ovoid; flower white…..……***C. umbellata***
Leaves lobed; capsule globose; flower yellow…….……...…***C. vitifolia***

Camonea umbellata (L.) A.R.Simões & Staples, Bot. J. Linn. Soc. 183(4): 583 (2017); *Merremia umbellata* (L.) Hall. f., Gamble, Fl. Pres. Madras 928 (1923); *Ipomoea cymosa* Roem. & Schult., Hook. f., Fl. Brit. India 4: 211 (1883).

Habit: Climber
Habitat: All types of forests
Morphology: Climber; leaves alternate, pubescent; inflorescence an axillary umbellate cyme; calyx 5-lobed, sub-equal; corolla campanulate; stamens 5, unequal; ovary 2-loculed, ovules 4; stigma capitate; capsule ovoid; seeds hairy.

Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1136* (GVCH); Kollengode range, Minnampara, 16 April2018, *Jabeena & Maya 1350* (GVCH).

Camonea vitifolia (Burm.f.) A.R.Simões & Staples, Bot. J. Linn. Soc. 183(4): 583 (2017); *Merremia vitifolia* (Burm. f.) Hall. f., Gamble, Fl. Pres. Madras 928 (1923); *Ipomoea vitifolia* (Burm. f.) Blume, Hook. f., Fl. Brit. India 4: 213 (1883).

Habit: Climber
Habitat: Degraded Forest areas
Morphology: Climber; leaves alternate, 7-nerved at base; inflorescence an axillary cyme; calyx 5-lobed; corolla campanulate; stamens 5, unequal; ovary 2-loculed; ovules 4; capsule globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Occasional
Altitude: 700-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1186* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4119* (GVCH); Plate 45: Fig. b.

Cuscuta L., Sp. Pl. 1: 124 (1753)

Cuscuta chinensis Lam., Encycl. [J. Lamarck & al.] 2(1): 229 (1786); Gamble, Fl. Pres. Madras 931 (1923); Hook. f., Fl. Brit. India 4: 227 (1883).

Habit: Climber
Habitat: Moist and Dry Deciduous Forest
Morphology: Climber; leaves absent; inflorescence a lateral fascicle; flowers sessile; calyx 5-lobed; corolla funnel-shaped; stamens 5; ovary globose; styles 2; capsule sub-globose.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Rare
Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 381* (GVCH).

Evolvulus L., Sp. Pl., ed. 2. 1: 391 (1762)

Evolvulus nummularius (L.) L., Sp. Pl., ed. 2. 1: 391 (1762); Vajr., Fl. Palghat Dist. 307 (1990).

Habit: Herb

Habitat: Forest plantations and Degraded Moist Deciduous forests

Morphology: Herb; leaves alternate; flowers solitary or paired in leaf-axils; calyx 5-lobed, sub-equal, ciliate; corolla rotate; stamens 5; ovary 2-loculed; ovules 4; styles 2; capsule globose.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Occasional

Altitude: 200-900m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1737* (GVCH); Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5027* (GVCH).

Hewittia Wight & Arn., Madras J. Lit. Sci. Ser. I, v. (1837) 22

Hewittia malabarica (L.) Suresh, Interpr. Van Rheede's Hort. Malab. 88 (1988); *Hewittia bicolor* (Vahl) Wight & Arn., Gamble, Fl. Pres. Madras 924 (1923); Hook. f., Fl. Brit. India 4: 216 (1883).

Habit: Climber
Habitat: Moist and Dry Deciduous forests
Morphology: Climber; stem pubescent; leaves alternate, 3-ribbed at base; flower axillary, solitary or in a few-flowered cyme; bracts 2, below the calyx; calyx 5-lobed, unequal, 3 outer large, 2 inner smaller; corolla campanulate; stamens 5, included; ovary imperfectly 2-loculed; ovules 4; capsule globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Rare
Altitude: 600-700m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 686* (GVCH).

Ipomoea L., Sp. Pl. 1: 159 (1753)

1.Corolla salver-shaped; flower red……..***I. hederifolia***
1.Corolla campanulate or infundibular; flower not red…...…….…(2)
2.Leaf blade divided or lobed……..…(3)
2.Leaf blade entire……....(10)
3.Plant glabrous……..…(4)
3.Plant pubescent or hispid…….……(5)
4.Leaves deeply lobed; 5-7 foliolate…….……....***I. cairica***
4.Leaves shortly lobed; 3-5 lobed……***I. batatas***
5.Leafy bracts forming a capitate head-like appearance.……...…….***I. capitellata***
5.Bracts not as above……..(6)
6.Leaves 5-9 lobed……..…***I. pestigridis***
6.Leaves 3 lobed…….…(7)
7.Plant pubescent……...….(8)
7.Plant hirsute…….(9)
8.Capsule and seeds glabrous…...***I. indica***
8.Capsule densely hispid; seeds glabrous except at one margin……..……...***I. triloba***
9.Capsule globose; seeds hairy on angles……...……..…***I. wightii***
9.Capsule depressed globose; seeds glabrous…….……...***I. purpurea***
10.Plant hispid or tomentose...…….....(11)
10.Plant glabrescent...……..(13)
11.Corolla campanulate……...***I. eriocarpa***
11.Corolla infundibular...…...……..(12)
12.Tomentose erect or subscandent shrubs…….….***I.carnea* subsp. *fistulosa***
12.Hispid creepers or twiners……..***I. barlerioides***
13.Corolla campanulate……..…***I. obscura***
13.Corolla infundibular or salver shaped…..……..……(14)
14.Plant aquatic…..……...***I. aquatica***
14.Plant terrestrial…….....(15)
15.Stem prickly…….....***I. alba***
15.Stem not prickly……..…….(16)
16.Stout stragglers; corolla funnel shaped……...……...……..***I. staphylina***
16.Slender twiners; corolla salver shaped…...……...……..***I. sagittifolia***

Ipomoea alba L., Sp. Pl. 1: 161 (1753); *Calonyction bona-nox* (L.) Boj., Gamble, Fl. Pres. Madras 920 (1923); *Ipomoea bona-nox* L., Hook. f., Fl. Brit. India 4: 197 (1883).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; stem warted; leaves cordate; flowers solitary or in a few-flowered axillary cyme; bracts caducous; calyx 5-lobed, sub-equal; corolla salver-shaped, glabrous; stamens 5, exserted; ovary 2-loculed, 4-loculed; capsule 4-valved capsule.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Least Concern
Phenology: October-December
Distribution: Rare

Altitude: 600-700m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 687* (GVCH); Plate 45: Fig. c.

Ipomoea aquatica Forssk., Fl. Aegypt.-Arab. 44. (1775); Hook. f., Fl. Brit. India 4: 210 (1883); Vajr., Fl. Palghat Dist. 309 (1990); *Ipomoea reptans* Poir., Gamble, Fl. Pres. Madras 916 (1923).

Habit: Herb
Habitat: Ponds and lakes
Morphology: Herb; stem hollow; leaves alternate; flowers solitary or in few-flowered cyme; calyx 5-lobed, sub-equal; corolla funnel-shaped, 5-lobed; stamens 5, included; ovary glabrous; capsule globose.
Raunkiaer's life-form: Hydrophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: November-March
Distribution: Rare
Altitude: 800-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 11 January 2020, *Jabeena & Maya 3613* (GVCH).

Ipomoea barlerioides (Choisy) C.B.Clarke Fl. Brit. India [J. D. Hooker] 4(10): 201 (1883); Gamble, Fl. Pres. Madras 915 (1923).

Habit: Climber
Habitat: Grasslands and Savannahs
Morphology: Climber; stem hispid; leaves alternate, entire; lateral nerves 5-7 pairs; bracts in pairs below the calyx; flower axillary, solitary; calyx 5-lobed; corolla funnel-shaped, hairy; stamens 5, included; ovary glabrous; capsule 4-valved, glabrous; seeds ciliate.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: June-December
Distribution: Occasional
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1038* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4317* (GVCH).

Ipomoea batatas (L.) Lam., Tabl. Encycl. tome 1, 2(2): 465 (1793).

Habit: Climber
Habitat: Cultivated
Morphology: Climber; leaves ovate; flower solitary or a few-flowered cyme; calyx 5-lobed, pubescent; corolla funnel-shaped; fruits ovoid, glabrous.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Data Deficient
Phenology: December-March
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5036* (GVCH).

Ipomoea cairica (L.) Sweet, Hort. Brit. [Sweet] 287 (1826); Gamble, Fl. Pres. Madras 918 (1923); *Ipomoea palmata* Forssk., Hook. f., Fl. Brit. India 4: 214 (1883).

Habit: Climber
Habitat: Moist and Dry Deciduous forests
Morphology: Climber; leaves 5-7-foliolate; flower solitary or in short racemes; calyx 5-lobed, sub-equal; corolla funnel-shaped, 5-lobed; stamens 5; capsule sub-globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: September-May
Distribution: Occasional

Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1132* (GVCH); Pothundy-Kaikatty, 16 April 2018, *Jabeena & Maya 1351* (GVCH).

Ipomoea capitellata Choisy, Mém. Soc. Phys. Genève 6: 446 (1833); *Ipomoea bracteata* Wight, Gamble, Fl. Pres. Madras 918 (1923); Hook. f., Fl. Brit. India 4: 203 (1883); *Ipomoea deccana* Austin, Vajr., Fl. Palghat Dist. 310 (1990).

Habit: Climber
Habitat: Moist Deciduous forests
Morphology: Climber; stem hispid; leaves 3-5-lobed, alternate, softly hirsute; flowers in pedunculate capitate head; flowers sessile; calyx 5-lobed, unequal; corolla glabrous; stamens 5; capsule globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 890* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2784* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2939* (GVCH); Plate 45: Fig. d.

Ipomoea carnea **subsp.** ***fistulosa*** (Mart. ex Choisy) D. F. Austin, Taxon 26(2-3): 237 (1977).

Habit: Shrub
Habitat: Marshy areas
Morphology: Shrub; stem tomentose; leaves cordate; lateral veins 8-10 pairs; inflorescence an axillary many-flowered cyme; calyx 5-lobed, sub-equal; corolla funnel-shaped; capsule ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Koonampalam, 14 December 2019, *Jabeena & Maya 3473* (GVCH); Nooradi, 11 January 2020, *Jabeena & Maya 3608* (GVCH).

Ipomoea eriocarpa R.Br., Prodr. Fl. Nov. Holland. 484. (1810); Hook. f., Fl. Brit. India 4: 203 (1883); *Ipomoea hispida* (Vahl) Roem. & Schult., Gamble, Fl. Pres. Madras 915 (1923).

Habit: Climber
Habitat: Dry Deciduous forests and Scrub jungles
Morphology: Climber; stem hairy; leaves hirsute; inflorescence an axillary cyme; calyx 5-lobed, unequal, outer 3 larger, inner 2 smaller; corolla campanulate, hairy; ovary pubescent; capsule globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3009* (GVCH).

Ipomoea hederifolia L., Syst. Nat., ed. 10. 2: 925 (1759); *Quamoclit phoenicea* (Roxb.) Choisy, Gamble, Fl. Pres. Madras 919 (1923); *Ipomoea coccinea* sensu Clarke, Hook. f., Fl. Brit. India 4: 199 (1883).

Habit: Climber
Habitat: Degraded Forest areas
Morphology: Climber; leaves alternate, glabrous; inflorescence a few-flowered,

axillary cyme; calyx 5-lobed; corolla salver-shaped; ovary 4-loculed; ovule solitary in each cell; capsule sub-globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Common
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 689* (GVCH); Keshavanpara, 21 November 2017, *Jabeena & Maya 753* (GVCH); Kollengode range, Vazhakkundu, 15 November 2019, *Jabeena & Maya 1822* (GVCH).

Ipomoea indica (Burm.) Merr., Interpr. Herb. Amboin. 445 (1917) (1917); *Ipomoea leari* Paxt., Gamble, Fl. Pres. Madras 919 (1923).

Habit: Climber
Habitat: Grown as garden plant; often found as an escape
Morphology: Climber; leaves alternate, pubescent; inflorescence a few-flowered cyme; calyx 5-lobed; corolla slaver-shaped; stamens 5, included; capsule globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: September-March
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2627* (GVCH); Pulayampara, 19 November 2020, *Jabeena & Maya 4403* (GVCH).

Ipomoea obscura (L.) Ker Gawl., Bot. Reg. 3: t. 239 (1817); Gamble, Fl. Pres. Madras 916 (1923); Hook. f., Fl. Brit. India 4: 207 (1883).

Habit: Climber
Habitat: Degraded forest areas
Morphology: Climber; leaves alternate; inflorescence a sub-umbellate cyme; calyx 5-lobed, unequal, 2 outer shorter; corolla funnel-shaped; stamens 5; ovary conical; stigma capitate; capsule sub-globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Occasional
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3713* (GVCH); Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4141* (GVCH).

Ipomoea pes-tigridis L., Sp. Pl. 1: 162 (1753); Hook. f., Fl. Brit. India 4: 204 (1883); Gamble, Fl. Pres. Madras 918 (1923); Vajr., Fl. Palghat Dist. 311 (1990); *Ipomoea pes-tigridis* L. var. *hepaticifolia* (L.) Clarke, Hook. f., Fl. Brit. India 4: 204 (1883).

Habit: Climber
Habitat: Deciduous forests
Morphology: Climber; leaves alternate; inflorescence an axillary, capitate clusters; calyx 5-lobed, unequal; corolla tubular-campanulate; stamens 5; ovary conical; capsule ovoid, papery, glabrous.

Raunkiaer's life-form: Liana

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated

Phenology: September-December

Distribution: Rare

Altitude: 600-700m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1188* (GVCH).

Ipomoea purpurea (L.) Roth, Bot. Abh. Beobacht. 27 (1787); Gamble, Fl. Pres. Madras 919 (1923); Hook. f., Fl. Brit. India 4: 200 (1883).

Habit: Climber
Habitat: Grown as garden plant; often found as escape
Morphology: Climber; leaves alternate; inflorescences a few-flowered cyme; calyx 5-lobed, hirsute; corolla funnel-shaped; capsule globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Holarctic and South America
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1531* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2758* (GVCH); Koonampalam, 14 December 2019, *Jabeena & Maya 3462* (GVCH).

Ipomoea sagittifolia Burm.f., Fl. Ind. (N. L. Burman) 50 (1768); *Ipomoea sepiaria* Roxb., Hook. f., Fl. Brit. India 4: 209 (1883); Vajr., Fl. Palghat Dist. 312 (1990).

Habit: Climber
Habitat: Wasteland, scrub jungles and roadsides
Morphology: Climber; leaves alternate, pubescent; inflorescence a sub-umbellate cyme; sepals 5, sub-equal; corolla salver-shaped; stamens 5, included; capsule globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 023* (GVCH); Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 398* (GVCH).

Ipomoea staphylina Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 4: 249 (1819); Gamble, Fl. Pres. Madras 917 (1923); Hook. f., Fl. Brit. India 4: 210 (1883);

Habit: Climber
Habitat: Deciduous forests
Morphology: Climber; leaves alternate; inflorescence an axillary panicled cyme; calyx 5, unequal; corolla funnel shaped; stamens 5, included; capsule globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Rare
Altitude: 600-700m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1235* (GVCH).

Ipomoea triloba L., Sp. Pl. 1: 161 (1753).

Habit: Climber
Habitat: Degraded forest areas
Morphology: Climber; leaves alternate; inflorescence an umbellate cyme; calyx 5-lobed, sub-equal, pubescent; corolla funnel-shaped; stamens 5, included; capsule sub-globose, hairy.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: September-March
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1364* (GVCH); Nelliyampathy

range, Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3082* (GVCH).

Ipomoea wightii Choisy, Mém. Soc. Phys. Genève 6: 470 (1833); Gamble, Fl. Pres. Madras 917 (1923); Hook. f., Fl. Brit. India 4: 203 (1883).

Habit: Climber
Habitat: Grasslands and Moist Deciduous forests
Morphology: Climber; stem hairy; leaves alternate, hairy; flowers in long-peduncled capitate head; calyx 5-lobed, sub-equal, fulvous hirsute; corolla funnel-shaped; stamens 5, included; capsule globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: December-January
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1194* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1641* (GVCH).

Xenostegia D.F.Austin & Staples, Brittonia 32(4): 533 (1981)

Leaves linear-lanceolate; pedicels 1-2 cm long……*X. tridentata*
Leaves oblong-obovate; pedicels upto 5 cm long…....***X. tridentata* subsp. *hastata***

Xenostegia tridentata (L.) D. F. Austin & Staples, *Brittonia* 32(4): 533 (1981); *Merremia tridentata* (L.) Hall. f. Gamble, Fl. Pres. Madras 928 (1923); *Ipomoea tridentata* (L.) Roth, Hook. f., Fl. Brit. India 4: 205 (1883).

Habit: Herb
Habitat: Deciduous forests
Morphology: Herb; leaves alternate; inflorescence an axillary few-flowered cyme; calyx 5-lobed, sub-equal; corolla campanulate; stamens 5, unequal; ovary 2-loculed; capsule sub-globose.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Not Evaluated

Phenology: November-January

Distribution: Common

Altitude: 600-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 529* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2218* (GVCH); Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4140* (GVCH); Plate 45: Fig. e.

Xenostegia tridentata* subsp. *hastata (Ooststr.) Parmar, J. Econ. Taxon. Bot. 18(2): 251 (1994).

Habit: Herb

Habitat: Deciduous forests

Morphology: Herb; stem prostrate; leaves alternate; flowers axillary, solitary; calyx 5-lobed, sub-equal; corolla campanulate; stamens 5, unequal; fruit a 4-valved capsule.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Not Evaluated

Phenology: September-March

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 912* (GVCH).

SOLANACEAE

1.Fruit capsule…….....***Brugmansia***
1.Fruit indehiscent berry…….....(2)
2.Anthers connivant in a cone, longer than filaments…….....***Solanum***
2.Anthers not connivant in a cone, shorter than filaments…….(3)
3.Calyx in fruit enlarged, overtopping the berry……...…….(4)
3.Calyx in fruit small……...…….(5)
4.Calyx in fruit inflated, shortly lobed…...……...……...***Physalis***
4.Calyx in fruit deeply cleft, 5 angled…..……...……..***Nicandra***
5.Flowers solitary or in pairs…..***Capsicum***
5.Flowers in congested racemose panicles…..……....***Cestrum***

Brugmansia Pers., Syn. Pl. [Persoon] 1: 216 (1805)

Capsule globose; flowers white…….....***B. arborea***
Capsule ellipsoid; flowers pink……...***B. suaveolens***

Brugmansia arborea (L.) Sweet, Hort. Suburb. Lond. 41 (1818); *Datura arborea* L., Gamble, Fl. Pres. Madras 941 (1923).

Habit: Shrub
Habitat: Grown in gardens, also found as an escape in the High Ranges
Morphology: Shrub; leaves alternate, entire; flowers solitary, pendulous; calyx 5-lobed, inflated; corolla funnel-shaped; stamens 5, attached near the base of the tube; capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: South American
IUCN category: Extinct in the Wild
Phenology: December-March
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothupara, 11 January 2020, *Jabeena & Maya 3667* (GVCH).

Brugmansia suaveolens (Willd.) Sweet, Hort. Suburb. Lond. 41 (1818).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves alternate; flower axillary, solitary, axillary, pendulous; calyx tubular, 5- lobed; corolla 5-lobed; stamens 5; ovary 2-loculed; stigma bilobed; fruit a 4-valved capsule.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Extinct in the Wild
Phenology: August-May
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2265* (GVCH); Nooradi, 11 January 2020, *Jabeena & Maya 3612* (GVCH).

Capsicum L., Sp. Pl. [Linnaeus] 1: 188 (1753)

Flowers solitary; calyx cupular……..***C. annuum***
Flowers 2-3 per node; calyx truncate……..…***C. frutescens***

Capsicum annuum L., Sp. Pl. 1: 188 (1753); *Capsicum annuum* L., var. annuum; Gamble, Fl. Pres. Madras 941 (1923); *Capsicum frutescens* Clarke Hook. f., Fl. Brit. India 4: 239 (1883).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; stem pubescent; leaves ovate; flower solitary, pendent; calyx truncate, 5-lobed; corolla 5-lobed; fruit pendulous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Rare

Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5026* (GVCH).

Capsicum frutescens L., Sp. Pl. 1: 189 (1753); *Capsicum minimum* Clarke in Hook. f., Fl. Brit. India 4: 239 (1883).

Habit: Herb
Habitat: Cultivated
Morphology: Herb; leaves ovate; flowers fascicled; calyx 5-lobed; corolla 5-lobed; stamens 5; stigma capitate.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4103* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1981* (GVCH).

Cestrum L., Sp. Pl. 1: 191 (1753)

Cestrum aurantiacum Lindl., Edwards's Bot. Reg. 30(Misc.): 71 (1844).

Habit: Climber
Habitat: Grown as garden plant; often found as an escape
Morphology: Climber; leaves alternate, hairy; flowers in panicled cyme; calyx 5-lobed, sub-equal; corolla funnel-shaped, 5-lobed; stamens 5; fruit globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Holarctic and South American
IUCN category: Least Concern
Phenology: August-March
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3022* (GVCH).

Nicandra Adans., Fam. Pl. (Adanson) 2: 219, 582 (1763)

Nicandra physalodes (L.) Gaertn., Fruct. Sem. Pl. ii. 237. t. 131. f. 2. (1791); Gamble, Fl. Pres. Madras 941 (1923); Hook. f., Fl. Brit. India 4: 240 (1883);

Habit: Shrub
Habitat: All types of forests
Morphology: Shrub; leaves alternate; flower axillary, solitary; calyx campanulate, tube inflated; corolla campanulate; stamens 5, free; berry globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3083* (GVCH).

Physalis L., Sp. Pl. 1: 182 (1753)

Physalis peruviana L., Sp. Pl., ed. 2. 2: 1670 (1763); Gamble, Fl. Pres. Madras 939 (1923); Hook. f., Fl. Brit. India 4: 238 (1883).

Habit: Herb
Habitat: Degraded forest areas and wastelands
Morphology: Herb; leaves alternate, 3-ribbed at base; flower axillary, solitary; calyx campanulate, 5-fid, accrescent in fruit, then inflated enclosing the berry; corolla campanulate; stamens 5; ovary 2-loculed; ovules numerous; berry globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: South American
IUCN category: Least Concern
Phenology: February-May

Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1616* (GVCH); Vazhakkundu, 15 January 2019, *Jabeena & Maya 1693* (GVCH).

Solanum L., Sp. Pl. 1: 184 (1753)

1.Anthers dehiscing introrsely by longitudinal slits……....***S. lycopersicum***
1.Anthers dehiscing by apical pores or by short slits……..…..(2)
2.Plant climbing……...……..(3)
2.Plant erect……(4)
3.Inflorescence extra-axillary, 3-9 flowered….……***S. trilobatum***
3.Inflorescence terminal, upto 50 flowered……..…...…….***S. seaforthianum***
4.Plant unarmed……..……(5)
4.Plant armed……...……..(6)
5.Large shrubs or tree; leaves tomentose……..….***S. erianthum***
5.Small herbaceous plant; leaves glabrous……..……....***S. americanum***
6.Leaves without prickles…….….(7)
6.Leaves with prickles……....(8)
7.Inflorescence many flowered corymbose cymes; corolla white…….....***S. torvum***
7.Inflorescence a few flowered raceme or solitary; corolla purple……..***S. melongena***
8.Berries less than 1.5 cm across……....(9)
8.Berries more than 2 cm across……...(11)
9.Peduncle small, upto 1 cm long……..……....***S. elaegnifolium***
9.Peduncle long, upto 4 cm long…….....(10)
10.Berry upto 0.8 cm across; pedicel upto 1.2 cm long…….....***S. multiflorum***
10.Berry upto 1.3 cm across; pedicel upto 0.8 cm long……..…..***S. violaceum***
11.Plant diffuse; corolla hispid without glandular hairs…...…….....***S. virginianum***
11.Plant erect; corolla with gland-tipped hairs…….……..***S. aculeatissimum***

Solanum aculeatissimum Jacq., Icon. Pl. Rar. [Jacquin] 1: 5, t. 41 (1781); Gamble, Fl. Pres. Madras 939 (1923).

Habit: Shrub
Habitat: Waste places
Morphology: Shrub; stem pubescent; leaves simple, pubescent; inflorescence supra-axillary; calyx unequal; corolla rotate, stellate-hairy; stamens 5, attached to the throat of the corolla; ovary glandular; stigma capitate; fruit globose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 147* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 904* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2869* (GVCH); Plate 45: Fig. f.

Solanum americanum Mill., Gard. Dict., ed. 8. [unpaged] Solanum no. 5 (1768); *Solanum nigrum* sensu Gamble, Fl. Pres. Madras 936 (1923).

Habit: Herb
Habitat: Degraded Moist Deciduous forests and river sides
Morphology: Herb; root not mixed with tubers; stem unarmed; leaves ovate; inflorescence axillary or lateral umbellate cyme; calyx 5-lobed; corolla rotate; stamens 5; berry globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South Americanum
IUCN category: Not Evaluated
Phenology: March-November
Distribution: Common
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2202* (GVCH); Pothundy-Kaikatty, 14

December 2019, *Jabeena & Maya 3383* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3916* (GVCH).

Solanum elaeagnifolium Cav., Icon. [Cavanilles] 3: 22 (t. 243) (1795).

Habit: Herb
Habitat: Wastelands and roadsides
Morphology: Herb; stem armed with spines; leaves alternate; flowers in racemose cymes; calyx 5-ribbed; corolla rotate; stamens inserted near base of corolla tube; ovary pubescent; fruit a globose berry.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Not Evaluated
Phenology: May-August
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2920* (GVCH); Pothupara, 11 January 2020, *Jabeena & Maya 3665* (GVCH).

Solanum erianthum D. Don, Prodr. Fl. Nepal. 96 (1825); *Solanum verbascifolium* sensu Clarke, Gamble, Fl. Pres. Madras 936 (1923); Hook. f., Fl. Brit. India 4: 230 (1883).

Habit: Shrub
Habitat: Degraded semi-evergreen and moist deciduous forest areas, also in wastelands
Morphology: Shrub; stem unarmed; leaves elliptic, pubescent; inflorescence a terminal or sub-terminal cyme; calyx 5-lobed; corolla rotate, pubescent; stamens 5; capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: July-August
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 214* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2868* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3814* (GVCH); Plate 45: Fig. g.

Solanum lycopersicum L., Sp. Pl. 1: 185 (1753); *Lycopersicum esculentum* Mill., Gamble, Fl. Pres. Madras 941 (1923); Hook. f., Fl. Brit. India 4: 237 (1883).

Habit: Herb
Habitat: Cultivated
Morphology: Herb; stem erect, pubescent; leaves pinnatisect; flowers axillary, solitary; calyx 5-lobed; corolla ciliate; stamens 5; ovary 2-loculed; berry depressed-globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 200-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4802* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5025* (GVCH).

Solanum melongena L., Sp. Pl. 1: 186 (1753); *Solanum melongena* L., var. *melongena*; Gamble, Fl. Pres. Madras 937 (1923); Hook. f., Fl. Brit. India 4: 234 (1883).

Habit: Shrub
Habitat: Cultivated
Morphology: Shrub; stem armed; leaves shallowly lobed; flowers solitary or in few-flowered raceme; calyx 5-lobed; corolla campanulate, 5-lobed; stamens 5; ovules many; berry oblong.
Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: August-March
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5014* (GVCH).

Solanum multiflorum Roth, Syst. Veg., ed. 15 bis [Roemer & Schultes] 4: 669 (1819); *Solanum indicum* var. *multiflorum* Clarke, Gamble, Fl. Pres. Madras 938 (1923); Hook.f., Fl. Brit. India 4: 235 (1883).

Habit: Shrub
Habitat: Evergreen and shola forests
Morphology: Shrub; stem armed; leaves alternate; inflorescence a shortly peduncled raceme; calyx 5-lobed, sub-equal; corolla rotate; stamens 5; ovary 2-loculed; berry globose, many-seeded.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 187* (GVCH); Mattumala, 15 May 2018, *Jabeena & Maya 1403* (GVCH); Seetharkundu, 11 June 2018, *Jabeena & Maya 1520* (GVCH).

Solanum seaforthianum Andrews, Bot. Repos. 8: t. 504 (1808).

Habit: Climber
Habitat: Degraded evergreen and Moist Deciduous Forest
Morphology: Climber; stem prickly; leaves hairy; flowers axillary, solitary; calyx 5-lobed, hairy; corolla blue, 5-lobed, hairy outside; stamens 5; ovary 2-loculed; berry globose.

Raunkiaer's life-form: Liana

Phytogeographical affinity: South American

IUCN category: Not Evaluated

Phenology: May-November

Distribution: Occasional

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 997* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1751* (GVCH).

Solanum torvum Sw., Prodr. [O. P. Swartz] 47. (1788); Gamble, Fl. Pres. Madras 937 (1923); Hook. f., Fl. Brit. India 4: 234 (1883).

Habit: Shrub
Habitat: Degraded Forest areas
Morphology: Shrub; stem prickly; leaves softly fulvous tomentose; lateral nerves 4-5 pairs; inflorescence a many-flowered corymbose cyme; calyx campanulate, 5-lobed; corolla rotate, 5-lobed, pubescent; berry globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated

Phenology: July-March

Distribution: Common

Altitude: 200-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1942* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2201* (GVCH); Pothupara, 11 January 2020, *Jabeena & Maya 3656* (GVCH).

Solanum trilobatum L., Sp. Pl. 1: 188 (1753); Gamble, Fl. Pres. Madras 938 (1923); Hook. f., Fl. Brit. India 4: 229 (1883).

Habit: Herb
Habitat: Dry Deciduous forests
Morphology: Scandent herb; stems with recurved prickles; leaves 3-5-lobed, prickly along petiole and midrib; cymes lateral, 2-8-flowered; calyx 5-lobed, prickly; corolla 5-lobed, reflexed; stamens 5; berry globose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-August
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4139* (GVCH).

Solanum violaceum Ortega, Nov. Rar. Pl. Descr. Dec. 56; Jacq. Fragm. 82; *Solanum indicum* Gamble, Fl. Pres. Madras 938 (1923); Hook. f., Fl. Brit. India 4: 234 (1883).

Habit: Shrub
Habitat: Evergreen, semi-evergreen and dry deciduous forests
Morphology: Shrub; stem armed; leaves deeply lobed, prickly on the nerves; inflorescence an extra-axillary raceme; calyx 5-lobed, prickly; corolla campanulate, 5-lobed; stamens 5; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 175* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 546* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1873* (GVCH).

Solanum virginianum L., Sp. Pl. 1: 187 (1753); *Solanum xanthocarpum* Schrad. & Wendl., Gamble, Fl. Pres. Madras 938 (1923); Hook. f., Fl. Brit. India 4: 236 (1883).

Habit: Herb
Habitat: Degraded Forest areas and wastelands
Morphology: Herb; stem glandular hairy; prickles numerous; leaves pinnatifid half-way; inflorescence a few-flowered cyme; calyx 5-lobed, slightly inflated in fruit; corolla 5-lobed; stamens 5; ovary 2-loculed; berry globose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1685* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1917* (GVCH).

LAMIALES

OLEACEAE

1.Corolla lobes imbricate……..***Jasminum***

1.Corolla lobes valvate…..……..(2)

2.Scandent shrub…….....…...***Myxopyrum***

2.Erect tree or shrub……....……..(3)

3.Inflorescence terminal…….***Ligustrum***

3.Inflorescence axillary……..…(4)

4.Corolla deeply divided to the base; fruit ribbed…...……***Chionanthus***

4.Corolla divided to half the length; fruit smooth…..……....……...***Olea***

Chionanthus D. Royen, Sp. Pl. 1: 8 (1753)

Chionanthus mala-elengi (Dennst.) P.S.Green, Bull. Bot. Surv. India 26(1-2): 124 (1985); *Linociera malabarica* Wall. ex G. Don, Hook. f., Fl. Brit. India 3: 607 (1882); Gamble, Fl. Pres. Madras 794 (1923); *Chionanthus mala-elengi* (Dennst.) P. S. Green ssp. *mala-elengi*, Vajr., Fl. Palghat Dist. 273 (1990).

Habit: Tree
Habitat: Evergreen, Semi-evergreen and Moist Deciduous forests
Morphology: Tree; leaves opposite, glabrous; lateral nerves about 10 pairs; flowers in clusters in few-branched cyme; calyx grey-pubescent; corolla 4-lobed, glabrous; stamens 2; ovary pubescent; drupe ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Rare
Altitude: 400-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 06 July 2019, *Jabeena & Maya 2336* (GVCH).

Jasminum L., Sp. Pl. 1: 7 (1753)

1.Leaves trifoliate……..…….(2)
1.Leaves simple……..……(3)
2.Leaflets upto 5 cm long; lateral nerves 3-4 pairs…….……..…...***J. calophyllum***
2.Leaflets upto 10 cm long; lateral nerves 7 pairs……....***J. flexile***
3.Leaves acute or rounded at base……...……...….***J. angustifolium***
3.Leaves cordate or subcordate at base……..4)
4.Calyx lobes glabrous…....***J. cordifolium***
4.Calyx lobes pubescent……...….(5)
5.Corolla lobes obtuse at apex……...***J. coarctatum***
5.Corolla lobes acute at apex……..(6)
6.Bracts 1-1.5 cm long; calyx lobes pubescent.…..……...***J. malabatrum***
6.Bracts upto 0.8 cm long; calyx lobes villous…..……...…….***J. multiflorum***

Jasminum angustifolium Willd., Sp. Pl., ed. 4 [Willdenow] 1(1): 36 (1797); Vahl, Enum. 1: 29; Hook. f., Fl. Brit. India 3: 598 (1882); Gamble, Fl. Pres. Madras 790 (1923).

Habit: Climber
Habitat: Scrub jungles and Sacred groves
Morphology: Climber; leaves simple, opposite; inflorescence 1-3-flowered cyme; calyx lobes linear, glabrous; corolla lobes 8-9; stamens 2; ovary 2-loculed; ovules 2 in each cell; fruit a didymous berry.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 512* (GVCH).

Jasminum calophyllum Wall. & G.Don, Gen. Hist. iv. 63 (1837); Hook. f., Fl. Brit. India 3: 602 (1882); Gamble, Fl. Pres. Madras 791 (1923).

Habit: Climber
Habitat: Evergreen forests
Morphology: Climber; leaves compound, trifoliolate; leaflets sub-equal, glabrous; nerves 3-4 pairs; cyme trichotomous, the end branches corymbose; calyx 5-lobed, hairy; corolla lobes glabrous; stamens 2; ovary 2-loculed; ovules 2 in each cell; fruit a didymous berry.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare

Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 979* (GVCH).

Jasminum coarctatum Roxb., Hort. Bengal. 3; Fl. Ind. i. 92; *Jasminum rottlerianum* Wall. ex A. DC. Hook. f., Fl. Brit. India 3: 593 (1882); Gamble, Fl. Pres. Madras 789 (1923); Vajr., Fl. Palghat Dist. 275 (1990); *Jasminum rottlerianum* Wall. ex A. DC. var. *glabrior* Clarke Hook.f., Fl. Brit. India 3:593 (1882).

Habit: Climber
Habitat: Evergreen, Shola and Moist Deciduous forests
Morphology: Climber; leaves simple, opposite, hairy; inflorescence an axillary or terminal cyme; bracts lanceolate; calyx 7-lobed, pubescent; corolla 5-7-lobed, twisted; stamens 2; ovary 2-loculed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-June
Distribution: Common
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 086* (GVCH); Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1880* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 1992* (GVCH); Plate 45: Fig. h.

Jasminum cordifolium Wall. & G.Don, Gen. Hist. iv. 60 (1837); Hook. f., Fl. Brit. India 3: 596 (1882); Gamble, Fl. Pres. Madras 790 (1923); *Jasminum malabaricum* Wight var. *lawii* Clarke, Hook.f., Fl. Brit. India 3: 594 (1882); Gamble, Fl. Pres. Madras 789 (1923).

Habit: Climber
Habitat: Evergreen and Moist Deciduous forests
Morphology: Climber; leaves simple, glabrous; nerves 3-4 pairs; inflorescence an axillary or terminal cyme; bracts subulate; calyx lobes linear, glabrous; corolla 5-lobed, glabrous; stamens 2; ovary 2-loculed; berry didymous, glabrous.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 948* (GVCH).

Jasminum flexile Vahl, Symb. Bot. (Vahl) 3: 1 (1794); *Jasminum flexile* Vahl var. *flexile* Hook. f., Fl. Brit. India 3: 601 (1882); Gamble, Fl. Pres. Madras 791 (1923); *Jasminum flexile* Vahl var. *travancorense* Gamble, Fl. Pres. Madras 791 (1921); *Jasminum azoricum* sensu Mohanan, Vajr., Fl. Palghat Dist. 274 (1990); *Jasminum azoricum* L. var. *travancorense* (Gamble) M. Mohanan, Vajr., Fl. Palghat Dist. 275 (1990).

Habit: Climber
Habitat: Evergreen, Semi-evergreen and Shola forests
Morphology: Climber; leaves compound; leaflets 3, sub-equal, glabrous; lateral nerves 6-7 pairs; inflorescence a lax paniculate cyme; calyx 5-6, glabrous; corolla 5-6 lobed; stamens 2; ovary 2-loculed; berry glabrous.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Occasional
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1091* (GVCH); Kollengode range,

Pothumala, 12 October 2019, *Jabeena & Maya 2583* (GVCH).

Jasminum malabaricum Wight, Icon. Pl. Ind. Orient. [Wight] t. 1250; Hook. f., Fl. Brit. India 3: 594 (1882); Gamble, Fl. Pres. Madras 789 (1923).

Habit: Climber
Habitat: Semi-evergreen forests and Scrub jungles
Morphology: Climber; leaves simple, opposite; lateral nerves 8-9 pairs; inflorescence a trichotomously branched cyme; bracts subulate, filiform; calyx 5-7 lobed, pubescent; corolla 6-10 lobed, oblong; stamens 2; ovary 2-loculed; fruit ovoid.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: March-November
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 568* (GVCH).

Jasminum multiflorum Andrews, Bot. Repos. t. 496; Vajr., Fl. Palghat Dist. 275 (1990); *Jasminum pubescens* Willd., Hook. f., Fl. Brit. India 3: 592 (1882); Gamble, Fl. Pres. Madras 789 (1923);

Habit: Climber
Habitat: Semi-evergreen and Moist Deciduous forests
Morphology: Climber; leaves simple, pubescent; inflorescence a terminal capitate cyme; bracts ovate; calyx 5-lobed, hairy; corolla lobes 6-8 lobed; stamens 2, included; ovary 2-loculed; berry ovoid.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 185* (GVCH).

Ligustrum L., Sp. Pl. 1: 7 (1753)

Flowers distant; ovary truncate; corolla tube as long as calyx…….....
.....***L. robustum* subsp. *walkeri***
Flowers closely packed; ovary conical; corolla tube twice as long as calyx……
…..***Ligustrum robustum*** subsp. ***perrottetii***

Ligustrum robustum subsp. ***perrottettii*** (A.DC.) de Juana, Bouteloua 24: 152 (2016); *Ligustrum perrottetii* A. DC., Hook. f., Fl. Brit. India 3: 615 (1882); Gamble, Fl. Pres. Madras 797 (1923); *Ligustrum gamblei* Ramamoorthy Vajr., Fl. Palghat Dist. 275 (1990).

Habit: Shrub
Habitat: Evergreen, semi-evergreen and shola forests
Morphology: Shrub; leaves opposite, glabrous; lateral nerves 6-8 pairs; inflorescence a terminal thyrsoid panicle; calyx 4-toothed; corolla funnel-shaped, 4-lobed; stamens 2; ovary 2-loculed; ovules pendulous; drupe ellipsoid.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats

IUCN category: Not Evaluated

Phenology: February-June

Distribution: Occasional

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1528* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2068* (GVCH).

Ligustrum robustum* subsp. *walkeri (Decne.) P.S.Green, Kew Bull. 40(1): 130 (1985); *Ligustrum walkeri* Decne., Gamble, Fl. Pres. Madras 797 (1923); Hook. f., Fl. Brit. India 3: 614 (1882).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves simple, opposite; flowers in terminal thyrsoid panicle; calyx 4-toothed; corolla funnel-shaped, lobes 4; stamens 2; ovary 2-loculed; ovules pendulous; berry obovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-July
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1948* (GVCH); Plate 46: Fig. a

Myxopyrum Blume, Bijdr. Fl. Ned. Ind. 13: 683 (1826)

Myxopyrum smilacifolium Blume, Mus. Bot. 1(20): 320 (1851); Hook. f., Fl. Brit. India 3: 618 (1882); *Myxopyrum serratulum* Hill., Gamble, Fl. Pres. Madras 798 (1923); Vajr., Fl. Palghat Dist. 276 (1990).

Habit: Climber
Habitat: Semi-evergreen, Evergreen forests and Sacred groves
Morphology: Climber; branches tetragonous; leaves simple, opposite, 5-ribbed at base; inflorescence an axillary or terminal trichotomous panicle; calyx 4-lobed; corolla tube urceolate, 4-lobed; stamens 2; ovary 2-loculed; stigma bilobed; berry globose.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-August
Distribution: Occasional
Rare: 200-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1242* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4810* (GVCH).

Olea L., Sp. Pl. 1: 8 (1753)

Olea dioica Roxb., Hort. Bengal. 3; Fl. Ind. i. 106; Hook. f., Fl. Brit. India 3: 612 (1882); Gamble, Fl. Pres. Madras 796 (1923); Vajr., Fl. Palghat Dist. 276 (1990).

Habit: Tree
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Tree; leaves simple, opposite, glabrous; lateral nerves 8-12 pairs; inflorescence an axillary or terminal panicle; calyx 4-lobed, ciliate; corolla campanulate, 4-lobed; stamens 2; ovary 2-loculed; drupe ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: November-April
Distribution: Common
Altitude: 400-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 056* (GVCH); Hilltop, 20 January 2018, *Jabeena & Maya 955* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3548* (GVCH).

GESNERIACEAE

1.Plant epiphytic...…...….***Aeschynanthus***
1.Plant terrestrial……...……..(2)
2.Leaves radical……..***Henckelia***
2.Leaves cauline…...……...……..(3)
3.Stem glabrous; placentas intruded; capsule loculicidal……...***Rhynchoglossum***
3.Stem pilose; placentas not intruded; capsule circumscissile….……***Epithema***

Aeschynanthus Jack, Trans. Linn. Soc. London 14: 42 (1823)

Aeschynanthus perrottetii A.DC., Prodr. [A. P. de Candolle] 9: 261 (1845); Hook. f., Fl. Brit. India 4: 339 (1884); Gamble, Fl. Pres. Madras 985 (1924); Vajr., Fl. Palghat Dist. 332 (1990); *Aeschynanthus perrottetii* A. DC. var. *planiculmis* Clarke, Hook.f., Fl. Brit. India 4: 340 (1884); *Aeschynanthus planiculmis* (Clarke) Gamble, Fl. Pres. Madras 985 (1924).

Habit: Shrub
Habitat: Evergreen and shola forests
Morphology: Epiphytic shrub; stem rooting at nodes; leaves opposite; flowers axillary, solitary or binate; calyx 5-partite, lobes linear; corolla curved, 5-lobed, glabrous without ciliate lobes; stamens 4; disc annular; ovary stipitate, 1-loculed; capsule loculicidally 2-valved.
Raunkiaer's life-form: Epiphyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 989* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2379* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2857* (GVCH).

Epithema Blume, Bijdr. Fl. Ned. Ind. 14: 737 (1826)

Epithema ceylanicum Wight, Ill. Ind. Bot. 182. I. 159; *Epithema carnosum* (G. Don) Benth. var. *hispida* Clarke, Hook.f., Fl. Brit. India 4: 369 (1884); Gamble, Fl. Pres. Madras 992 (1924); Vajr., Fl. Palghat Dist. 333 (1990).

Habit: Herb
Habitat: On wet rocks in Evergreen and Semi-evergreen forests
Morphology: Succulent herb; leaves simple; lateral nerves 6-8 pairs; inflorescence a pedunculate scorpioid cyme; calyx campanulate, 5-lobed; corolla bilipped, 5-lobed, lobes sub-equal; stamens 2; staminodes 2; ovary ovoid, 1-loculed; capsule ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Occasional
Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1184* (GVCH); Victoria, 12 October 2020, *Jabeena & Maya 4183* (GVCH); Plate 46: Fig. b.

Henckelia Spreng., Anleit. Kenntn. Gew., ed. 2. 2(1): 402 (1817)

1.Lamina spathulate...……..……***H. wightii***
1.Lamina not spathulate……..……(2)
2.Leaf margins doubly crenate, ultimate segments irregular……..…***H. fischeri***
2.Leaf margins crenate, ultimate segments regular….……...……(3)
3.Staminodes hooked; nerves of leaves 5-6 pairs……..……...***H. humboldtiana***
3.Staminodes straight; nerves of leaves 4 pairs……...……..***H. incana***

Henckelia fischeri (Gamble) A.Weber & B.L.Burtt, Beitr. Biol. Pflanzen 70(2-3): 344 (1998); *Didymocarpus fischeri* Gamble, Fl. Pres. Madras 989 (1924).

Habit: Herb
Habitat: On wet rocks in evergreen forests
Morphology: Herb; leaves simple, irregularly crenate; lateral nerves 5-6 pairs; scape dichotomously branched, few-flowered raceme; calyx 5-partite; corolla campanulate, 5-lobed, glandular hairy; stamens 2, included; staminodes 2; ovary 1-loculed, glandular hairy; capsule loculicidally 2-valved, plagiocarpic.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: October-November

Distribution: Occasional

Altitude: 500-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2423* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4285* (GVCH); Plate 46: Fig. c.

Henckelia humboldtiana (Gardner) A.Weber & B.L.Burtt, Beitr. Biol. Pflanzen 70(2-3): 346 (1998); *Didymocarpus humboldtiana* Gard., Hook. f., Fl. Brit. India 4: 353 (1884); Gamble, Fl. Pres. Madras 989 (1924).

Habit: Herb

Habitat: Grasslands

Morphology: Herb; leaves simple, crenate; petioles narrowly winged; lateral nerves 4-6 pairs; scape axillary, pedunculate raceme, glandular-hairy; calyx 5-fid; corolla campanulate, ventricose; stamens 2, included; staminodes hooked; ovary glandular-hairy; capsule oblique, pubescent.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: September-November

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2569* (GVCH).

Henckelia incana Spreng., Syst. Veg., ed. 16 [Sprengel] 1: 38 (1824); *Didymocarpus tomentosa* Wight, Hook. f., Fl. Brit. India 4: 353 (1884); Gamble, Fl. Pres. Madras 989 (1924); Vajr., Fl. Palghat Dist. 332 (1990).

Habit: Herb

Habitat: On wet rocks in grasslands

Morphology: Herb; leaves simple, margins crenate-serrate; lateral nerves 4 pairs; scapes dichotomously branching in corymb; calyx 5-fid; corolla campanulate, curved, glandular-hairy; stamens 2; staminodes straight; ovary glandular-hairy; capsule linear, villous.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India

IUCN category: Not Evaluated

Phenology: May-October

Distribution: Common

Altitude: 900-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 445* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 563* (GVCH); Mattumala, 11 June 2018, *Jabeena & Maya 1470* (GVCH).

Henckelia wightii (C.B.Clarke) A.Weber & B.L.Burtt, Beitr. Biol. Pflanzen 70(2-3): 359 (1998); *Didymocarpus rottleriana* var. *wightii* Clarke in Hook.f., Fl. Brit. India 4: 353 (1884); *Didymocarpus wightii* (Clarke) Gamble, Fl. Pres. Madras 989 (1924).

Habit: Herb

Habitat: Grasslands

Morphology: Herb; leaves obovate-spathulate, white-woolly; inflorescence a few-flowered drooping cyme; calyx 5-partite; corolla curved; stamens 2, included; staminodes 2; ovary 1-loculed; capsule lanceolate.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated
Phenology: July-November
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2128* (GVCH).

Rhynchoglossum Blume, Bijdr. Fl. Ned. Ind. 14: 741 (1826)

Rhynchoglossum notonianum (Wall.) B.L.Burtt, Notes Roy. Bot. Gard. Edinburgh 24: 170 (1962); Vajr., Fl. Palghat Dist. 333 (1990); *Klugia notoniana* (Wall.) A. DC. Gamble, Hook. f., Fl. Brit. India 4: 366 (1889); Fl. Pres. Madras 990 (1924).

Habit: Herb
Habitat: Moist shady areas in evergreen and semi-evergreen forests
Morphology: Herb; stems succulent; leaves simple, alternate, unequal at base; lateral nerves 17-20 pairs; inflorescence a terminal raceme; calyx campanulate, 5-lobed; corolla bilipped; stamens 4, perfect, included; ovary ovoid, 1-loculed; capsule loculicidally 2-valved.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Common
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1206* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1746* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2228* (GVCH); Plate 46: Fig. d.

PLANTAGINACEAE

1.Corolla salver-shaped……..….***Achetaria***
1.Corolla not salver-shaped……....(2)
2.Lobes of corolla four…...…….***Scoparia***
2.Lobes of corolla five…...…….(3)
3.Aquatic or amphibious herb; leaf margin entire; corolla bluish white…….***Bacopa***
3.Terrestrial herb; leaf margin crenate-serrate; corolla yellow…...….***Mecardonia***

Achetaria Cham. & Schltdl., Linnaea 2: 566 (1827)

Achetaria azurea (Linden) V. C. Souza, Pesquisas, Bot. 60: 90 (2009).

Habit: Herb
Habitat: Grown as garden plant
Morphology: Herb; leaves simple, opposite pairs; flowers in terminal spikes; calyx 5-toothed; corolla bilipped.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: July-April
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2795* (GVCH).

Bacopa Aubl., Hist. Pl. Guiane 128 (1775)

Bacopa monnieri (L.) Wettst., Nat. Pflanzenfam. [Engler & Prantl] 4(3b, lief. 67): 77 (1891); Vajr., Fl. Palghat Dist. 322 (1990); *Herpestis monnieria* (L.) Kunth, Hook. f., Fl. Brit. India 4: 272 (1884); *Moniera cuneifolia* Michx., Gamble, Fl. Pres. Madras 953 (1923).

Habit: Herb
Habitat: Open areas and mangrove forests
Morphology: Herb; stem creeping, rooting at nodes; leaves sessile, punctate; flowers axillary, solitary, pedicelled; calyx 5-lobed, unequal; corolla bilipped; stamens 4; ovary with many ovules in each cell; capsule ovoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African

IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4099* (GVCH); Plate 46: Fig. e.

Mecardonia Ruiz & Pav., Fl. Peruv. Prodr. 95 (1794)

Mecardonia procumbens (Mill.) Small, Fl. S.E. U.S. [Small]. 1065, 1338 (1903).

Habit: Herb
Habitat: Degraded moist deciduous forests, grasslands and waste places
Morphology: Herb; stem tetragonous; leaves simple, opposite; flowers axillary, solitary; calyx 5-fid, lobes unequal; corolla bilipped; stamens 4, didynamous; capsule 2-valved.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017 *Jabeena & Maya 117* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 933* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2814* (GVCH).

Scoparia L., Sp. Pl. 1: 116 (1753)

Scoparia dulcis L., Sp. Pl. 1: 116 (1753); Hook. f., Fl. Brit. India 4: 289 (1884); Gamble, Fl. Pres. Madras 964 (1924); Vajr., Fl. Palghat Dist. 326 (1990).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; leaves simple, opposite or whorled; flowers axillary, solitary or binate; bracteoles absent; calyx 4-5 lobed, ciliate; corolla 4-lobed, sub-equal; stamens 4, sub-equal; ovary 2-loculed; capsule globose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 085* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2190* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2834* (GVCH).

SCROPHULARIACEAE

Buddleja L., Sp. Pl. 1: 112 (1753)

Buddleja asiatica Lour., Fl. Cochinch. 1: 72 (1790); Hook. f., Fl. Brit. India 4: 82 (1883); Gamble, Fl. Pres. Madras 865 (1923); Vajr., Fl. Palghat Dist. 293 (1990).

Habit: Shrub
Habitat: Degraded Forest areas
Morphology: Shrub; leaves opposite, united by a stipular line; flowers in spike; calyx campanulate, 4-lobed, pubescent; corolla urceolate, 4-lobed, villous; stamens 4, on the corolla-tube; ovary 2-loculed; capsule septicidally 2-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Least Concern
Phenology: October-April
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 12 January 2021, *Jabeena & Maya 4727* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 04 March2021, *Jabeena & Maya 4975* (GVCH); Plate 46: Fig. f.

LINDERNIACEAE

1.Seeds without alveolate endosperm……..……....***Lindernia***
1.Seeds with alveolate endosperm……..(2)
2.Calyx winged…...…….……..***Torenia***
2.Calyx not winged……...……..(3)
3.Stamens 2 only perfect……..***Bonnaya***
3.Stamens 4, all perfect……..……(4)
4.Capsule equalling the calyx.....***Vandellia***
4.Capsule longer than the calyx……....***Craterostigma***

Bonnaya Link & Otto, Icon. Pl. Select. 25 (1828)

Plant erect; seeds black…….....***B. ciliata***
Plant prostrate or diffuse; seeds yellow…..……..….***B. veronicifolia***

Bonnaya ciliata Spreng., Syst. Veg., ed. 16 [Sprengel] 1: 41 (1824); *Lindernia ciliata* (Colsm.) Pennell, var. *ciliata* Vajr., Fl. Palghat Dist. 324 (1990); *Bonnaya brachiata* Link & Otto, Hook. f., Fl. Brit. India 4: 284 (1884); *Ilysanthes serrata* (Roxb.) Urban, Gamble, Fl. Pres. Madras 962 (1923).

Habit: Herb
Habitat: Moist deciduous forests and wet localities
Morphology: Herb; leaves simple, opposite, margin dentate, sessile; inflorescence a terminal raceme; calyx 5-lobed; corolla bilipped; stamens 2; staminodes with divergent hooks; ovary 2-loculed, many-ovuled; capsule linear.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: June-October
Distribution: Occasional
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 116* (GVCH); Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5013* (GVCH); Plate 46: Fig. g.

Bonnaya veronicifolia Spreng., Syst. Veg., ed. 16 [Sprengel] 1: 41 (1824); *Lindernia antipoda* (L.) Alston, Vajr., Fl. Palghat Dist. 324 (1990); *Bonnaya veronicifolia* (Retz.) Urban, Hook. f., Fl. Brit. India 4: 285 (1884); *Ilysanthes veronicifolia* (Retz.) Urban, Gamble, Fl. Pres. Madras 962 (1923).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; stem decumbent at base; leaves simple, opposite; flowers in axillary or terminal raceme; calyx 5-lobed; corolla bilipped; stamens 2; staminodes 2, hooked; ovary with many ovules; stigma 2; capsule linear, septicidal.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and Australian
IUCN category: Least Concern
Phenology: August-October
Distribution: Rare
Altitude: 200-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 08 November 2017, *Jabeena & Maya 732* (GVCH).

Craterostigma Hochst., Flora 24(2): 668 (1841)

Craterostigma nummulariifolium (D.Don) Eb.Fisch., Schäfer. & Kai Müll., Willdenowia 43(2): 222 (2013); *Vandellia nummularifolia* D.Don, Hook. f., Fl. Brit. India 4: 282 (1884); Gamble, Fl. Pres. Madras 959 (1923).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; stem quadrangular; leaves simple, opposite, 3-5 ribbed at base, glabrous; flowers 2-4 in an axillary cyme; calyx 5-lobed; corolla bilipped; stamens 4; anthers divaricate; ovary 1-2 loculed; capsule elliptic, glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: African
IUCN category: Least Concern

Phenology: August-September
Distribution: Common
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 114* (GVCH); Manpara, 29 July 2017, *Jabeena & Maya 246* (GVCH); Pulayampara, 19 August 2017, *Jabeena & Maya 360* (GVCH); Plate 46: Fig. h.

Lindernia All., Mélanges Philos. Math. Soc. Roy. Turin 3(1): 178, t. 5, fig. 1 (1766)

1.Stamens 4, all fertile…....***L. procumbens***
1.Stamens 2; staminodes 2….……(2)
2.Calyx lobes equal; capsule oblong-ellipsoid……...……***L. rotundifolia***
2.Calyx lobes unequal; capsule globose…….....…***L. tamilnadensis***

Lindernia hyssopioides Haines, Bot. Bihar & Orissa Pt. 4, 635 (1922); Vajr., Fl. Palghat Dist. 325 (1990); *Ilysanthes hyssopioides* (L.) Benth., Hook. f., Fl. Brit. India 4: 283 (1884); Gamble, Fl. Pres. Madras 961 (1923).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; stem tetragonous; leaves 3-ribbed at base; flowers axillary, solitary; calyx 5-lobed, glabrous; corolla bilipped; stamens 2; staminodes bifid; capsule ellipsoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: March-September
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 464* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2736* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2993* (GVCH); Plate 47: Fig. a

Lindernia procumbens (Krock.) Philcox, Taxon 14(1): 30 (1965);

Habit: Herb
Habitat: Along river banks
Morphology: Herb; leaves 3-5-ribbed at base, sessile; flowers axillary, solitary; calyx 5-lobed; corolla bilipped; stamens 4; anthers spurred; capsule ellipsoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: January-March
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1745* (GVCH).

Lindernia rotundifolia (L.) Alston,Handb. Fl. Ceylon 6(suppl.): 214 (1931); *Ilysanthes rotundifolia* (L.) Benth., Hook. f., Fl. Brit. India 4: 254 (1885); Gamble, Fl. Pres. Madras 962 (1923).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; leaves orbicular, 3-ribbed at base, sessile; flowers axillary, solitary; calyx deeply 5-lobed; corolla bilipped; stamens 2; staminodes 2; capsule sub-globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3094* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3530* (GVCH); Cheriya Govindamala, 03

November 2020, *Jabeena & Maya 4352* (GVCH).

Lindernia tamilnadensis M.G.Prasad & Sunojk., Phytotaxa 162(1): 57 (2014).

Habit: Herb
Habitat: Wet areas
Morphology: Herb; stem quadrangular; leaves sessile, 3–5 ribbed at base; flowers axillary, solitary; calyx deeply 5-lobed; corolla bilipped, glabrous; stamens 2; staminodes 2, linear; ovary sub-globose, glabrous; capsule globose, glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to South India
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Rare
Altitude: 800-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Ravi Varma Estate, 03 November 2020, *Jabeena & Maya 4357* (GVCH).

Torenia L., Sp. Pl. 2: 619 (1753)

1.Calyx lobes equal…..……...***T. crustacea***
1.Calyx mouth oblique…...……...…(2)
2.Calyx in fruit winged.....***T. travancorica***
2.Calyx in fruit not winged……...…….(3)
3.Calyx glabrous……..….***T. bicolor***
3.Calyx hirsute…...…….……***T. hirsuta***

Torenia bicolor Dalz., Hooker's J. Bot. Kew Gard. Misc. 3: 38 (1851); Hook. f., Fl. Brit. India 4: 278 (1884); Gamble, Fl. Pres. Madras 957 (1923); Vajr., Fl. Palghat Dist. 327 (1990).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; stem quadrangular; leaves opposite, crenate, sparsely hirsute; flowers axillary, solitary or in pairs; calyx not winged, keeled, glabrous; corolla bilipped; stamens 4; filaments appendaged; ovary oblong; capsule oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2463* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2762* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2965* (GVCH); Plate 46: Fig. b.

Torenia crustacea (L.) Cham. & Schltdl., Linnaea 2(4): 570 (1827); *Lindernia crustacea* (L.) F.v. Muell., Vajr., Fl. Palghat Dist. 324 (1990); *Vandellia crustacea* (L.) Benth., Hook. f., Fl. Brit. India 4: 274 (1884); Gamble, Fl. Pres. Madras 959 (1923).

Habit: Herb
Habitat: Moist Deciduous forests and wastelands
Morphology: Herb; stem prostrate; stem tetragonous; leaves simple, opposite; flowers axillary, solitary or paired; calyx 5-lobed, ribbed; corolla bilipped; stamens 4; ovary globose; capsule ovoid.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American

IUCN category: Least Concern

Phenology: August-November

Distribution: Occasional

Altitude: 200-300m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 499* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2839* (GVCH).

Torenia hirsuta Willd., Sp. Pl., ed. 4 [Willdenow] 3(1): 266 (1800); Gamble, Fl. Pres. Madras 957 (1923); Vajr., Fl. Palghat Dist. 327 (1990); *Torenia asiatica* L. var. *hirsuta* (Willd.) Hook.f., Fl. Brit. India 4: 277 (1884).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; stem quadrangular; leaves simple, opposite; flowers axillary, solitary; calyx 5-lobed; corolla bilipped; stamens 4; ovary 2-loculed; capsule ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: February-March
Distribution: Rare
Altitude: 800-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January2019, *Jabeena & Maya 1711* (GVCH).

Torenia travancorica Gamble, Fl. Madras 957 (1923); Vajr., Fl. Palghat Dist. 328 (1990); *Torenia asiatica* Hook. f., Fl. Brit. India 4: 277 (1884).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; stems tetragonous; leaves ovate, hairy; lateral nerves 5-7 pairs; flowers axillary, solitary; calyx winged, glabrous; corolla bilipped; stamens 4; filaments appendaged; capsule glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-January
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 24 September 2019, *Jabeena & Maya 2500* (GVCH).

Vandellia L., Mant. Pl. 12 (1767)

Capsule linear, equalling or shorter than fruiting calyx……..…***V. anagallis***
Capsule sub-globose, exceeding the fruiting calyx……..……...***V. pusilla***

Vandellia anagallis (Burm.f.) T.Yamaz., J. Jap. Bot. xxx. 176 (1955); *Lindernia anagallis* (Burm. f.) Pennell, Vajr., Fl. Palghat Dist. 324 (1990); *Vandellia pedunculata* Benth., Hook. f., Fl. Brit. India 4: 282 (1885); Gamble, Fl. Pres. Madras 959 (1923); *Vandellia angustifolia* Benth., Hook. f., Fl. Brit. India 4: 282 (1884).

Habit: Herb
Habitat: Along the banks of streams and marshy areas
Morphology: Herb; stem rooting at nodes, leaves elliptic, glabrous, sessile; flowers axillary, solitary or binate; calyx 5-lobed; corolla bilipped; stamens 4; anthers spurred; capsule glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: July-December
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3517* (GVCH).

Vandellia pusilla Merr., Philipp. J. Sci., C 7: 246 (1912); *Vandellia scabra* Benth., Hook. f., Fl. Brit. India 4: 281 (1884); Gamble, Fl. Pres. Madras 959 (1923); *Lindernia pusilla* (Willd.) Boldingh, Vajr., Fl. Palghat Dist. 325 (1990).

Habit: Herb
Habitat: Moist Deciduous areas and marshy areas
Morphology: Herb; stem prostrate, rooting at nodes; leaves simple, opposite, pubescent; flowers axillary, paired; calyx 5-lobed; corolla bilipped; stamens 4;

filaments appendaged; capsule sub-globose.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: August-October
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 December 2017, *Jabeena & Maya 497* (GVCH); Plate 47: Fig. d.

PEDALIACEAE

Fruit indehiscent with 4 spines on the margins……..……...***Pedalium***
Fruit dehiscent, a 2-valved capsule, not spinous…...…….…….***Sesamum***

Pedalium D.Royen, Syst. Nat., ed. 10. 2: 1123 (1759)

Pedalium murex L., Syst. Nat., ed. 10. 2: 1123 (1759); Hook. f., Fl. Brit. India 4: 386 (1884); Gamble, Fl. Pres. Madras 1001 (1924); Vajr., Fl. Palghat Dist. 337 (1990).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; stem diffuse; leaves simple, opposite; flowers axillary, solitary; calyx 5-toothed, persistent; corolla 5-lobed; stamens 4, didynamous with a fifth rudimentary; ovary 2-loculed; ovules 2 in each cell; stigma bilobed; fruit 2-valved.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1218* (GVCH); Plate 47: Fig. e.

Sesamum L., Sp. Pl. 2: 634 (1753)

Sesamum indicum L., Sp. Pl. 2: 634 (1753), nom. cons; Hook. f., Fl. Brit. India 4: 387 (1884); Gamble, Fl. Pres. Madras 1002 (1924); *Sesamum orientale* L., Vajr., Fl. Palghat Dist. 337 (1990).

Habit: Herb
Habitat: Cultivated
Morphology: Herb; stem erect; leaves simple, pubescent; flowers axillary, solitary; calyx 5-lobed, pubescent; corolla bilipped; stamens 4, didynamous; ovary pubescent; capsule oblong, beaked.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 516* (GVCH).

ACANTHACEAE

1.Plant climbing; calyx reduced……..……...***Thunbergia***
1.Plant erect, prostrate or straggling; calyx developed……...(2)
2.Flowers in axillary clusters or sub-capitate peduncled clusters……..……...(3)
2.Flowers in spikes, racemes or panicles……...……....(6)
3.Flowers in axillary whorls……..…….....***Hygrophila***
3.Flowers in few flowered clusters or capitate…….…….…..(4)
4.Stamens 4……....***Dipteracanthus***
4.Stamens 2……....…….(5)
5.Capsule and seeds glabrous…….……***Hypoestes***
5.Capsule hairy; seeds glandular papillose…….……***Dicliptera***
6.Corolla lobes twisted to left in the bud……..……...……(7)

6.Corolla lobes imbricate in bud…….……(9)
7.Placentas separating elastically from the base of capsule……..***Phaulopsis***
7.Placentas not separating elastically from the base of capsule…….……(8)
8.Corolla tube ventricose.....***Strobilanthes***
8.Corolla tube not ventricose……..***Eranthemum***
9.Ovules more than 3 in each locule……...…..……...***Andrographis***
9.Ovules 1 or 2 in each locule…..…….(10)
10.Corolla lobes 5, equal or sub-equal……..(11)
10.Corolla distantly bilipped……...….(13)
11.Anther one celled…...……***Crossandra***
11.Anther two celled…...……..(12)
12.Calyx lobes 4……..……..***Barleria***
12.Calyx lobes 5…….……..***Asystasia***
13.Stamens 4……...…..***Lepidagathis***
13.Stamens 2……...……(14)
14.Spike one-sided……..***Rungia***
14.Spike not one-sided……...……..(15)
15.Bracts large; spike dense…....***Ecbolium***
15.Bracts small or absent; spike lax or panicled...…….……(16)
16.Appendages on anther cells absent…..……....***Rhinacanthus***
16.Appendages on anther cells present……...(17)
17.Bracts and bracteoles white with green nerves……...…….***Nicoteba***
17.Bracts and bracteoles green…….(18)
18.Mostly of shrubs; calyx lobes mostly 5…….…….....***Justicia***
18.Mostly of herbs; calyx lobes usually 4…….……***Rostellularia***

Andrographis Wall. ex Nees, Pl. Asiat. Rar. (Wallich). 3: 77, 116 (1832)

1.Capsule glandular hairy…….....***A. atropurpurea***
1.Capsule pubescent, not glandular…....(2)
2.Anther cells bearded…...…***A. paniculata***
2.Anther cells glabrous……..…….(3)
3.Capsule oblong, not compressed……***A. alata***
3.Capsule compressed……..…….....(4)
4.Stem pubescent; raceme elongated; corolla glandular hairy…….....***A. elongata***
4.Stem villous; raceme short; corolla not glandular hairy……..…..….***A. echioides***

Andrographis alata (Vahl) Nees, Prodr. [A. P. de Candolle] 11: 516 (1847); Hook. f., Fl. Brit. India 4: 502 (1884); Gamble, Fl. Pres. Madras 1049 (1925); Vajr., Fl. Palghat Dist. 341 (1990).

Habit: Herb
Habitat: Shady areas in Grasslands
Morphology: Herb; leaves opposite, pubescent; inflorescence an axillary or terminal, panicle; calyx 5-lobed, glandular-hispid; corolla eglandular; stamens 2; filaments flattened; ovary oblong, pubescent; capsule oblong.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 858* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4325* (GVCH); Plate 47: Fig. f.

Andrographis atropurpurea (Dennst.) Alston, Taxon 26(5-6): 539 (1977); *Andrographis wightiana* Anders. ex Nees., Hook. f., Fl. Brit. India 4: 503 (1884); Gamble, Fl. Pres. Madras 1048 (1924).

Habit: Herb
Habitat: Evergreen and Semi-evergreen forests
Morphology: Herb; stem slender; leaves ovate, glabrous; lateral nerves 4-5 pairs; inflorescence a racemose panicle; calyx 5-lobed, hairy; corolla bilipped, glabrous; anthers bearded; capsule oblong, glandular hairy.
Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 585* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 700* (GVCH).

Andrographis echioides Nees, Pl. Asiat. Rar. (Wallich). iii. 117 (1832); Hook. f., Fl. Brit. India 4: 505 (1884); Gamble, Fl. Pres. Madras 1051 (1924); Vajr., Fl. Palghat Dist. 341 (1990).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; stem hairy; leaves opposite; inflorescence an axillary raceme; calyx 5-lobed; corolla bilipped; stamens 2; ovary 2-loculed; capsule compressed at right angles to the septum.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-July
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5023* (GVCH); Plate 47: Fig. g.

Andrographis elongata (Vahl) T.Anderson, J. Linn. Soc., Bot. 9: 502 (1867); Hook. f., Fl. Brit. India 4: 502 (1884); Gamble, Fl. Pres. Madras 1048 (1924).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; stem pubescent; leaves opposite; lateral nerves 3-4 pairs; inflorescence an axillary raceme; calyx 5-lobed, glandular-hairy; corolla bilipped, glandular-hairy; stamens 2; ovary oblong, pubescent; capsule oblong, compressed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 482* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2552* (GVCH).

Andrographis paniculata (Burm.f.) Wall. ex Nees, Pl. Asiat. Rar. (Wallich). 3(pt. 12): 116 (1832); Hook. f., Fl. Brit. India 4: 501 (1884); Gamble, Fl. Pres. Madras 1048 (1924); *Andrographis subspathulata* Clarke, Hook. f., Fl. Brit. India 4: 502 (1884).

Habit: Herb
Habitat: Scrub jungles
Morphology: Herb; stem glabrous; leaves opposite, glabrous; inflorescence an axillary or terminal panicle, glandular-hairy; calyx 5-lobed, hairy; corolla ventricose, glandular-hairy; ovary pubescent; capsule oblong, hairy.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: March-December

Distribution: Occasional

Altitude: 200-400m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 04 March 2021, J*abeena & Maya 4974* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5034* (GVCH).

Asystasia Blume, Bijdr. Fl. Ned. Ind. 14: 796 (1826)

1.Plant puberulous……...…..***A. gangetica***
1.Plant glabrous……..(2)
2.Leaf margin entire…….***A. dalzelliana***
2.Leaf margin not entire……***A. crispata***

Asystasia crispata Benth., Linnaea 24(6): 647 (1852); Hook. f., Fl. Brit. India 4: 494 (1884); Gamble, Fl. Pres. Madras 1063 (1924).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; leaves opposite, pubescent; lateral nerves 5-6 pairs; inflorescence a terminal raceme; calyx 5-lobed, pubescent; corolla 5-lobed, hairy; stamens 2; ovary 2-loculed; capsule pubescent.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 099* (GVCH); Manpara, 29 July 2017, *Jabeena & Maya 275* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3833* (GVCH).

Asystasia dalzelliana Santapau, Kew Bull. 3(2): 276 (1948); Vajr., Fl. Palghat Dist. 343 (1990); *Asystasia violacea* Dalz. ex Clarke, Hook. f., Fl. Brit. India 4: 494 (1884); Gamble, Fl. Pres. Madras 1063 (1884).

Habit: Herb
Habitat: Evergreen and Semi-evergreen forests
Morphology: Herb; stem quadrangular; leaves opposite; inflorescence a simple raceme; calyx 5-lobed; corolla 5-lobed, lobes sub-equal, pubescent; stamens 4; capsule oblong, pubescent.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific, Holarctic and African

IUCN category: Not Evaluated

Phenology: September-January

Distribution: Occasional

Altitude: 500-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 193* (GVCH); Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5035* (GVCH).

Asystasia gangetica (L.) T.Anderson, Enum. Pl. Zeyl. [Thwaites] 235 (1860); Hook. f., Fl. Brit. India 4: 493 (1884); Gamble, Fl. Pres. Madras 1063 (1924).

Habit: Herb

Habitat: Degraded forest areas

Morphology: Herb; leaves opposite; lateral veins 6- 8 pairs; flowers in a simple raceme; calyx 5-lobed, pubescent; corolla 5-lobed, pubescent; stamens 4; ovary 2-loculed, pubescent; capsule clavate, pubescent.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Not Evaluated

Phenology: September-December

Distribution: Occasional

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1742* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3030* (GVCH).

Barleria L., Sp. Pl. 2: 636 (1753)

1.Bracts glandular pubescent..***B. prattensis***
1.Bracts not glandular…….……(2)
2.Leaf base acute; corolla pink……..……..***B. tomentosa***
2.Leaf base truncate; corolla white……...……...……***B. acuminata***

Barleria acuminata Wight, Icon. Pl. Ind. Orient. [Wight] t. 450; Hook. f., Fl. Brit. India 4: 484 (1884); Gamble, Fl. Pres. Madras 1059 (1924); *Barleria tomentosa* Roth var. *acuminata* (Nees) Clarke, Hook. f., Fl. Brit. India 4: 485 (1884).

Habit: Shrub
Habitat: Deciduous forests
Morphology: Shrub; leaves opposite, pubescent; inflorescence an axillary or terminal raceme; calyx 5-lobed, pubescent; corolla 5-lobed; stamens 2; ovary ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 400-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 798* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1692* (GVCH).

Barleria prattensis Santapau, Kew Bull. 3(3): 487 (1949); Vajr., Fl. Palghat Dist. 345 (1990); *Barleria montana* sensu Bedd., Hook. f., Fl. Brit. India 4: 487 (1884); Gamble, Fl. Pres. Madras 1061 (1924).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaves opposite, glabrous; lateral nerves 5-6 pairs; flowers axillary, solitary or in short terminal raceme; calyx 5-lobed, sub-equal; corolla funnel shaped, 5-lobed, sub-equal; stamens 2; ovary glabrous; capsule oblong.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3873* (GVCH).

Barleria tomentosa Roth, Nov. Pl. Sp. 314 (1821); Hook. f., Fl. Brit. India 4: 485 (1884); Gamble, Fl. Pres. Madras 1059 (1924).

Habit: Shrub
Habitat: Deciduous forests
Morphology: Shrub; leaves ovate, pubescent; inflorescence an axillary raceme; calyx 5-lobed, sub-equal; corolla 5-lobed, unequal; stamens 2.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3038* (GVCH); Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3066* (GVCH); Plate 47: Fig. h.

Crossandra Salisb., Parad. Lond. 1: t. 12 (1805)

Crossandra infundibuliformis (L.) Nees, Pl. Asiat. Rar. (Wallich). 3(12): 98 (1832); *Crossandra undulaefolia* Salisb., Hook. f., Fl. Brit. India 4: 492 (1884); Gamble, Fl. Pres. Madras 1055 (1924).

Habit: Shrub
Habitat: Grown as garden plant

Morphology: Shrub; leaves opposite or whorled; flowers sessile in linear-oblong spike; calyx 5-lobed, unequal, glandular-hairy; corolla 5-lobed, sub-equal; stamens 4, unequal; ovary oblong; capsule oblong.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: December-March
Distribution: Occasional
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4801* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5024* (GVCH).

Dicliptera Juss., Ann. Mus. Natl. Hist. Nat. 9: 267 (1807)

1.Stem 6-angled……....***D. paniculata***
1.Stem terete……..…(2)
2.Leaves hispid; bracts obovate; corolla 8 mm long……...……..***D. cuneata***
2.Leaves glabrous except nerves below; bracts deltoid; corolla 20 mm long……..***D. foetida***

Dicliptera cuneata Nees, Pl. Asiat. Rar. (Wallich). 3: 111 (1832); Hook. f., Fl. Brit. India 4: 552 (1884); Gamble, Fl. Pres. Madras 1073 (1924).

Habit: Shrub
Habitat: Evergreen and wet areas in Deciduous forests
Morphology: Shrub; leaves opposite; inflorescence an axillary subcapitate peduncled cluster; calyx lobes 5, hairy; corolla bilipped; stamens 2; ovary 2-loculed; ovules 2 in each cell; fruit a clavate capsule.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1722* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4209* (GVCH); Plate 48: Fig. a

Dicliptera foetida Blatt., Rec. Bot. Surv. India viii. 361 (1921); *Dicliptera zeylanica* Nees., Hook. f., Fl. Brit. India 4: 552 (1884); Gamble, Fl. Pres. Madras 1073 (1924); Vajr., Fl. Palghat Dist. 347 (1990).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, elliptic; lateral nerves 4-5 pairs; inflorescence an axillary peduncled cyme; calyx 5-lobed; corolla bilipped; stamens 2; ovary 2-loculed; capsule clavate.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1733* (GVCH); Nelliyampathy range, Mattumala,17 January 2020, *Jabeena & Maya 3831* (GVCH); Plate 48: Fig. b.

Dicliptera paniculata (Forssk.) I.Darbysh., Kew Bull. 62(1): 122 (2007); *Peristrophe bicalyculata* (Retz.) Nees., Hook. f., Fl. Brit. India 4: 554 (1885); Gamble, Fl. Pres. Madras 1084 (1924).

Habit: Herb
Habitat: Deciduous forests and wastelands
Morphology: Herb; leaves opposite, pubescent; inflorescence an axillary trichotomous cyme; calyx 5-lobed; corolla bilipped; stamens 2; ovary oblong; capsule ellipsoid, hairy.
Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: December-February
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3046* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3324* (GVCH).

Ecbolium Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 40(1): 75 (1871)

Ecbolium ligustrinum (Vahl) Vollesen, Kew Bull. 44(4): 651 (1989); *Ecbolium linneanum* Kurz, Hook. f., Fl. Brit. India 4: 544 (1885); Gamble, Fl. Pres. Madras 1074 (1924); *Ecbolium linneanum* Kurz var. *dentatum* (Klein ex Link) Clarke, Hook. f., Fl. Brit. India 4: 545 (1885); Gamble, Fl. Pres. Madras 1074 (1924); *Ecbolium linneanum* Kurz var. *laetevirens* (Vahl) Clarke, Hook. f., Fl. Brit. India 4: 545 (1885); Gamble, Fl. Pres. Madras 1074 (1924); *Ecbolium viride* (Forssk.) Alston var. *laetevirens* (Vahl) Raizada, Vajr., Fl. Palghat Dist. 348 (1990).

Habit: Shrub
Habitat: Semi-evergreen forests
Morphology: Shrub; leaves opposite; lateral nerves 5-7 pairs; inflorescence a terminal spike; calyx 5-lobed, pubescent; corolla bilipped, pubescent; stamens 2; capsule clavate.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: January-May
Distribution: Rare
Altitude: 200-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5043* (GVCH).

Eranthemum L., Sp. Pl. 1: 9 (1753)

Eranthemum capense L., Sp. Pl. 1: 9 (1753); Hook. f., Fl. Brit. India 4: 525 (1885); Gamble, Fl. Pres. Madras 1078 (1924); Vajr., Fl. Palghat Dist. 348 (1990); *Eranthemum montanum* Roxb., Gamble, Fl. Pres. Madras 1025 (1924).

Habit: Herb
Habitat: Semi-evergreen and moist deciduous forests and sacred groves
Morphology: Herb; leaves opposite; lateral nerves 2-5 pairs; inflorescence a terminal or axillary panicle; calyx 5-lobed, glandular-hairy; corolla 5-lobed, sub-equal; stamens 2; capsule oblong.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-March
Distribution: Common
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1175* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1823* (GVCH); Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4806* (GVCH).

Hygrophila R.Br., Prodr. Fl. Nov. Holland. 479 (1810)

Armed plants; thorns axillary.....***H. schulli***
Unarmed plants; thorns absent……***H. ringens***

Hygrophila auriculata (Schumach.) Heine, Kew Bull. 16(2): 172 (1962); Vajr., Fl. Palghat Dist. 350 (1990); *Asteracantha longifolia* (L.) Nees., Hook. f., Fl. Brit. India 4: 408 (1884); Gamble, Fl. Pres. Madras 1015 (1924).

Habit: Herb
Habitat: Moist localities

Morphology: Herb; stem with thorns at the nodes; leaves in whorls of 6, unequal; flowers in sessile axillary whorls, surrounded by slightly recurved spines; calyx 4-partite; corolla bilipped; stamens 4, didynamous; anthers 2-celled, equal; ovary 2-loculed; ovules 4 in each cell.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-April
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03-11-2019, *Jabeena & Maya 2871* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3579* (GVCH).

Hygrophila ringens (L.) R.Br. ex Steud., Nomencl. Bot. [Steudel] 1: 418 (1821); *Hygrophila quadrivalvis* Nees., Hook. f., Fl. Brit. India 4: 408 (18840; Gamble, Fl. Pres. Madras 1016 (1924); *Hygrophila angustifolia* R. Br., Gamble, Fl. Pres. Madras 1016 (1924); *Hygrophila salicifolia* (Vahl) Nees., Vajr., Fl. Palghat Dist. 350 (1990).

Habit: Herb
Habitat: Moist localities
Morphology: Herb; leaves opposite, entire; inflorescence an axillary cluster; calyx 5-lobed, strigose; corolla bilipped; stamens 4, didynamous; ovary oblong; style hairy; capsule oblong, glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Occasional
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03-11-2019, *Jabeena & Maya 2896* (GVCH); Nooradi, 11 January 2020, *Jabeena & Maya 3611* (GVCH); Plate 48: Fig. c.

Hypoestes Sol. ex R.Br., Prodr. Fl. Nov. Holland. 474 (1810)

Hypoestes phyllostachya Baker, J. Linn. Soc., Bot. 22: 511 (1887).

Habit: Herb
Habitat: Grown as garden plant; often found as escape
Morphology: Herb; leaves opposite, glabrous; flowers axillary; calyx 5-lobed; corolla bilipped, pubescent; stamens 2; ovary oblong, glabrous; capsule elongated, pubescent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: African
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 673* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2881* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 1990* (GVCH).

Justicia L., Sp. Pl. 1: 15 (1753)

1.Plant herbaceous....……***J. japonica***

1.Plant shrubby…….……..(2)

2.Branchlets purplish……***J. gendarussa***

2.Branchlets green……..……(3)

3.Capsule glabrous……..…….***J. santapaui***

3.Capsule pubescent…...……(4)

4.Flowers compactly arranged; calyx not glandular hairy; ovary pubescent; seeds globular……...….***J. adhatoda***

4.Flowers distantly arranged; calyx glandular hairy; ovary glabrous in the upper half; seeds obovoid……....***J. wynaadenis***

Justicia adhatoda L., Sp. Pl. 1: 15 (1753); *Adhatoda zeylanica* Medic., Vajr., Fl. Palghat Dist. 340 (1990); *Adhatoda vasica* Nees., Hook. f., Fl. Brit. India 4: 540 (1885); Gamble, Fl. Pres. Madras 1082 (1924).

Habit: Shrub
Habitat: Planted
Morphology: Shrub; leaves opposite, entire; inflorescence an axillary spike; calyx 5-lobed, 3-nerved; corolla bilipped; stamens 2; anthers 2-celled, cells minutely apiculate at base; ovary pubescent; capsule clavate.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 200-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4814* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5015* (GVCH).

Justicia gendarussa Burm.f., Fl. Ind. (N. L. Burman) 10 (1768); Hook. f., Fl. Brit. India 4: 532 (1885); Gamble, Fl. Pres. Madras 1079 (1924).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Shrub; leaves opposite, glabrous; lateral veins 5-7 pairs; inflorescence a terminal spike; calyx 5-lobed; corolla bilipped; stamens 2; ovary 2-loculed, pubescent; capsule ovoid, glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5022* (GVCH); Padagiri, 12 March 2021, *Jabeena & Maya 5097* (GVCH).

Justicia santapaui Bennet, J. Bombay Nat. Hist. Soc. 67: 358 (1970); Vajr., Fl. Palghat Dist. 352 (1990); *Justicia montana* (Nees) Wall. ex Anders., Gamble, Fl. Pres. Madras 1078 (1924).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; leaves opposite, glabrous; lateral nerves 6-8 pairs; inflorescence an axillary or terminal spike; calyx 5-lobed, pubescent; corolla bilipped, villous inside; ovary 2-loculed, hairy; capsule clavate.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1634* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3897* (GVCH).

Justicia simplex D. Don, Prodr. Fl. Nepal. 118. (1825); Hook. f., Fl. Brit. India 4: 539 (1885); Gamble, Fl. Pres. Madras 1080 (1924); Vajr., Fl. Palghat Dist. 353 (1990).

Habit: Herb
Habitat: Grasslands and waste places
Morphology: Herb; leaves opposite, pubescent; lateral nerves 5-7 pairs; inflorescence a cylindric spike; calyx 4-lobed, hairy; corolla bilipped; stamens 2; capsule pubescent.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: August-February
Distribution: Common

Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 248* (GVCH); Kollengode range, Pulayampara, 19 August 2017, *Jabeena & Maya 355* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2270* (GVCH); Plate 48: Fig. d.

Justicia wynaadensis B.Heyne, Numer. List [Wallich] n. 2474 (1830); Hook. f., Fl. Brit. India 4: 533 (1885); Gamble, Fl. Pres. Madras 1079 (1924); Vajr., Fl. Palghat Dist. 353 (1990).

Habit: Herb
Habitat: Evergreen and Moist Deciduous forests
Morphology: Herb; leaves opposite, glabrous; lateral nerves 6-8 pairs; inflorescence an axillary or terminal spike; flowers opposite in the spikes; calyx 5-lobed, glandular-hairy; corolla bilipped; stamens 2; capsule clavate, villous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1739* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3824* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3557* (GVCH).

Lepidagathis Willd., Sp. Pl., ed. 4 [Willdenow] 3(1): 400 (1800)

Leaves ovate; ovary ovoid; capsule ellipsoid……..***L. incurva***
Leaves elliptic; ovary globose; capsule oblong…..……***L. fasciculata***

Lepidagathis fasciculata Nees, Pl. Asiat. Rar. (Wallich). iii. 95 (1832); Hook. f., Fl. Brit. India 4: 522 (1885); Gamble, Fl. Pres. Madras 1068 (1924).

Habit: Herb
Habitat: Deciduous forests
Morphology: Herb; leaves opposite, pubescent; lateral nerves 6-7 pairs; flowers in an axillary or terminal spike; calyx 5-lobed, glandular-hairy; corolla bilipped; stamens 4; ovary globose; capsule oblong.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-May
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1061* (GVCH); Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1491* (GVCH).

Lepidagathis incurva Buch.-Ham. ex D.Don, Prodr. Fl. Nepal. 119 (1825); *Lepidagathis hyalina* Nees., Hook. f., Fl. Brit. India 4: 521 (1884); Gamble, Fl. Pres. Madras 1068 (1924).

Habit: Herb
Habitat: Wastelands and Deciduous forests
Morphology: Herb; stem prostrate; leaves opposite, hairy; lateral nerves to 6-8 pairs; inflorescence an axillary or terminal spike; calyx 5-lobed, glandular-hairy; corolla bilipped; stamens 4, didynamous; ovary ovoid; capsule ellipsoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: February-April
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1349* (GVCH); Seetharkundu, 11-

06-2018, *Jabeena & Maya 1566* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4088* (GVCH); Plate 48: Fig. e.

Nicoteba Lindau, Bot. Jahrb. Syst. 18(1-2): 56 (1893)

Nicoteba betonica Lindau, Bot. Jahrb. Syst. 18(1-2): 56 (1893); Hook. f., Fl. Brit. India 4: 525 (1885); Gamble, Fl. Pres. Madras 1078 (1924); Vajr., Fl. Palghat Dist. 351 (1990).

Habit: Shrub
Habitat: Moist Deciduous forests and wastelands
Morphology: Shrub; leaves opposite, glabrous; lateral nerves 4-6 pairs; inflorescence a terminal spike; calyx 5-lobed; corolla bilipped, pubescent; stamens 4; ovary 2-loculed; capsule clavate, pubescent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1222* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3743* (GVCH).

Phaulopsis Willd., Sp. Pl., ed. 4 [Willdenow] 3(1): 4, 342 (1800)

Phaulopsis imbricata Sweet, Hort. Brit. [Sweet] 327 (1826); *Micranthus oppositifolius* Wendl., Gamble, Fl. Pres. Madras 1022 (1924); *Phaulopsis dorsiflora* (Retz.) Sant., Vajr., Fl. Palghat Dist. 358 (1990).

Habit: Herb
Habitat: Deciduous and Semi-evergreen forests
Morphology: Herb; stem glandular-hairy; leaves opposite; lateral nerves 3-4 pairs; inflorescence an axillary, 1-sided spike; calyx 5-lobed, unequal; corolla bilipped; stamens 4; ovary 2-loculed; capsule clavate, glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: November-March
Distribution: Common
Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1190* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1791* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3000* (GVCH); Plate 48: Fig. f.

Rhinacanthus Nees, Pl. Asiat. Rar. (Wallich). iii. 76 (1832)

Rhinacanthus nasutus (L.) Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 39(2): 79 (1870); Vajr., Fl. Palghat Dist. 359 (1990); *Rhinacanthus communis* Nees., Hook. f., Fl. Brit. India 4: 541 (1885); Gamble, Fl. Pres. Madras 1083 (1924).

Habit: Shrub
Habitat: Moist Deciduous forests
Morphology: Shrub; leaves opposite, pubescent; lateral nerves 7-10 pairs; calyx 5-lobed, hairy; corolla bilipped, pubescent; stamens 2; ovary 2-loculed; capsule clavate.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Occasional
Altitude: 500-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range,

Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1163* (GVCH).

Rostellularia Rchb., Handb. Nat. Pfl.-Syst. 190 (1837)

1.Bracteoles similar……...…….(2)
1.Bracteoles dissimilar……(3)
2.Hairs on the bracteoles bulbous based; petiole upto 2 cm……....…..***R. neesii***
2.Hairs on the bracteoles simple; petiole upto 0.5 cm long…....……***R. procumbens***
3.Bracts lanceolate; calyx lobes ciliate…...……...…….***R. prostrata***
3.Bracts ovate; calyx lobes not ciliate…….....***R. diffusa***

Rostellularia diffusa (Nees) Nees, Prodr. [A. P. de Candolle] 11: 371 (1847); Hook. f., Fl. Brit. India 4: 538 (1885); Gamble, Fl. Pres. Madras 1081 (1924); Vajr., Fl. Palghat Dist. 352 (1990).

Habit: Herb
Habitat: Evergreen forests and Grasslands
Morphology: Herb; leaves opposite; inflorescence an axillary spike; calyx 5-lobed, ciliate; corolla bilipped; stamens 2; ovary 2-loculed, hairy; capsule hairy.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2550* (GVCH); Karassuri, 20 October 2019, *Jabeena & Maya 2672* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2959* (GVCH); Plate 48: Fig. g.

Rostellularia diffusa **var.** ***prostrata*** (Roxb. ex C.B.Clarke) J.L.Ellis, Bull. Bot. Surv. India 30(1-4): 131 (1990); Hook. f., Fl. Brit. India 4: 538 (1885); Hook. f., Fl. Brit. India 4: 538 (1885); Gamble, Fl. Pres. Madras 1081 (1924); Vajr., Fl. Palghat Dist. 352 (1990).

Habit: Herb
Habitat: Deciduous forests
Morphology: Herb; leaves opposite; lateral nerves 3-4 pairs; inflorescence a terminal cylindrical spike; calyx 4-lobed, glabrous; corolla bilipped, glabrous; ovary 2-loculed, glabrous; capsule clavate, glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3556* (GVCH); Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 842* (GVCH).

Rostellularia neesii (Ramamoorthy) A.K.Mukh., Fl. Pachmarhi & Bori Reserves 236 (1984); *Justicia neesii* Ramam., Vajr., Fl. Palghat Dist. 352 (1990); *Justicia micrantha* Wall. ex Clarke, Hook. f., Fl. Brit. India 4: 536 (1885); Gamble, Fl. Pres. Madras 1080 (1924).

Habit: Herb
Habitat: Moist deciduous forests
Morphology: Herb; leaves opposite, glabrous; lateral nerves 3-4 pairs; inflorescence a terminal spike; calyx 4-lobed; corolla bilipped; stamens 2; ovary 2-loculed; capsule glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 24 September 2019, *Jabeena & Maya 2499* (GVCH).

Rostellularia procumbens (L.) Nees, Prodr. [A. P. de Candolle] 11: 371 (1847); *Justicia procumbens* L., Hook. f., Fl. Brit. India 4: 539 (1885); Gamble, Fl. Pres. Madras 1080 (1924).

Habit: Herb
Habitat: Moist Deciduous forests and grasslands
Morphology: Herb; leaves opposite, pubescent; lateral nerves 4-6 pairs; inflorescence a terminal spike; calyx 4-lobed, ciliate; corolla bilipped; stamens 2; ovary 2-loculed, glabrous; capsule glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: June-December
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Keshavanpara, 21 November 2017, *Jabeena & Maya 743* (GVCH); Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4483* (GVCH).

Ruellia L., Sp. Pl. [Linnaeus] 2: 634 (1753)

Ruellia prostrata Poir., Encycl. [J. Lamarck & al.] 6(1): 349 (1804); *Dipteracanthus prostratus* (Poir.) Nees., Vajr., Fl. Palghat Dist. 347 (1990); *Ruellia prostrata* Poir., Hook. f., Fl. Brit. India 4: 411 (1884); Gamble, Fl. Pres. Madras 1017 (1924); *Ruellia prostrata* Poir. var. *dejecta* (Nees) Clarke, Hook. f., Fl. Brit. India 4: 412 (1884).
Habit: Herb
Habitat: Degraded forest areas
Morphology: Herb; stem hairy; leaves opposite; flowers in axillary, 2-3-flowered cluster; calyx 5-lobed, ciliate; corolla bilipped; stamens 4, didynamous; ovary 2-loculed, glabrous; capsule oblong, pubescent.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: October-April
Distribution: Occasional
Altitude: 200-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3372* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5021* (GVCH).

Rungia Nees, Pl. Asiat. Rar. (Wallich). 3: 77 (1832)

Stem hairy; fertile bracts winged on either sides; sepals hairy...….....***R. pectinata***
Stem glabrous; fertile bracts aristate; sepals glabrous…..……***R. wightiana***

Rungia pectinata Nees, Prodr. [A. P. de Candolle] 11: 470 (1847); Vajr., Fl. Palghat Dist. 360 (1990); *Rungia parviflora* (Retz.) Nees var. *pectinata* (L.) Clarke, Hook. f., Fl. Brit. India 4: 550 (1885); Gamble, Fl. Pres. Madras 1071 (1924).

Habit: Herb
Habitat: Semi-evergreen forests and waste places
Morphology: Herb; leaves simple, entire; inflorescence an axillary sessile spike; calyx 5-partite, pubescent; corolla bilipped; stamens 2; ovary 2-loculed; ocules 2 in each cell; capsule ovoid, glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Common
Altitude: 400-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2937* (GVCH); Kollengode range, Minnampara, 09 December 2019, *Jabeena*

& Maya 3226 (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4063* (GVCH).

Rungia wightiana Nees, Pl. Asiat. Rar. (Wallich). 3: 110 (1832); Hook. f., Fl. Brit. India 4: 546 (1885); Gamble, Fl. Pres. Madras 1071 (1924).

Habit: Herb
Habitat: Evergreen forests
Morphology: Herb; leaves opposite, glabrous; lateral nerves 5-8 pairs; inflorescence a terminal spike; calyx 5-partite, glabrous; corolla bilipped; stamens 2; ovary 2-loculed; capsule ovoid, hairy.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: December-January
Distribution: Rare
Altitude: 1300-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 08 February 2020, *Jabeena & Maya 4032* (GVCH).

Strobilanthes Blume, Bijdr. Fl. Ned. Ind. 14: 781, 796-797 (1826)

1.Ovules more than 2 in each cell…….***S. crossandra***
1.Ovules 2 in each cell……...….(2)
2.Stamens 2…….….(3)
2.Stamens 4……...(11)
3.Lateral nerves 7-8 pairs……***S. consanguineus***
3.Lateral nerves more than 10 pairs…....(4)
4.Spike interrupted; stem tetragonous……***S. lawsonii***
4.Spike not interrupted; stem terete……...……***S. lanatus***
5.Stem tetragonous; winged at the nodes……..….***S. barbata***
5.Stem hardly tetragonous; not winged……...(6)
6.Inflorescence in panicles….***S. neoaspera***
6.Inflorescence not panicled…...……(7)
7.Flowers in heads…….…….(8)
7.Flowers in spikes……...…….(9)
8.Inflorescence globose; bracteoles oblanceolate; staminal sheath glabrous……..…….***S. anceps***
8.Inflorescence flattened; bracteoles linear; staminal sheath ciliate..……...***S. pulneyensis***
9.Stamens included…….....***S. anamallaica***
9.Stamens exserted…….……***S. ciliatus***
10.Spike panicled……...….***S. rubicundus***
10.Spike not panicled…...…...……(11)
11.Capsule beaked; bracts lanceolate; spike sub-tetragonous…….…....***S. dupenii***
11.Capsule not beaked; bracts ovate; spike ovoid……..……..***S. heyneana***

Strobilanthes anamallaica J.R.I.Wood, Kew Bull. 50(1): 10 (1995); *Strobilanthes adenophorus* sensu Anders., Hook. f., Fl. Brit. India 4: 440 (1884); Gamble, Fl. Pres. Madras 1040 (1924); *Nilgirianthus beddomei* Bremek., Vajr., Fl. Palghat Dist. 356 (1990).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, glabrous; lateral nerves 5-6 pairs; inflorescence an axillary spike; calyx deeply 5-partite; corolla funnel-shaped with included stamens; stamens 4, didynamous; ovary 2-loculed; ovules 2 in each cell.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: April-May

Distribution: Occasional

Altitude: 900-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2141* (GVCH); Hilltop, 08 February 2020, *Jabeena & Maya 4019* (GVCH).

Strobilanthes anceps Nees, Companion Bot. Mag. 2: 312 (1837); Hook. f., Fl. Brit. India 4: 442 (1884); Gamble, Fl. Pres. Madras 1038 (1924).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, fulvous glandular-hairy; lateral nerves 6-7 pairs; inflorescence a peduncled globose spike; calyx 5-lobed; corolla ventricose, pubescent; stamens 4; ovary 2-loculed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-April
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 12 January 2021, *Jabeena & Maya 4735* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5069* (GVCH).

Strobilanthes barbata Nees, Pl. Asiat. Rar. (Wallich). iii. 85 (1832); Hook. f., Fl. Brit. India 4: 437 (1884); Gamble, Fl. Pres. Madras 1037 (1924); *Nilgirianthus barbatus* (Nees) Bremek., Vajr., Fl. Palghat Dist. 356 (1990).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; stem winged at nodes; leaves opposite, glabrous; lateral nerves 7-12 pairs; petiole winged; inflorescence a sub-sessile dense-flowered spike; calyx 5-lobed, sub-equal; corolla 5-lobed, hairy inside; stamens 4, didynamous; ovary 2-loculed, glandular-hairy; capsule elliptic.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Occasional
Altitude: 300-700m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Ravi Varma Estate, 03 November 2020, *Jabeena & Maya 4355* (GVCH); Cherunelli, 06 February 2021, *Jabeena & Maya 4797* (GVCH).

Strobilanthes ciliata Nees, Pl. Asiat. Rar. (Wallich). iii. 85; Hook. f., Fl. Brit. India 4: 439 (1884); Gamble, Fl. Pres. Madras 1039 (1924); *Strobilanthes warreensis* Dalz., Hook. f., Fl. Brit. India 4: 439 (1884); Gamble, Fl. Pres. Madras 1039 (1924).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; leaves opposite, glabrous; lateral nerves 4-5 pairs; inflorescence an axillary peduncled spike; calyx 5-lobed; corolla 5-lobed; stamens 4, didynamous; ovary 2-loculed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Vulnerable
Phenology: December-May
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Padagiri, 12 March 2021, *Jabeena & Maya 5096* (GVCH).

Strobilanthes consanguinea T.Anderson, Enum. Pl. Zeyl. [Thwaites] 226, partim; Hook. f., Fl. Brit. India 4: 435 (1884); Gamble, Fl. Pres. Madras 1036 (1924); *Strobilanthes consanguineus* (Nees) Anders. var. *amomum* (Nees) Clarke Hook. f., Fl. Brit. India 4: 435 (1884); Gamble, Fl. Pres. Madras 1037 (1924); *Strobilanthes consanguineus* (Nees) Anders. var. *hypoleuca* (Nees) Clarke, Hook. f., Fl. Brit. India 4: 436 (1884); Gamble, Fl. Pres. Madras 1037 (1924).

Habit: Shrub

Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, glabrous; lateral nerves 7-8 pairs; inflorescence a shortly peduncled paniculate spike; calyx 5-lobed; corolla 5-lobed, glabrous; stamens 2; ovary 2-loculed; capsule glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Occasional
Altitude: 1200-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1023* (GVCH); Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1651* (GVCH).

Strobilanthes crossandra (Steud.) J.R.I.Wood, Novon 23(3): 391 (2014); *Hemigraphis elegans* (Hook.) Nees., Hook. f., Fl. Brit. India 4: 424 (1884); Gamble, Fl. Pres. Madras 1019 (1924).

Habit: Herb
Habitat: Moist Deciduous and Evergreen forests
Morphology: Herb; leaves opposite, pubescent; lateral nerves 4-5 pairs; flowers solitary axillary or in heads; calyx 5-partite, unequal; corolla funnel-shaped, 5-lobed, sub-equal; stamens 4, didynamous; ovary 2-loculed; ovules 2 in each cell; capsule linear, pubescent.
Raunkiaer's life-form:
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-February
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1744* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3369* (GVCH); Plate 48: Fig. h.

Strobilanthes dupeni Bedd. ex C.B.Clarke, Fl. Brit. India [J. D. Hooker] 4(11): 453 (1884); Gamble, Fl. Pres. Madras 1043 (1924); *Kanjarum palghatense* Ramam., Vajr., Fl. Palghat Dist. 354 (1990).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; leaves opposite, pubescent; inflorescence a terminal or lateral spike; calyx 5-lobed; corolla ventricose; stamens 4, included; ovary 2-loculed; capsule ellipsoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: August-October
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2073* (GVCH).

Strobilanthes heyneana Nees, in Wall. [Pl. As. Rar. iii. 85; Hook. f., Fl. Brit. India 4: 443 (1884); Gamble, Fl. Pres. Madras 1041 (1924); *Nilgirianthus heyneanus* (Nees) Bremek., Vajr., Fl. Palghat Dist. 357 (1990); *Strobilanthes asperrimus* Nees., Hook. f., Fl. Brit. India 4: 443 (1884); Gamble, Fl. Pres. Madras 1041 (1924).

Habit: Shrub
Habitat: Margins of Shola forests and Grasslands
Morphology: Shrub; leaves opposite, hairy; lateral nerves 8-9 pairs; inflorescence an axillary peduncled spike; calyx 5-lobed; corolla tubular, ventricose; stamens 4, didynamous; ovary 2-loculed, glabrous; capsule glabrous.

Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 624* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 694* (GVCH).

Strobilanthes lanata Nees, Prodr. [A. P. de Candolle] 11: 191 (1847); *Strobilanthes gossypinus* Anders., Hook.f., Fl. Brit. India 4: 434 (1884); Gamble, Fl. Pres. Madras 1037 (1924).

Habit: Shrub
Habitat: Dry hill slopes
Morphology: Shrub; leaves opposite; lateral nerves 10-13 pairs; inflorescence an axillary or terminal spike; calyx 5-lobed, equal, pubescent; corolla 5-lobed, ventricose; stamens 2; ovary 2-loculed, hairy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: November-April
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2427* (GVCH).

Strobilanthes lawsonii Gamble, Bull. Misc. Inform. Kew 1923(10): 374 (1923); Gamble, Fl. Pres. Madras 1037 (1924).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, hairy below; lateral nerves 10-12 pairs; calyx 5-lobed, equal; corolla tubular, 5-lobed, hairy inside; stamens 2; ovary 2-loculed; capsule ellipsoid, glabrous.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: October-December

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1488* (GVCH).

Strobilanthes neoaspera Venu & P.Daniel, Strobilanthes Penins. India 154 (2007); *Strobilanthes asper* sensu Wight, Hook. f., Fl. Brit. India 4: 452 (1884); Gamble, Fl. Pres. Madras 1041 (1924); *Nilgirianthus asper* (Wight) Sant., Vajr., Fl. Palghat Dist. 355 (1990).

Habit: Shrub

Habitat: Evergreen and Shola forests

Morphology: Shrub; leaves opposite, hairy; lateral nerves 7-10 pairs; calyx 5-lobed, equal, glandular-hairy; corolla tubular, 5-lobed, hairy; stamens 4, didynamous; ovary 2-loculed, glandular-hairy; capsule elliptic.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats

IUCN category: Not Evaluated

Phenology: January-April

Distribution: Rare

Altitude: 1000-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2018, *Jabeena & Maya 1440* (GVCH).

Strobilanthes pulneyensis C.B.Clarke, Fl. Brit. India [J. D. Hooker] 4(11): 438 (1884); Gamble, Fl. Pres. Madras 1038 (1924); *Xenacanthus pulneyensis* (Hook. f.) Bremek., Vajr., Fl. Palghat Dist. 363 (1990).

Habit: Shrub
Habitat: Semi-evergreen forests
Morphology: Shrub; leaves elliptic, hairy; lateral nerves 5-7 pairs; inflorescence an axillary spike; calyx 5-lobed; corolla tubular, 5-lobed; stamens 4, didynamous; ovary 2-loculed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 363* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1955* (GVCH); Plate 49: Fig. a

Strobilanthes rubicunda T.Anderson, J. Linn. Soc., Bot. 9: 483 (1867); Hook. f., Fl. Brit. India 4: 475 (1885); Gamble, Fl. Pres. Madras 1044 (1924); *Leptacanthus rubicundus* Nees, Vajr., Fl. Palghat Dist. 354 (1990).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite, glabrous; inflorescence a terminal panicle; calyx 5-lobed, glandular-hairy; corolla tubular, glabrous; stamens 4, didynamous; ovary 2-loculed; capsule linear, glabrous.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2065* (GVCH).

Thunbergia Retz., Physiogr. Salsk. Handl. 1(3): 163 (1780)

1.Plant erect…...……..……***T. erecta***
1.Plant climbing……..……(2)
2.Flower white……..……..(3)
2.Flower yellow……..……(4)
3.Bract tomentose...……...…***T. tomentosa***
3.Bract glabrous…...……***T. fragrans***
4.Raceme drooping……...…***T. mysorensis***
4.Raceme not drooping……..…….***T. alata***

Thunbergia alata Bojer ex Sims, Bot. Mag. 52: t. 2591 (1825); Hook. f., Fl. Brit. India 4: 391 (1884); Gamble, Fl. Pres. Madras 1008 (1924); Vajr., Fl. Palghat Dist. 362 (1990).

Habit: Climber

Habitat: Grown as garden plant; often found as an escape

Morphology: Climber; leaves opposite, 5-ribbed at base; petiole winged; flowers solitary; calyx obscure; corolla ventricose, 5-lobed; stamens 4, didynamous; ovary 2-loculed; capsule globose.

Raunkiaer's life-form: Liana

Phytogeographical affinity: African

IUCN category: Not Evaluated

Phenology: December-March

Distribution: Occasional

Altitude: 900-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 06 July 2019, *Jabeena & Maya 2164* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3522* (GVCH).

Thunbergia erecta T.Anderson, J. Proc. Linn. Soc., Bot. 7: 18 (1863); Gamble, Fl. Pres. Madras 1008 (1924).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves opposite, glabrous; inflorescence an axillary raceme; calyx 5-9-toothed; corolla ventricose, 5-lobed; stamens 4, didynamous; ovary 2-loculed; capsule globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: African
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2213* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3971* (GVCH).

Thunbergia fragrans Roxb., Pl. Coromandel 1(3): 47, t. 67 (1796); Hook. f., Fl. Brit. India 4: 390 (1884); Gamble, Fl. Pres. Madras 1007(707). 1924; Manilal, Fl. Silent Valley 212. 1988; Babu, Fl. Malappuram Dist. 600. 1990; Vajr., Fl. Palghat Dist. 362. 1990

Habit: Climber
Habitat: Deciduous forests
Morphology: Climber; leaves opposite, 5-ribbed; flowers axillary, solitary; calyx 10-16-toothed; corolla tubular; stamens 4, didynamous; ovary 2-loculed; capsule glabrous.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Common
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 797* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2381* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2776* (GVCH); Plate 49: Fig. b.

Thunbergia mysorensis (Wight) T.Anderson, J. Linn. Soc., Bot. 9: 448 (1867); Hook. f., Fl. Brit. India 4: 393 (1884); Gamble, Fl. Pres. Madras 1008 (1924); Vajr., Fl. Palghat Dist. 362 (1990).

Habit: Climber
Habitat: Evergreen and semi-evergreen forests
Morphology: Climber; leaves lanceolate, 3-ribbed; inflorescence an axillary, drooping raceme; calyx obscure; corolla bright yellow, ventricose, glabrous; stamens 4, didynamous; anthers spurred; capsule glabrous.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Rare
Altitude: 600-700m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1229* (GVCH).

Thunbergia tomentosa Wall. ex Nees, Pl. Asiat. Rar. (Wallich). iii. 78 (1832); Hook. f., Fl. Brit. India 4: 392 (1884); Gamble, Fl. Pres. Madras 1008 (1924).

Habit: Climber
Habitat: Degraded forests in high ranges
Morphology: Climber; leaves 3-ribbed at base; flowers axillary, solitary; calyx 15-toothed; corolla tubular, 5-lobed; stamens 4; ovary 2-loculed; capsule villous.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-March

Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3997* (GVCH).

BIGNONIACEAE

1.Plant climbing……..……...***Pyrostegia***
1.Plant erect……...…….(2)
2.Shrub…….....***Tecoma***
2.Trees…...…….(3)
3.Leaves simple bipinnate…....…….(4)
3.Leaves multipinnate……...…….(7)
4.Fruit linear, angled or terete……(5)
4.Fruit flat……...……(6)
5.Panicle pendulous; calyx bilipped……....***Kigelia***
5.Panicle not pendulous; calyx unequally 5-lobed……...……...….***Stereospermum***
6.Calyx spathaceous……...***Spathodea***
6.Calyx not spathaceous…..…....***Pajanelia***
7.Fruit warty tubercled…....***Radermachera***
7.Fruit smooth……...….(8)
8.Calyx campanulate; stamen 5..***Oroxylum***
8.Calyx truncate; stamens 4.…..***Jacaranda***

Jacaranda Juss., Gen. Pl. [Jussieu] 138 (1789)

Jacaranda mimosifolia D.Don, Bot. Reg. 8: t. 631 (1822).

Habit: Tree
Habitat: Planted
Morphology: Tree; leaves bipinnate; leaflets opposite, sessile; lateral nerves 5-8 pairs; inflorescence an axillary or terminal panicle; calyx 5-lobed; corolla tubular, bilipped; stamens 4, didynamous; ovary 2-loculed; capsule orbicular; seeds winged.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: South American
IUCN category: Vulnerable
Phenology: December-July
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4047* (GVCH).

Kigelia DC., Biblioth. Universelle Genève n.s., xvii. 135 (1838)
Kigelia africana (Lam.) Benth., Niger Fl. [W. J. Hooker]. 463 (1849); *Kigelia pinnata* (Jacq.) DC., Gamble, Fl. Pres. Madras 1000 (1924).

Habit: Tree
Habitat: Planted
Morphology: Tree; leaves imparipinnate; leaflets 5-9; lateral nerves 7-11 pairs; inflorescence an axillary panicle; calyx campanulate, bilipped; corolla campanulate; stamens 4, didynamous; ovary 1-loculed; fruit indehiscent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2247* (GVCH); Plate 49: Fig. c.

Oroxylum Vent., Dec. Gen. Nov. (1808) 8

Oroxylum indicum (L.) Benth. ex Kurz, Forest Fl. Burma 2: 237 (1877); Hook. f., Fl. Brit. India 4: 378 (1884); Gamble, Fl. Pres. Madras 994 (1924); Vajr., Fl. Palghat Dist. 335 (1990).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; leaves imparipinnate; leaflets 3-5 in each pinnae; lateral nerves, 4-6 pairs; inflorescence a terminal raceme; calyx campanulate; corolla campanulate, 5-lobed, sub-equal; stamens 5; ovary sub-sessile; stigma bilobed; capsule 2 valved, compressed.

Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 06-07-2019, *Jabeena & Maya 2338* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4252* (GVCH).

Pajanelia DC., Biblioth. Universelle Genève xvii. (1838) 130; (Rev. Bign. 14)

Pajanelia longifolia (Willd.) K.Schum., Nat. Pflanzenfam. [Engler & Prantl] 4, Abt. 3b: 244 (1894); Vajr., Fl. Palghat Dist. 335 (1990); *Pajanelia rheedei* Wight, Hook. f., Fl. Brit. India 4: 384 (1884); Gamble, Fl. Pres. Madras 1000 (1924).

Habit: Tree
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Tree; leaves imparipinnate; leaflets 7-17; lateral nerves 6-10 pairs; inflorescence a terminal racemose panicle; calyx campanulate, 5-lobed; corolla ventricose, 5-lobed, sub-equal; stamens 4, didydynamous; ovary 2-loculed; capsule 2 valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: January-June
Distribution: Rare
Altitude: 400-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3079* (GVCH).

Pyrostegia C.Presl, Abh. Königl. Böhm. Ges. Wiss. ser. 5, 3: 523 (1845)

Pyrostegia venusta Miers, Proc. Roy. Hort. Soc. iii. (1863) 188; *Pyrostegia ignea* (Vell.) Presl, Gamble, Fl. Pres. Madras 1000 (1924).

Habit: Climber
Habitat: Grown as an ornamental plant in the High Ranges
Morphology: Climber; tendrils simple; leaves bifoliolate; inflorescence a drooping corymbose cyme; calyx campanulate, 5-lobed; corolla tubular, bilipped; stamens 4, didynamous; ovary 2-loculed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: December-June
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3526* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3735* (GVCH).

Radermachera Zoll. & Moritzi, Syst. Verz. (Zollinger) 53 (1854)

Radermachera xylocarpa K.Schum., Nat. Pflanzenfam. [Engler & Prantl] iv. Abt. 3 b, 243 (1895); Vajr., Fl. Palghat Dist. 335 (1990); *Stereospermum xylocarpum* (Roxb.) Benth., Hook. f., Fl. Brit. India 4: 383 (1884).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves compound; pinnae 7-9; leaflets 3-9 in each pinnae; lateral nerves 4-7 pairs; inflorescence a terminal panicled cyme; calyx campanulate, 5-lobed; corolla campanulate, bilipped, glabrous; stamens 4, didynamous; ovary oblong, glabrous; capsule, 2-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: March-April

Distribution: Rare
Altitude: 400-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3345* (GVCH).

Spathodea P.Beauv., Fl. Oware 1: 46 (1805)

Spathodea campanulata P.Beauv., Fl. Oware 1: 47, tt. 27-28 (1805); Gamble, Fl. Pres. Madras 1000 (1924).

Habit: Tree
Habitat: Planted as shade tree in coffee plantations
Morphology: Tree; to leaves imparipinnate; leaflets 9-19; lateral nerves 5-10 pairs; inflorescence a terminal raceme; calyx spathaceous; corolla 5-lobed, glandular; stamens sub-equal; ovary pubescent; capsule 2-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: African
IUCN category: Least Concern
Phenology: November-May
Distribution: Common
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2374* (GVCH); Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2995* (GVCH); Oothukkuzhi, 11 January 2020, *Jabeena & Maya 3701* (GVCH).

Stereospermum Cham., Linnaea 7(6): 720 (1833)

Filaments of stamens with a tuft of woolly hair at the base….....***S. tetragonum***
Filaments of stamens without the tuft of hairs at the base…..……....***S. chelonoides***

Stereospermum chelonoides (L.f.) DC., Biblioth. Universelle Genève 17: 124 (1838); *Stereospermum suaveolens* (G. Don) DC., Hook. f., Fl. Brit. India 4: 382 (1884); Gamble, Fl. Pres. Madras 998 (1924).

Habit: Tree
Habitat: Moist Deciduous forests
Morphology: Tree; leaves imparipinnate; leaflets 5-11, coriaceous, pubescent; lateral nerves 6-8 pairs; inflorescence a drooping panicle; calyx campanulate, 3-5-lobed, hairy; corolla funnel-shaped, 5-lobed, pubescent; stamens 4, didynamous; ovary 2-loculed; capsule indehiscent.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-August
Distribution: Occasional
Altitude: 200-900m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1838* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 06 July 2019, *Jabeena & Maya 2335* (GVCH).

Stereospermum tetragonum DC., Biblioth. Universelle Genève xvii. (1838) 124; Prod. ix. 210 (1845); Gamble, Fl. Pres. Madras 998 (1924); *Stereospermum chelonoides* sensu Wight, Hook. f., Fl. Brit. India 4: 383 (1884); *Stereospermum colais* (Buch.-Ham. ex Dillw.) Mabb., var. *colais* Vajr., Fl. Palghat Dist. 336 (1990).

Habit: Tree
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Tree; leaves imparipinnate; leaflets 7-13; lateral nerves 6-10 pairs; inflorescence a terminal panicle; calyx campanulate, 3-5-lobed; corolla glandular-hairy, 5-lobed, sub-equal; stamens 4, didynamous; ovary 2-loculed; capsule sub-tetragonus.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-October
Distribution: Occasional
Altitude: 200-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4217* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4505* (GVCH).

Tecoma Juss., Gen. Pl. [Jussieu] 139 (1789)

Tecoma stans (L.) Kunth, Nov. Gen. Sp. [H.B.K.] 3: 144 (1819); Vajr., Fl. Palghat Dist. 336 (1990); *Stenolobium stans* (L.) D.Don, Gamble, Fl. Pres. Madras 1000 (1924).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves opposite; leaflets 3-7 leaflets; inflorescence an erect terminal panicle; calyx campanulate; corolla tubular; stamens included; ovary 2-loculed; fruit an indehiscent capsule.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: South American
IUCN category: Least Concern
Phenology: December-April
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2987* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3435* (GVCH).

LENTIBULARIACEAE

Utricularia L., Sp. Pl. 1: 18 (1753)

1.Plant epiphytic; leaves orbicular……***U. striatula***
1.Plant terrestrial; leaves not orbicular……..(2)
2.Raceme twining……...***U. reticulata***
2.Raceme erect……....(3)
3.Mouth of the trap terrestrial or lateral….……...…***U. caerulea***
3.Mouth of the trip basal……...….(4)
4.Peduncle winged……..……...…(5)
4.Peduncle not winged……...…..…(6)
5.Seeds obovoid; spur upto 3.5 mm long……...……***U. lazulina***
5.Seeds ellipsoid; spur 5-7 mm long……***U. praeterita***
6.Pedicel winged at anthesis……..***U. graminifolia***
6.Pedicel not winged at anthesis……***U. sunilii***

Utricularia caerulea L., Sp. Pl. 1: 18 (1753); Gamble, Fl. Pres. Madras 983 (1924); Vajr., Fl. Palghat Dist. 330 (1990).

Habit: Herb
Habitat: Grasslands and Marshy areas
Morphology: Herb; stolons capillary; foliar organs rosulate; traps stalked; inflorescence a simple raceme; bracts elliptic; calyx 2-partite, sub-equal; corolla bilipped; stamens 2; ovary ovoid, 1-loculed, many-ovuled; capsule sub-globose.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: August-October
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 712* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2847* (GVCH); Hilltop, 01 February 2020, *Jabeena & Maya 3987* (GVCH).
Utricularia graminifolia Vahl, Enum. Pl. [Vahl] i. 195 (1804); Gamble, Fl. Pres. Madras 981 (1924); *Utricularia smithiana* Wight, Gamble, Fl. Pres. Madras 982 (1924); *Utricularia caerulea* sensu Clarke, Hook.f., Fl. Brit. India 4: 331 (1884).

Habit: Herb
Habitat: Marshy Grasslands
Morphology: Herb; rhizoids glandular; stolon glandular; traps sub-globose;

inflorescence a simple raceme; scales basifixed; pedicel winged; calyx 2-partite; corolla bilipped; spur curved; stamens 2; ovary ovoid, 1-loculed; capsule ovoid.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-March
Distribution: Common
Altitude: 400-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1077* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1719* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4268* (GVCH).

Utricularia lazulina P.Taylor, Proc. Indian Acad. Sci. Pl. Sci. 93(2): 101 (1984) (1984).

Habit: Herb
Habitat: Marshy areas in Grasslands
Morphology: Herb; rhizoid papillose; stolon branched; traps sub-globose; inflorescence a simple raceme; calyx 2-partite, unequal; corolla bilipped; spur curved; stamens 2; ovary ovoid, 1-loculed; capsule ovoid.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats

IUCN category: Least Concern

Phenology: August-October

Distribution: Common

Altitude: 400-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 454* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 15 October 2017, *Jabeena & Maya 711* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2971* (GVCH).

Utricularia praeterita P.Taylor, in K.M. Matthew, Fl. Tamilnadu Carnatic 3(1): 1120 (1983).
Habit: Herb
Habitat: Grasslands
Morphology: Herb; rhizoid branched; traps sub-globose; inflorescence a simple raceme; calyx 2-partite, sub-equal; corolla bilipped; spur conical; stamens 2; ovary ovoid, 1-loculed, many-ovuled; capsule ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Near Threatened
Phenology: August-October
Distribution: Rare
Altitude: 1300-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1078* (GVCH).

Utricularia reticulata Sm., Exot. Bot. ii. 119. t. 119 (1805); Hook. f., Fl. Brit. India 4: 331 (1884); Gamble, Fl. Pres. Madras 982 (1924).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; rhizoids capillary; stolon capillary; traps sub-globose; inflorescence a simple raceme; calyx 2-partite, sub-equal; corolla bilipped; spur slightly curved; stamens 2; ovary ovoid, 1-loculed; capsule ovoid.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Least Concern

Phenology: September-March

Distribution: Occasional

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1080* (GVCH); Kollengode range,

Pothumala, 12 October 2019, *Jabeena & Maya 2574* (GVCH); Plate 49: Fig. d.

Utricularia striatula Sm., Cycl. [A. Rees], (London ed.) xxxvii. n. 17 (1819); Gamble, Fl. Pres. Madras 983 (1924); Vajr., Fl. Palghat Dist. 331 (1990); *Utricularia orbiculata* Wall. ex A. DC., Hook. f., Fl. Brit. India 4: 334 (1884).

Habit: Herb
Habitat: On wet rocks in Grasslands
Morphology: Herb; rhizoid branched; stolons glandular; traps globose; calyx 2-partite, unequal; corolla bilipped; spur cylindrical; stamens 2; ovary obliquely ovoid; capsule obliquely ovoid.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Least Concern
Phenology: September-March
Distribution: Occasional
Altitude: 400-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 06 July 2019, *Jabeena & Maya 2329* (GVCH).

Utricularia sunilii Naveen Kum. & K.M.P.Kumar, Phytotaxa 371(2): 140 (2018).

Habit: Herb
Habitat: Wet areas in high ranges
Morphology: Herb; rhizoids glabrous; traps globose; calyx 2-partite, unequal; corolla bilipped, glabrous; stamens 2; ovary ovoid, 1-loculed; fruit oblong.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Kerala

IUCN category: Not Evaluated

Phenology: September-January

Distribution: Rare

Altitude: 1300-1500m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1124* (GVCH); Plate 49: Fig. e.

VERBENACEAE

1.Inflorescence a raceme……..….***Duranta***
1.Inflorescence a spike…….....….(2)
2.Spike axillary capitate…..……..***Lantana***
2.Spike terminal elongate...***Stachytarpheta***

Duranta L., Sp. Pl. 2: 637 (1753)

Duranta erecta L., Sp. Pl. 2: 637 (1753); *Duranta plumieri* Jacq., Hook. f., Fl. Brit. India 4: 560 (1885); Gamble, Fl. Pres. Madras 1106 (1924).

Habit: Shrub

Habitat: Grown as garden plant; also getting naturalized

Morphology: Shrub; leaves elliptic, glabrous; inflorescence an axillary or terminal panicled racemes; calyx tubular, 5-lobed, persistent; corolla tubular; stamens 4, didynamous; ovary globose, 8-loculed; drupe globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American

IUCN category: Least Concern

Phenology: July-September

Distribution: Occasional

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 2983* (GVCH); Koonampalam, 14 December 2019, *Jabeena & Maya 3464* (GVCH).

Lantana L., Sp. Pl. [Linnaeus] 2: 626 (1753)

Plants armed…..…….....***L. camara***

Plants unarmed ……..…….***L. indica***

Lantana camara L., Sp. Pl. 2: 627 (1753); *Lantana aculeata* L., Gamble, Fl. Pres. Madras 1087 (1924); *Lantana camara* L. var. *aculeata* (L.) Moldenke, Hook. f., Fl. Brit. India 4: 562 (1885); Vajr., Fl. Palghat Dist. 366 (1990).

Habit: Shrub
Habitat: Grown as garden plant; now naturalized as weed
Morphology: Shrub; stem armed; leaves opposite, pubescent; inflorescence terminal or axillary spike; flowers sessile; calyx obscurely toothed; corolla salver-shaped, 5-lobed, bilipped; stamens 4; ovary 2-loculed; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, African, Holarctic and South American
IUCN category: Not Evaluated
Phenology: April-June
Distribution: Common
Altitude: 200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2375* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2833* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2942* (GVCH).

Lantana indica Roxb., Hort. Bengal. 46 (1832); Fl. Ind. iii. 89; Hook. f., Fl. Brit. India 4: 562 (1885); Gamble, Fl. Pres. Madras 1087 (1924).

Habit: Shrub
Habitat: Deciduous forests and Grasslands
Morphology: Shrub; leaves ovate, pubescent; lateral nerves 6-7 pairs; inflorescence an axillary spike; calyx truncate, obscurely toothed; corolla salver-shaped; stamens 5; ovary 2-loculed; berry globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific and African

IUCN category: Not Evaluated

Phenology: October-January

Distribution: Occasional

Altitude: 1000-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 309* (GVCH); Mattumala, 11 June 2018, *Jabeena & Maya* 1462 (GVCH); Plate 49: Fig. f.

Stachytarpheta Vahl, Enum. Pl. [Vahl] 1: 205 (1804), nom. cons.

Stachytarpheta jamaicensis (L.) Vahl, Enum. Pl. [Vahl] 1: 206 (1804); Vajr., Fl. Palghat Dist. 369 (1990); *Stachytarpheta indica* (L.) Vahl var. *jamaicensis* (L.) Moon, Gamble, Fl. Pres. Madras 1090 (1924); *Stachytarpheta indica* sensu Clarke, Hook. f., Fl. Brit. India 4: 564 (1885).

Habit: Shrub

Habitat: Dry and Moist Deciduous forests

Morphology: Shrub; leaves obovate; inflorescence a terminal spike; calyx 4-toothed; corolla salver-shaped; stamens 4, didynamous; ovary 2-loculed; drupe oblong.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Not Evaluated

Phenology: June-December

Distribution: Common

Altitude: 200-1400m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1220* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 1995* (GVCH); Chakkaliyampara, 03 November 2019, *Jabeena & Maya 2856* (GVCH).

LAMIACEAE

1.Fruit not 4-lobed, or if 4-lobed, then drupaceous, or if separating into nutlets, then ovary entire……..……..….(2)
1.Fruit separating into 4 distinct nutlets; ovary always 4-lobed…….…..…..(9)
2.Leaves palmately 3-5 foliolate…....***Vitex***
2.Leaves simple……..(3)
3.Corolla regular…….....(4)
3.Corolla irregular…...……...……(5)
4.Inflorescence a panicle; flower 6-merous…….……...***Tectona***
4.Inflorescence a corymb; flowers 4-merous…….……...***Callicarpa***
5.Inflorescence cymose……...……..(6)
5.Inflorescence panicled raceme……..…(7)
6.Stamens included; inflorescence corymbose or thyroid cyme...…….***Premna***
6.Stamens exserted; inflorescence a simple cyme…..……...…….***Holmskioldia***
7.Calyx glandular……..***Gmelina***
7.Calyx eglandular…….….(8)
8.Anthers basifixed; stigma lobes unequal……...……...***Rotheca***
8.Anthers versatile; stigma lobes equal…….…….....***Clerodendrum***
9.Calyx distinctly bilipped……...…….(10)
9.Calyx equal or sub-equal…..……..(18)
10.Flowers in uninterrupted spikes forming heads…..……..(11)
10.Flowers in interrupted spikes or thyrsus…….……..……(12)
11.Disc entire……...***Platostoma***
11.Disc lobed……...***Anisochilus***
12.Ovary 4-lobed…….….(13)
12.Ovary 4-partite…….(14)
13.Calyx 10 ribbed; stamens 4....***Teucrium***
13.Calyx 8 ribbed; stamens 2…….....***Salvia***
14.Upper lip of corolla shorter than lower lip……...…..(15)
14.Upper lip of corolla equal or longer than lower lip…….....……..(17)
15.Flowers paired at nodes of racemes…….….***Scutelleria***
15.Flowers not paired at nodes……(16)
16.Cyme paniculate…….……***Isodon***
16.Cyme dichasial, aggregated in thyrsus or flowers in false verticals……..***Coleus***
17.Stigma entire…….....***Orthosiphon***
17.Stigma bifid…….……***Ocimum***
18.Plant stellately pubescent……***Gomphostemma***
18.Plant not stellately pubescent.....…(19)
19.Leaves in whorls of 3…...***Colebrookea***
19.Leaves opposite……...……...……(20)
20.Flowers in axillary clusters, cymes or globose heads……..……..….(21)
20.Flowers in elongated spikes, racemes or panicles…..……...…(25)
21.Calyx 5 toothed……....(22)
21.Calyx 8-10 toothed……...…...(24)
22.Anthers erect, divaricate……....***Mentha***
22.Anthers declinate, not divaricate….(23)
23.Style bifid……..…….***Mesophaerum***
23.Style entire……...…...***Hyptis***
24.Calyx teeth spinescent; corolla orange……...…….....***Leonotis***
24.Calyx teeth not spinescent; corolla white…….……...***Leucas***
25.Corolla 4-lobed……..***Pogostemon***
25.Corolla 5-lobed……..….***Anisomeles***

Anisochilus Wall. ex Benth., Edwards's Bot. Reg. 15: sub t. 1300, no. 98 (1830)

Stem silvery white tomentose; leaves obovate; leaf apex acute…….***A. argenteus***
Stem pubescent; leaves ovate; leaf apex obtuse……...….***A. carnosus***

Anisochilus argenteus Gamble, Fl. Madras 1127 (1924); et in Kew Bull. 1924, 265.

Habit: Herb
Habitat: Rocky areas in Evergreen forests and Grasslands

Morphology: Herb; stem tomentose; leaves whorled; spike terminal, cylindrical, densely white villous, subtended by a pair of leaves; bracts densely villous; calyx 2-lipped, much deflexed; corolla bilipped, decurved; stamens 4, didynamous; ovary 4-partite.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to South India
IUCN category: Not Evaluated
Phenology: December-February
Distribution: Rare
Altitude: 1200-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1048* (GVCH).

Anisochilus carnosus (L.f.) Wall., Pl. Asiat. Rar. (Wallich). 2(5): 18 (1830); Hook. f., Fl. Brit. India 4: 627 (1885); Gamble, Fl. Pres. Madras 1127 (1924); Vajr., Fl. Palghat Dist. 372 (1990).

Habit: Herb
Habitat: Rocky areas in Grasslands
Morphology: Herb; leaves opposite, pubescent; inflorescence terminal; calyx bilipped; corolla 2-lipped, 5-lobed; stamens 4, exserted; ovary 4-partite; nutlets ovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1826* (GVCH); Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4479* (GVCH).

Anisomeles R.Br., Prodr. Fl. Nov. Holland. 503 (1810)

Anisomeles indica (L.) Kuntze, Revis. Gen. Pl. 2: 512 (1891); Gamble, Fl. Pres. Madras 1140 (1924); Vajr., Fl. Palghat Dist. 373 (1990).

Habit: Herb
Habitat: Moist, Dry Deciduous forests and wastelands
Morphology: Herb; leaves opposite, hairy; inflorescence an axillary or terminal spike; calyx campanulate, 5-lobed; corolla bilipped; stamens 4, didynamous; ovary 4-partite; nutlets 4.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3006* (GVCH); Kollengode range, Mattumala, 04 November 2020, *Jabeena & Maya 4358* (GVCH); Plate 49: Fig. g.

Callicarpa L., Sp. Pl. 1: 111 (1753)

Callicarpa tomentosa (L.) L., Syst. Veg., ed. 13. 130 (1774); Vajr., Fl. Palghat Dist. 364 (1990); *Callicarpa arborea* Miq. ex Clarke, Hook. f., Fl. Brit. India 4: 507 (1885); *Callicarpa lanata* L., Gamble, Fl. Pres. Madras 1092 (1924).
Habit: Shrub
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Shrub; leaves opposite, glaucous; lateral nerves 6-8 pairs; inflorescence an axillary corymbose cyme; calyx campanulate, 5-lobed; corolla 4-lobed; stamens 4; ovary globose, pubescent, 2-loculed; ovules 2 in each cell; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: November-April
Distribution: Common
Altitude: 400-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 862* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 977* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2001* (GVCH); Plate 49: Fig. h.

Clerodendrum L., Sp. Pl. 2: 637 (1753)

1.Corolla red or pink coloured……...***C. thomsoniae***
1.Corolla white……..……(2)
2.Inflorescence a condensed cyme ……***C. chinense***
2.Inflorescence a panicle..***C. infortunatum***

Clerodendrum chinense (Osbeck) Mabb., Pl.-Book (corr. repr. 1989) 707 (1989); *Clerodendrum philippinum* Schauer, Vajr., Fl. Palghat Dist. 365 (1990); *Clerodendrum fragrans* Hort. ex Vent., Gamble, Fl. Pres. Madras 1100 (1924).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves ovate, 3-ribbed at base; inflorescence a terminal condensed cyme; calyx campanulate, 5-partite; corolla salver-shaped; stamens 4, didynamous; ovary imperfectly 4-loculed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: February-May
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 260* (GVCH).

Clerodendrum infortunatum L., Sp. Pl. 2: 637 (1753); Hook. f., Fl. Brit. India 4: 594 (1885); Gamble, Fl. Pres. Madras 1100 (1924).
Habit: Shrub
Habitat: Degraded Forest areas
Morphology: Shrub; leaves opposite, tomentose; 5-7-ribbed at base; inflorescence a terminal panicle; calyx cupular, 5-lobed; corolla tubular, 5-lobed, hairy; stamens 4, didynamous; ovary globose; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-February
Distribution: Common
Altitude: 400-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 098* (GVCH); Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3332* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4256* (GVCH); Plate 50: Fig. a

Clerodendrum thomsoniae Balf., in Edinb. N. Phil. Journ. n.s., xv. (Jan.-Apr. 1862) 233.

Habit: Climber
Habitat: Grown as garden plant
Morphology: Climber; leaves opposite; inflorescence a solitary cyme; calyx deeply 4-fid; corolla tubular, 5-lobed; stamens 4; ovary imperfectly 4-loculed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: African
IUCN category: Not Evaluated
Phenology: August-November
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2807* (GVCH).

Colebrookea Sm., Exot. Bot. 2: 111, t. 115 (1806)

Colebrookea oppositifolia Sm., Exot. Bot. ii. 111. t. 115; Hook. f., Fl. Brit. India 4: 642 (1885); Gamble, Fl. Pres. Madras

1138 (1924); Vajr., Fl. Palghat Dist. 374 (1990).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; leaves opposite, tomentose; lateral nerves 8-10 pairs; inflorescence a terminal panicled spike; calyx 4-lobed, hairy; corolla 4-lobed, sub-equal; stamens 4, exserted in male flowers, included in female flowers; filaments naked; ovary 4-partite; style bifid; nutlets obovoid with hairy tips.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-May
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 869* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3815* (GVCH).

Coleus Lour., Fl. Cochinch. 2: 372 (1790)

Coleus barbatus (Andrews) Benth. ex G.Don, Hort. Brit. [Loudon] 483 (1830); *Coleus barbatus* (Andr.) Benth., Hook. f., Fl. Brit. India 4: 625 (1885); Gamble, Fl. Pres. Madras 1124 (1924); *Coleus forskohlii* auct., Vajr., Fl. Palghat Dist. 374 (1990).

Habit: Herb
Habitat: Grasslands and Dry Deciduous forests
Morphology: Herb; leaves opposite, pubescent; inflorescence a terminal raceme; calyx bilipped; corolla bilipped, decurved; stamens 4, didynamous; anther cells confluent; ovary 4-partite.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Common
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 582* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2410* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3218* (GVCH).

Gmelina L., Sp. Pl. 2: 626 (1753)

Gmelina arborea Roxb. ex Sm., Cycl. [A. Rees], (London ed.) 16: Gmelina n. 4 (1810); Hook. f., Fl. Brit. India 4: 581 (1885); Gamble, Fl. Pres. Madras 1097 (1924); Vajr., Fl. Palghat Dist. 365 (1990).

Habit: Tree
Habitat: Moist and Dry Deciduous forests
Morphology: Tree; leaves opposite, coriaceous; lateral nerves 3-5 from base; inflorescence a terminal panicle; calyx campanulate, 5-lobed; corolla bilabiate, 5-lobed, sub-equal; stamens 4, didynamous; ovary glabrous; drupe ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: January-June
Distribution: Rare
Altitude: 400-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, Jabeena & Maya 4130 (GVCH).

Gomphostemma Wall. ex Benth., Pl. Asiat. Rar. (Wallich). 2(pts. 4-5): 12

Gomphostemma heyneanum Wall., Numer. List [Wallich] n. 2152 (1829); Gamble, Fl. Pres. Madras 1156 (1924); Vajr., Fl. Palghat Dist. 375 (1990).

Habit: Herb
Habitat: Evergreen forests

Morphology: Herb; stem stellate-hairy; leaves opposite; lateral nerves 5-7 pairs; inflorescence a terminal spike; calyx campanulate, 5-lobed; corolla bilipped; stamens 4, didynamous; ovary 4-partite; style bifid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Occasional
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1151* (GVCH); Keshavanpara, Pothumala, 12 October 2019, *Jabeena & Maya 2598* (GVCH).

Holmskioldia Retz., Observ. Bot. (Retzius) vi. 31 (1791)

Holmskioldia sanguinea Retz., Observ. Bot. (Retzius) vi. 31. (1791); Hook. f., Fl. Brit. India 4: 501 (1885); Gamble, Fl. Pres. Madras 1106 (1924).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves ovate, pubescent; inflorescence an axillary pedunculate cyme; calyx petaloid; Corolla tubular, unequally 5-lobed; drupe obovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 575* (GVCH); Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 780* (GVCH).

Hyptis Jacq., Collectanea [Jacquin] 1: 101, 103 (1787), nom. cons.

Hyptis capitata Jacq., Collectanea [Jacquin] 1: 102; Ic. Rar. 1, t. 114.

Habit: Shrub
Habitat: Degraded forests and wastelands
Morphology: Shrub; leaves elliptic; lateral nerves 5-7 pairs; inflorescence an axillary or terminal head; calyx 5-7-lobed, glandular; corolla bilipped; stamens 4; nutlets smooth.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and South American
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Rare
Altitude: 200-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 09 March 2021, *Jabeena & Maya 5020* (GVCH).

Isodon (Schrad. ex Benth.) Spach, Hist. Nat. Vég. (Spach) 9: 162 (1840)

1.Lips of fruiting calyx prominent……...……....***I. nigrescens***
1.Lips of fruiting calyx not prominent....(2)
2.Upper leaflets sessile, lower ones petioled…….…….……..***I. nilgherricus***
2.All leaves petioled……..…….(3)
3.Subshrubs; branchlets glabrescent; thyrsus upto 15 cm long……..….***I. wightii***
3.Herb; branchlets glandular-hairy; panicle upto 25 cm long…..…..…***I .lophanthoides***

Isodon lophanthoides (Buch.-Ham. ex D.Don) H.Hara, J. Jap. Bot. 60(8): 235 (1985): (1985); *Plectranthus stocksii* Hook. f., Fl. Brit. India 4: 618 (1885); Gamble, Fl. Pres. Madras 1121 (1924).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves opposite, glandular below; inflorescence a terminal Flowers many in short cymes forming terminal panicle; calyx 5-ribbed, glandular; corolla bilipped; stamens 4; ovary 4-partite.

Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 789* (GVCH); Hilltop, 20 January 2018, *Jabeena & Maya 1125* (GVCH).

Isodon nigrescens (Benth.) H.Hara, J. Jap. Bot. 60(8): 236 (1985); *Plectranthus nigrescens* Benth., Hook. f., Fl. Brit. India 4: 617 (1885); Gamble, Fl. Pres. Madras 1120 (1924).

Habit: Herb
Habitat: Marshy areas
Morphology: Herb; leaves ovate, glandular-hairy; inflorescence a panicle on terminal or upper axils; calyx campanulate, 5-lobed, pubescent; corolla bilipped, reflexed; stamens 4; nutlets ovoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-December
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 165* (GVCH).

Isodon nilgherricus (Benth.) H.Hara, J. Jap. Bot. 60(8): 236 (1985); *Plectranthus nilgherricus* Benth., Hook. f., Fl. Brit. India 4: 619 (1885); Gamble, Fl. Pres. Madras 1121 (1924).

Habit: Herb

Habitat: Grasslands

Morphology: Shrub; leaves sessile, pubescent; lateral nerves 3-4 pairs; inflorescence a terminal panicle; calyx 5-lobed, sub-equal, hairy; corolla bilipped, glandular; stamens 4, didynamous; ovary 4-partite.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: October-February

Distribution: Occasional

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03-11-2020, *Jabeena & Maya 4316* (GVCH); Mattumala, 19 November 2020, *Jabeena & Maya 4383* (GVCH).

Isodon wightii (Benth.) H.Hara, J. Jap. Bot. 60(8): 237 (1985); Hook. f., Fl. Brit. India 4: 619 (1855); Gamble, Fl. Pres. Madras 1120 (1924); *Plectranthus pulneyensis* Hook. f., Fl. Brit. India 4: 617 (1855); *Plectranthus nepetaefolius* Benth., Hook. f., Fl. Brit. India 4: 619 (1855); *Robdosia wightii* (Benth.) Hara, Vajr., Fl. Palghat Dist. 383 (1990).

Habit: Herb

Habitat: Grasslands

Morphology: Herb; leaves opposite, serrate, hairy; lateral nerves 4-5 pairs; flowers in thyrsoid cyme; calyx bilipped, 5-lobed, sub-equal, hairy; corolla bilipped, glabrous; stamens 4, didynamous; ovary 4-partite.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India

IUCN category: Not Evaluated

Phenology: September-December

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4510* (GVCH).

Leonotis (Pers.) R.Br., Hort. Kew., ed. 2 [W.T. Aiton] 3: 409 (1811)

Leonotis nepetifolia (L.) R.Br., Hortus Kewensis (1811); Hook. f., Fl. Brit. India 4: 691 (1885); Gamble, Fl. Pres. Madras 1155 (1924); Vajr., Fl. Palghat Dist. 376 (1990).

Habit: Shrub
Habitat: Deciduous forests
Morphology: Shrub; stem tetrangular; leaves opposite, 3-ribbed at base; inflorescence an axillary or terminal thyrsus; calyx 7-toothed, oblique; corolla bilipped, hairy; stamens 4, didynamous; ovary 4-partite; fruit of 4 oblong nutlets.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2759* (GVCH).

Leucas R.Br., Prodr. Fl. Nov. Holland. 504 (1810)

1.Mouth of calyx oblique……....(2)
1.Mouth of calyx not oblique…...……..(3)
2.Branches hirsute; leaf margin distantly serrate; calyx 10 toothed..……....***L. aspera***
2.Branches pubescent; leaf margin subentire; calyx 8 toothed...***L. lavundifolia***
3.Throat of calyx tube glabrous…….(4)
3.Throat of calyx tube villous……..…..(5)
4.Leaves sessile or sub-sessile; lateral veins 2-3 pairs; calyx upto 5 mm long; calyx teeth sub-equal…...…....***L. chinensis***
4.Leaves petiolate; lateral veins 4-5 pairs; calyx upto 14 mm long; calyx teeth equal…...…….……***L. sahyadriensis***
5.Leaves lanceolate, tawny villous……..***L. vestita***
5.Leaves ovate, pubescent or glabrate…...……..***L. ciliata***

Leucas aspera Link, Enum. Hort. Berol. Alt. 2: 113 (1822); Hook. f., Fl. Brit. India 4: 690 (1885); Gamble, Fl. Pres. Madras 1150 (1924); Vajr., Fl. Palghat Dist. 377 (1990).

Habit: Herb
Habitat: Deciduous forests and wastelands
Morphology: Herb; leaves opposite, pubescent; flowers in axillary or terminal verticils; calyx tubular, 10-ribbed, unequally 10-toothed; corolla bilipped, villous; stamens 4, didynamous; ovary 4-partite.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Occasional
Altitude: 100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 299* (GVCH); Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 496* (GVCH).

Leucas chinensis (Retz.) Sm., Cycl. [A. Rees], (London ed.) 20(2): Leucas no. 8 (1812); Hook. f., Fl. Brit. India 4: 681 (1885); Gamble, Fl. Pres. Madras 1151 (1924).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves opposite; flowers in axillary verticils; calyx funnel-shaped, straight, 10-ribbed, 10-toothed; corolla tubular, glabrous; stamens 4, didynamous; filaments bearded.
Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: December-February
Distribution: Common
Altitude: 200-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 216* (GVCH); Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 526* (GVCH); Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2145* (GVCH); Plate 50: Fig. b.

Leucas ciliata Benth., Pl. Asiat. Rar. (Wallich). i. 61 (1830); Hook. f., Fl. Brit. India 4: 687 (1885); Gamble, Fl. Pres. Madras 1153 (1924); Vajr., Fl. Palghat Dist. 378 (1990).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Herb; leaves opposite, hairy; flowers in terminal globose verticils; calyx not ribbed; corolla bilipped, brown hairy; stamens 4, didynamous; ovary 4-partite.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 012* (GVCH); Keshavanpara, 06 July 2019, *Jabeena & Maya 2157* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2471* (GVCH); Plate 50: Fig. c.

Leucas lavandulifolia Sm., Cycl. [A. Rees], (London ed.) 20: Leucas sp. no. 2 (1812); *Leucas linifolia* (Roth) Spreng., Hook. f., Fl. Brit. India 4: 690 (1885); Gamble, Fl. Pres. Madras 1149 (1924); *Leucas linifolia* (Roth) Spreng. var. *decipiens* Hook. f., Fl. Brit. India 4: 691 (1885); *Leucas indica* (L.) R. Br. ex Vatke, Vajr., Fl. Palghat Dist. 378 (1990).

Habit: Herb
Habitat: Rocky areas in Moist and Dry Deciduous forests
Morphology: Herb; leaves opposite; inflorescence an axillary vertical; calyx tubular, 8-toothed, pubescent, mouth oblique; corolla bilipped; stamens 4, didynamous; stigma bifid; nutlets 4.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-October
Distribution: Occasional
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 597* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1072* (GVCH).

Leucas sahyadriensis Sunojk., Phytotaxa 399(3): 189 (2019).

Habit: Herb
Habitat: Semi-evergreen forests
Morphology: Herb; leaves opposite; inflorescence an axillary cluster; calyx funnel-shaped, villous, 10-toothed; corolla included in the calyx tube, margin ciliate; stamens 4, didynamous; ovary trigonal; stigma bifid; nutlets oblong.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to South India
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Rare
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1523* (GVCH).

Leucas vestita Benth., Pl. Asiat. Rar. (Wallich). i. 61 (1830); Hook. f., Fl. Brit.

India 4: 686 (1885); Gamble, Fl. Pres. Madras 1153 (1924).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves ovate, tawny villous; flowers in terminal verticils; calyx mouth rufous hairy; corolla bilipped, upper lip covered with brown hairs; stamens 4, didynamous; ovary4-partite; fruit of 4 nutlets.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: November-January
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1053* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2558* (GVCH).

Mentha L., Sp. Pl. 2: 576 (1753)

Mentha arvensis L., Sp. Pl. 2: 577 (1753).

Habit: Herb
Habitat: Cultivated
Morphology: Herb; stem hairy; leaves opposite, margins toothed; flowers in whorls around the upper leaf axils; corolla bilipped; stamens 4, exserted; ovary 4-partite.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Holarctic
IUCN category: Least Concern
Phenology: June-August
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3132* (GVCH).

Mesosphaerum P.Browne, Civ. Nat. Hist. Jamaica 257 (1756)

Mesosphaerum suaveolens (L.) Kuntze, Revis. Gen. Pl. 2: 525 (1891); *Hyptis suaveolens* (L.) Poit., Hook. f., Fl. Brit. India 4: 630 (1885); Gamble, Fl. Pres. Madras 1129 (1924); Vajr., Fl. Palghat Dist. 376 (1990).

Habit: Shrub
Habitat: Degraded Forest areas and wastelands
Morphology: Shrub; leaves opposite; lateral nerves 5-7 pairs; inflorescence an axillary cyme; calyx tubular, 10-ribbed, glandular-hairy; corolla bilipped, glabrous; stamens 4; ovary 4-partite; nutlets oblong.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-February
Distribution: Occasional
Altitude: 200-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3071* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5019* (GVCH).

Ocimum L., Sp. Pl. 2: 597 (1753)

Leaves obovate; corolla white; calyx glabrous……..…….....***O. gratissimum***
Leaves elliptic-oblanceolate; corolla reddish; calyx hispid without……***O. tenuiflorum***

Ocimum gratissimum L., Sp. Pl. 2: 1197 (1753); Hook. f., Fl. Brit. India 4: 608 (1885); Gamble, Fl. Pres. Madras 1111 (1924); Vajr., Fl. Palghat Dist. 380 (1990).
Habit: Shrub
Habitat: Moist and Dry Deciduous forests
Morphology: Shrub; leaves opposite, hairy below; inflorescence a terminal paniculate raceme; calyx 5-bilipped, glabrous; corolla bilipped; stamens 4, declinate; anthers 1-celled; ovary 4-partite.
Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2259* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3008* (GVCH).

Ocimum tenuiflorum L., Sp. Pl. 2: 597 (1753); Vajr., Fl. Palghat Dist. 380 (1990); *Ocimum sanctum* L., Hook. f., Fl. Brit. India 4: 609 (1885); Gamble, Fl. Pres. Madras 1111 (1924).

Habit: Shrub
Habitat: Planted
Morphology: Shrub; leaves opposite, pubescent; raceme simple; calyx campanulate, 5-lobed; corolla campanulate, bilipped; stamens 4; nutlets ellipsoid.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2806* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3029* (GVCH); Plate 50: Fig. d.

Orthosiphon Benth., Edwards's Bot. Reg. 15. t. 1300 (1830)

Orthosiphon thymiflorus (Roth) Sleesen, Reinwardtia 5: 42 (1959); Vajr., Fl. Palghat Dist. 380 (1990); *Orthosiphon glabratus* Benth., Gamble, Fl. Pres. Madras 1114 (1924); *Orthosiphon viscosus* Benth., Gamble, Fl. Pres. Madras 1114 (1924).

Habit: Herb
Habitat: Degraded forest areas and wastelands
Morphology: Herb; leaves opposite; lateral nerves 6-8 pairs; inflorescence a terminal raceme; calyx bilipped, deflexed; corolla bilipped; stamens 4, declinate; nutlets 2-4.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-May
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 153* (GVCH); Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 503* (GVCH); Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1277* (GVCH); Plate 50: Fig. e.

Platostoma P.Beauv., Fl. Oware 2: 61, t. 95 (1818)

Platostoma hispidum (L.) A.J.Paton, Kew Bull. 52(2): 273 (1997); *Acrocephalus indicus* (Burm.f.) O. Ktze., Gamble, Fl. Pres. Madras 1115 (1924); *Acrocephalus hispidus* (L.) Nicolson & Sivad., Vajr., Fl. Palghat Dist. 372 (1990).

Habit: Herb

Habitat: Grassy areas in moist deciduous forests and wastelands

Morphology: Herb; leaves opposite, pubescent; inflorescence a terminal ovoid head; calyx tubular, bilipped; corolla bilipped; stamens 4, didynamous; ovary 4-partite; nutlets 4.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: September-December

Distribution: Rare

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4338* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4478* (GVCH); Plate 50: Fig. f.

Pogostemon Desf., Mém. Mus. Hist. Nat. 2: 154 (1815)

1.Spikes not panicled……..…....***P. mollis***
1.Spike panicled…...…….……(2)
2.Clusters in the spike interrupted.…….(3)
2.Clusters in the spike uninterrupted..…(4)
3.Diffuse herbs; panicle not one-sided…….……***P. purpurascens***
3.Subshrubs; panicle one sided…….....***P. paniculatus***
4.Leaf margin doubly crenate; leaf membranous; bract ovate…...***P. pubescens***
4.Leaf margin irregularly serrate-dentate; leaf chartaceous; bract oblong.....***P. benghalensis***

Pogostemon benghalensis Kuntze, Revis. Gen. Pl. 2: 529 (1891); Vajr., Fl. Palghat Dist. 381 (1990); *Pogostemon plectranthoides* Desf., Hook. f., Fl. Brit. India 4: 632 (1885); Gamble, Fl. Pres. Madras 1133 (1924).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves opposite; lateral nerves 4-5 pairs; inflorescence a terminal spike; calyx 5-lobed, equal; corolla 4-lobed, equal; stamens 4, exserted, sub-equal; ovary 4-partite, glabrous;fruit of 4 ovoid nutlets.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: January-March
Distribution: Common
Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1332* (GVCH); Seetharkundu, 11 June 2018, *Jabeena & Maya 1525* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3234* (GVCH); Plate 50: Fig. g.

Pogostemon mollis Benth., Labiat. Gen. Spec. 155 (1833); Hook. f., Fl. Brit. India 4: 635 (1885); Gamble, Fl. Pres. Madras 1134 (1924); Vajr., Fl. Palghat Dist. 382 (1990).

Habit: Shrub
Habitat: Rocky area in Grasslands
Morphology: Shrub; leaves opposite, hairy; inflorescence a terminal raceme, tawny-villous; calyx 5-lobed, sub-equal; corolla bilipped; stamens 4; fruiting calyx tubular, villous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Rare
Altitude: 1200-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1141* (GVCH).

Pogostemon paniculatus Benth., Pl. Asiat. Rar. (Wallich). i. 30 (1830); Hook. f., Fl. Brit. India 4: 631 (1885); Gamble, Fl. Pres. Madras 1132 (1924); Vajr., Fl. Palghat Dist. 382 (1990).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests, also in wastelands
Morphology: Herb; leaves opposite, tomentose; lateral nerves 3-4 pairs; inflorescence a terminal panicle; calyx tubular, 5-ribbed, hairy; corolla bilipped, pubescent; stamens 4, sub-equal, exserted; ovary 4-partite.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-February

Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 998* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3859* (GVCH).

Pogostemon pubescens Benth., Prodr. [A. P. de Candolle] 12: 152 (1848); Gamble, Fl. Pres. Madras 1133 (1924); Vajr., Fl. Palghat Dist. 382 (1990); *Pogostemon parviflorus* Benth., Hook. f., Fl. Brit. India 4: 632 (1885).

Habit: Shrub
Habitat: Shola forests
Morphology: Shrub; leaves opposite, hairy; inflorescence an axillary or terminal panicle; calyx tubular, pubescent; corolla bilipped; stamens 4, sub-equal, exserted; ovary 4-partite.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-December
Distribution: Common
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1021* (GVCH); Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4072* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4337* (GVCH); Plate 50: Fig. h.

Pogostemon purpurascens Dalz., Hooker's J. Bot. Kew Gard. Misc. 2: 337 (1850); Hook. f., Fl. Brit. India 4: 632 (1885); Gamble, Fl. Pres. Madras 1133 (1924); Vajr., Fl. Palghat Dist. 382 (1990).

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Herb; leaves opposite; lateral nerves 4-5 pairs; inflorescence a paniculate spike; calyx tubular, 5-lobed, equal, villous; corolla bilipped, hairy; stamens 4, didynamous; filaments bearded; nutlets trigonous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-April
Distribution: Common
Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1691* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1926* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3963* (GVCH); Plate 51: Fig. a.

Premna L., Mant. Pl. Altera 154, 252 (1771)

Plant climbing; lateral veins 3-4 pairs; calyx cupular; ovary glabrous……***P. paucinervis***
Plant erect; lateral veins 5-7 pairs; calyx tubular; ovary pubescent.…...***P. tomentosa***

Premna paucinervis Gamble, Fl. Madras 1095 (1924); *Premna purpurascens* Thw. var. *paucinervis* Clarke, Hook. f., Fl. Brit. India 4: 574 (1885).

Habit: Climber
Habitat: Semi-evergreen forests
Morphology: Climber; leaves ovate, membranous, villous; lateral nerves 3-4 pairs; inflorescence a corymbose cyme; calyx campanulate, pubescent; corolla bilipped, villous within; stamens 4, didynamous; filaments bearded; ovary glabrous; stigma shortly bifid.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to South India
IUCN category: Not Evaluated
Phenology: December-May
Distribution: Rare
Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1485* (GVCH); Plate 51: Fig. b.

Premna tomentosa Willd., Sp. Pl., ed. 4 [Willdenow] 3(1): 314 (1800); Hook. f., Fl. Brit. India 4: 576 (1885); Gamble, Fl. Pres. Madras 1095 (1924); Vajr., Fl. Palghat Dist. 368 (1990).

Habit: Tree
Habitat: Dry Deciduous forests
Morphology: Tree; leaves opposite, tomentose; lateral nerves 5-7 pairs; inflorescence an axillary or terminal corymb; calyx tubular, 5-lobed, hairy; corolla tubular, 5-lobed, hairy; stamens 4, didynamous; ovary pubescent; drupe ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: February-April
Distribution: Rare
Altitude: 200-400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1243* (GVCH).

Rotheca Raf., Fl. Tellur. 4: 69 (1838)

Rotheca serrata (L.) Steane & Mabb., Novon 8(2): 206 (1998); *Clerodendrum serratum* (L.) Moon, Hook. f., Fl. Brit. India 4: 592 (1885); Gamble, Fl. Pres. Madras 1100 (1924); Vajr., Fl. Palghat Dist. 365 (1990).

Habit: Shrub
Habitat: Moist Deciduous forests
Morphology: Shrub; leaves opposite; inflorescence a terminal paniculate cyme; calyx 5sub-truncate, 5-lobed; corolla bilipped, 5-lobed, unequal; stamens 4; ovary globose; drupe sub-globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 600-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4192* (GVCH); Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 365* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 2455* (GVCH); Plate 51: Fig. c.

Salvia L., Sp. Pl. 1: 23 (1753)

Salvia splendens Sellow ex Nees, Flora 4(no. 19): 300 (1821).

Habit: Herb
Habitat: Grown as garden plant
Morphology: Herb; leaves opposite; inflorescence a terminal raceme; calyx tubular, 5-lobed; corolla tubular, bilipped; stamens 2, exserted; ovary 4-loculed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: African
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 257* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2808* (GVCH).

Scutellaria L., Sp. Pl. 2: 598 (1753)

Leaves upto 5 cm long; corolla glabrous; nutlets tuberculate..……....***S. violacea***
Leaves upto 8 cm long; corolla hairy; nutlets rugose…...……..…***S. wightiana***

Scutellaria violacea B.Heyne ex Benth., Pl. Asiat. Rar. (Wallich). 1(3): 66 (1830); Hook. f., Fl. Brit. India 4: 668 (1885); Gamble, Fl. Pres. Madras 1142 (1924); *Scutellaria violacea* Heyne ex Benth. var. *sikkimensis* Hook.f., Fl. Brit. India 4: 668 (1885).

Habit: Herb
Habitat: Margins of Evergreen forests with Grasslands
Morphology: Herb; leaves opposite, hairy; lateral nerves 5-6 pairs; inflorescence a terminal raceme; calyx campanulate, bilipped, glabrous; corolla bilipped; stamens 4, didynamous; anthers connivant; ovary 4-partite.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: February-May
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1513* (GVCH); Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1876* (GVCH); Plate 51: Fig. d.

Scutellaria wightiana Benth., Pl. Asiat. Rar. (Wallich). i. 67; Gamble, Fl. Pres. Madras 1142 (1924); *Scutellaria violacea* Heyne ex Benth. var. *hispidior* Benth., Hook. f., Fl. Brit. India 4: 668 (1885).

Habit: Herb
Habitat: Shola forests
Morphology: Herb; leaves ovate, hairy; inflorescence a terminal raceme, glandular-hairy; calyx campanulate, bilipped, glabrous; corolla bilipped; stamens 4, didynamous; ovary 4-partite.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Peninsular India

IUCN category: Not Evaluated

Phenology: July-December

Distribution: Rare

Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2118* (GVCH).

Tectona L.f., Suppl. Pl. 20, 151 (1782)

Tectona grandis L.f., Suppl. Pl. 151 (1782); Hook. f., Fl. Brit. India 4: 570 (1885); Gamble, Fl. Pres. Madras 1092 (1924); Vajr., Fl. Palghat Dist. 369 (1990).

Habit: Tree
Habitat: Moist Deciduous forests and in plantations
Morphology: Tree; leaves opposite, coriaceous; lateral nerves 8-10 pairs; inflorescence a terminal cymose panicle; calyx campanulate, 5-6-lobed, sub-equal; corolla 5-6-lobed; stamens 5-6, equal; ovary globose, 4-loculed; drupe globose, hairy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-January
Distribution: Common
Altitude: 100-600m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 21 November 2017, *Jabeena & Maya 852* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5018* (GVCH).

Teucrium L., Sp. Pl. 2: 562 (1753)

Teucrium heynei V.S.Kumar & Chakrab., Phytotaxa 243(2): 197 (2016); Hook. f., Fl. Brit. India 4: 700 (1885); Gamble, Fl. Pres. Madras 1158 (1924).

Habit: Shrub
Habitat: Grasslands and Moist Deciduous forests
Morphology: Shrub; leaves opposite; inflorescence an axillary or terminal panicled raceme; calyx bilipped, 10-ribbed; corolla 1-lipped; stamens 4, didynamous; nutlets 4.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-December
Distribution: Common

Altitude: 1000-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15-10-2017, *Jabeena & Maya 545* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1931* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4191* (GVCH); Plate 51: Fig. e.

Vitex L., Sp. Pl. 2: 638 (1753)

Drupe globose; calyx densely tomentose; rachis winged in sapling leaves……***V. altissima***
Drupe obovoid; calyx adpressed pubescent; rachis swollen at base……...***V. leucoxylon***

Vitex altissima L.f., Suppl. Pl. 294 (1782); Hook. f., Fl. Brit. India 4: 584 (1885); Gamble, Fl. Pres. Madras 1102 (1924); Vajr., Fl. Palghat Dist. 370 (1990); *Vitex alata* Willd., Hook. f., Fl. Brit. India 4: 584 (1885).

Habit: Tree
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Tree; leaves opposite, 3-5-foliolate; lateral nerves 10-16 pairs; calyx 5-lobed, tomentose; corolla bilipped; stamens 4, didynamous; ovary globose, hairy; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-July
Distribution: Rare
Altitude: 600-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 20 January 2018, *Jabeena & Maya 1302* (GVCH).

Vitex leucoxylon L.f., Suppl. Pl. 293 (1782); Hook. f., Fl. Brit. India 3: 587 (1885); Gamble, Fl. Pres. Madras 1103 (1923).

Habit: Tree
Habitat: Along river banks in evergreen and semi-evergreen forests
Morphology: Tree; leaves opposite, 3-5-foliolate; lateral nerves 5-14 pairs; inflorescence an axillary corymbose cyme; calyx 5-toothed; corolla bilipped, 5-lobed; stamens 4, didynamous; ovary globose; drupe obovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: March-July
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 026* (GVCH); Kollengode range; Manpara, 29 July 2017, *Jabeena & Maya 317* (GVCH).

OROBANCHACEAE

1.Ovary one loculed…….***Aeginetia***
1.Ovary two loculed……..……..…(2)
2.All leaves divided into linear lobes….(3)
2.Leaves entire or toothed…..……(4)
3.Anther spurred at base; capsule truncate at apex……..…….……..***Parasopubia***
3.Anther bearded at base; capsule emarginate at apex…….***Sopubia***
4.Leaves linear; corolla bilipped…...***Striga***
4.Leaves elliptic; corolla sub-equal……..……..***Buchnera***

Aeginetia L., Sp. Pl. 2: 632 (1753)

Aeginetia acaulis Walp., Repert. Bot. Syst. (Walpers) iii. 481; *Aeginetia pedunculata* Wall., Hook. f., Fl. Brit. India 4: 320 (1884); Gamble, Fl. Pres. Madras 974 (1924); Vajr., Fl. Palghat Dist. 329 (1990).

Habit: Herb
Habitat: Moist Deciduous forests and Grasslands

Morphology: leafless herb; scape glabrous; flowers corymbose; calyx spathaceous, split in front nearly to the base; corolla bilipped, 5-lobed; stamens 4, didynamous, included; ovary 1-loculed; fruit a partially 2-valved capsule.
Raunkiaer's life-form: Vascular Parasite
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-November
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1615* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2594* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3206* (GVCH).

Buchnera L., Sp. Pl. 2: 630 (1753)

Buchnera hispida D.Don, Prodromus Florae Nepalensis (1825); Hook. f., Fl. Brit. India 4: 298 (1884); Gamble, Fl. Pres. Madras 966 (1923); Vajr., Fl. Palghat Dist. 322 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Annual herb; lower leaves opposite, upper leaves alternate; inflorescence an axillary spike; calyx tubular, 5-lobed, 10-ribbed; corolla 5-lobed, sub-equal; stamens 4, didynamous; anthers 1-celled; ovary 2-loculed; ovules many; capsule oblong.
Raunkiaer's life-form: Vascular Semi-Parasite
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3996* (GVCH); Plate 51: Fig. f.

Parasopubia H.-P.Hofm. & Eb.Fisch., Bot. Jahrb. Syst. 125(3): 357 (2004)

Parasopubia delphiniifolia (L.) H.-P. Hofm. & Eb.Fisch., Bot. Jahrb. Syst. 125(3): 357 (2004); Hook. f., Fl. Brit. India 4: 302 (1885); Gamble, Fl. Pres. Madras 970 (1924); Vajr., Fl. Palghat Dist. 326 (1990).

Habit: Herb
Habitat: Grasslands and Moist Deciduous forests
Morphology: Herb; leaves opposite, lobes narrow, filiform; flowers axillary; calyx teeth subulate; corolla ventricose; bilipped; stamens 4; staminode one, spurred; capsule truncate at apex.
Raunkiaer's life-form: Vascular Semi-Parasite
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: September-October
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 583* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1034* (GVCH); Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3227* (GVCH).

Sopubia Ham. ex D.Don, Prodr. Fl. Nepal. 88 (1825)

Sopubia trifida Buch.-Ham. ex D.Don, Prodr. Fl. Nepal. 88. (1825); Hook. f., Fl. Brit. India 4: 302 (1884); Gamble, Fl. Pres. Madras 970 (1924); Vajr., Fl. Palghat Dist. 326 (1990).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves trifid; inflorescence an axillary or terminal raceme; calyx campanulate, glandular; corolla rotate, sub-equally 5-lobed;

stamens 4, didynamous; anthers bearded at base; capsule emarginate.
Raunkiaer's life-form: Vascular Semi-parasite
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Common
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 602* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1045* (GVCH); Valuvaachi, 17 January 2020, *Jabeena & Maya 3850* (GVCH); Plate 51: Fig. g.

Striga Lour., Fl. Cochinch. 1: 22 (1790)

Calyx mostly 10-ribbed, secondary nerves ending at the sinus between the lobes; corolla yellow……....***S. asiatica***
Calyx 15-ribbed, all ribs continued to the apex of the lobe……..…….***S. angustifolia***

Striga angustifolia (D.Don) Saldanha, Bull. Bot. Surv. India 5: 70 (1963); Vajr., Fl. Palghat Dist. 327 (1990); *Striga euphrasioides* auct., Hook. f., Fl. Brit. India 4: 299 (1884); Gamble, Fl. Pres. Madras 968 (1924).

Habit: Herb
Habitat: Grassy areas in Moist Deciduous forests
Morphology: Herb; leaves linear; inflorescence a terminal spike; calyx tubular, 5-lobed, 10-15-ribbed; corolla tubular, 5-lobed; stamens 4, didynamous; capsule oblong.
Raunkiaer's life-form: Vascular Semi-parasite
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3849* (GVCH).

Striga asiatica (L.) Kuntze, Revis. Gen. Pl. 2: 466 (1891); *Striga lutea* Lour., Hook. f., Fl. Brit. India 4: 299 (1884); Gamble, Fl. Pres. Madras 968 (1924).

Habit: Herb
Habitat: Grassy areas in Deciduous forests
Morphology: Herb; leaves opposite; inflorescence a terminal spike; calyx tubular, 10-ribbed, hairy; corolla 5-lobed; stamens 4, didynamous, included; ovary many-ovuled; capsule oblong.
Raunkiaer's life-form: Vascular Semi-parasite
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 217* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 662* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3193* (GVCH).

IV.1.11. Campanulids (Euasterids II)

Aquifoliales

STEMONURACEAE

Gomphandra Wall. ex Lindl., Intr. Nat. Syst. Bot., ed. 2. 439 (1836)

Gomphandra tetrandra (Wall.) Sleumer, Notizbl. Bot. Gart. Berlin-Dahlem 15: 238 (1940); Vajr., Fl. Palghat Dist. 114 (1990); *Gomphandra axillaris* Wall. ex Bedd., Hook. f., Fl. Brit. India 1: 586 (1875); *Gomphandra polymorpha* Wight, Gamble, Fl. Pres. Madras 195 (1915).

Habit: Shrub
Habitat: Evergreen and Semi-evergreen forests
Morphology: Shrub; leaves alternate, penni-nerved; lateral nerves 7-9 pairs; inflorescence an axillary or lateral peduncled cyme; calyx cup-shaped, 4-lobed; corolla campanulate, 4-lobed; stamens 4-5, connate; ovary 1-loculed; ovules 2, collateral; drupe elongate.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: September-December
Distribution: Occasional
Altitude: 600-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 29 February 2020, *Jabeena & Maya 4132* (GVCH); Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4529* (GVCH); Plate 51: Fig. h.

ASTERALES

CAMPANULACEAE

Corolla irregular; stigma bifid.....***Lobelia***
Corolla regular; stigma trifid……..***Wahlenbergia***

Lobelia L., Sp. Pl. 2: 929 (1753)

1.Plant shrubby…..……..***L. nicotianifolia***
1.Plant herbaceous……..……(2)
2.Two anthers only penicillate at tip….…….……..***L. heyniana***
2.All anthers penicillate at tip……...….(3)
3.Herb procumbent; leaf apex acute; flowers axillary, solitary; sepals lanceolate; capsule densely pilose….…….……..***L. zeylanica***
3.Herb decumbent; leaf apex obtuse; flowers terminal raceme; sepals oblong; capsule glabrous…….…..…..***L. alsinoides***

Lobelia alsinoides Lam., Encycl. [J. Lamarck & al.] 3(2): 588 (1792); Vajr., Fl. Palghat Dist. 260 (1990); *Lobelia trigona* Roxb., Hook. f., Fl. Brit. India 3: 423 (1881); Gamble, Fl. Pres. Madras 736 (1921).

Habit: Herb
Habitat: Wet areas in Grasslands
Morphology: Herb; leaves alternate, toothed; inflorescence a terminal raceme; calyx 5-partite; corolla bilipped; staminal tube free; anthers connate; ovary inferior, 2-loculed; capsule 2-valved.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: August-October
Distribution: Common
Altitude: 900-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 498* (GVCH); Keshavanpara, 21 November 2017, *Jabeena & Maya 774* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2733* (GVCH); Plate 52: Fig. a

Lobelia heyniana Roem. & Schult., Syst. Veg., ed. 15 bis [Roemer & Schultes] 5: 50 (1819); *Lobelia trialata* Buch.-Ham. ex D. Don, Hook. f., Fl. Brit. India 3: 425 (1881); Gamble, Fl. Pres. Madras 736 (1921); *Lobelia zeylanica* sensu Clarke, Hook.f., Fl. Brit. India 3: 425 (1881).

Habit: Herb
Habitat: Wet areas in evergreen forests and moist grassy places
Morphology: Herb; leaves alternate; lateral nerves 3-4 pairs; inflorescence a terminal, raceme; calyx 5-partite, glabrous; corolla bilipped; anthers connate, 2 only penicillate; ovary 2-loculed
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: September-November
Distribution: Common
Altitude: 900-1400m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pulayampara, 19 August 2017, *Jabeena & Maya 359* (GVCH); Seetharkundu, 23-09-2017, *Jabeena & Maya 465* (GVCH); Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4301* (GVCH).

Lobelia nicotianifolia Roth, Syst. Veg., ed. 15 bis [Roemer & Schultes] 5: 47 (1819); Hook. f., Fl. Brit. India 3: 427 (1881); Gamble, Fl. Pres. Madras 736 (1921); Vajr., Fl. Palghat Dist. 260 (1990).

Habit: Shrub
Habitat: Grasslands, Shola and Evergreen forests
Morphology: Shrub; leaves alternate; racemes terminal or in upper axils; calyx 5-partite; corolla bilipped; staminal tube free; anthers connate, villous on the back; capsule cupular.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Occasional
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3243* (GVCH); Karassuri, 12 January 2021, *Jabeena & Maya 4726* (GVCH).

Lobelia zeylanica L., Sp. Pl. 2: 932 (1753); *Lobelia affinis* Wall. ex G. Don, Hook. f., Fl. Brit. India 3: 424 (1881).

Habit: Herb
Habitat: Marshy areas in grasslands
Morphology: Herb; stem rooting at nodes, winged; leaves ovate, serrate; flowers axillary, solitary; calyx 5-partite, ciliate; corolla bilipped; anther connate; ovary 2-loculed; capsule globose.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3523* (GVCH); Plate 52: Fig. b.

Wahlenbergia Schrad. ex Roth, Nov. Pl. Sp. 399 (1821)

Wahlenbergia erecta (Roth ex Roem. & Schult.) Tuyn, Fl. Males., Ser. 1, Spermat. 6: 113 (1960); Vajr., Fl. Palghat Dist. 261 (1990); *Cephalostigma schimperi* Hochst. ex Rich., Hook. f., Fl. Brit. India 3: 428 (1881); Gamble, Fl. Pres. Madras 738 (1921).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves sessile; flowers axillary or terminal, solitary; calyx 5-partite, hairy; corolla campanulate, 5-lobed; stamens 5, free from the corolla; ovary turbinate, 2-3 loculed; capsule 2-3-valved, hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: March-May
Distribution: Occasional
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 16 April 2018, *Jabeena & Maya 1348* (GVCH); Mattumala, 15 May 2018, *Jabeena & Maya 1453* (GVCH); Plate 52: Fig. c.

ASTERACEAE

1.Capitulum dimorphic, unisexual……***Xanthium***
1.Capitulum not dimorphic, bisexual….(2)
2.Capitulum homogamous....…….….(3)
2.Capitulum heterogamous..…….(21)
3.Flowers all ligulate…...……..(4)

3.Flowers all tubular……..…….(7)
4.Leaves pinnate, all cauline…..…..***Tagetes***
4.Leaves pinnatifid, radical or cauline…(5)
5.Leaves radical and cauline…….***Sonchus***
5.Leaves radical only……...……..(6)
6.Sap milky……...***Launaea***
6.Sap watery…….....***Taraxacum***
7.Leaves opposite...……...…….(8)
7.Leaves alternate……...……..(12)
8.Involucral bracts less than 5…...***Mikania***
8.Involucral bracts more than 5…..…….(9)
9.Pappus of 10 or more capillary bristles…….……..…(10)
9.Pappus of 3-5 scales or calvate hairs……..(11)
10.Stem glandular hairy…..…....***Ageratina***
10.Stem pubescent; not glandular.....***Chromolaena***
11.Pappus of scales……....***Ageratum***
11.Pappus of clavate hairs…***Adenostemma***
12.Style branches subulate……...…....(13)
12.Style branches linear, obtuse, truncate or appendiculate……(19)
13.Heads in glomerules…....***Elephantopus***
13.Heads distinct……...……...…(14)
14.Outer involucral bracts leafy…..….(15)
14.Outer involucral bracts not leafy….(16)
15.Trichomes t-shaped; pollen spiny…….……...***Centantherum***
15.Trichomes flagelliform; pollen polyhedral…….....…….***Phyllocephalum***
16.Head solitary or corymbose; bracts one seriate; anther bases entire or subauricled……..***Gynura***
16.Head solitary or in cymes or panicles; bracts many seriate; anther obtusely auricled at base……..…(17)
17.Woody trees, large shrubs or vines; leaves often coriaceous…...….***Strobocalyx***
17.Herbs, subshrubs or weak shrubs; leaves usually membranous or chartaceous……...(18)
18.Stem, leaves and involucres with simple hairs; achene 10-ribbed..….***Acilepis***
18.Stem, leaves and involucres with T-shaped hairs; achene 5-ribbed……..***Cyanthilium***
19.Anther cells not tailed….……..***Acmella***
19.Anther cells tailed or auricled.…….(20)
20.Capitulum purple…..……...***Emilia***
20.Capitulum pink or brick red……***Crassocephalum***
21.Anthers tailed…….…..(22)
21.Anthers not tailed……...…..(28)
22.Plant aromatic……...…..(23)
22.Plant not aromatic……...……(24)
23.Leaves decurrent at base……...***Laggera***
23.Leaves not decurrent...…….....***Blumea***
24.Plant covered by woolly cottony growth or white tomentose…...…….....(25)
24.Plant not as above……..….(27)
25.Bisexual florets all sterile; style undivided or notched…….....***Anaphalis***
25.Bisexual florets all or mostly fertile; style divided……..……(26)
26.Female florets lesser than bisexual florets….……....***Helichrysum***
26.Female florets more than bisexual florets……...……...***Gnaphalium***
27.Upper leaves amplexicaul; leaves one nerved from base……...……...…..***Vicoa***
27.All leaves not amplexicaul, 3-nerved from base…….……***Eleutheranthera***
28.Involucral bracts with scarious or hyaline margins and tips……..…(29)
28.Involucral bracts not as above…....(33)
29.Receptacle epaleate……....***Artemisia***
29.Receptacle palette……...….(30)
30.Capitulum solitary…...……....(31)
30.Capitulum cymose or panicled…....(32)
31.Tubular disc florets less than liguled ray florets……....***Zinnia***
31.Tubular disc florets more than liguled ray florets…...……...…..***Melampodium***
32.Pappus present…….***Erigeron***
32.Pappus absent…….....***Dichrocephala***
33.Leaves deeply pinnatified……...….(34)
33.Leaves simple or pinnately compound…….……..……..(35)
34.Plant aromatic; leaves alternate……...***Parthenium***
34.Plant non-aromatic; leaves opposite……..***Cosmos***
35.Disc achenes rounded or laterally compressed……...(36)
35.Disc achenes angular or dorsally compressed…..……(37)
36.Outer involucral bracts spreading…..…….....***Siegesbeckia***
36.Outer involucral bracts erect.....***Wedelia***

37.Head sessile or sub-sessile...…….…(38)
37.Head peduncled...……....(39)
38.Disc floret 5-merous…….....***Synedrella***
38.Disc floret 4-merous……***Calyptocarpus***
39.Leaves pinnatified……...***Bidens***
39.Leaves simple or lobed…….……..(40)
40.Heads in cymes or panicles…..……(41)
40.Heads solitary……..…....(42)
41.Leaves elliptic-lanceolate, 1-nerved from base……..……....***Solidago***
41.Leaves ovate, 3-nerved from base……....***Galinsoga***
42.Procumbent herb; leaves opposite……....***Tridax***
42.Erect shrub; leaves alternate……....***Tithonia***

Acilepis D.Don, Prodr. Fl. Nepal. 169 (1825) (1825)

1.Leaves white tomentose beneath……***A. dendigulensis***
1.Leaves green beneath……...(2)
2.Head upto 0.4 cm across; achenes glandular……..…..***A. divergens***
2.Head upto 1.2 cm across; achenes not glandular……..….***A. ornata***

Acilepis dendigulensis (DC.) H.Rob., Proc. Biol. Soc. Washington 112(1): 226 (1999); *Vernonia indica* Clarke, Hook. f., Fl. Brit. India 3: 238 (1881); Gamble, Fl. Pres. Madras 674 (1921).

Habit: Shrub
Habitat: Grasslands
Morphology: Shrub; stem white-wooly; leaves alternate, dentate, glabrous above, white beneath; lateral nerves 6-8 pairs; heads globose in panicled cymes, 6-10-flowered; bracts cottony-tomentose; corollas all equal, tubular, glabrous; achenes ribbed, glandular.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Valiya Govindamala, 20 November 2020, *Jabeena & Maya 4509* (GVCH); Plate 52: Fig. d.

Acilepis divergens (DC.) H.Rob. & Skvarla, Proc. Biol. Soc. Washington 122(2): 140 (2009); *Vernonia divergens* (Roxb.) Edgew., Hook. f., Fl. Brit. India 3: 234 (1881); Gamble, Fl. Pres. Madras 673 (1921); Vajr., Fl. Palghat Dist. 258 (1990).

Habit: Shrub
Habitat: Moist Deciduous forests
Morphology: Shrub; stem tomentose; leaves elliptic, alternate, pubescent and green beneath; lateral nerves 6-8 pairs; heads globose in short-peduncled corymb; corolla all equal, tubular, glabrous; achenes 10-ribbed, glandular.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3848* (GVCH).

Acilepis ornata (Talbot) H.Rob. & Skvarla, Proc. Biol. Soc. Washington 122(2): 141 (2009); *Vernonia dalzelliana* Drumm. & Hutch., Gamble, Fl. Pres. Madras 674 (1921).

Habit: Shrub
Habitat: Evergreen forests
Morphology: Shrub; leaves alternate; lateral veins 7-11 pairs; heads in axillary or terminal corymb; involucral bracts aristate, reflexed; corolla all equal, tubular, 5-lobed; achenes hairy, 10-ribbed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 27 November 2017, *Jabeena & Maya 908* (GVCH).

Acmella Rich., Syn. Pl. [Persoon] 2: 472 (1807)

1.Pappus absent……..***A. calva***
1.Pappus bristly…...…….…..(2)
2.Head not coloured, white..…***A. radicans***
2.Head yellow……...…….(3)
3.Peduncles upto 5 cm long; bracts glabrous….……...……***A. ciliata***
3.Peduncles upto 10 cm long; bracts glandular…...…….***A. paniculata***

Acmella calva (DC.) R.K.Jansen, Syst. Bot. Monogr. 8: 41 (1985); *Spilanthes calva* DC., Vajr., Fl. Palghat Dist. 256 (1990); *Spilanthes acmella* sensu Hook. f., Fl. Brit. India 3: 307 (1881); Gamble, Fl. Pres. Madras 708 (1921);

Habit: Herb
Habitat: Moist localities in Evergreen forests
Morphology: Herb; leaves opposite; heads on axillary or terminal peduncle; ray-flowers uniseriate, female, ligulate; disc flowers bisexual, tubular; involucre campanulate; bracts unequal; achene dorsally-compressed.

Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Indo-Pacific and Holarctic

IUCN category: Not Evaluated

Phenology: February-April

Distribution: Occasional

Altitude: 1000-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3240* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3871*(GVCH); Plate 52: Fig. e.

Acmella ciliata (Kunth) Cass., Dict. Sci. Nat., ed. 2. [F. Cuvier] 24: 331 (1822).
Habit: Herb
Habitat: Marshy areas
Morphology: Herb; leaves opposite; heads axillary, solitary; involucral bracts biseriate; ray florets female, ligulate; corolla 3-lobed; achenes trigonous; disc florets bisexual; achenes oblong.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Occasional
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Mannathypalam, 12 October 2020, *Jabeena & Maya 4162* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 3028*(GVCH).

Acmella paniculata (Wall. ex DC.) R.K.Jansen, Syst. Bot. Monogr. 8: 67 (1985); *Spilanthes acmella* var. *paniculata* (DC.) Clarke, Hook. f., Fl. Brit. India 3: 307 (1881).

Habit: Herb
Habitat: Degraded forest areas
Morphology: Herb; leaves ovate; heads solitary; bracts glandular; flowers all, tubular, glabrous; achenes biconvex, glandular.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Least Concern
Phenology: July-October
Distribution: Occasional
Altitude: 1000-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 556* (GVCH); Nelliyampathy range, Mattumala, 02 November 2020, *Jabeena & Maya 4241* (GVCH).

Acmella radicans (Jacq.) R. K. Jansen, Syst. Bot. Monogr. 8: 69 (1985).

Habit: Herb
Habitat: Degraded Moist Deciduous forests
Morphology: Herb; leaves opposite, glabrous; heads solitary; flowers all tubular, 3-lobed; achenes of outer florets trigonous; central achenes laterally compressed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Not Evaluated
Phenology: October-March
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 934* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3100* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3365* (GVCH); Plate 52: Fig. f.

Adenostemma J. R. Forst. & G.Forst., Char. Gen. Pl., ed. 2. [89] (1776)

Adenostemma lavenia (L.) Kuntze, Revis. Gen. Pl. 1: 304 (1891); Gamble, Fl. Pres. Madras 677 (1921); Vajr., Fl. Palghat Dist. 247 (1990); *Adenostemma viscosum* J.R. & G. Forst. var. *lavenia* Hook. f., Fl. Brit. India 3: 242 (1881).

Habit: Herb
Habitat: Evergreen and Semi-evergreen forests
Morphology: Herb; leaves opposite, toothed; heads in terminal corymb; involucre campanulate; bracts equal, biseriate; receptacle pitted; corolla all equal, tubular; anthers truncate with glandular tip; style arms clavate; achenes compressed.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: October-December
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, *Jabeena & Maya 2616* (GVCH); Plate 52: Fig. g.

Ageratina Spach, Hist. Nat. Vég. (Spach) 10: 286 (1841)

Ageratina adenophora (Spreng.) R.M.King & H.Rob., Phytologia 19: 211 (1970).

Habit: Shrub
Habitat: Degraded Forest areas
Morphology: Shrub; stem glandular-hairy; leaves opposite; heads in terminal corymbose panicle; bracts triseriate; outer florets bisexual; inner florets female; achenes ellipsoid.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: South American

IUCN category: Not Evaluated

Phenology: February-June

Distribution: Common

Altitude: 900-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 21 April 2018, *Jabeena & Maya 1380* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2020* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2951* (GVCH).

Ageratum L., Sp. Pl. 2: 839 (1753)

Involucral bracts glabrous or sparsely pubescent……..***A. conyzoides***

Involucral bracts glandular pubescent……***A. haustonianum***

Ageratum conyzoides L., Sp. Pl. 2: 839 (1753); Hook. f., Fl. Brit. India 3: 243 (1881); Gamble, Fl. Pres. Madras 677 (1921); Vajr., Fl. Palghat Dist. 248 (1990).

Habit: Herb
Habitat: Wastelands
Morphology: Herb; stem hairy; leaves opposite; heads in terminal corymbose panicle; bracts 1-3-seriate; florets all equal, bisexual, tubular, glabrous; stamens 5; achenes linear.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 006* (GVCH); Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 170* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 420* (GVCH).

Ageratum houstonianum Mill., Gard. Dict., ed. 8. n. 2 (1768); Gamble, Fl. Pres. Madras 1881 (1936).

Habit: Herb
Habitat: Degraded Forest areas
Morphology: Herb; stem hairy; leaves ovate; heads in terminal corymbose panicle; flowers all equal, bisexual, tubular, glabrous, 5-lobed at apex.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: February-May
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2241* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2369* (GVCH); Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4052* (GVCH).

Anaphalis DC., Prodr. [A. P. de Candolle] 6: 271 (1838)

1.Leaves glabrous on upper surface, grey wooly below…….....…….....***A. wightiana***
1.Leaves cottony on both sides…….....(2)
2.Bracts pinkish, leaves slightly decurrent……...….***A. subdecurrens***
2.Bracts white-yellow, leaves adante/amplexicaul……..……(3)
3.Leave margin flat, except the upper scape, achene scaly…….……***A. lawii***
3.Leave margin revolute, achene papillose……....***A. leptophylla***

Anaphalis lawii Gamble, Fl. Madras 696 (1921); *Anaphalis oblonga* DC. var. *lawii* Hook. f., Fl. Brit. India 3: 283 (1881).

Habit: Herb
Habitat: Grasslands and on rocky slopes
Morphology: Herb; stem woolly; leaves alternate, amplexicaulis; heads in corymbose cymes, heterogamous, not rayed; bracts 3-seriate; outer flowers female; inner bisexual, sterile; corolla 5-toothed; achenes cylindric.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular India
IUCN category: Not Evaluated
Phenology: September-March
Distribution: Rare
Altitude: 1100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1333* (GVCH).

Anaphalis leptophylla DC., Prodr. [A. P. de Candolle] 6: 273 (1838); Hook. f., Fl. Brit. India 3: 285 (1881); Gamble, Fl. Pres. Madras 696 (1921).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem woolly; leaves simple; heads in a dense corymb; involucre bracts many-seriate; corolla 5-lobed; stamens 5; achenes compressed.
Raunkiaer's life-form: Hemi-Cryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Vulnerable
Phenology: June-October
Distribution: Occasional
Altitude: 1100-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2388* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2595* (GVCH).

Anaphalis subdecurrens Gamble, Fl. Madras 695 (1921); *Anaphalis oblonga* DC., Hook. f., Fl. Brit. India 3: 283 (1881).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem woolly; leaves simple, 1-veined; heads in terminal cyme; bracts elliptic; outer flowers female, glabrous; inner flowers bisexual; achenes papillose.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: July-March
Distribution: Common
Altitude: 1100-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 215* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 561* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3856* (GVCH); Plate 52: Fig. h.

Anaphalis wightiana DC., Prodr. [A. P. de Candolle] 6: 273 (1838); Hook. f., Fl. Brit. India 3: 286 (1881); Gamble, Fl. Pres. Madras 696 (1921).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; stem cottony; leaves 1-nerved, semi-amplexicaul; heads in terminal cymes; outer flowers female; inner flowers bisexual; corolla 5-lobed; stamens 5; achene papillose.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Peninsular
IUCN category: Vulnerable
Phenology: September-June
Distribution: Rare
Altitude: 1200-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 256* (GVCH).

Artemisia L., Sp. Pl. 2: 845 (1753)

Artemisia nilagirica (C.B.Clarke) Pamp., Nuovo Giorn. Bot. Ital. ser. 2, 33: 452 (1926); Vajr., Fl. Palghat Dist. 248 (1990); *Artemisia vulgaris* sensu Hook. f., Fl. Brit. India 3: 325 (1881); Gamble, Fl. Pres. Madras 713 (1921).

Habit: Shrub
Habitat: Along forest margins
Morphology: Shrub; leaves alternate; heads in axillary or terminal panicle, globose, not rayed; bracts ciliate; outer flowers female, uniseriate; inner flowers bisexual; corolla glabrous; achene oblong.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-December
Distribution: Occasional
Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 21 April 2018, *Jabeena & Maya 1387* (GVCH); Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3582* (GVCH).

Bidens L., Sp. Pl. 2: 831 (1753)

Bidens pilosa L., Sp. Pl. 2: 832 (1753); Bidens pilosa sensu Hook. f., Fl. Brit. India 3: 309 (1881); Gamble, Fl. Pres. Madras 709 (1921); *Bidens pilosa* L. var. *minor* (Blume) Sherff, Vajr., Fl. Palghat Dist. 248 (1990).

Habit: Herb
Habitat: Weeds in wastelands
Morphology: Herb; leaves opposite; heads heterogamous, rayed, in corymbose panicles; ray florets uniseriate; disc florets bisexual, fertile; involucre campanulate; corolla 5-lobed; style arms hairy at tip; achenes tetragonous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: March-October
Distribution: Common
Altitude: 800-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 024* (GVCH); Kollengode range, Pulayampara, 19 August 2017, *Jabeena & Maya 348* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 860* (GVCH); Plate 53: Fig. a

Blumea DC., Arch. Bot. (Paris) 2: 514 (1833)

1.Plant glabrous……...….***B. virens***
1.Plant variously hairy……...…….(2)
2.Hairs on plant glandular…...…….(3)
2.Hairs on plant not glandular……(4)
3.Heads few, in axillary and terminal corymbs…….***B. belangeriana***
3.Heads many, in spreading corymbs and panicles……...…...…..***B. membranacea***
4.Corolla of female flowers purple……....***B. axillaris***
4.Corolla of female flowers yellow…...(5)
5.Heads in congested cymes; corolla lobes glandular……....***B. barbata***
5.Heads in panicles; corolla lobes not glandular…….……..….***B. hieracifolia***

Blumea axillaris DC., Prodr. [A. P. de Candolle] 5: 434 (1836); *Blumea wightiana* DC., Hook. f., Fl. Brit. India 3: 261 (1881); Gamble, Fl. Pres. Madras 686 (1921); *Blumea neilgherrensis* Hook. f., Fl. Brit. India 3: 261 (1881); Gamble, Fl. Pres. Madras 686 (1921); *Blumea mollis* (D. Don) Merr., Vajr., Fl. Palghat Dist. 249 (1990).

Habit: Herb
Habitat: Degraded Deciduous forests and Grasslands
Morphology: Herb; leaves glandular-hairy; heads in axillary or terminal panicle; bracts hairy; central flowers bisexual; corolla glandular; achenes ellipsoid, ribbed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Australian and African
IUCN category: Not Evaluated
Phenology: January-November
Distribution: Occasional
Altitude: 100-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 04 March 2021, *Jabeena & Maya 4973* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5016* (GVCH).

Blumea barbata DC., Contr. Bot. India [Wight] 14. (1834); Hook. f., Fl. Brit. India 3: 262 (1881); Gamble, Fl. Pres. Madras 687 (1921); Vajr., Fl. Palghat Dist. 249 (1990).

Habit: Herb
Habitat: Degraded forests areas
Morphology: Herb; leaves sessile; tomentose; heads in terminal or axillary

cyme; bracts hairy; corolla glabrous; achenes ribbed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Common
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1515* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3746* (GVCH).

Blumea belangeriana DC., Prodr. [A. P. de Candolle] 5: 444 (1836); Hook. f., Fl. Brit. India 3: 266 (1881); Gamble, Fl. Pres. Madras 686 (1921); Vajr., Fl. Palghat Dist. 249 (1990).

Habit: Herb
Habitat: Along forest margins
Morphology: Herb; stem erect; leaves sessile; lateral nerves 6-8 pairs; heads in axillary or terminal corymb; corolla pubescent; achene angled, sparsely hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-April
Distribution: Common
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1020* (GVCH); Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1542* (GVCH).

Blumea hieraciifolia DC., Contr. Bot. India [Wight] 15. (1834); Hook. f., Fl. Brit. India 3: 263 (1881); Gamble, Fl. Pres. Madras 686 (1921); *Blumea sericans* Hook. f., Fl. Brit. India 3: 262 (1881).

Habit: Herb
Habitat: Moist Deciduous forests and Savannahs
Morphology: Herb; leaves alternate; heads in an axillary or terminal panicle; involucre 4-seriate; corolla glabrous, but glandular; receptacle glabrous; achenes oblong, ribbed, pubescent at first, then glabrous.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, Jabeena & Maya 1606 (GVCH).

Blumea membranacea DC., Prodr. [A. P. de Candolle] 5: 440 (1836); Hook. f., Fl. Brit. India 3: 265 (1881); Gamble, Fl. Pres. Madras 687 (1921); *Blumea membranacea* Wall. ex DC. var. *gardneri* Hook. f., Fl. Brit. India 3: 265 (1881); Gamble, Fl. Pres. Madras 687 (1921).

Habit: Herb
Habitat: Deciduous forests
Morphology: Herb; leaves alternate, glandular; heads in a panicle; involucral bracts hairy; corolla of disc flowers glabrous; achenes ribbed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: August-May
Distribution: Rare
Altitude: 1000-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3995* (GVCH).

Blumea virens DC., Contr. Bot. India [Wight] 14. (1834); Hook. f., Fl. Brit. India 3: 264 (1881); Gamble, Fl. Pres. Madras 686 (1921).

Habit: Herb

Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Herb; leaves alternate, glabrous; heads in axillary or terminal panicles; central flowers bisexual, glandular; achenes ribbed, hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: December-June
Distribution: Occasional
Altitude: 600-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3338* (GVCH); Koonampalam, 14 December 2019, *Jabeena & Maya 3461* (GVCH).

Calyptocarpus Less., Syn. Gen. Compos. 221 (1832)

Calyptocarpus vialis Less., Syn. Gen. Compos. 221 (1832).

Habit: Herb
Habitat: Shady areas
Morphology: Herb; leaves opposite, 3-ribbed at base; heads axillary, solitary; involucral bracts 2-seriate; ray florets ligulate, female; disc florets tubular, bisexual; achenes compressed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: July-September
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pulayampara, 19 November 2020, *Jabeena & Maya 4402* (GVCH).

Centratherum Cass., Bull. Sci. Soc. Philom. Paris 1817: 31 (1817)

Centratherum punctatum Cass., Dict. Sci. Nat., ed. 2. [F. Cuvier] 7: 384 (1817).

Habit: Herb
Habitat: Grown as garden plant
Morphology: Herb; stem prostrate; leaves alternate; heads terminal; flowers all equal, tubular; involucral bracts many-seriate; corolla 5-lobed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: August-January
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3005* (GVCH).

Chromolaena DC., Prodr. [A. P. de Candolle] 5: 133 (1836)

Chromolaena odorata (L.) R.M.King & H.Rob., Phytologia 20(3): 204 (1970); Vajr., Fl. Palghat Dist. 250 (1990); *Eupatorium odoratum* L., Hook. f., Fl. Brit. India 3: 244 (1881).

Habit: Herb
Habitat: Weed in waste places
Morphology: Shrub; leaves opposite; heads in terminal corymbose cymes; bracts 5-seriate; flowers all equal, bisexual, tubular, 5-lobed; achenes linear, 5-angled.

Raunkiaer's life-form: Hemicryptophyte

Phytogeographical affinity: Indo-Pacific, Holarctic and South American

IUCN category: Not Evaluated

Phenology: November-May

Distribution: Common

Altitude: 100-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1780* (GVCH); Nelliyampathy range, Kurissumala, 22 June 2019, *Jabeena & Maya 2031* (GVCH);

Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2112* (GVCH).

Cosmos Cav., Icon. [Cavanilles] 1(1): 9, t. 14, 79 (1791)

Leaves upto 9 cm long, glabrous; ray florets pinkish white…..…….***C. caudatus***

Leaves 10-15 cm long, pilose; ray florets yellow…..…….***C. sulphureus***

Cosmos caudatus Kunth, Nov. Gen. Sp. [H.B.K.] 4(17): 188 (ed. fol.) (1818).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaves bipinnate, ciliate; head solitary; outer bracts ciliate; ray florets 3-toothed; bisexual flowers tubular.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: August-February
Distribution: Occasional
Altitude: 500-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 19 August 2017, *Jabeena & Maya 344* (GVCH); Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1712* (GVCH).

Cosmos sulphureus Cav., Icon. [Cavanilles] 1(3): 56, t. 79 (1791); Vajr., Fl. Palghat Dist. 259 (1990).

Habit: Herb

Habitat: Cultivated

Morphology: Herb; leaves pinnatisect; heads solitary; involucral bracts 2-seriate; ray florets bisexual; disc florets tubular; achenes compressed.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Holarctic and African

IUCN category: Not Evaluated

Phenology: February-November

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3131* (GVCH).

Crassocephalum Moench, Methodus (Moench) 516 (1794)

Crassocephalum crepidioides S.Moore, J. Bot. 50: 211 (1912); Vajr., Fl. Palghat Dist. 251 (1990); *Erechtites valerianaefolia* sensu C.E.C. Fisch., Gamble, Fl. Pres. Madras 1882 (1936).

Habit: Herb
Habitat: Deciduous forests and in forest plantations
Morphology: Herb; leaves pinnatifid, pubescent; heads in terminal raceme; involucral bracts 1-seriate; flowers all equal; achenes ribbed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and African
IUCN category: Not Evaluated
Phenology: August-December
Distribution: Common
Altitude: 800-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 022* (GVCH); Hilltop, 20 January 2018, *Jabeena & Maya 919* (GVCH); Nooradi, 11 January 2020, *Jabeena & Maya 3603* (GVCH).

Cyanthillium Blume, Bijdr. Fl. Ned. Ind. 15: 889 (1826)

Cyanthillium cinereum (L.) H.Rob., Proc. Biol. Soc. Washington 103(1): 252 (1990): (1990); Hook. f., Fl. Brit. India 3: 233

(1881); Gamble, Fl. Pres. Madras 676 (1921); Vajr., Fl. Palghat Dist. 257 (1990).

Habit: Herb
Habitat: Deciduous forests
Morphology: Herb; leaves ovate, hairy; heads in terminal corymbose cymes; outer involucral bracts hairy; flowers all equal; corolla glabrous; achenes hairy.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 100-900m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3130* (GVCH); Pothundy-Kaikatty, 14 December 2019, *Jabeena & Maya 3428* (GVCH); Kalchady, 09 March 2021, *Jabeena & Maya 5017* (GVCH).

Dichrocephala L'Hér. ex DC., Arch. Bot. (Paris) 2(6): 517 (1833)

Dichrocephala integrifolia (L.f.) Kuntze, Revis. Gen. Pl. 1: 333 (1891); Vajr., Fl. Palghat Dist. 251 (1990); *Dichrocephala latifolia* (Pers.) DC., Hook. f., Fl. Brit. India 3: 245 (1881); Gamble, Fl. Pres. Madras 679 (1921); *Cotula latifolia* Pers., Hook. f., Fl. Brit. India 3: 245 (1881).

Habit: Herb
Habitat: Evergreen, Shola forests and grasslands
Morphology: Herb; leaves alternate; heads in terminal panicles; involucral bracts uniseriate; outer florets female, tubular, glabrous; central florets, 4-lobed; anthers connate; achenes compressed.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, Holarctic, Australian and African

IUCN category: Not Evaluated

Phenology: August-December

Distribution: Common

Altitude: 800-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 396* (GVCH); Mattumala, 11 June 2018, *Jabeena & Maya 1468* (GVCH); Pothumala, 12 October 2019, *Jabeena & Maya 2544* (GVCH); Plate 53: Fig. b.

Elephantopus L., Sp. Pl. 2: 814 (1753)

Elephantopus scaber L., Sp. Pl. 2: 814 (1753); Hook. f., Fl. Brit. India 3: 242 (1881); Gamble, Fl. Pres. Madras 676 (1921); Vajr., Fl. Palghat Dist. 252 (1990).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaves radical; heads in a cluster supported by 3 broadly ovate-cordate leafy bracts; involucral bracts biseriate; flowers bisexual; corolla equal, tubular; anthers auricled at base; ovary oblong; achenes 10-ribbed.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: October-January
Distribution: Occasional
Altitude: 200-600m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 26 January 2018, Jabeena & Maya 717 (GVCH); Pothundy-Kaikatty, 21 November 2017, Jabeena & Maya 849 (GVCH).

Eleutheranthera Poit., Bull. Sci. Soc. Philom. Paris 3(no. 66): 137 (1802)

Eleutheranthera ruderalis (Sw.) Sch.Bip., Bot. Zeitung (Berlin) 24: 239 (1866).

Habit: Herb

Habitat: Degraded Moist Deciduous forests
Morphology: Herb; leaves ovate, pubescent, 3-ribbed at base; heads in axillary clusters; involucral bracts biseriate; flowers bisexual, tubular; anthers sagittate at base; achenes obovoid, pubescent.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: May-November
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1824* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2251* (GVCH); Pullukaadu, 30 November 2019 *Jabeena & Maya 3027* (GVCH).

Emilia Cass., Bull. Sci. Soc. Philom. Paris 1817: 68 (1817)

1.Leaves all cauline……....***E. ramulosa***
1.Leaves cauline and radical…….……..(2)
2.Leaves crisped pubescent; stigma truncate….……..……..***E. scabra***
2.Leaves glabrescent; stigma acute…...……..…***E. sonchifolia***

Emilia ramulosa Gamble, Bull. Misc. Inform. Kew 1921(3): 120 (1921); Gamble, Fl. Pres. Madras 716 (1921).

Habit: Herb

Habitat: Shola forests

Morphology: Herb; leaves all cauline and subsimilar, margins recurved; heads; involucral bracts uniseriate; corolla tubular, 5-lobed; stamens 5; achenes 5-ribbed.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Southern Western Ghats

IUCN category: Not Evaluated

Phenology: May-June

Distribution: Rare

Altitude: 900-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 772* (GVCH).

Emilia scabra DC. ex Wight, Contrib. Bot. Ind. 24 (1834); Gamble, Fl. Pres. Madras 716 (1921); *Emilia sonchifolia* (L.) DC. var. *scabra* (DC.) Hook. f., Fl. Brit. India 3: 336 (1881).

Habit: Herb
Habitat: Semi-evergreen forests and Grasslands
Morphology: Herb; leaves radical and cauline, pubescent; heads solitary; involucral bracts glabrous; corolla glandular; achenes ribbed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: September-November
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 298* (GVCH); Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 754* (GVCH); Kurissumala, 22 June 2019, *Jabeena & Maya 2051* (GVCH).

Emilia sonchifolia (L.) DC., Contr. Bot. India [Wight] 24 (1834); Hook. f., Fl. Brit. India 3: 336 (1881); Gamble, Fl. Pres. Madras 716 (1921); Vajr., Fl. Palghat Dist. 252 (1990).

Habit: Herb
Habitat: Moist and Dry Deciduous forests

Morphology: Herb; leaves radical and cauline; heads homogamous, not rayed; involucral bracts uniseriate; florets all equal, bisexual; corolla 5-lobed; stamens 5; achenes 5-ribbed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 15 May 2019, *Jabeena & Maya 1941* (GVCH); Nelliyampathy range, Karappara, 06 July 2019, *Jabeena & Maya 2180* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2850* (GVCH).

Erigeron L., Sp. Pl. 2: 863 (1753)

1.Flower head 1-1.5 cm in diameter……...***E. karvinskianus***
1.Flower head upto 0.5 cm in diameter……..(2)
2.Capitulum white……....***E. canadensis***
2.Capitulum yellow…….***E. bonariensis***

Erigeron bonariensis L., Sp. Pl. 2: 863 (1753); *Erigeron linifolius* Willd., Hook. f., Fl. Brit. India 3: 254 (1881); *Conyza ambigua* DC., Gamble, Fl. Pres. Madras 683 (1921); *Conyza bonariensis* (L.) Cronq., Vajr., Fl. Palghat Dist. 251 (1990).

Habit: Herb
Habitat: Grasslands and Moist Deciduous forests
Morphology: Herb; leaves alternate, pubescent; heads in panicles, cylindric; involucral bracts glabrous; outer florets female; central florets bisexual; achenes truncate, hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: June-January
Distribution: Common
Altitude: 800-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 297* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 393* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1888* (GVCH); Plate 53: Fig. c.

Erigeron canadensis L., Sp. Pl. 2: 863 (1753); Gamble, Fl. Pres. Madras 681 (1921); Vajr., Fl. Palghat Dist. 253 (1990).
Habit: Herb
Habitat: Grasslands and Moist Deciduous forests
Morphology: Herb; leaves alternate; heads terminal; involucral bracts 2-3 seriate; ray florets female; disc florets bisexual; achene cylindric.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: June-August
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, *Jabeena & Maya 093* (GVCH); Manpara, 29 July 2017, *Jabeena & Maya 255* (GVCH).

Erigeron karvinskianus DC., Prodr. [A. P. de Candolle] 5: 285 (1836); *Erigeron mucronatus* DC., Gamble, Fl. Pres. Madras 682 (1921).

Habit: Herb
Habitat: Grown as garden plant; often found as an escape
Morphology: Herb; stem pubescent; leaves 3-lobed; heads solitary; involucral bracts 3-seriate; ray florets female; disc florets bisexual; achenes cylindric.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Not Evaluated
Phenology: Throughout the year

Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 14 December 2019, *Jabeena & Maya 3439* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3731* (GVCH).

Galinsoga Ruiz & Pav., Prod. Fl. Per. 110, t. 24 (1794)

Galinsoga parviflora Cav., Icon. [Cavanilles] 3(2): 41, t. 281 (1796); Hook. f., Fl. Brit. India 3: 311 (1881); Gamble, Fl. Pres. Madras 711 (1921).

Habit: Herb
Habitat: In open areas, Dry Deciduous and Shola forests
Morphology: Herb; leaves opposite, 3-ribbed at base; heads in axillary or terminal cymes, heterogamous, rayed; involucral bracts biseriate; ray florets female, uniseriate, fertile; disc florets bisexual, tubular, fertile; corolla 5-toothed; achenes obovoid.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Not Evaluated
Phenology: December-April
Distribution: Common
Altitude: 800-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 11 January 2020, *Jabeena & Maya 3591* (GVCH); Pothupara, 11 January 2020, *Jabeena & Maya 3663* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2260* (GVCH).

Gnaphalium L., Sp. Pl. 2: 850 (1753)

Gnaphalium polycaulon Pers., Syn. Pl. [Persoon] 2(2): 421 (policaulon) (1807); *Gnaphalium indicum* Hook. f., Fl. Brit. India 3: 289 (1881); Gamble, Fl. Pres. Madras 698 (1921).

Habit: Herb

Habitat: Grasslands

Morphology: Herb; leaves alternate; heads in axillary spikes, heterogamous, not rayed; involucral bracts 2-3-seriate, glabrous; outer flowers female, 2-seriate; inner flowers bisexual; achenes 2-3-angled.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, African and South American

IUCN category: Least Concern

Phenology: Throughout the year

Distribution: Common

Altitude: 800-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1137* (GVCH); Oothukkuzhi, 30 November 2019, *Jabeena & Maya 3111* (GVCH); Nooradi, 11 January 2020, *Jabeena & Maya 3588* (GVCH); Plate 53: Fig. d.

Gynura Cass., Dict. Sci. Nat., ed. 2. [F. Cuvier] 34: 391 (-392) (1825)

Gynura pseudochina (L.) DC., Prodr. [A. P. de Candolle] 6: 299 (1838); Hook. f., Fl. Brit. India 3: 334 (1881); Gamble, Fl. Pres. Madras 714 (1921).

Habit: Herb

Habitat: Degraded forest areas

Morphology: Herb; leaves alternate, pinnatisect; heads homogamous, not rayed, in peduncled cymes; involucral bracts uniseriate, glabrous; corolla glandular; achenes hairy.

Raunkiaer's life-form: Geophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: September-March

Distribution: Rare

Altitude: 1000-1200m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 12 October 2019, Jabeena & Maya 2622 (GVCH); Plate 53: Fig. e.

Helichrysum Mill., Gard. Dict. Abr., ed. 4. [462] (1754)

Helichrysum buddlejoides DC. ex Wight, Contr. Bot. India [Wight] 20. (1834); Hook. f., Fl. Brit. India 3: 290 (1881); Gamble, Fl. Pres. Madras 699 (1921); *Helichrysum buddleioides* var. *hookerianum* (Wight & Arn.) Hook. f., Fl. Brit. India 3: 291 (1881).

Habit: Herb
Habitat: Shola forests
Morphology: Herb; stem woolly; leaves alternate; heads in corymbs; involucral bracts many-seriate, glabrous; flowers all bisexual; receptacle flat; corolla tubular, glabrous; anther bases sagittate, tailed; achenes 3-angled.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: November-March
Distribution: Rare
Altitude: 1200-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 932* (GVCH).

Laggera Sch.Bip. ex Benth., Gen. Pl. [Bentham & Hooker f.] 2(1): 290 (1873)

Laggera alata (DC.) Sch.Bip. ex Oliv., Trans. Linn. Soc. London 29: 94 (1873); Hook. f., Fl. Brit. India 3: 271 (1881); Gamble, Fl. Pres. Madras 689 (1921).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves alternate, sessile; heads in terminal panicle, heterogamous, not rayed; involucral bracts many-seriate; receptacle flat, naked; corolla 4-toothed; central florets bisexual; corolla glabrous; achenes ribbed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Common
Altitude: 1000-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1064* (GVCH); Kollengode range, Minnampara, 09 December 2019, *Jabeena & Maya 3209* (GVCH); Nelliyampathy range, Mattumala, 17 January 2020, *Jabeena & Maya 3842* (GVCH).

Launaea Cass., Dict. Sci. Nat., ed. 2. [F. Cuvier] 25: 321 (1822)

Launaea acaulis (Roxb.) Babc. ex Kerr, in Craib, Fl. Siam. Enum. 2: 299 (1936); *Crepis acaulis* (Roxb.) Hook. f., Fl. Brit. India 3: 396 (1881); Gamble, Fl. Pres. Madras 730 (1921).

Habit: Herb
Habitat: Moist Deciduous forests
Morphology: Herb; leaves radical; heads peduncled, corymbose; involucre campanulate; involucral bracts uniseriate; receptacle flat, naked; flowers all equal, ligulate; corolla glabrous; anthers sagittate at base; achenes compressed.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-September
Distribution: Rare
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 April 2018, *Jabeena & Maya 1318* (GVCH).

Melampodium L., Sp. Pl. 2: 921 (1753)

Melampodium divaricatum DC., Prodr. [A. P. de Candolle] 5: 520 (1836).

Habit: Herb
Habitat: Grown as garden plant; often found as an escape
Morphology: Herb; leaves opposite, margins irregular; outer florets ligulate, female; inner florets tubular, bisexual; achenes ribbed.
Raunkiaer's life-form: Chamaephyte
Phytogeographical affinity: Holarctic and South American
IUCN category: Not Evaluated
Phenology: August-April
Distribution: Rare
Altitude: 800-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothupara, 03 November 2019, *Jabeena & Maya 3653* (GVCH).

Mikania Willd., Sp. Pl., ed. 4 [Willdenow] 3(3): 1481, 1742 (1803)

Inflorescence lax and paniculate; phyllaries acute……..…...***M. micrantha***
Inflorescence dense and corymbose; phyllaries attenuate…..……...***M. scandens***

Mikania micrantha Kunth, Nov. Gen. Sp. [H.B.K.] 4(fol.): 105 (1818); *Mikania scandens* sensu Clarke, Hook. f., Fl. Brit. India 3: 144 (1881).
Habit: Climber
Habitat: Forest plantations and moist localities
Morphology: Climber; leaves opposite, glabrous; heads in axillary panicles; involucral bracts biseriate; flowers all equal, bisexual; corolla tubular, 5-lobed, glandular; achenes 5-ribbed.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: February-April
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 560* (GVCH); Vazhakkundu, 27 November 2017, *Jabeena & Maya 896* (GVCH); Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2866* (GVCH).

Mikania scandens (L.) Willd., Sp. Pl., ed. 4 [Willdenow] 3(3): 1743 (1803).

Habit: Climber
Habitat: Wet forest areas
Morphology: Climber; leaves opposite; heads in axillary corymb; corolla glandular; achenes oblong, 5-angled.
Raunkiaer's life-form: Liana
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: January-October
Distribution: Occasional
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Cheriya Manpara, 16 February 2020, *Jabeena & Maya 4113* (GVCH); Nelliyampathy range, Cherunelli, 06 February 2021, *Jabeena & Maya 4830* (GVCH).

Parthenium L., Sp. Pl. 2: 988 (1753)

Parthenium hysterophorus L., Sp. Pl. 2: 988 (1753); Vajr., Fl. Palghat Dist. 259 (1990).

Habit: Herb
Habitat: Dry Deciduous forests and wastelands
Morphology: Herb; leaves alternate, pinnatisect; heads in terminal panicle; involucral bracts biseriate; florets dissimilar; outer florets 5, ligulate, rayed, female; inner florets tubular, male; achenes ribbed.
Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Indo-Pacific, Holarctic and South American
IUCN category: Not Evaluated
Phenology: May-March
Distribution: Common
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 009* (GVCH); Karappara, 06 July 2019, *Jabeena & Maya 2207* (GVCH); Chandramala, 03 November 2019, *Jabeena & Maya 2868* (GVCH).

Phyllocephalum Blume, Bijdr. Fl. Ned. Ind. 15: 888 (1826)

1.Plant a stout perennial…..….***P. indicum***
1.Plant an annual……..…..……(2)
2.Leaves deeply serrate; peduncles slender; outer bracts thickly white felted, acute……..***P. scabridum***
2.Leaves shortly serrate or entire; peduncles stout; outer bracts with coarse moniliform hairs, usually obtuse…..……....***P .courtallense***

Phyllocephalum courtallense (Wight) Narayana, Curr. Sci. 51(8): 438 (1982); *Centratherum courtallense* (Wight) Benth. ex Hook. f., Fl. Brit. India 3: 227 (1881); Gamble, Fl. Pres. Madras 666 (1921).

Habit: Herb
Habitat: Grasslands and montane scrub jungles
Morphology: Herb; stem erect; leaves alternate; heads solitary or in corymbs, homogamous; involucral bracts many-seriate; outer bracts hairy; corolla all equal, tubular, 5-lobed; anthers auricled at base; achenes ribbed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: January-June
Distribution: Common
Altitude: 800-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 399* (GVCH); Karassuri, 20 October 2019, *Jabeena & Maya 2680* (GVCH); Minnampara, 09 December 2019, *Jabeena & Maya 3194* (GVCH).

Phyllocephalum indicum (Less.) K.Kirkman, Rhodora 83(833): 12 (1981); *Centratherum reticulatum* (Wight) Benth. & Hook. f., Hook. f., Fl. Brit. India 3: 227 (1881); Gamble, Fl. Pres. Madras 666 (1921).

Habit: Herb
Habitat: Along stream banks
Morphology: Herb; leaves sub-sessile; heads in axillary or terminal corymb, homogamous, not rayed; involucral bracts many-seriate; corolla all equal, tubular; achenes ribbed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: May-October
Distribution: Rare
Altitude: 300-500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kalchady, 01 October 2017, *Jabeena & Maya 531* (GVCH).

Phyllocephalum scabridum (DC.) K. Kirkman, Rhodora 83 (833): 10 (1981); *Centratherum molle* (DC.) Benth., Hook. f., Fl. Brit. India 3: 227 (1881); Gamble, Fl. Pres. Madras 666 (1921); Vajr., Fl. Palghat Dist. 250 (1990).

Habit: Herb
Habitat: Shola and Moist Deciduous forests
Morphology: Herb; leaves elliptic; heads homogamous, solitary; involucre sub-hemispheric; involucral bracts many-seriate; corollas all tubular, equal, glabrous; anthers auricled; achenes ribbed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific

Endemism: Endemic to Western Ghats
IUCN category: Not Evaluated
Phenology: July-December
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Keshavanpara, 21 November 2017, *Jabeena & Maya 742* (GVCH).

Sigesbeckia L., Sp. Pl. 2: 900 (1753)

Sigesbeckia orientalis L., Sp. Pl. 2: 900 (1753); Hook. f., Fl. Brit. India 3: 304 (1881); Gamble, Fl. Pres. Madras 704 (1921); Vajr., Fl. Palghat Dist. 254 (1990).

Habit: Herb
Habitat: Dry and moist deciduous forests
Morphology: Herb; stem glandular-pubescent; leaves opposite, toothed; heads heterogamous, rayed, in leafy panicles; involucre campanulate; involucral bracts biseriate; outer florets ligulate, female; inner florets tubular, bisexual; anthers bases obtuse; achenes quadrangular.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, African and South American
IUCN category: Not Evaluated
Phenology: April-December
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1681* (GVCH).

Solidago L., Sp. Pl. 2: 878 (1753)

Solidago canadensis L., Sp. Pl. 2: 878 (1753).

Habit: Herb
Habitat: Grown as garden plant
Morphology: Herb; stem with a line of white hairs; leaves alternate, pubescent, toothed; heads paniculate, not rayed; heads homogamous, tubular, all equal.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Holarctic
IUCN category: Not Evaluated
Phenology: December-March
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1512* (GVCH).

Sonchus L., Sp. Pl. 2: 793 (1753)

Sonchus oleraceus L., Sp. Pl. 2: 794 (1753); Hook. f., Fl. Brit. India 3: 414 (1881); Gamble, Fl. Pres. Madras 732 (1921); Vajr., Fl. Palghat Dist. 255 (1990).

Habit: Herb
Habitat: Shola forests
Morphology: Herb; leaves radical; heads homogamous, in panicled cyme; involucral bracts 3-seriate; corolla 5-lobed; achenes truncate.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American
IUCN category: Not Evaluated
Phenology: March-November
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 025* (GVCH).

Sphagneticola O.Hoffm., Notizbl. Königl. Bot. Gart. Berlin 3: 36 (1900)

Sphagneticola trilobata (L.) Pruski, Mem. New York Bot. Gard. 78: 114 (1996).

Habit: Herb
Habitat: Grown as garden plant; found as an escape
Morphology: Herb; leaves elliptic; heads solitary; involucral bracts many-seriate; ray florets ligulate; ovary trigonous; disc florets tubular; pubescent; achenes warty.
Raunkiaer's life-form: Chamaephyte

Phytogeographical affinity: Holarctic and South American
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Rare
Altitude: 800-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pullukaadu, 30 November 2019, *Jabeena & Maya 3018* (GVCH).

Strobocalyx (Blume ex DC.) Sch.Bip., Jahresber. Pollichia 18/19: 170 (1861)

Strobocalyx arborea Sch.Bip., Jahresber. Pollichia 18-19: 171 (1861); *Vernonia monosis* Benth. ex Clarke, Gamble, Fl. Pres. Madras 672 (1921); *Vernonia arborea* Buch.-Ham., Hook. f., Fl. Brit. India 3: 239 (1881); Vajr., Fl. Palghat Dist. 257 (1990); *Vernonia arborea* Buch.-Ham. var. *wightiana* (DC.) Hook. f., Fl. Brit. India 3: 239 (1881);

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves alternate, pubescent beneath; heads in terminal panicles; involucral bracts pubescent; corolla tubular; stamens 5; ovary 1-loculed; achene 10-ribbed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Least Concern
Phenology: September-March
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1605* (GVCH); Mattumala, 15 May 2019, *Jabeena & Maya 1954* (GVCH); Karassuri, 04 March 2021, *Jabeena & Maya 4993* (GVCH).

Synedrella Gaertn., Fruct. Sem. Pl. 2: 456 (1791)

Synedrella nodiflora Gaertn., Fruct. Sem. Pl. 2(3): 456, t. 171 (1791); Hook. f., Fl. Brit. India 3: 308 (1881); Gamble, Fl. Pres. Madras 708 (1921); Vajr., Fl. Palghat Dist. 256 (1990).

Habit: Herb
Habitat: Deciduous forests
Morphology: Herb; leaves opposite; heads axillary or terminal solitary, heterogamous; involucral bracts biseriate; ray florets ligulate, female; ovary winged; disc florets tubular, bisexual; corolla 5-lobed; stamens 5; achenes dimorphic, achenes in ray florets winged and disc florets not winged.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Australian
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Common
Altitude: 100-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Kaikatty, 10 June 2017, *Jabeena & Maya 013* (GVCH); Kollengode range, Seetharkundu, 23 September 2017, *Jabeena & Maya 403* (GVCH); Pothumala, 15 October 2017, *Jabeena & Maya 588* (GVCH); Plate 53: Fig. f.

Tagetes L., Sp. Pl. 2: 887 (1753)

Tagetes erecta L., Sp. Pl. 2: 887 (1753).

Habit: Herb
Habitat: Grown as garden plant; found as an escape
Morphology: Herb; stam angular; leaves pinnatifid; heads solitary; ray florets long-clawed; involucre campanulate; involucral bracts many-seriate; achenes ribbed.

Raunkiaer's life-form: Therophyte

Phytogeographical affinity: Holarctic and South American

IUCN category: Not Evaluated

Phenology: Throughout the year

Distribution: Occasional

Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2800* (GVCH); Kollengode range, Greenland, 11 January 2020, *Jabeena & Maya 3740* (GVCH).

Taraxacum F. H. Wigg., Prim. Fl. Holsat. 56, adnot. x, y, z. (1780)

Taraxacum javanicum Soest, Wentia 10: 56 (1963); *Taraxacum officinale* Hook. f., Fl. Brit. India 3: 401 (1881); Gamble, Fl. Pres. Madras 731 (1921).

Habit: Herb
Habitat: Grasslands and tea plantations
Morphology: Herb; leaves pinnatifid; involucre campanulate; involucral bracts reflexed; florets all equal, ligulate; achenes spinulose at apex.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-December
Distribution: Occasional
Altitude: 900-1100m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1775* (GVCH); Nelliyampathy range, Hilltop, 01 February 2020, *Jabeena & Maya 3910* (GVCH).

Tithonia Desf. ex Juss., Gen. Pl. [Jussieu] 189 (1789)

Tithonia diversifolia (Hemsl.) A.Gray, Proc. Amer. Acad. Arts xix. 5 (1883).

Habit: Shrub
Habitat: Grown as garden plants; often found as escape
Morphology: Shrub; leaves alternate, 3-5 lobed; heads axillary, solitary; involucral bracts 4-seriate; head heterogamous; outer florets ligulate, female; inner florets tubular, bisexual; corolla 5-lobed; achenes hairy.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African, Australian and South American
IUCN category: Not Evaluated
Phenology: September-May
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pulayampara, 19 August 2017, *Jabeena & Maya 350* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 424* (GVCH); Plate 53: Fig. g.

Tridax L., Sp. Pl. 2: 900 (1753)

Tridax procumbens L., Sp. Pl. 2: 900 (1753); Hook. f., Fl. Brit. India 3: 311 (1881); Gamble, Fl. Pres. Madras 711 (1921); Vajr., Fl. Palghat Dist. 256 (1990).

Habit: Herb
Habitat: Deciduous forests and wastelands
Morphology: Herb; leaves opposite, hairy; heads solitary, heterogamous; involucral bracts 3-seriate, hairy; outer florets ligulate, female; inner florets tubular, bisexual; corolla 5-lobed; achenes obovoid, hairy.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Occasional
Altitude: 100-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 303* (GVCH); Seetharkundu, 23 September 2017, *Jabeena & Maya 417* (GVCH).

Vicoa Cass., Ann. Sci. Nat. (Paris) 17: 418 (1829)

Vicoa indica DC., in Wight, Contrib. 10. (1834); Gamble, Fl. Pres. Madras 701 (1921); *Vicoa auriculata* Cass., Hook. f., Fl. Brit. India 3: 297 (1881); *Pentanema*

indicum (L.) Ling, Vajr., Fl. Palghat Dist. 258 (1990).

Habit: Herb
Habitat: Degraded Forest areas
Morphology: Herb; leaves alternate; heads in terminal or axillary corymb, homogamous, not rayed; involucre bracts many-seriate; corolla campanulate; achenes 10-ribbed.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: November-February
Distribution: Occasional
Altitude: 1000-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1116* (GVCH); Mattumala, 17 January 2020, *Jabeena & Maya 3841* (GVCH); Plate 53: Fig. h.

Xanthium L., Sp. Pl. 2: 987 (1753)

Xanthium strumarium L., Sp. Pl. 2: 987 (1753); Hook. f., Fl. Brit. India 3: 303 (1881); Gamble, Fl. Pres. Madras 703 (1921); Vajr., Fl. Palghat Dist. 259 (1990).

Habit: Herb
Habitat: Deciduous forests
Morphology: Herb; stem erect; leaves 3-ribbed at base; heads axillary; bisexual heads in upper axils, involucral bracts free, corolla tubular; female heads in lower axils, involucral bracts united in female heads, corolla absent; stamens connate; achenes paired on each head.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: March-December
Distribution: Rare
Altitude: 100-300m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 30 November 2019, *Jabeena & Maya 3073* (GVCH).

Zinnia L., Syst. Nat., ed. 10. 2: 1189, 1221, 1377 (1759)

Zinnia elegans Jacq., Collectanea [Jacquin] 3: 152 (1789).

Habit: Herb
Habitat: Grown as garden plant
Morphology: Herb; leaves elliptic; heads solitary, heterogamous; outer florets ligulate, female; inner florets tubular, bisexual; achenes ribbed
Raunkiaer's life-form: Therophyte
Phytogeographical affinity: South American
IUCN category: Not Evaluated
Phenology: Throughout the year
Distribution: Rare
Altitude: 800-900m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2801* (GVCH).

DIPSACALES

ADOXACEAE

Leaves simple……***Viburnum***
Leaves pinnately compound.....***Sambucus***

Sambucus L., Sp. Pl. 1: 269 (1753)

Sambucus canadensis L., Sp. Pl. 1: 269 (1753).

Habit: Shrub
Habitat: Grown as garden plant
Morphology: Shrub; leaves opposite, compound; inflorescence a terminal corymbose panicle; calyx adnate to the ovary; petals 5-fid; stamens 5; ovary inferior, 1-loculed.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Holarctic
IUCN category: Not Evaluated
Phenology: December-June
Distribution: Occasional
Altitude: 800-1000m

Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3572* (GVCH); Pothupara, 11 January 2020, *Jabeena & Maya 3670* (GVCH).

Viburnum L., Sp. Pl. 1: 267 (1753)

Viburnum punctatum Buch.-Ham. ex D.Don, Prodr. Fl. Nepal. 142. (1825); Hook. f., Fl. Brit. India 3: 5 (1880); *Viburnum acuminatum* Wall. ex DC., Gamble, Fl. Pres. Madras 575 (1919).

Habit: Tree
Habitat: Semi-evergreen forests
Morphology: Tree; leaves simple, opposite; stipule absent; lateral nerves 5-10 pairs; inflorescence a terminal umbellate corymb; calyx 5-lobed; corolla rotate, 5-lobed; stamens 5; ovary inferior, 1-loculed; ovule solitary, pendulous; drupe ovoid.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: January-August
Distribution: Common
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 305* (GVCH); Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1012* (GVCH); Pullukaadu, 30 November 2019, *Jabeena & Maya 2980* (GVCH); Plate 54: Fig. a

APIALES

PITTOSPORACEAE

Pittosporum Banks ex Gaertn., Fruct. Sem. Pl. 1: 286 (1788)

Flowers in terminal sessile umbels; leaves pseudoverticillate towards the branch tips……..…….***P. tetraspermum***
Flowers in simple racemes; leaves alternate…..……...***P. neelgherense***

Pittosporum neelgherrense Wight & Arn., Prodr. Fl. Ind. Orient. 1: 154 (1834); Hook. f., Fl. Brit. India 1: 198 (1872); Gamble, Fl. Pres. Madras 55 (1915).
Habit: Tree
Habitat: Evergreen and Shola forests
Morphology: Tree; leaves simple, alternate; stipule absent; lateral nerves 8-14 pairs; inflorescence a simple raceme; calyx 5-lobed, ciliate; petals 5, erect, recurved at the top; stamens 5, erect; ovary one-loculed; capsule 2-valved.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to India
IUCN category: Not Evaluated
Phenology: January-June
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1102* (GVCH); Plate 54: Fig. b.

Pittosporum tetraspermum Wight & Arn., Prodr. Fl. Ind. Orient. 1: 154 (1834); Hook. f., Fl. Brit. India 1: 198 (1872); Gamble, Fl. Pres. Madras 55 (1915); Vajr., Fl. Palghat Dist. 63 (1990).

Habit: Shrub
Habitat: Evergreen, Shola and Moist Deciduous forests
Morphology: Shrub; leaves simple, pseudo verticillate; lateral nerves 10-12 pairs; inflorescence a terminal umbel; calyx 5-lobed, pubescent; petals 5, clawed; ovary hairy; capsule globose.

Raunkiaer's life-form: Phanerophyte

Phytogeographical affinity: Indo-Pacific

IUCN category: Not Evaluated

Phenology: February-April

Distribution: Occasional

Altitude: 900-1100m

Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Manpara, 01 December 2018, *Jabeena & Maya 1604* (GVCH); Nelliyampathy range, Keshavanpara, 26 August 2019, *Jabeena & Maya 2340* (GVCH); Plate 54: Fig. c.

ARALIACEAE

Leaves palmately lobed; stipule scarious; inflorescence terminal…..…...***Hydrocotyle***
Leaves digitate; stipule connate with the petiole; inflorescence axillary....***Schefflera***

Hydrocotyle L., Sp. Pl. 1: 234 (1753)

Umbel peduncles clustered; primary ridges of mericarps obscure.....***H. javanica***
Umbel solitary, sessile; primary ridges of mericarps apparent……..…***H. conferta***

Hydrocotyle conferta Wight, Icon. Pl. Ind. Orient. [Wight] 3(3): t. 1002 (1845); Gamble, Fl. Pres. Madras 556 (1919).

Habit: Herb
Habitat: Grasslands and Shola margins
Morphology: Herb; stem rooting at nodes; leaves alternate, 7-9 lobed; inflorescence an axillary solitary umbel; flowers sessile; calyx obscure; petals 5, entire; stamens 5; mericarp slightly compressed; seed solitary.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Endangered
Phenology: January-April
Distribution: Rare
Altitude: 900-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 14 December 2019, *Jabeena & Maya 3516* (GVCH).

Hydrocotyle javanica Thunb., Diss. Hydroc. n. 17. t. 2; ed. Pers. ii. 415. t. 2; Gamble, Fl. Pres. Madras 556 (1919); Vajr., Fl. Palghat Dist. 222 (1990).

Habit: Herb
Habitat: Along stream banks in Evergreen forests, also in sacred groves
Morphology: Herb; stem rooting at nodes; leaves alternate, 7-9 lobed; inflorescence a capitate clusters of umbel; calyx 5-toothed; petals 5, entire; stamens 5; ovary 2-loculed; mericarps slightly compressed.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Least Concern
Phenology: October-May
Distribution: Common
Altitude: 500-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Pothundy-Kaikatty, 02 July 2017, *Jabeena & Maya 001 (GVCH);* Kollengode range, Manpara, 29 July 2017, *Jabeena & Maya 173 (GVCH);* Mattumala, 11-06-2018, *Jabeena & Maya 1471 (GVCH);* Plate 54: Fig. d.

Schefflera J. R. Forst. & G. Forst., Char. Gen. Pl., ed. 2. 45 (1776)

Leaflets prominently reticulated; panicle slender; flowers upto 5 per umbel……....***S. venulosa***
Leaflets not prominently reticulated; panicle stout; flowers more than 6 per umbel……...…***S. wallichiana***

Schefflera venulosa (Wight & Arn.) Harms, Nat. Pflanzenfam. [Engler & Prantl] iii. VIII. 39 (1894); Gamble, Fl. Pres. Madras 570 (1919); Vajr., Fl. Palghat Dist. 224 (1990); *Heptapleurum venulosum* (Wight & Arn.) Seem., Hook. f., Fl. Brit. India 2: 729 (1879).

Habit: Shrub
Habitat: Evergreen forests and Sacred groves

Morphology: Shrub; leaves alternate, digitate, 5-6 foliolate; inflorescence a panicle of umbels, glabrous; flowers pedicellate; calyx truncate; petals many; drupe globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific and Holarctic
IUCN category: Not Evaluated
Phenology: March-June
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20 January 2018, *Jabeena & Maya 1009* (GVCH); Mattumala, 02 November 2020, *Jabeena & Maya 4245* (GVCH).

Schefflera wallichiana (Wight & Arn.) Harms, Notizbl. Bot. Gart. Berlin-Dahlem 13: 449, in obs. (1937); Gamble, Fl. Pres. Madras 570 (1919); *Heptapleurum wallichianum* (Wight & Arn.) Clarke, Hook. f., Fl. Brit. India 2: 730 (1879).

Habit: Tree
Habitat: Evergreen forests
Morphology: Tree; leaves compound, alternate; leaflets 5-8; lateral nerves 10-21 pairs; inflorescence a panicle of umbels; calyx truncate; petals 5; stamens 5; ovary inferior; berry globose.
Raunkiaer's life-form: Phanerophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: April-May
Distribution: Occasional
Altitude: 600-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Seetharkundu, 11 June 2018, *Jabeena & Maya 1562* (GVCH); Pothumala, 12-10-2019, *Jabeena & Maya 2620* (GVCH); Plate 54: Fig. e.

APIACEAE

1.Prostrate herbs……....***Centella***
1.Erect herbs……..(2)
2.Mericarp not winged……...……(3)
2.Mericarp winged……...…..(4)
3.Flowers in compound umbels……...***Pimpinella***
3.Flowers in dense rounded cymes……..***Eryngium***
4.Sepals with entire or sub entire tip….……...……...***Peucedanum***
4.Sepals usually absent or small…...…..(5)
5.Ovary pubescent; petals radiant……...***Heracleum***
5.Ovary glabrous; petals not radiant……..……...……***Anethum***

Anethum L., Sp. Pl. 1: 263 (1753)

Anethum graveolens L., Sp. Pl. 1: 263 (1753); Gamble, Fl. Pres. Madras 566 (1919); *Peucedanum graveolens* (L.) Hiern Hook. f., Fl. Brit. India 2: 709 (1879).

Habit: Herb
Habitat: Cultivated
Morphology: Herb; leaves alternate, decompound; inflorescence a compound umbel; rays many; sepals absent; petals bifid; stamens 5; ovary glabrous.
Raunkiaer's life-form: Therophyte
Phytogeographical affinity:
IUCN category: Not Evaluated
Distribution: Rare
Altitude: 800-900
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Nooradi, 26 January 2018, *Jabeena & Maya 3505* (GVCH).

Centella L., Sp. Pl., ed. 2. 2: 1393 (1763)

Centella asiatica (L.) Urb., Fl. Bras. (Martius) 11(1): 287 (1879); Gamble, Fl. Pres. Madras 556 (1919); Vajr., Fl. Palghat Dist. 222 (1990).

Habit: Herb
Habitat: Deciduous forests
Morphology: Herb; stem rooting at nodes; leaves alternate; inflorescence an axillary few-flowered umbels; involucral bracts 2;

calyx truncate; petals imbricate; stamens 5; ovary 2-loculed; fruit laterally compressed.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic and African
IUCN category: Least Concern
Phenology: Throughout the year
Distribution: Occasional
Altitude: 400-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Vazhakkundu, 15 January 2019, *Jabeena & Maya 1716* (GVCH); Nelliyampathy range, Victoria, 12-10-2020, *Jabeena & Maya 4187* (GVCH).

Eryngium L., Sp. Pl. 1: 232 (1753)

Eryngium foetidum L., Sp. Pl. 1: 232 (1753).

Habit: Herb
Habitat: Cultivated
Morphology: Herb; leaves oblong; involucral bracts 5-7; flower heads cylindrical; sepals longer than the petals, persistent; petals clawed; anthers 5; fruit.
Raunkiaer's life-form: Hemicryptophyte
Phytogeographical affinity: Indo-Pacific, Holarctic, African and South American
IUCN category: Not Evaluated
Phenology: February-November
Distribution: Occasional
Altitude: 800-1000m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chandramala, 03 November 2019, *Jabeena & Maya 2848* (GVCH); Nooradi, 14 December 2019, *Jabeena & Maya 3583* (GVCH); Plate 54: Fig. f.

Heracleum L., Sp. Pl. 1: 249 (1753)
Lower leaves pinnate; fruit laterally compressed……...***H. rigens***
Lower leaves bi or tripinnate; fruit dorsally compressed….....***H. candolleanum***

Heracleum candolleanum Gamble, Fl. Madras 565 (1919); *Heracleum rigens* Wall. ex DC. var. *candolleana* (Wight & Arn.) Clarke, Hook. f., Fl. Brit. India 2: 715 (1879); *Heracleum rigens* var. *ligusticifolium* (Wight) Clarke, Hook. f., Fl. Brit. India 2: 716 (1879); *Heracleum courtallense* Gamble, Fl. Pres. Madras 565 (1919).

Habit: Shrub
Habitat: Shola forests and Grasslands
Morphology: Shrub; leaves alternate, bipinnate; leaflets 7-9; inflorescence a terminal compound raceme; rays 11-13; calyx 5-lobed; petals 3, glabrous; stamens 5; ovary compressed; fruit winged.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: April-October
Distribution: Occasional
Altitude: 1000-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 11 June 2018, *Jabeena & Maya 1476* (GVCH); Karassuri, 24 September 2019, *Jabeena & Maya 1476* (GVCH); Plate 54: Fig. g.

Heracleum rigens Wall., Numer. List [Wallich] n. 575. 1829; DC. Prod. iv. 191; Gamble, Fl. Pres. Madras 564 (1919); *Heracleum rigens* Wall. ex DC. var. *multiradiatum* Gamble, Fl. Pres. Madras 565 (1919); *Heracleum rigens* Wall. ex DC. var. *elongatum* Gamble, Fl. Pres. Madras 565 (1919).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves bipinnate; inflorescence a terminal compound umbel; involucre bracts 2-3; calyx 5-lobed; petals 5; stamens 5; ovary 2-loculed; disc bilobed; fruit laterally compressed.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated

Phenology: August-September
Distribution: Occasional
Altitude: 900-1200m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Hilltop, 20-01-2018, *Jabeena & Maya 1112* (GVCH); Kollengode range, Karassuri, 24 September 2019, *Jabeena & Maya 2442* (GVCH).

Peucedanum L., Sp. Pl. 1: 245 (1753)

Stem upto 25 cm tall; bracts broadly ovate; bracteoles ovate-lanceolate; pedicel glabrous...……..……***P. pradeepianum***
Stem upto 40 cm tall; bracts and bracteoles oblong; pedicel hirtullous……***P. sp.nov.***

Peucedanum pradeepianum K.M.P. Kumar, Hareesh & Balach., Phytotaxa 446(1): 46 (2020).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; leaves decompound; inflorescence a terminal compound umbel; rays 3-5, equal; involucre bracts 1–3; involucel 4-5; calyx 5-lobed; petals 5; stamens 5; mericarp ellipsoid, 5-ribbed.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Kerala
IUCN category: Not Evaluated
Phenology: September-January
Distribution: Rare
Altitude: 700-800m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Cheriya Govindamala, 03 November 2020, *Jabeena & Maya 4288* (GVCH).
Peucedanum sp.nov. K.M.P.Kumar, Ram P. & Hareesh
Habit: Herb
Habitat: Open grasslands
Morphology: Erect one-stemmed perennial; stem angled, green with purple ridges; leaves decompound; leaflets two types, basal leaflets lanceolate, margin deeply serrate, mucronate at apex, sometimes 2-parted; upper leaflets elliptic, serrate, mucronate at apex; rachis sheathing at base; petiole angled, hirtullous; inflorescence compound umbel, umbels 3–4 rayed, rays subequal, involucre bracts oblong, purple; flowers all perfect, pedicellate, subequal; involucel 4, unequal ovate, margin entire, acute or slightly acuminate at apex, persistent, purple, ciliate hairs present on both sides; sepals united, teeth prominent, margin entire; petals obovate, acute at apex, strongly inflexed, white; stamens spreading, filaments white, anthers purple, oblong or sub-globular, dorsally inserted; stylopodium broadly conical, pinkish; styles slender, deflexed; mericarp ellipsoid; vittae prominent, 6 commissural and 3–4 lateral.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
Endemism: Endemic to Southern Western Ghats
IUCN category: Not Evaluated
Phenology: June-October
Distribution: Rare
Altitude: 1200-1500m
Specimen examined: INDIA, Kerala: Palakkad district, Nelliyampathy range, Chakkaliyampara, 06 July 2019, *Jabeena & Maya 2133* (GVCH).

Pimpinella L., Sp. Pl. 1: 263 (1753)

Petiole upto 12 cm long; calyx shortly 5-toothed; fruit ovate……..…***P. heyneana***
Petiole upto 6 cm long; sepals absent; fruit oblong-obovate……..***P. leschenaultii***

Pimpinella heyneana (DC.) Benth., Gen. Pl. [Bentham & Hooker f.] 1(3): 894 (1867); Gamble, Fl. Pres. Madras 560 (1919); Vajr., Fl. Palghat Dist. 223 (1990)

Habit: Herb
Habitat: Moist Deciduous and Semi-evergreen forests
Morphology: Herb; leaves alternate; inflorescence a terminal panicled umbel;

rays 10; calyx 5-toothed; petals 5; stamens 5; fruit villous.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: October-February
Distribution: Rare
Altitude: 1200-1400m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Mattumala, 02 July 2017, Jabeena & Maya *122* (GVCH); Manpara, 01 December 2018, Jabeena & Maya *1637* (GVCH).

Pimpinella leschenaultii DC., Prodr. [A. P. de Candolle] 4: 122 (1830); Hook. f., Fl. Brit. India 2: 687 (1879); Gamble, Fl. Pres. Madras 560 (1919).

Habit: Herb
Habitat: Grasslands
Morphology: Herb; basal leaves simple, 3-5-nerved; cauline leaves 3-foliolate; inflorescence a terminal compound umbel or from upper axils; bracts lanceolate; rays 5-15; sepals absent; petals 5; stamens 5; ovary glabrous; stylopodium conical; fruit oblong.
Raunkiaer's life-form: Geophyte
Phytogeographical affinity: Indo-Pacific
IUCN category: Not Evaluated
Phenology: June-September
Distribution: Rare
Altitude: 1200-1300m
Specimen examined: INDIA, Kerala: Palakkad district, Kollengode range, Pothumala, 15 October 2017, *Jabeena & Maya 550* (GVCH).

RESULTS (IV.2 onwards)

IV.2. Habitat diversity and vegetation distribution

Objective addressed

- Analysis of diversity in macro and micro habitats and associated floristic elements in Nelliyampathy hills

IV.2.1. Habitat diversity (Plate 55-57)

The critical analysis of the floristic elements and its distribution in Nelliyampathy hills revealed that the natural vegetation of the study area can be broadly classified into west coast tropical evergreen, west coast semi-evergreen, southern moist mixed deciduous and southern montane wet grasslands. Apart from these major forest types, some edaphic types also could be identified such as shola vegetation, bamboo brakes, riparian stretches and wetlands.

IV.2.1.1. West Coast Tropical Evergreen forests

This type of vegetation is characterized by large trees which could cover the entire canopy and large woody climbers along with epiphytic taxa. The epiphytic orchids as well as terrestrial ones, ferns, mosses and other herbaceous plants utilizes the high humidity and shade provided by the canopy. At higher elevations, it was observed that the frequency of epiphytic taxa as well as mosses and lichens increased while the woody climbers were showing a decreasing trend.

In the study area, evergreen forests could be observed from an altitude of 500m to 1200m. The vegetation is predominant in Pothumala, Mattumala, Manpara and Karassuri regions of Kollengode range, and Hill Top, Kurissumala, Chakkaliyampara, Pothumala, Mattumala, Valuvaachi and Kaikatty regions of Nelliyampathy range. The vegetation seems to be retaining a three-tier stratification. The evergreen forests at Kaikatty region, below an altitude of 700m were scattered and confined to the banks of water courses. The species composition of these evergreen patches below 700m and above 700m showed variations.

The forests patches below 700 m consists of trees like *Artocarpus heterophyllus* Lam., *Bischofia javanica* Blume, *Canarium strictum* Roxb., *Diospyros buxifolia* (Blume) Hiern, *Dipterocarpus indicus* Bedd., *Hopea parviflora* Bedd., *Mangifera indica* L., *Machilus glaucescens* (Nees) Wight, *Syzygium gardneri* Thwaites, *Terminalia travancorensis* Wight & Arn., *Vateria indica* L., etc in upper storey. The middle stratum consists of trees like *Aglaia lawii* (Wight) C.J.Saldanha, *A. perviridis* Hiern., *Aphanamixis polystachya* (Wall.) R.Parker, *Beilschmiedia gemmiflora* (Blume) Kosterm., *Cinnamomum malabathrum* (Lam.) J.Presl.,

Garcinia morella (Gaertn.) Desr., *Hydnocarpus alpinus* Wight, *Knema attenuata* (Wall. ex Hook.f. & Thomson) Warb., *Lepisanthes tetraphylla* Radlk., *Reinwardtiodendron anamalaiense* (Bedd.) Mabb., etc. Lower stratum is composed of trees like *Atalantia racemosa* Wight & Arn., *Baccaurea courtallensis* (Wight) Müll.Arg., *Isonandra lanceolata* Wight, *Leptonychia caudata* Burret., *Orophea erythrocarpa* Bedd., etc. The most common woody climbers of this vegetation includes *Aganope thyrsiflora* (Benth.) Polhill., *Artabotrys zeylanicus* Hook.f. & Thomson, *Mezoneuron cucullatum* (Roxb.) Wight & Arn., *Combretum latifolium* Blume, *Derris brevipes* Baker, *Sarcostigma kleinii* Wight & Arn., etc. The major undergrowth were *Alpinia malaccensis, Ixora nigricans, Munronia pinnata, Strobilanthes heyneanus* etc. The major tree associations found in this habitat include *Hopea-Dipterocarpus-Machilus* and *Lepisanthes-Vateria-Mallotus* combinations.

The evergreen forests above the altitude of 700m composed of *Artocarpus heterophyllus* Lam., *Calophyllum polyanthum* Wall., *Cullenia exarillata* A.Robyns., *Dysoxylum malabaricum* Bedd. ex C.DC., *Elaeocarpus tuberculatus* Roxb., *Holigarna ferruginea* Marchand, *Mesua ferrea* L., *Palaquium ellipticum* (Dalzell) Baill., *Machilus glaucescens* (Nees) Wight, *Toona hexandra* M.Roem., *Vateria indica* L. etc in the upper storey. While the middle stratum consists of *Actinodaphne wightiana* (Kuntze) Noltie., *Agrostistachys borneensis* Becc., *Beilschmiedia wightii* Benth. & Hook.f., *Heynea trijuga* Roxb., *Litsea bourdillonii* Gamble, *L. floribunda* Gamble, *L. oleoides* Hook.f., *Mallotus tetracoccus* Kurz., *Melicope lunu-ankenda* (Gaertn.) T.G.Hartley, *Meliosma simplicifolia* Walp., etc. *Aglaia tomentosa* Teijsm. & Binn., *Dendrocnide sinuata* (Blume) Chew., *Ligustrum robustum ssp. walkeri* (Decne.) P.S.Green, *Meiogyne pannosa* (Dalzell) J.Sinclair, *Oreocnide integrifolia* (Gaudich.) Miq., *Orophea uniflora* Hook.f. & Thomson, *Phyllanthus assamicus* Müll.Arg., *Symplocos acuminata* Miq., etc. are some of the common members of the lower stratum. The climbers are *Aganosma cymosa* (Roxb.) G.Don., *Carissa spinarum* L., *Embelia ribes* Burm.f., *Kunstleria keralensis* C.N.Mohanan & N.C.Nair, *Millettia rubiginosa* Wight & Arn., *Toddalia asiatica* (L.) Lam. etc. The undergrowth is abundant with *Arisaema* sp., *Crepidium* sp., *Meistera acuminata* (Thwaites) Škorničk. & M.F.Newman, *Meistera cannicarpa* (Wight) Škorničk. & M.F.Newman, *Elettaria cardamomum* (L.) Maton., *Mycetia acuminata* Kuntze., *Piper umbellatum* L., *Psychotria flavida* Talbot etc. The major tree associations found here include *Drypetes-Hydnocarpus-Mesua* and *Cullenia-Palaquium-Mesua* combinations.

The common epiphytes present include *Aeschynanthus perrottetii* A.DC., *Remusatia vivipara* (Roxb.) Schott., *Oberonia sp., Peperomia sp.,* and the common parasitic taxa include

Helixanthera intermedium Danser, *Taxillus* sp., *Scurrula parasitica* L. and *Viscum sp.* These groups have specific adaptations towards the cooler, darker and the moist microclimate prevailing in the evergreen forests.

In the evergreen forests of Nelliyampathy hills, a dominance of Lauraceae members such as *Actinodaphne sp., Litsea sp., Machilus glaucescens* (Nees) Wight, Euphorbiaceae members such as *Mallotus sp., Macaranga peltata* Müll.Arg., Putranjivaceae members such as *Drypetes sp.* and Malvaceae member *Heritiera papilio* Bedd. could be observed. The evergreen taxa inhabiting the Nelliyampathy hills are tabulated in Annexure I and accounts to 171 taxa.

IV.2.1.2. West Coast Tropical Semi-evergreen forests

This forest type is distributed from the Kundaranchola region, which serves as a transition between the moist deciduous and evergreen forests. This habitat prevailed in the margins of evergreen forest types at Mattumala, Manpara, Pullukaadu, Nooradi, Nellikkulathy, Hilltop and other major hill tracts of Nelliyampathy. Since they form the border regions, they are composed of both evergreen as well as some moist deciduous elements. The canopy cover is less, but retains a three-tier stratification.

The upper storey is composed mainly of *Artocarpus hirsutus* Lam., *Bischofia javanica* Blume, *Bombax ceiba* L., *Chukrasia tabularis* A.Juss., *Dimocarpus longan* Lour., *Diospyros buxifolia* (Blume) Hiern., *Hopea parviflora* Bedd., *Mimusops elengi* L., *Monoon fragrans* (Dalzell) B. Xue & R. M. K. Saunders, *Prunus ceylanica* Miq., *Pterospermum rubiginosum* B.Heyne ex G. Don., *Terminalia bellirica* (Gaertn.) Roxb., *Tetrameles nudiflora* R.Br., etc. The middle storey harbour *Aglaia lawii* (Wight) C. J. Saldanha, *Aporosa cardiosperma* (Gaertn.) Merr., *Diospyros* sp., *Ficus nervosa* Roth., *Holoptelea integrifolia* (Roxb.) Planch., *Hydnocarpus alpinus* Wight, *Olea dioica* Roxb., *Pajanelia longifolia* (Willd.) K.Schum. etc. The major elements of lower storey include *Acronychia pedunculata* Miq., *Agrostistachys indica* Dalzell, *Callicarpa tomentosa* (L.) L., *Drypetes oblongifolia* (Bedd.) Airy Shaw, *Hunteria zeylanica* Gardner ex Thwaites, *Ixora brachiata* Roxb., *Mallotus philippensis* (Lam.) Müll.Arg., *Sapindus trifoliatus* L., *Xanthophyllum flavescens* Roxb., etc. The woody climbers include *Ancistrocladus heyneanus* Wall. ex J.Graham, *Mezoneuron cucullatum* (Roxb.) Wight & Arn., *Chilocarpus denudatus* Blume, *Olax imbricata* Roxb., *Sarcostigma kleinii* Wight & Arn., *Senegalia pennata* (L.) Maslin, etc. The undergrowth mostly consists of species like *Clerodendrum infortunatum* L., *Solanum torvum* Sw., *Strobilanthes heyneanus* Nees. etc. The elemental composition of semi-evergreen forests is tabulated in Table 6. and includes 41 taxa.

Table 6. Exclusive Semi-evergreen elements in Nelliyampathy hills

Sl. No.	Binomial Name	Family
1	*Acronychia pedunculata* Miq.	Rutaceae
2	*Aganope thyrsiflora* (Benth.) Polhill	Fabaceae
3	*Aganosma cymosa* (Roxb.) G.Don.	Apocynaceae
4	*Ailanthus triphysus* (Dennst.) Alston	Simaroubaceae
5	*Archidendron bigeminum* (L.) I.C.Nielsen	Fabaceae
6	*Begonia dipetala* Graham	Begoniaceae
7	*Capparis rheedei* DC.	Capparaceae
8	*Cayaponia laciniosa* (L.) C.Jeffrey	Cucurbitaceae
9	*Ceropegia maculata* Bedd.	Apocynaceae
10	*Cleidion javanicum* Blume	Euphorbiaceae
11	*Desmos chinensis* Lour.	Annonaceae
12	*Ecbolium ligustrinum* (Vahl) Vollesen	Acanthaceae
13	*Elaeagnus indica* Serv.	Elaeagnaceae
14	*Elaeocarpus serratus* L.	Elaeocarpaceae
15	*Fibraurea darshanii* Udayan & K.Ravik.	Menispermaceae
16	*Ficus beddomei* King	Moraceae
17	*Ficus laevis* Blume	Moraceae
18	*Glycosmis nelliyampathiensis* Jabeena & Maya	Rutaceae
19	*Grewia polygama* Roxb.	Malvaceae
20	*Holoptelea integrifolia* (Roxb.) Planch.	Ulmaceae
21	*Leucas sahyadriensis* Sunojk.	Lamiaceae
22	*Litsea coriacea* (B.Heyne ex Nees) Hook.f.	Lauraceae
23	*Litsea glabrata* (Wall.) Hook.f.	Lauraceae
24	*Litsea laevigata* Gamble	Lauraceae
25	*Litsea mysorensis* Gamble	Lauraceae
26	*Mallotus atrovirens* Müll.Arg.	Euphorbiaceae
27	*Margaritaria indica* (Dalzell) Airy Shaw	Phyllanthaceae
28	*Murdannia versicolor* G.Brückn.	Commelinaceae
29	*Ophiorrhiza mungos* L.	Rubiaceae
30	*Oxyceros rugulosus* (Thwaites) Tirveng.	Rubiaceae
31	*Polystachya concreta* (Jacq.) Garay & H.R.Sweet	Orchidaceae
32	*Premna paucinervis* Gamble	Lamiaceae
33	*Reinwardtiodendron anamalaiense* (Bedd.) Mabb.	Meliaceae
34	*Rhopalephora scaberrima* (Blume) Faden	Commelinaceae
35	*Rubus racemosus* Roxb.	Rosaceae
36	*Spodiopogon rhizophorus* (Steud.) Pilg.	Poaceae
37	*Strobilanthes pulneyensis* C.B.Clarke	Acanthaceae
38	*Viburnum punctatum* Buch.-Ham. ex D.Don.	Adoxaceae
39	*Vigna radiata* var. *sublobata* (Roxb.) Verdc.	Fabaceae
40	*Viscum angulatum* B.Heyne ex DC.	Loranthaceae
41	*Viscum heyneanum* DC.	Loranthaceae

IV.2.1.3. Southern moist mixed deciduous forests

This habitat type is found in Pothundy to Kundaranchola region, Kalchady, Cherunelli, Pullukaadu, Koonampalam and Pothupara regions. This forest type is hard to be identified from Semi-evergreen forests in wet seasons and could only be identified during dry season when they shed off their leaves. As in Evergreen and Semi-evergreen forests, Moist Deciduous forests also are composed of a three-tier stratification. The major tree associations found in these habitats are *Terminalia - Schleichera - Lagerstroemia, Bombax - Terminalia* and *Anogeissus - Tectona - Dalbergia* combinations.

The major trees in the upper storey include *Albizia lebbeck* (L.) Benth., *Alstonia scholaris* (L.) R.Br., *Bombax ceiba* L., *B. insigne* Wall., *Dalbergia sissoides* Graham ex Wight & Arn., *Dillenia pentagyna* Roxb., *Gmelina arborea* Roxb. ex Sm., *Grewia tiliifolia* Vahl., *Adina cordifolia* (Roxb.) Hook. f. & Benth., *Lagerstroemia microcarpa* Wight, *Lannea coromandelica* (Houtt.) Merr., *Pterocarpus marsupium* Roxb., *Stereospermum tetragonum* DC., *Tectona grandis* L. f., *Terminalia bellirica* (Gaertn.) Roxb., *T. paniculata* Roth. *and Xylia xylocarpa* (Roxb.) W. Theob. The middle storey consists of *Bridelia retusa* A.Juss., *Cassia fistula* L., *Careya arborea* Roxb., *Cleistanthus collinus* Benth. & Hook. f., *Dalbergia lanceolaria* L.f., *Ficus exasperata* Benth. & Hook. f., *Garuga pinnata* Roxb., *Hymenodictyon obovatum* Wall., *Macaranga peltata* Müll.Arg., *Olea dioica* Roxb., *Piliostigma malabaricum* Benth., *Sapindus trifoliatus* L., *Schleichera oleosa* (Lour.) Oken., *Spondias pinnata* (L.f.) Kurz., *Sterculia guttata* Roxb., *Streblus asper* Lour., *Trema orientale* Blume etc. *Cipadessa baccifera* Miq., *Cochlospermum religiosum* (L.) Alston, *Grewia serrulata* DC., *Helicteres isora* L., *Naringi crenulata* (Roxb.) Nicolson, *Tamilnadia uliginosa* (Retz.) Tirveng. & Sastre, *Wrightia tinctoria* R.Br., etc. are common in the lower storey. The major climbers in the region includes *Cissus latifolia* Lam., *Getonia floribunda* Roxb., *Olax imbricata* Roxb., *Senegalia pennata* (L.) Maslin, *S. torta* (Roxb.) Maslin, *Ziziphus rugosa* Lam., etc. The undergrowth is dominated by *Abutilon persicum* (Burm.f.) Merr., *Baliospermum solanifolium* (Burm.) Suresh, *Barleria prattensis* Santapau, *Chromolaena odorata* (L.) R. M. King & H. Rob., *Flemingia strobilifera* (L.) W. T. Aiton, *Rotheca serrata* (L.) Steane & Mabb., etc. The taxa which are exclusively seen in Moist deciduous forests are tabulated in Annexure II and it includes 106 taxa.

IV.2.1.4. Southern montane wet grasslands

The hill tracts of Nelliyampathy is blessed with many open montane grasslands. These grassy patches could be seen at the top of Minnampara, Manpara, Pothumala, Karassuri, Mattumala, Karimala regions of Kollengode range and Nellikkulathy, Mattumala, Pothumala,

Kurissumala, Chakkaliyampara and Hilltop regions of Nelliyampathy range. Grasslands from an altitude of 900-1600 m could be seen in the study area.

The most common grasses reported from the study area includes *Arundinella ciliata* Nees *ex* Miq., *A. leptochloa* Hook. f., *A. mesophylla* Nees ex Steud., *Chrysopogon asper* B. Heyne ex Blatt. & McCann, *C. hackelii* (Hook. f.) C. E. C. Fisch., *Cymbopogon flexuosus* (Nees ex Steud.) Will. Watson, *Dimeria ornithopoda* Trin., *Glyphochloa forficulata* (C.E.C.Fisch.) Clayton, *Jansenella griffithiana* (Müll.Hal.) Bor, *Polytrias indica* (Houtt.) Veldkamp, *Pseudopogonatherum trispicatum* (Schult.) Ohwi., *Sacciolepis indica* (L.) Chase, *Themeda triandra* Forssk., *Zenkeria elegans* Trin., etc. The common herbaceous taxa such as *Anaphalis lawii* Gamble, *Cyanotis* sp., *Cyperus* sp., *Crotalaria fysonii* Dunn., *Emilia scabra* DC. ex Wight, *Eriocaulon* spp., *Fimbristylis* sp., *Habenaria sp., Heracleum candolleanum* Gamble, *Impatiens* spp., *Phyllocephalum courtallense* (Wight) Narayana, are common in these grasslands. Parasitic plants such as *Aeginetia acaulis* Walp., *Buchnera hispida* D.Don. and *Striga* sp. as well as carnivorous taxa such as *Utricularia sp.* and *Drosera sp.* are more common in this habitat. Some sub-shrubby taxa also could be observed in this habitat such as *Hypericum mysorense* B. Heyne ex Wight & Arn., *Lobelia nicotianaefolia* Roth., *Osbeckia aspera* Blume, *Strobilanthes* spp., *Teucrium heynei* V. S. Kumar & Chakrab. etc. Typical grassland elements are summarized in Annexure III and include 170 taxa .

IV.2.1.5. Shola vegetation

The shola vegetation in Nelliyampathy hills lack the typical traits and elemental composition of Shola forests, since the characteristic shola forests are montane vegetation with unique elements occupying temperate habitats in tropical latitude. But the vegetation here shows some important characteristics of shola plants like stunted, short statured, highly branched trees, clothed with mosses and other epiphytes. Unlike the Evergreen, Semi-evergreen and Moist Deciduous forests, the Shola forests do not show any specific stratification.

Some of the most common species found here include *Euonymus indicus* B.Heyne ex Wall., *Ligustrum robustum subsp. perrottetii* (A.DC.) de Juana., *Maesa indica* (Roxb.) Sweet, *Pittosporum neelgherrense* Wight & Arn., *Symplocos acuminata* Miq., etc. The common epiphytes are *Bulbophyllum* sp., *Coelogyne sp., Eria* sp, *Impatiens parasitica* Bedd., *Oberonia* sp., *Dendrobium sp., Peperomia* sp., etc. A total number of 106 unique shola elements had been recorded from the hill tracts of Nelliyampathy and are summarized in Annexure IV.

IV.2.1.6. Bamboo brakes

Bamboo brakes or reed brakes are one of the important edaphic types of evergreen forest distributed in Nelliyampathy hills. *Bambusa bambos* (L.) Voss., *Ochlandra travancorica* Gamble and *Pseudoxytenanthera bourdillonii* (Gamble) H.B.Naithani, are the common reeds which found along Kaikatty, Pothundy, Sooryapara, Mangothimala, Thuthampara, Mattumala, Nellikkulathy, Govindamala and Cherunelli regions of Nelliyampathy range. *Psychotria flavida* Talbot, *Saprosma glomeratum* Bedd., *Mesua ferrea* L., *Syzygium cumini* (L.) Skeels, *Aglaia edulis* (Roxb.) Wall., *Aglaia lawii* (Wight) C. J. Saldanha, are some of the taxa associated with these reeds.

IV.2.1.7. Riparian and wetland elements

Since the study area is blessed with many riverine tributaries, riparian stretches are abundant in the study area. Major areas of riparian stretches can be seen at Chandramala, Kaikatty, Karadi, Koonampalam, Kottengadi, Kundaranchola, Mannathyppalam, Nooradi, Pullukaadu Colony, Seetharkundu and on the way to Govindamala. Important riparian elements recorded are tabulated in Table 7. and it includes 50 taxa.

Table 7. Diversity of riparian elements in Nelliyampathy hills

Sl. No.	Binomial Name	Family
1	*Ampelocissus latifolia* (Roxb.) Planch.	Vitaceae
2	*Arundo donax* L.	Poaceae
3	*Biophytum umbraculum* Welw.	Oxalidaceae
4	*Bulbostylis barbata* (Rottb.) C.B.Clarke	Cyperaceae
5	*Canavalia africana* Dunn ex Hutch.	Fabaceae
6	*Canscora diffusa* (Vahl) R.Br. ex Roem. & Schult.	Gentianaceae
7	*Chrysopogon zizanioides* (L.) Roberty	Poaceae
8	*Colocasia esculenta* (L.) Schott.	Araceae
9	*Cyperus compressus* L.	Cyperaceae
10	*Cyperus distans* L.f.	Cyperaceae
11	*Cyperus haspan* L.	Cyperaceae
12	*Cyperus tenuispica* Steud.	Cyperaceae
13	*Digitaria radicosa* (J.Presl) Miq.	Poaceae
14	*Elaeocarpus tuberculatus* Roxb.	Elaeocarpaceae
15	*Entada rheedei* Spreng	Fabaceae
16	*Eragrostis atrovirens* (Desf.) Trin. ex Steud.	Poaceae
17	*Eragrostis gangetica* Steud.	Poaceae
18	*Eragrostis japonica* Trin.	Poaceae
19	*Eragrostis riparia* Nees.	Poaceae
20	*Eragrostis unioloides* Nees ex Steud.	Poaceae
21	*Fimbristylis microcarya* F.Muell.	Cyperaceae
22	*Fimbristylis narayanii* C.E.C.Fisch.	Cyperaceae
23	*Glinus oppositifolius* Aug.DC.	Molluginaceae

24	*Griffithella hookeriana* (Tul.) Warm.	Podostemaceae
25	*Hiptage benghalensis* (L.) Kurz.	Malpighiaceae
26	*Homonoia riparia* Lour.	Euphorbiaceae
27	*Hydrocotyle javanica* Thunb.	Araliaceae
28	*Impatiens capensis* Meerb.	Balsaminaceae
29	*Indotristicha ramosissima* (Wight) P.Royen	Podostemaceae
30	*Lindernia procumbens* (Krock.) Philcox	Linderniaceae
31	*Mallotus nudiflorus* (L.) Kulju & Welzen	Euphorbiaceae
32	*Melastoma malabathricum* L.	Melastomataceae
33	*Memecylon angustifolium* Wight	Melastomataceae
34	*Neolamarckia cadamba* (Roxb.) Bosser	Rubiaceae
35	*Oreocnide integrifolia* (Gaudich.) Miq.	Urticaceae
36	*Pandanus furcatus* Roxb.	Pandanaceae
37	*Paspalum conjugatum* P.J.Bergius	Poaceae
38	*Persicaria barbata* (L.) H.Hara	Polygonaceae
39	*Phyllanthus reticulatus* Poir.	Phyllanthaceae
40	*Phyllocephalum indicum* (Less.) K.Kirkman	Asteraceae
41	*Polypleurum wallichii* (R.Br. ex Griff.) Warm.	Podostemaceae
42	*Pouzolzia caudata* Benn.	Urticaceae
43	*Rotala malampuzhensis* R.V.Nair ex C.D.K.Cook.	Lythraceae
44	*Rotala mexicana* Cham. & Schltdl.	Lythraceae
45	*Setaria barbata* (Lam.) Kunth.	Poaceae
46	*Solanum americanum* Mill.	Solanaceae
47	*Trigastrotheca pentaphylla* (L.) Thulin	Molluginaceae
48	*Vandellia anagallis* (Burm.f.) T.Yamaz.	Linderniaceae
49	*Vitex leucoxylon* L.f.	Lamiaceae
50	*Zeylanidium subulatum* (Gardner) C.Cusset	Podostemaceae

Apart from these riverine stretches, there are many small artificial and naturally found perennial pools which harbours plenty of wetland elements. A total number of 71 wetland taxa were recorded and the list is given in Annexure V.

IV.2.1.8. Perennial ponds

Several artificial and natural ponds are present in the hill tracts. Many of the artificial ponds were created for irrigation purposes in the plantations and household activities of the workers in these estates. These perennial ponds harbour both native as well as introduced species. *Nymphaea nouchali* Burm.f., *Nymphaea rubra* Roxb. ex Salisb. etc. were introduced for aesthetic purposes while *Ipomoea aquatica* Forssk., *Myriophyllum oliganthum* (Wight & Arn.) F.Muell., *Blyxa echinosperma* (C.B.Clarke) Hook.f. etc are naturally growing in these systems.

IV.2.1.9. Sacred Grove elements

Sacred grove elements were identified among the Evergreen, Semi-evergreen, Moist Deciduous and Shola vegetation. A total of 39 sacred groove elements could be recorded from the study area and the list of taxa are given in Table 8.

Table 8. Sacred groove elements of Nelliyampathy hills

Sl. No.	Binomial name	Family
1	*Alangium salviifolium* (L.f.) Wangerin	Cornaceae
2	*Allophylus cobbe* (L.) Forsyth f.	Sapindaceae
3	*Alstonia scholaris* (L.) R.Br.	Apocynaceae
4	*Antiaris toxicaria* (Pers.) Lesch.	Moraceae
5	*Antidesma acidum* Retz.	Phyllanthaceae
6	*Antidesma montanum* Blume	Phyllanthaceae
7	*Aphanamixis polystachya* (Wall.) R.Parker	Meliaceae
8	*Ariopsis peltata* Nimmo	Araceae
9	*Bridelia stipularis* Blume	Phyllanthaceae
10	*Canthium rheedei* DC.	Rubiaceae
11	*Capparis moonii* Wight	Capparaceae
12	*Carissa spinarum* L.	Apocynaceae
13	*Chonemorpha fragrans* Alston	Apocynaceae
14	*Cipadessa baccifera* Miq.	Meliaceae
15	*Combretum latifolium* Blume	Combretaceae
16	*Connarus monocarpos* L.	Connaraceae
17	*Derris scandens* Benth.	Fabaceae
18	*Eranthemum capense* L.	Acanthaceae
19	*Fagraea ceilanica* Thunb.	Gentianaceae
20	*Geophila repens* (L.) I.M.Johnst.	Rubiaceae
21	*Hiptage benghalensis* (L.) Kurz.	Malpighiaceae
22	*Hopea parviflora* Bedd.	Dipterocarpaceae
23	*Hopea ponga* (Dennst.) Mabb.	Dipterocarpaceae
24	*Hydrocotyle javanica* Thunb.	Araliaceae
25	*Impatiens minor* (DC.) Bennet	Balsaminaceae
26	*Ixora brachiata* Roxb.	Rubiaceae
27	*Jasminum angustifolium* Willd.	Oleaceae
28	*Kamettia caryophyllata* (Roxb.) Nicolson & Suresh	Apocynaceae
29	*Lepisanthes tetraphylla* Radlk.	Sapindaceae
30	*Memecylon randerianum* S.M.Almeida & M.R.Almeida	Melastomataceae
31	*Mesua thwaitesii* Planch. & Triana	Calophyllaceae
32	*Microcos paniculata* L.	Malvaceae
33	*Myxopyrum smilacifolium* Blume	Oleaceae
34	*Pavetta indica* L.	Rubiaceae
35	*Psychotria flavida* Talbot	Rubiaceae
36	*Rourea minor* (Gaertn.) Alston	Connaraceae
37	*Sarcostigma kleinii* Wight & Arn.	Icacinaceae
38	*Schefflera venulosa* (Wight & Arn.) Harms	Araliaceae
39	*Xanthophyllum flavescens* Roxb.	Polygalaceae

IV.2.1.10. Plantations

The major monocultural practises in the study area includes Tea, Coffee, Cardamom, Rubber, Pepper, Vanilla, Acacia and Eucalyptus. POABS, Manalaroo, Sooryapara, Victoria, Alexandria are some of the major estates in Nelliyampathy.

Camellia sinensis (L.) Kuntze and *Coffea arabica* L. are the most common monoculture plantations in the study area. Large scale areas have been converted into tea and coffee estates. Taxa like *Grevillea robusta* A.Cunn. ex R.Br., *Spathodea campanulata* P.Beauv., *Erythrina sp.* etc. were often used as shade trees in these regions. These estates harbour a number of taxa and support their survival. Taxa like *Medinilla beddomei* C.B.Clarke, *Stellaria media* (L.) Vill., *Lepidium didymum* L., *Drymaria cordata* (L.) Willd. ex Schult., *Polycarpon tetraphyllum* (L.) L., and *Taraxacum javanicum* Soest. are often seen associated with these plantations. *Piper nigrum* L., *Elettaria cardamomum* (L.) Maton and *Vanilla planifolia* Andr. are cultivated as intercrops.

The major teak plantations are seen in the Pothundy and Thuthampara regions. *Bombax ceiba* L. is often mixed with these teak plantations. *Eucalyptus tereticornis* Sm., is mainly used for pulp extraction and plantations of this species could be noted at Padagiri, Seetharkundu, Anamada and Cheriya Manpara. *Acacia auriculiformis* A. Cunn. ex Benth. plantations in Thuthampara and Padagiri were reverted back to natural forest owing to the high proportion of miscellaneous growth and they are under the natural forest regeneration. *Hevea brasiliensis* (Willd. ex A. Juss.) Müll.Arg., plantations can be seen at Ayyappanthittu region as well as Rosary. Coffee is used as an intercrop in these areas. Weeds like *Chromolaena odorata* (L.) R. M. King & H. Rob., and *Mikania micrantha* Kunth. grows extensively under the shade of rubber trees.

IV.2.1.11. Degraded forest elements

Many taxa indicate the degradation of vegetation in a particular area. The present study could record 88 such degraded forest elements from the study area. The list of degraded forest elements are summarized in Annexure VI.

IV.2.2. Microhabitat diversity (Plate 58-60)

In addition to the macrohabitats, several small microhabitats of unique edaphic and microclimatic conditions support plant growth with unique elements in the hill tract. Following is a brief account on various microhabitats recorded in the forest area.

IV.2.2.1. Ephemeral Flush Vegetation

It is a temporary microhabitat which is predominantly seen in the wet seasons of the year. It occurs in areas where water sweeps continuously throughout the rainy season.

Usually, these areas are rich with bryophyte mats along with small herbaceous angiosperm taxa. Therophytes predominate this microhabitat, since it is seasonally active. Soil deposition in these areas are negligible. *Utricularia* sp., *Drosera* sp., *Eriocaulon* sp., *Geissaspis* sp., *Smithia* sp., *Eragrostis* sp., *Cyperus* sp., *Dimeria* sp., *Fimbristylis* sp., *Grona triflora* are the major components of this microhabitat. *Eragrostis-Dimeria-Eriocaulon, Drosera-Eriocaulon-Cyperus, Smithia-Cyperus-Fimbristylis, Geissaspis-Grona-Eragrostis, Lindernia-Eragrostis-Eriocaulon* are the major floral associations seen in this microhabitat.

IV.2.2.2. Exposed Rock Surfaces

These are the exposed rocky surfaces which receive sufficient sunlight. Since soil deposition is negligible and water holding capacity is very low, this microhabitat constitutes the harshest one for the plant growth. The surfaces are very smooth and thus eliminates the possibility of rooting of larger plants. In the monsoon season, these surfaces are covered by small herbaceous taxa. The taxa conquering these surfaces are usually creeping or prostate in nature with adventitious roots from nodal regions. Some of the taxa representing this microhabitat include *Allmania nodiflora* (L.) R. Br. *ex* Wight, *Bulbostylis barbata* (Rottb.) C. B. Clarke, *Hydrocotyle javanica* Thunb., *Emilia ramulosa* Gamble, *Taraxacum javanicum* Soest., *Heliotropium rottleri* Lehm., *Cyanotis burmannia* Wight etc.

IV.2.2.3. Rock Crevices and Fissures

Small crevices and fissures in the rock substratum provide a unique microhabitat for small herbaceous taxa. These crevices upholds water and small amounts of nutrients from the water, percolating during the rainy season. These microhabitats are active only in the wet seasons which prefer therophytic taxa which completes their life cycle in monsoon or immediate post-monsoon season. The plants inhabiting this microhabitat often prefer a rosette habit and the taxa inhabiting these crevices and fissures include *Henckelia sp., Peucedanum sp., Heracleum sp., Crinum asiaticum* L., *Pimpinella sp., Theriophonum infaustum* N.E.Br., *Acilepis sp., Anaphalis sp.* etc.

IV.2.2.4. Boulders

Boulders are large rocks seen either isolated or in groups. Bryophytes and lichens form a cover on these rocky systems. Small herbaceous taxa like *Sonerila sp., Epithema ceylanicum* Wight, *Lecanthus peduncularis* (Royle) Wedd., *Argostemma courtallense* Arn., *Peperomia pellucida* (L.) Kunth., *Pilea kingii* C.E.C.Fisch., *Exacum sessile* L. are some of the taxa inhabiting boulders. The taxa representing this microhabitat often lacks an aerial stem or are with a short stem. Since the rooting of these plants in the rock systems is so fragile, the short stature helps them to decrease the problems due to air resistance. Succulence

is another peculiarity of taxa inhabiting this microhabitat and it helps them to retain the moisture in their plant body.

IV.2.2.5. Rocky cliffs and Crest edges

These are the edges or cliffy areas of plateau. These areas form a unique ecosystem since the deposition of water and nutrients are negligible. *Pouzolzia sp., Globba sp., Begonia sp., Impatiens sp.,* and grasses like *Chrysopogon sp., Cymbopogon sp., Apluda mutica* L., *Spodiopogon rhizophorus* (Steud.) Pilg. are seen predominantly in this microhabitat.

IV.2.2.6. Seasonal Drainage Channels

The hill tracts of Nelliyampathy consists of many annual waterfalls. These areas inhabit unique taxa during the wet seasons. When the drainage channel gets dried up in the post-monsoon seasons, the vegetation also disappears. Podostemaceae members such as *Griffithella hookeriana* (Tul.) Warm., *Indotristicha ramosissima* (Wight) P. Royen., *Polypleurum wallichii* (R. Br. ex Griff.) Warm. and *Zeylanidium subulatum* (Gardner) C. Cusset. survive in these unique microhabitats.

IV.2.2.7. Soil Filled Depressions

These are small depressions on large rock systems. This microhabitat possesses a little amount of soil and nutrients along with water. *Alysicarpus parviflorus* Dalzell, *Arundinella ciliata* Nees ex Miq., *Osbeckia aspera* Blume, *Vandellia pusilla* Merr., *Curculigo trichocarpa* (Wight) Bennet & Raizada, *Crotalaria prostrata* Rottler, *Phyllocephalum indicum* (Less.) K. Kirkman, *Blumea barbata* DC., *Alternanthera sessilis* (L.) DC. etc. are some of the taxa inhabiting this microhabitat. These microhabitats are active throughout the year. In the wet seasons, they are inhabited by small shrubs along with herbaceous taxa while in the dry seasons they consist of drought resistant taxa with a dominance of grasses.

IV.2.2.8. Temporary Pools

These are small pools created in the rocky grooves during the rainy season. They retain the water even after the monsoon for one or two months. Soil deposition is also high in these regions. *Rotala malampuzhensis* R. V. Nair, *Ludwigia perennis* L., *Murdannia semiteres* (Dalzell) Santapau, *Cyperus sp.*, are the most common inhabitants in this microhabitat.

IV.3. Altitudinal gradients and cross analysis of Angiosperm vegetation

Objectives addressed

- Analysis of angiosperm vegetation across altitudinal gradients in Nelliyampathy hills
- Analysis of distribution of various life-forms and habit forms in altitudinal gradients
- Analysis of habitat diversity in various altitudinal zones

IV.3.1. Distribution of angiosperms in altitudinal gradients

The study area shows a wide altitudinal gradient from 100m ASL to 1633m ASL. The gradient can be easily distinguished in the hill tracts which begin with moist deciduous forests to semi-evergreen and evergreen forests. The higher altitudes are represented by open montane grasslands and shola patches. In the case of diversity, middle altitudinal zones account for the maximum species diversity, i.e, 600-900m and 900-1200m. The highest species diversity is shown in the altitudinal zone 900-1200m. The diversity is low in the lower altitudinal zones as well as higher altitudinal zones. Table 9. shows the species diversity across different altitudinal gradients.

Table 9. Species diversity across different altitudinal gradients

Sl. No.	Altitudinal zone	No. of taxa recorded
1	Upto 300m (I^{st} Zone)	198 taxa
2	300-600m (II^{nd} zone)	300 taxa
3	600-900m (III^{rd} zone)	738 taxa
4	900-1200m (IV^{th} zone)	1211 taxa
5	Above 1200 (V^{th} zone)	259 taxa

IV.3.2. Analysis of vegetation along various altitudinal zones

The lowest zone comprises a high percentage of deciduous elements (40%) and it is getting reduced as the altitude increases. When it reaches the uppermost zone, it becomes the lowest, 12.3%. On the other hand, Evergreen and Semi-evergreen elements are lowest in the lower zone and it increases till it reaches the IV^{th} zone. In the uppermost zone, it has decreased since the predominant habitat there is open montane grasslands and shola patches. Figure 2. represents the distribution of habitat along different altitudinal gradients.

IV.3.3. Distribution of endemics and threatened plants along altitudinal gradient

The percentage of endemism and threatened taxa is steadily increasing from the lowest zone to highest zone. Even though the number of endemics and threatened taxa are highest in IV^{th} zone, the percentage of endemics and threatened taxa are highest in the V^{th} zone. Percentage endemism was calculated from the ratio of the number of endemics to the total number of taxa in each zone. Table 10. and Figure 3. & 4. show the number of endemics

and threatened taxa as well as the percentage of endemic and threatened species in each altitudinal zone.

Table 10. Distribution of endemic and threatened taxa across altitudinal gradient

Sl. No.	Altitudinal zone	No. of endemic taxa	Percentage endemism	No. of threatened taxa	Percentage of threatened taxa
1	Upto 300m (I^{st} Zone)	10	5%	3	1.5%
2	300-600m (II^{nd} zone)	34	11%	10	3%
3	600-900m (III^{rd} zone)	126	17%	26	3.5%
4	900-1200m (IV^{th} zone)	312	26%	52	4.2%
5	Above 1200 (V^{th} zone)	92	35.5%	13	5%

IV.3.4. Altitudinal distribution of different growth forms

The habit diversity in all these five altitudinal zones are different (Table 11. & Figure 5.). The tree diversity steadily decreases with increasing altitude while herbaceous diversity increases with increasing altitude. Climbers and Shrub diversity is high in the medium altitudes.

Table 11. Altitudinal distribution of habit forms

Sl. No.	Habit	I^{st} zone	II^{nd} zone	III^{rd} zone	IV^{th} zone	V^{th} zone
1	Herb	40%	43.30%	45.80%	51.30%	68.30%
2	Shrub	15.10%	17.30%	18.80%	19.30%	12.70%
3	Tree	33.80%	32.60%	21.40%	18%	13.50%
4	Climber	11.10%	10.60%	13.90%	11.10%	5%

IV.3.5. Altitudinal distribution of life-forms

Phanerophytes and Chamaephytes show a steady decrease from the lower to the upper altitudinal zone. Phanerophytes and Chamaephytes are those life-forms which have their shoot apexes or dormant buds in the air, which possess the least protection. Hence its density decreases with increase in altitude, because in higher altitudes, the temperature is low and wind velocity is high. So the less protected life-forms couldn't survive in the harsh conditions of high altitudes. Hemicryptophytic, epiphytic and therophytic life form steadily increases with the increase in altitude. Hemicryptophytes protect their dormant buds in the ground level while therophytes are drought escapers. These two are best adapted for a life in high altitudes. The shola patches of high-altitude zones support a high epiphytic density. Geophytic life forms are more or less constant in all altitudinal zones. Lianas and Hydrophytes are dominant in the middle altitude. Saprophytic, semi-parasitic and parasitic life forms did not show any

general trend in any of the altitudinal zones. Table 12. shows the altitudinal wise distribution of various life-forms.

Table 12. Altitudinal distribution of life-forms

Sl. No.	Life-form	Ist zone	IInd zone	IIIrd zone	IVth zone	Vth zone
1	Phanerophyte	44.4%	43%	36.8%	35.3%	25.8%
2	Therophyte	16.6%	18%	19%	19.7%	24.3%
3	Hemicryptophyte	7%	7%	8%	9.4%	20.8%
4	Chamaephyte	15.6%	14.7%	14%	12.7%	11.6%
5	Geophyte	4%	5%	4.2%	6.4%	4.3%
6	Epiphyte	0	1%	2.7%	3.4%	4.3%
7	Liana	11.9%	11.0%	14.3%	11.2%	5.4%
8	Hydrophyte	0	0	0.8%	0.5%	0.8%
9	Parasite	0	0	0	0.16%	0.3%
10	Semi-Parasite	0.5%	0.3%	0.2%	1.0%	2.4%
11	Saprophyte	0	0	0	0.08%	0

IV.4. Threatened and Endemic taxa Vs Phytogeographical disposition of flowering plants

Endemism and threat status of an area indicates its vulnerability to adverse climatic conditions and calls for a need of protection and conservation. These two forms the major criteria to evaluate the importance of an area to be protected. Nelliyampathy shows a high percentage of both endemics as well as threatened taxa. Supplementing this, the phytogeographical affinity of a species provides an idea on the distribution of taxa across the globe and will be an indicator for the significance to be given for a taxon while considering the species-specific conservation protocols.

IV.4.1. Threatened taxa (Plate 61-63)

Nelliyampathy hills harbours sixty-six threatened taxa listed under various IUCN Categories. These include 2 taxa under Extinct in the Wild (EW), 5 under Critically Endangered (CR), 18 under Endangered (EN), 31 under Vulnerable (VU) and 10 under Near Threatened categories. Table 13. includes the list of threatened taxa recorded from the study area. Figure 6. shows the distribution of threatened taxa among various IUCN categories. Apart from these taxa, the collected species includes 14 taxa coming under Data Deficient category and 1142 taxa are yet to be evaluated by IUCN.

According to Barik *et al*. (2018), among the taxa collected, 308 taxa belong to the threatened categories and the list is summarized in Annexure VII. Orchidaceae is the family with highest number of threatened taxa (44 species) followed by Fabaceae (23 taxa), Poaceae

(15 taxa), Apocynaceae and Commelinaceae (13 taxa each), Rubiaceae (12 taxa), Asteraceae (9 taxa) and Phyllanthaceae (8 species). The family-wise distribution of threatened species is depicted in Figure 7.

The mapping of the IUCN categorized taxa was carried out in order to find the distribution of these taxa in the study area (Fig. 8 & Fig. 9). The core areas with the concentration of these taxa can be considered as the hotspots of the study area. Most of them are seen in high altitude regions above 800m.

Table 13. IUCN threat category taxa in Nelliyampathy hills

Sl. No.	Binomial Name	Family	Category
1	*Brugmansia arborea* (L.) Sweet	Solanaceae	Extinct in the Wild
2	*Brugmansia suaveolens* (Willd.) Sweet	Solanaceae	Extinct in the Wild
3	*Curcuma vamana* M.Sabu & Mangaly	Zingiberaceae	Critically Endangered
4	*Decalepis salicifolia* (Bedd. ex Hook.f.) Bruyns	Apocynaceae	Critically Endangered
5	*Dipterocarpus bourdillonii* Brandis	Dipterocarpaceae	Critically Endangered
6	*Eugenia wynadensis* Bedd.	Myrtaceae	Critically Endangered
7	*Syzygium palghatense* Gamble	Myrtaceae	Critically Endangered
8	*Actinodaphne salicina* Meisn.	Lauraceae	Endangered
9	*Aporosa bourdillonii* Stapf.	Phyllanthaceae	Endangered
10	*Coffea arabica* L.	Rubiaceae	Endangered
11	*Cryptocarya anamalayana* Gamble	Lauraceae	Endangered
12	*Dipterocarpus indicus* Bedd.	Dipterocarpaceae	Endangered
13	*Dysoxylum malabaricum* Bedd.ex C.DC.	Meliaceae	Endangered
14	*Eugenia indica* (Wight) Chithra	Myrtaceae	Endangered
15	*Euphorbia santapaui* A. N. Henry	Euphorbiaceae	Endangered
16	*Gymnema latifolium* Wall . ex Wight	Apocynaceae	Endangered
17	*Hopea ponga* (Dennst.) Mabb.	Dipterocarpaceae	Endangered
18	*Hydrocotyle conferta* Wight	Araliaceae	Endangered
19	*Nostolachma crassifolia* (Gamble) Deb & J. Lahiri.	Rubiaceae	Endangered
20	*Palaquium ravii* Sasidh. & Vink.	Sapotaceae	Endangered
21	*Prunus ceylanica* Miq.	Rosaceae	Endangered
22	*Psychotria globicephala* Gamble	Rubiaceae	Endangered
23	*Psychotria macrocarpa* Hook.f.	Rubiaceae	Endangered
24	*Tarenna monosperma* (Wight & Arn.)	Rubiaceae	Endangered
25	*Vanilla planifolia* Andrews	Orchidaceae	Endangered
26	*Aglaia perviridis* Hiern.	Meliaceae	Vulnerable
27	*Anaphalis leptophylla* DC.	Asteraceae	Vulnerable
28	*Anaphalis wightiana* DC.	Asteraceae	Vulnerable

29	*Aporosa cardiosperma* (Gaertn.) Merr.	Phyllanthaceae	Vulnerable
30	*Arenga wightii* Griff.	Arecaceae	Vulnerable
31	*Cayratia pedata* Gagnep.	Vitaceae	Vulnerable
32	*Cinnamomum macrocarpum* Hook.f.	Lauraceae	Vulnerable
33	*Cleistanthus collinus* Benth. & Hook.f.	Euphorbiaceae	Vulnerable
34	*Cryptocarya wightiana* Thwaites	Lauraceae	Vulnerable
35	*Curcuma pseudomontana* J.Graham	Zingiberaceae	Vulnerable
36	*Dalbergia latifolia* Roxb.	Fabaceae	Vulnerable
37	*Diospyros candolleana* Wight	Ebenaceae	Vulnerable
38	*Drypetes wightii* Pax & K.Hoffm.	Putranjivaceae	Vulnerable
39	*Eriocaulon pectinatum* Ruhland	Eriocaulaceae	Vulnerable
40	*Euonymus angulatus* Wight	Celastraceae	Vulnerable
41	*Euphorbia vajravelui* Binojk. & N. P. Balakr.	Euphorbiaceae	Vulnerable
42	*Hydnocarpus pentandrus* (Buch.-Ham.) Oken	Achariaceae	Vulnerable
43	*Jacaranda mimosifolia* D.Don.	Bignoniaceae	Vulnerable
44	*Lasianthus rostratus* Wight	Rubiaceae	Vulnerable
45	*Magnolia nilagirica* (Zenker) Figlar	Magnoliaceae	Vulnerable
46	*Mallotus atrovirens* Müll.Arg.	Euphorbiaceae	Vulnerable
47	*Memecylon wallichii* Ridl.	Melastomataceae	Vulnerable
48	*Myristica malabarica* Lam.	Myristicaceae	Vulnerable
49	*Orophea uniflora* Hook.f. & Thomson	Annonaceae	Vulnerable
50	*Phyllanthus bourdillonii* (Gamble) Chakrab. & N.P.Balakr.	Phyllanthaceae	Vulnerable
51	*Santalum album* L.	Santalaceae	Vulnerable
52	*Saraca asoca* (Roxb.) W.J.de Wilde	Fabaceae	Vulnerable
53	*Strobilanthes ciliata* Nees.	Acanthaceae	Vulnerable
54	*Syzygium densiflorum* Wall. ex Wight & Arn.	Myrtaceae	Vulnerable
55	*Swietenia macrophylla* King	Meliaceae	Vulnerable
56	*Vateria indica* L.	Dipterocarpaceae	Vulnerable
57	*Aglaia edulis* (Roxb.) Wall.	Meliaceae	Near Threatened
58	*Dimocarpus longan* Lour.	Sapindaceae	Near Threatened
59	*Pterocarpus marsupium* Roxb.	Fabaceae	Near Threatened
60	*Litsea bourdillonii* Gamble	Lauraceae	Near Threatened
61	*Litsea coriacea* (B.Heyne ex Nees) Hook.f.	Lauraceae	Near Threatened
62	*Litsea floribunda* Gamble	Lauraceae	Near Threatened
63	*Litsea laevigata* Gamble	Lauraceae	Near Threatened
64	*Beilschmiedia wightii* Benth. & Hook.f.	Lauraceae	Near Threatened
65	*Litsea oleoides* Hook.f.	Lauraceae	Near Threatened
66	*Utricularia praeterita* P.Taylor	Lentibulariaceae	Near Threatened

IV.4.2. Endemic taxa (Plate 64-71)

The vegetation of Nelliyampathy hills consists of 25% endemic elements, with reference to the total number of taxa collected. Among these endemic species, 46% are endemic to Southern Western Ghats, 25.6% are endemic to Western Ghats, 17% are endemic to Peninsular India, 4.5% are endemic to Kerala, 3.7% are endemic to India and 3.2% are endemic to South India (Fig. 10.). The list of Endemic taxa is given in Annexure VIII.

Habit-wise analysis of endemics showed that herbaceous habit is dominant and 49% of the total endemics are herbs, while 23% are trees, 20% are shrubs and 8% are climbers. Analysis with Raunkiaer's life form showed that Phanerophytes accounts the highest number of endemics with 153 taxa, followed by Therophytes (54 taxa), Chamaephytes (42 taxa), Geophytes (37 taxa) and Hemicryptophytes (36 taxa).

Family Poaceae accounts the highest number of endemics with 31 taxa followed by Rubiaceae (27 taxa), Acanthaceae (24 taxa), Orchidaceae (22 taxa), Fabaceae (21 taxa), Lauraceae (19 taxa), Zingiberaceae (16 taxa), Melastomataceae (15 taxa) and Balsaminaceae (12 taxa) (Fig 11.).

Among these families, Balsaminaceae are the family with the highest percentage of endemism with respect to its number of taxa documented and 12 out of the 15 taxa collected from Balsaminaceae family show endemism, i.e., 80% of the collected taxa under the Balsaminaceae family are endemics. Likewise, 76% endemism is shown by the family Lauraceae and 71% endemism is shown by family Melastomataceae.

Among the endemic species collected, 90 taxa were confined to evergreen patches and 102 were sharing the evergreen habitat along with other habitats. Together, 192 taxa are representatives of evergreen habitat, out of the 379 endemics collected. The other habitat with the highest number of endemics is grasslands and 71 endemic taxa collected are seen exclusively in grasslands. At the same time, 23 taxa share other habitats along with grasslands.

IV.4.3. Phytogeographical affinity

Analysis of phytogeographical affinity revealed that 59% of the vegetation is confined to the Indo-Pacific zone. Only 19 taxa showed a cosmopolitan distribution in Indo-Pacific, African, Australian, Holarctic and South American zones. These 19 taxa include cultivated plants, weeds or representatives of degraded areas. Table 14. shows the number of taxa showing affinities towards various Phytogeographical zones.

The zones with highest percentage affinities include Indo-Pacific, African and South American with 9.4% followed by Indo-Pacific and African, and Indo-Pacific and Holarctic

with 7.3% each. Other than Indo-Pacific, the collected taxa shows highest affinity towards the African zone (377 taxa) followed by South American (272 taxa), Holarctic (265 taxa) and Australian (89 taxa). The collected taxa showed least affinity with the Australian zone.

The analysis showed that 5% taxa have affinities to other zones except Indo-Pacific, i.e., they do not share any affinities with the Indo-Pacific zone. They are either restricted to a single zone such as African zone (13 taxa), Australian (4 taxa), Holarctic (6 taxa), South American (31 taxa) or distributed in two or three different zones such as African and Holarctic (1 taxa), Holarctic and South American (18 taxa) and African, Holarctic and South American (1 taxa). All these taxa which do not possess affinity towards the Indo-Pacific zone are either cultivated ones or representatives of degraded areas.

Table 14. Distribution of taxa among various phytogeographical zones

Sl. No.	Phytogeographical zone	No. of taxa
1	Indo-Pacific	905
2	Indo-Pacific and African	114
3	Indo-Pacific and Australian	36
4	Indo-Pacific and Holarctic	112
5	Indo-Pacific and South American	8
6	Indo-Pacific, African and Australian	6
7	Indo-Pacific, African and Holarctic	36
8	Indo-Pacific, African and South American	145
9	Indo-Pacific, African, Australian and Holarctic	10
10	Indo-Pacific, Australian and Holarctic	14
11	Indo-Pacific, Holarctic and South American	18
12	Indo-Pacific, African, Australian and South American	1
13	Indo-Pacific, African, Holarctic and South American	31
14	Indo-Pacific, African, Australian, Holarctic and South American	19
15	African	13
16	Australian	4
17	Holarctic	6
18	South American	31
19	African and Holarctic	1
20	Holarctic and South American	18
21	African, Holarctic and South American	1

IV.5. Distribution of plants with special adaptations (Plate 72-74)

According to the habitat and climatic conditions, species show various kinds of adaptations. These adaptive traits gave them an extra bonus for survival. The most commonly seen adaptations of species in Nelliyampathy includes anemochory, parasitism, semi-parasitism, saprophytism and epiphytism.

IV.5.1. Anemochory

Anemochory is one of the most advanced features shown by angiosperms. It helps the plants for far dispersal of their seeds and range extension. Since Nelliyampathy hills lie adjacent to the Palghat Gap area, the wind velocity here is high. Hence utilization of this wind for seed dispersal would help the plants to reach more distances. Annexure IX summarizes the list of anemochorous taxa. Asteraceae accounts for the highest number of anemochorous taxa with 57 species, followed by Apocynaceae (21 taxa), Bignoniaceae (8 taxa), Apiaceae and Malvaceae with 5 taxa each.

IV.5.2. Parasitism

Holoparasites are those obligate parasites devoid of chlorophyll which could not assimilate Carbon and inorganic Nitrogen of their own. *Cuscuta chinensis* Lam., a stem parasite and *Aeginetia acaulis* Walp., a root parasite are the taxa showing holo parasitism. *Cuscuta chinensis* Lam. is a member of moist and dry deciduous forest elements while *Aeginetia acaulis* Walp. is more often seen in grasslands.

IV.5.3. Hemi Parasitism

Hemiparasites or partial parasites are those plants that possess chlorophyll and have the capability to carry out photosynthesis but are partially parasitic on other plants. A total number of 16 partial parasites could be recorded from Nelliyampathy (Table 15.). It includes 10 stem parasites which are epiphytic in nature and 6 root parasites.

IV.5.4. Saprophytism

Saprophytism is a mode of life in which an individual lives on dead or decaying organic matter. Various saprophytic mushrooms are present in Nelliyampathy but a single angiosperm taxa was found to be saprophytic. *Epipogium roseum* (D. Don) Lindl. is the saprophytic species recorded from the study area.

IV.5.5. Carnivory

Carnivory in plants is considered to be a strategy to obtain nutrients in the nutrient-poor habitats where these carnivorous plants usually appear. The Lentibulariaceae and Droseraceae members are the carnivorous taxa recorded from the study area. *Utricularia graminifolia* Vahl, *Utricularia lazulina* P.Taylor, *Utricularia reticulata* Sm., *Utricularia striatula* Sm., *Utricularia sunilii* Naveen Kum. & K.M.P.Kumar, *Utricularia caerulea* L., *Drosera burmanni* Vahl, *Drosera indica* L. and *Drosera peltata* Thunb. are the carnivorous taxa recorded from Nelliyampathy hills.

Table 15. Hemiparasites of Nelliyampathy hills

Sl. No.	Binomial Name	Family	Category
1	*Buchnera hispida* D.Don.	Orobanchaceae	Root parasite
2	*Dendrophthoe falcata* (L.f.) Ettingsh.	Loranthaceae	Stem parasite
3	*Helixanthera intermedia* Danser	Loranthaceae	Stem parasite
4	*Helixanthera wallichiana* Danser	Loranthaceae	Stem parasite
5	*Parasopubia delphiniifolia* (L.) H.-P.Hofm. & Eb.Fisch.	Orobanchaceae	Root parasite
6	*Santalum album* L.	Santalaceae	Root parasite
7	*Scurrula parasitica* L.	Loranthaceae	Stem parasite
8	*Sopubia trifida* Buch.-Ham. ex D.Don.	Orobanchaceae	Root parasite
9	*Striga angustifolia* (D.Don) Saldanha	Orobanchaceae	Root parasite
10	*Striga asiatica* (L.) Kuntze.	Orobanchaceae	Root parasite
11	*Taxillus cuneatus* Danser	Loranthaceae	Stem parasite
12	*Taxillus recurvus* (Wall. ex DC.) Tiegh.	Loranthaceae	Stem parasite
13	*Taxillus tomentosus* (B.Heyne ex Roth) Tiegh.	Loranthaceae	Stem parasite
14	*Viscum angulatum* B.Heyne ex DC.	Santalaceae	Stem parasite
15	*Viscum articulatum* Burm.f.	Santalaceae	Stem parasite
16	*Viscum heyneanum* DC.	Santalaceae	Stem parasite

IV.5.6. Epiphytism

Epiphytic mode of life could be seen from the lower bryophytes to flowering plants. In closed habitats such as tropical rainforests, this mode of life provides easier access to sunlight than that of terrestrial habitat. The aerial habitat provides a large number of microhabitats such as bark, trunk, branches, twigs etc. which together provide a greater habitable surface compared to the ground level. A total number of 52 taxa were found to be epiphytic in nature in Nelliyampathy hills. Some of them are occasional epiphytes, which prefer epiphytic or lithophytic habitat while some others are obligatory epiphytes which could not be seen in a habit other than epiphytic. *Ariopsis peltata* Nimmo, *Remusatia vivipara* (Roxb.) Schott, *Aerides crispa* Lindl., *Anthurium andraeanum* Linden, are some of the occasional epiphytes. Table 16. represents the epiphytic taxa recorded from Nelliyampathy.

Table 16. Epiphytic taxa recorded from Nelliyampathy hills

Sl. No.	Binomial Name	Family Name
1	*Acampe praemorsa* (Roxb.) Blatt. & McCann.	Orchidaceae
2	*Aerides crispa* Lindl.	Orchidaceae
3	*Aerides ringens* C.E.C.Fisch.	Orchidaceae
4	*Aeschynanthus perrottetii* A.DC.	Gesneriaceae
5	*Anthurium andraeanum* Linden.	Araceae
6	*Ariopsis peltata* Nimmo.	Araceae
7	*Bulbophyllum fimbriatum* Rchb.f.	Orchidaceae
8	*Bulbophyllum fischeri* Seidenf.	Orchidaceae
9	*Bulbophyllum sterile* (Lam.) Suresh	Orchidaceae
10	*Bulbophyllum stocksii* (Benth. ex Hook.f.) J.J.Verm.	Orchidaceae
11	*Bulbophyllum tremulum* Wight	Orchidaceae
12	*Cleisostoma tenuifolium* (L.) Garay	Orchidaceae
13	*Coelogyne breviscapa* Lindl.	Orchidaceae
14	*Coelogyne nervosa* A.Rich.	Orchidaceae
15	*Cottonia peduncularis* Rchb.f. ex Schiller	Orchidaceae
16	*Cyanotis vivipara* Dalzell	Commelinaceae
17	*Cymbidium aloifolium* (L.) Sw.	Orchidaceae
18	*Dendrobium aphyllum* C.E.C.Fisch.	Orchidaceae
19	*Dendrobium aqueum* Lindl.	Orchidaceae
20	*Dendrobium barbatulum* Lindl.	Orchidaceae
21	*Dendrobium herbaceum* Lindl.	Orchidaceae
22	*Dendrobium jerdonianum* Wight	Orchidaceae
23	*Dendrobium ovatum* Kraenzl.	Orchidaceae
24	*Diplocentrum congestum* Wight	Orchidaceae
25	*Diplocentrum* recurvum Lindl.	Orchidaceae
26	*Eulophia graminea* Lindl.	Orchidaceae
27	*Impatiens parasitica* Bedd.	Balsaminaceae
28	*Luisia tenuifolia* Blume.	Orchidaceae
29	*Luisia tristis* Hook.f.	Orchidaceae
30	*Medinilla beddomei* C.B.Clarke	Melastomataceae
31	*Oberonia anamalayana* J.Joseph	Orchidaceae
32	*Oberonia bicornis* Lindl.	Orchidaceae
33	*Oberonia brachyphylla* Blatt. & McCann.	Orchidaceae
34	*Oberonia brunoniana* Wight	Orchidaceae
35	*Oberonia chandrasekharanii* V.J.Nair, V.S.Ramach. & R.Ansari	Orchidaceae
36	*Oberonia mucronata* (D.Don) Ormerod & Seidenf.	Orchidaceae
37	*Oberonia verticillata* Wight	Orchidaceae
38	*Papilionanthe subulata* (J.Koenig) Garay	Orchidaceae
39	*Peperomia portulacoides* (Lam.) A.Dietr.	Piperaceae
40	*Peperomia tetraphylla* Hook. & Arn.	Piperaceae
41	*Pholidota imbricata* Hook.	Orchidaceae
42	*Pinalia mysorensis* Kuntze.	Orchidaceae
43	*Polystachya concreta* (Jacq.) Garay & H.R.Sweet	Orchidaceae
44	*Porpax braccata* (Lindl.) Schuit.	Orchidaceae
45	*Porpax filiformis* (Wight) Schuit.	Orchidaceae
46	*Remusatia vivipara* (Roxb.) Schott.	Araceae
47	*Rhynchostylis retusa* (L.) Blume	Orchidaceae
48	*Sirhookera lanceolata* Kuntze.	Orchidaceae
49	*Smithsonia maculata* (Dalzell) C.J.Saldanha	Orchidaceae
50	*Trichoglottis tenera* Rchb.f.	Orchidaceae
51	*Vanda tessellata* Hook. ex G.Don.	Orchidaceae
52	*Vanda testacea* Rchb.f.	Orchidaceae

Majority of the epiphytes recorded were of Orchidaceae (43 taxa). Other families represented among epiphytes include Araceae (3 taxa), Piperaceae (2 taxa), Balsaminaceae, Commelinaceae, Gesneriaceae and Melastomataceae with a single taxon each. Endemism is prevalent among epiphytes. Among the epiphytes recorded, forty one percent are endemic and species richness is high in higher altitudes. Most of the epiphytes are collected from an altitude higher than 800m and only 8 taxa were recorded from lower altitudes.

IV.5.7. Climbers and lianas

The climbers and lianas utilize the availability of a physical support to reach the canopy which helps them for preventing the shade of neighbouring plants. It ensures the sufficient sunlight for them in a closed habitat like evergreen or shola patches. The climbers and lianas are abundant in Nelliyampathy since evergreen and shola patches are dominant in the area. A total number of 186 climbers were recorded, belonging to 42 families. Family Fabaceae accounts the highest number of climbers with 35 taxa followed by Convolvulaceae (21 taxa), Apocynaceae (18 taxa), Cucurbitaceae (16 taxa), Menispermaceae (9 taxa), Oleaceae and Vitaceae with 8 taxa each. Annexure X represents the list of climbers and lianas recorded from Nelliyampathy.

IV.6. Characterization of Chasmophytes in angiosperm flora

Objectives addressed

- Characterization of chasmophytic vegetation and their adaptive traits
- Ecological characterization and classification of chasmophytic elements based on habitat preference

IV.6.1. Chasmophytic diversity (Plate 75-78)

The hill tract of Nelliyampathy is blessed with open rocky patches and large boulders. The small rock crevices and fissures in the open grasslands, large boulders in the forest floor, moist regions of rocky cliffs and crust edges, small soil filled depressions in the large rock systems etc. provides suitable areas for the chasmophytes to survive and perish. Chasmophytic vegetation is predominant in the monsoon and immediate post-monsoon seasons, since the water availability in the bare rock systems are comparatively high in these wet seasons of the year. When the climate becomes harsh in the drier seasons, a very few chasmophytic taxa which can withstand the limited water availability only persist and majority of them are grasses.

The present study accounted for 551 chasmophytic taxa that belong to 64 families and 269 genera. They belong to eight different clades according to APG IV (Table 17). Family Poaceae accounts for the highest number of chasmophytic taxa with 63 species followed by Asteraceae (53 taxa), Fabaceae (37 taxa), Lamiaceae (28 taxa), Cyperaceae (25 taxa), Commelinaceae (23 taxa) and Acanthaceae (22 taxa). *Cyperus* was recorded as the most speciose genera with 15 taxa followed by *Impatiens* (13 taxa), *Crotalaria* (9 taxa), *Murdannia* (9 taxa), *Cyanotis* (8 taxa) and *Fimbristylis*, *Eriocaulon*, *Euphorbia*, *Utricularia* and *Osbeckia* with 7 taxa each.

Table 17. Distribution of chasmophytic taxa according to APG IV

Sl. No.	Clade	No. of families	No. of genera	No. of species
1	Magnoliids	1	1	4
2	Monocots	7	29	46
3	Commelinids	7	52	127
4	Superrosids	1	1	3
5	Rosids	18	56	125
6	Superasterids	10	19	28
7	Asterids	16	71	151
8	Campanulids	4	40	67

IV.6.2. Adaptive traits of chasmophytes

The harsh edaphic conditions in the rocky surface led to the development of many adaptive traits in these chasmophytic groups.

IV.6.2.1. Extensive root system

Well-developed root systems like fibrous roots or adventitious roots formed from nodal regions help the plants in exploiting minerals and nutrients deposited in the rock crevices and fissures. Taxa in the cliff areas show stronger roots for anchorage. *Allmania nodiflora* (L.) R.Br. ex Wight, *Drymaria cordata* (L.) Willd. ex Schult., *Torenia hirsuta* Willd., *Stylosanthes hamata* Taub., *Hydrocotyle javanica* Thunb., *Murdannia* sp., etc. produces adventitious roots from nodal regions. Grasses and other monocot members possess fibrous root systems. Taxa like *Aerides crispa* Lindl., *Anaphalis leptophylla* DC., *Swertia corymbosa* (Griseb.) Wight ex C.B.Clarke, *Osbeckia* sp., etc. contains strong rootstocks which helps in proper anchorage in the bare rock systems

IV.6.2.2. Rosette or cushion-like habit

Formation of a rosette or cushion like habit is another important adaptation shown by chasmophytes. The sub aerial parts get reduced and the space between the internodes become short, which help the plants in moderating water transportation efficacy. In these plants, only

the inflorescence gets projected out into the air. Taxa like *Henckelia sp., Heracleum sp., Pimpinella sp.,* etc. are some of the taxa with this feature.

IV.6.2.3. Scapigerous nature

The taxa with scapigerous growth habits are having rosette leaves and the stem is much reduced. Such taxa have stem-like flowering stalks and are much condensed in appearance. Stemless nature gives the plant an upper hand for survival in harsh rocky surfaces due to high transportation efficiency. Taxa like *Impatiens scapiflora* Wight & Arn., *Impatiens minae* Ratheesh, Anil Kumar & Sivad., *Utricularia sp., Sonerila veldkampiana* Ratheesh, Mini & Sivad., *Ariopsis peltata* Nimmo., etc. are some of the scapigerous chasmophytic taxa collected from Nelliyampathy.

IV.6.2.4. Herbaceous habit

Small herbaceous taxa are often adapted for the chasmophytic habit since the available nutrients are limited and it warrants the completion of the life cycle within a short duration. Even the shrubby forms reduce their size and are seen as their juvenile forms. Smaller the size of the plants, nutrient requirements are limited and the transpiration rate and water loss will also be minimal.

IV.6.2.5. Therophytic life-form

Therophytes are the most predominant life-form among the chasmophytes. This is so because it helps the plant to escape the extreme drier conditions. The plant completes its life cycle when the water availability is high and the conditions are suitable.

IV.6.2.6. Succulence

Succulence is a common feature in chasmophytes which helps them to overcome the water scarcity of the habitat. It helps the plant to retain the fluid balance and it in turn helps the plant to survive in a water scarce environment. *Kalanchoe sp., Euphorbia sp., Cyanotis sp., Medinilla beddomei* C.B.Clarke, etc. possess succulent leaves, while *Impatiens sp., Sonerila sp., Begonia sp., Hydrocotyle sp., Pilea sp., Lecanthus peduncularis* (Royle) Wedd., *Epithema ceylanicum* Wight, *Argostemma courtallense* Arn., etc. are with succulent stem parts. The taxa like *Peperomia blanda* (Jacq.) Kunth., *Peperomia pellucida* (L.) Kunth., etc. are having succulent plant bodies.

IV.6.2.7. Pubescence

Pubescence is an adaptive feature for reducing the transpiration rate. It helps the plant to retain the water content in their body which in turn supports the chasmophytic taxa to thrive on the harsh edaphic conditions. Taxa like *Anaphalis sp., Acilepis dendigulensis* (DC.) H.Rob., *Cyanotis arachnoidea* C.B.Clarke, and *Cyanotis thwaitesii* Hassk., possesses the

entire plant body with white cobwebby hairs. Other taxa showing pubescence includes *Emilia sp., Henckelia sp., Cyanotis sp., Leucas sp., Isodon sp.,* etc.

IV.6.2.8. Subterranean perennating organs

Perennating organs are always a means of plants to overcome unfavourable situations. In the case of chasmophytes, it helps them to avoid acute water shortage in extreme drier phases of the year. When the conditions become favourable, these organs quickly absorb water and grow up into a new individual. These perennating organs are tubers, bulbs or rhizomes and the taxa with these perennating organs include *Sonerila sp., Arisaema sp., Ceropegia fimbriifera* Bedd., *Heracleum sp., Peucedanum sp., Hypoxis aurea* Lour., *Pachystoma pubescens* Blume. etc.

IV.6.2.9. Semi-parasitism and Carnivory

Semi-parasitism and carnivory is seen in some taxa to overcome the nutritional deficiency of the habitat. Species of *Drosera* like *Drosera indica* L., *Drosera burmanni* Vahl, *Drosera peltata* Thunb., and species of *Utricularia* such as *Utricularia caerulea* L., *Utricularia graminifolia* Vahl, *Utricularia lazulina* P.Taylor, *Utricularia reticulata* Sm., *Utricularia striatula* Sm., *Utricularia sunilii* Naveen Kum. & K.M.P.Kumar are the insectivorous taxa recorded from Nelliyampathy hills. These carnivorous taxa are often thought to be the indicators of a nutrient deficient habitat, especially the nutrients like Nitrogen, Phosphorus and Sulphur.

Taxon such as *Aeginetia acaulis* Walp., shows parasitism while taxa like *Buchnera hispida* D.Don., *Parasopubia delphiniifolia* (L.) H.-P.Hofm. & Eb.Fisch., *Sopubia trifida* Buch.-Ham. ex D.Don., *Striga angustifolia* (D.Don) Saldanha, *Striga asiatica* (L.) Kuntze. etc shows semi-parasitic nature.

IV.7. Wild Genetic Resources

The cultivated plants of today have their relatives growing in the wild. They continue to evolve in the wild and develop the inherent traits like drought tolerance or pest resistance. Such prospective traits can be used for crossbreeding in domesticated species with an aim of crop improvement.

Nelliyampathy hills harbour many taxa which are potential ornamentals and close relatives of the cultivated ones. Such taxa offer treasures of genes with untapped potential and are sources of genetic diversity.

IV.7.1. Wild ornamentals (Plate 79-80)

Several wild plants with showy flowers or foliage are suitable for horticulture which will add the aesthetic beauty of the gardens. Some of these could be used for hybridization

processes which makes them more appealing. Table 18. represents the potential ornamental wild plants collected from Nelliyampathy.

Table 18. Wild ornamentals of Nelliyampathy hills

Sl. No.	Botanical name	Family
1	*Abutilon guineense* (Schumach.) Baker f. & Exell.	Malvaceae
2	*Abutilon indicum* (L.) Sweet	Malvaceae
3	*Acampe praemorsa* (Roxb.) Blatt. & McCann.	Orchidaceae
4	*Acilepis ornata* (Talbot) H.Rob. & Skvarla.	Asteraceae
5	*Aerides crispa* Lindl.	Orchidaceae
6	*Aerides ringens* C.E.C.Fisch.	Orchidaceae
7	*Argyreia elliptica* (Roth) Choisy	Convolvulaceae
8	*Argyreia hirsuta* Wight & Arn.	Convolvulaceae
9	*Argyreia populifolia* Choisy	Convolvulaceae
10	*Azanza lampas* Alef.	Malvaceae
11	*Barleria acuminata* Wight	Acanthaceae
12	*Barleria prattensis* Santapau	Acanthaceae
13	*Barleria tomentosa* Roth.	Acanthaceae
14	*Begonia bachulkarii* Aitawade, Kattuk. & S. R. Yadav	Begoniaceae
15	*Begonia cordifolia* Thwaites	Begoniaceae
16	*Begonia dipetala* Graham.	Begoniaceae
17	*Begonia fallax* A.DC.	Begoniaceae
18	*Brachycorythis iantha* (Wight) Summerh.	Orchidaceae
19	*Brachycorythis splendida* Summerh.	Orchidaceae
20	*Butea monosperma* Kuntze.	Fabaceae
21	*Camonea umbellata* (L.) A. R. Simões & Staples.	Convolvulaceae
22	*Camonea vitifolia* (Burm.f.) A. R. Simões & Staples.	Convolvulaceae
23	*Capparis moonii* Wight	Capparaceae
24	*Capparis rheedii* DC.	Capparaceae
25	*Careya arborea* Roxb.	Lecythidaceae
26	*Cassia fistula* L.	Fabaceae
27	*Chlorophytum heynei* Baker	Asparagaceae
28	*Chlorophytum malabaricum* Baker	Asparagaceae
29	*Cissus discolor* Blume	Vitaceae
30	*Clematis gouriana* Roxb. *ex* DC.	Ranunculaceae
31	*Clematis zeylanica* Poir.	Ranunculaceae
32	*Cosmos caudatus* Kunth.	Asteraceae
33	*Crinum asiaticum* L.	Amaryllidaceae
34	*Crinum latifolium* L.	Amaryllidaceae
35	*Crotalaria spectabilis* Roth.	Fabaceae
36	*Dendrobium aqueum* Lindl.	Orchidaceae
37	*Dendrobium jerdonianum* Wight	Orchidaceae
38	*Diplocentrum recurvum* Lindl.	Orchidaceae
39	*Eranthemum capense* L.	Acanthaceae
40	*Getonia floribunda* Roxb.	Combretaceae
41	*Globba marantina* L.	Zingiberaceae
42	*Globba sessiliflora* Sims.	Zingiberaceae
43	*Gloriosa superba* L.	Colchicaceae
44	*Gmelina arborea* Roxb. ex Sm.	Lamiaceae
45	*Gomphostemma heyneanum* Wall.	Lamiaceae

46	*Hedychium coronarium* J.Koenig.	Zingiberaceae
47	*Hedychium spicatum* Sm.	Zingiberaceae
48	*Hedychium venustum* Wight	Zingiberaceae
49	*Hypericum mysorense* B.Heyne ex Wight & Arn.	Hypericaceae
50	*Impatiens balsamina* L.	Balsaminaceae
51	*Impatiens maculata* Wight	Balsaminaceae
52	*Impatiens parasitica* Bedd.	Balsaminaceae
53	*Impatiens scapiflora* Wight & Arn.	Balsaminaceae
54	*Ipomoea hederifolia* L.	Convolvulaceae
55	*Ipomoea obscura* (L.) Ker Gawl.	Convolvulaceae
56	*Ipomoea pes-tigridis* L.	Convolvulaceae
57	*Ipomoea staphylina* Roem. & Schult.	Convolvulaceae
58	*Ixora brachiata* Roxb.	Rubiaceae
59	*Ixora elongata* B.Heyne & G.Don.	Rubiaceae
60	*Ixora nigricans* R.Br. ex Wall.	Rubiaceae
61	*Ixora ravikumarii* Kottaim.	Rubiaceae
62	*Jasminum angustifolium* Willd.	Oleaceae
63	*Jasminum calophyllum* Wall. & G.Don.	Oleaceae
64	*Jasminum coarctatum* Roxb.	Oleaceae
65	*Jasminum flexile* Vahl.	Oleaceae
66	*Jasminum malabaricum* Wight	Oleaceae
67	*Jasminum multiflorum* Andrews	Oleaceae
68	*Lobelia nicotianifolia* Roth.	Campanulaceae
69	*Magnolia nilagirica* (Zenker) Figlar.	Magnoliaceae
70	*Melastoma malabathricum* L.	Melastomataceae
71	*Memecylon umbellatum* Burm.f.	Melastomataceae
72	*Mussaenda frondosa* L.	Rubiaceae
73	*Osbeckia aspera* Blume	Melastomataceae
74	*Osbeckia gracilis* Bedd.	Melastomataceae
75	*Oxalis debilis* Kunth.	Oxalidaceae
76	*Oxalis latifolia* Kunth.	Oxalidaceae
77	*Pancratium triflorum* Roxb.	Amaryllidaceae
78	*Passiflora foetida* L.	Passifloraceae
79	*Pavetta zeylanica* Gamble	Rubiaceae
80	*Pecteilis susannae* (L.) Raf.	Orchidaceae
81	*Pongamia pinnata* (L.) Pierre.	Fabaceae
82	*Rhinacanthus nasutus* (L.) Kurz.	Acanthaceae
83	*Rhynchoglossum notonianum* (Wall.) B.L.Burtt.	Gesneriaceae
84	*Rhynchostylis retusa* (L.) Blume	Orchidaceae
85	*Rotheca serrata* (L.) Steane & Mabb.	Lamiaceae
86	*Rubus niveus* Thunb.	Rosaceae
87	*Saraca asoca* (Roxb.) W.J.de Wilde	Fabaceae
88	*Sonerila veldkampiana* Ratheesh, Mini & Sivad.	Melastomataceae
89	*Spathodea campanulata* P.Beauv.	Bignoniaceae
90	*Swertia angustifolia* Buch.-Ham. ex D.Don.	Gentianaceae
91	*Swertia corymbosa* (Griseb.) Wight ex C.B.Clarke	Gentianaceae
92	*Syzygium laetum* (Buch.-Ham.) Gandhi	Myrtaceae
93	*Thunbergia fragrans* Roxb.	Acanthaceae
94	*Thunbergia mysorensis* (Wight) T.Anderson	Acanthaceae
95	*Zingiber zerumbet* (L.) Sm.	Zingiberaceae

IV.7.2. Wild edible plants

Forests offer a wide range of edible plants which we can either use as raw or cooked. This includes leafy vegetables, fruits, tubers etc. There are many wild edible plants in Nelliyampathy. Table 19. summarizes various edible plants and their useful parts and a total of 98 taxa were recorded as wild edibles from Nelliyampathy. Leaves are the most useful part of the majority of taxa.

Table 19. Wild edibles of Nelliyampathy Hills

Sl. No.	Binomial name	Family	Useful part
1	*Abelmoschus moschatus* Medik.	Malvaceae	Unripe fruit
2	*Allmania nodiflora* (L.) R.Br. ex Wight	Amaranthaceae	Leaf
3	*Alternanthera bettzickiana* (Regel) G.Nicholson	Amaranthaceae	Leaf
4	*Alternanthera sessilis* (L.) DC.	Amaranthaceae	Leaf
5	*Amaranthus spinosus* L.	Amaranthaceae	Leaf
6	*Amaranthus tricolor* L.	Amaranthaceae	Leaf
7	*Amaranthus viridis* L.	Amaranthaceae	Leaf
8	*Arenga wightii* Griff.	Arecaceae	Peduncle, Pith
9	*Artocarpus heterophyllus* Lam.	Moraceae	Fruit & Kernel
10	*Asparagus racemosus* Willd.	Asparagaceae	Tuber
11	*Atalantia racemosa* Wight & Arn.	Rutaceae	Fruit
12	*Azadirachta indica* A.Juss.	Meliaceae	Fruit
13	*Boerhavia diffusa* L.	Nyctaginaceae	Leaf
14	*Boerhavia erecta* L.	Nyctaginaceae	Leaf
15	*Bombax ceiba* L.	Malvaceae	Flower
16	*Brassica juncea* (L.) Czern.	Brassicaceae	Leaf
17	*Bridelia retusa* A.Juss.	Phyllanthaceae	Fruit
18	*Canarium strictum* Roxb.	Burseraceae	Kernel
19	*Canna indica* L.	Cannaceae	Rhizome
20	*Capparis zeylanica* L.	Capparaceae	Fruit
21	*Capsicum frutescens* L.	Solanaceae	Leaf and fruit
22	*Cardamine hirsuta* L.	Brassicaceae	Whole plant
23	*Cardiospermum halicacabum* L.	Sapindaceae	Leaf
24	*Caryota urens* L.	Arecaceae	Peduncle and pith
25	*Celosia argentea* L.	Amaranthaceae	Leaf
26	*Centella asiatica* (L.) Urb.	Apiaceae	Whole plant
27	*Cissus quadrangularis* L.	Vitaceae	Stem and leaf
28	*Coccinia grandis* (L.) Voigt.	Cucurbitaceae	Leaf and fruit
29	*Colocasia esculenta* (L.) Schott.	Araceae	Corm, leaf and petiole
30	*Commelina benghalensis* L.	Commelinaceae	Leaf
31	*Curculigo orchioides* Gaertn.	Hypoxidaceae	Tuber
32	*Curcuma neilgherrensis* Wight	Zingiberaceae	Rhizome
33	*Dillenia indica* L.	Dilleniaceae	Flower
34	*Dioscorea bulbifera* L.	Dioscoreaceae	Tuber
35	*Dioscorea oppositifolia* L.	Dioscoreaceae	Tuber
36	*Dioscorea pentaphylla* L.	Dioscoreaceae	Tuber
37	*Diplocyclos palmatus* (L.) C.Jeffrey	Cucurbitaceae	Leaf and fruit
38	*Dolichos trilobus* L.	Fabaceae	Leaf
39	*Elatostema sessile* J.R.Forst. & G.Forst.	Urticaceae	Tender shoot with leaf
40	*Ensete superbum* (Roxb.) Cheesman	Musaceae	Flower and fruit
41	*Entada rheedei* Spreng.	Fabaceae	Kernel
42	*Erythrina stricta* Roxb.	Fabaceae	Flower
43	*Euphorbia hirta* L.	Euphorbiaceae	Leaf
44	*Ficus benghalensis* L.	Moraceae	Fruit

45	*Ficus hispida* L.f.	Moraceae	Fruit
46	*Ficus racemosa* L.	Moraceae	Fruit
47	*Ficus religiosa* L.	Moraceae	Fruit
48	*Flacourtia indica* (Burm.f.) Merr.	Salicaceae	Fruit
49	*Glycosmis pentaphylla* (Retz.) DC.	Rutaceae	Fruit
50	*Grewia flavescens* Juss.	Malvaceae	Fruit
51	*Grewia tiliifolia* Vahl.	Malvaceae	Fruit
52	*Hemidesmus indicus* (L.) R.Br.	Apocynaceae	Root
53	*Heracleum rigens* Wall.	Apiaceae	Leaf and fruit
54	*Hibiscus lobatus* (Murray) Kuntze.	Malvaceae	Unripe fruit
55	*Hibiscus lunariifolius* Willd.	Malvaceae	Unripe fruit
56	*Hultholia mimosoides* (Lam.) Gagnon & G.P.Lewis	Fabaceae	Fruit
57	*Ipomoea alba* L.	Convolvulaceae	Pedicel
58	*Ipomoea staphylina* Roem. & Schult.	Convolvulaceae	Root
59	*Jasminum calophyllum* Wall. & G.Don	Oleaceae	Leaf
60	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae	Leaf
61	*Maesa indica* (Roxb.) Sweet	Primulaceae	Fruit
62	*Mangifera indica* L.	Anacardiaceae	Fruit
63	*Mesua ferrea* L.	Calophyllaceae	Fruit
64	*Microcos heterotricha* Burret	Malvaceae	Fruit
65	*Mimusops elengi* L.	Sapotaceae	Fruit
66	*Momordica charantia* L.	Cucurbitaceae	Fruit
67	*Momordica dioica* Roxb. ex Willd.	Cucurbitaceae	Fruit
68	*Moringa pterygosperma* Gaertn.	Moringaceae	Leaf and fruit
69	*Murraya koenigii* (L.) Spreng.	Rutaceae	Leaf and fruits
70	*Murraya paniculata* (L.) Jack	Rutaceae	Leaf, flower and fruit
71	*Ocimum gratissimum* L.	Lamiaceae	Seed
72	*Oxalis corniculata* L.	Oxalidaceae	Leaf
73	*Passiflora foetida* L.	Passifloraceae	Fruit
74	*Pavetta indica* L.	Rubiaceae	Tender unripe fruit
75	*Persicaria chinensis* (L.) H.Gross	Polygonaceae	Leaf
76	*Phyllanthus emblica* L.	Phyllanthaceae	Fruit
77	*Phyllanthus reticulatus* Poir.	Phyllanthaceae	Fruit
78	*Pithecellobium dulce* (Roxb.) Benth.	Fabaceae	Aril
79	*Psidium guajava* L.	Myrtaceae	Fruit
80	*Rhynchosia rufescens* (Willd.) DC.	Fabaceae	Seed
81	*Rubus niveus* Thunb.	Rosaceae	Fruit
82	*Senna occidentalis* (L.) Link.	Fabaceae	Tender pod
83	*Sesamum indicum* L.	Pedaliaceae	Seed
84	*Sesbania grandiflora* (L.) Poir.	Fabaceae	Leaf
85	*Solanum americanum* Mill.	Solanaceae	Leaf and fruit
86	*Solanum erianthum* D.Don	Solanaceae	Unripe fruit
87	*Solanum torvum* Sw.	Solanaceae	Unripe fruit
88	*Solanum trilobatum* L.	Solanaceae	Unripe fruit
89	*Sterculia foetida* L.	Malvaceae	Kernel
90	*Sterculia guttata* Roxb.	Malvaceae	Kernel
91	*Sterculia urens* Roxb.	Malvaceae	Latex, root tuber, Kernel
92	*Streblus asper* Lour.	Moraceae	Latex
93	*Syzygium cumini* (L.) Skeels	Myrtaceae	Fruit
94	*Tamarindus indica* L.	Fabaceae	Fruit
95	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae	Kernel
96	*Trianthema portulacastrum* L.	Aizoaceae	Leaf
97	*Vigna radiata* var. *sublobata* (Roxb.) Verdc.	Fabaceae	Leaf and fruit
98	*Ziziphus oenopolia* (L.) Mill.	Rhamnaceae	Fruit

IV.7.3. Wild relatives of cultivated plants

Nelliyampathy hills offer a wide range of germplasm of the wild relatives of many cultivated species, which serves as an important gene pool for species improvement. The wild relatives of paddy, the commonly used cereal of our state, includes *Oryza meyeriana* Baill. and *Oryza rufipogon* Griff. The only wild relative of ragi was *Eleusine indica* (L.) Gaertn. while the relatives of pulses include members of *Cajanus, Vigna* and *Wajira.* The wild relative of sugarcane recorded was *Saccharum spontaneum* L. Relatives of fruit crops such as banana, passion fruit, gooseberry, java plum etc. along with that of vegetables such as cucumber, tomato etc. were also recorded. The wild relatives of cinnamon, ginger and pepper are also found in the hill tracts of Nelliyampathy. A total number of 122 taxa were recorded from Nelliyampathy hills which are the genetic resources of various species that are in cultivation (Table 20).

Table 20. Wild relatives of cultivated species

Sl. No.	Category	Wild relatives
1	Cereals and Millets	*Oryza meyeriana* Baill., *Oryza rufipogon* Griff., *Eleusine indica* (L.) Gaertn.
2	Pulses and legumes	*Cajanus* (5 sp.), *Vigna* (5 sp. & 1 var.), *Wajira grahamiana* (Wight & Arn.) Thulin & Lavin
3	Sugar-yielding	*Saccharum spontaneum* L.
4	Fruit crops	*Ensete superbum* (Roxb.) Cheesman, *Flacourtia indica* (Burm.f.) Merr., *Flacourtia montana* J.Graham, *Passiflora foetida* L., *Phyllanthus* (11 sp.), *Syzygium* (9 sp.), *Ziziphus jujuba* Mill., *Ziziphus nummularia* (Burm.f.) Wight & Arn., *Ziziphus oenopolia* (L.) Mill., *Ziziphus rugosa* Lam.
5	Vegetables	*Abelmoschus angulosus* Wight & Arn., *Abelmoschus moschatus* Medik., *Amaranthus blitum* L., *Amaranthus spinosus* L., *Amaranthus viridis* L., *Amorphophallus commutatus* (Schott) Engl., *Amorphophallus paeoniifolius* (Dennst.) Nicolson, *Cucumis maderaspatanus* L., *Cucumis silentvalleyi* (Manilal, T.Sabu & P.Mathew) Ghebret. & Thulin, *Dioscorea* (5 sp.), *Ipomoea* (17 sp.), *Momordica dioica* Roxb. ex Willd., *Solanum* (12 sp.), *Trichosanthes anaimalaiensis* Bedd., *Trichosanthes cucumerina* L., *Trichosanthes tubiflora* (Wight & Arn.) H.J.de Boer, *Trichosanthes villosula* Cogn.
6	Fibre-yielding	*Corchorus aestuans* L.
7	Timber yielding	*Dalbergia lanceolaria* L.f., *Dalbergia latifolia* Roxb., *Dalbergia sissoides* Graham ex Wight & Arn., *Ailanthus excelsus* Roxb., *Ailanthus triphysus* (Dennst.) Alston
8	Oil yielding	*Sesamum indicum* L.
9	Gums and resins	*Senegalia caesia* (L.) Maslin, Seigler & Ebinger, *Senegalia pennata* (L.) Maslin, *Senegalia rugata* Britton & Rose, *Senegalia torta* (Roxb.) Maslin, Seigler & Ebinger.
10	Spices and condiments	*Alpinia malaccensis* (Burm.f.) Roscoe, *Amomum hypoleucum* Thwaites, *Amomum pterocarpum* Thwaites, *Cinnamomum macrocarpum* Hook.f., *Cinnamomum malabathrum* (Lam.) J.Presl., *Clausena anisata* (Willd.) Hook.f., *Clausena austroindica* B.C.Stone & K.Narayanan, *Clausena indica* Oliv., *Curcuma* (8 sp.), *Meistera acuminata* (Thwaites) Škorničk. & M.F.Newman, *Meistera cannicarpa* (Wight) Škorničk. & M.F.Newman, *Meistera masticatorium* (Thwaites) Škorničk. & M.F.Newman, *Meistera sahyadrica* (V.P.Thomas & M.Sabu) Škorničk. & M.F.Newman, *Myristica beddomei* King, *Myristica fragrans* Houtt., *Myristica malabarica* Lam., *Murraya koenigii* (L.) Spreng., *Murraya paniculata* (L.) Jack, *Piper* (6 sp.), *Syzygium* (9 sp.), *Zingiber* (7 sp.)

IV.8. Medicinal plant diversity (Plate 81-86)

Forests were always a greater source of medicinal plants. A total of 375 medicinal taxa were recorded from Nelliyampathy hills and it accounts to 24.5% of the collected taxa. Annexure XI summarizes the list of medicinal plants collected from the study area. Family Fabaceae accounts the highest number of medicinal plants with 27 taxa, followed by Apocynaceae (20 taxa), Malvaceae (18 taxa), Asteraceae (16 taxa), Lamiaceae and Rubiaceae with 15 taxa each. Herbaceous taxa are predominant among them (37.20%), followed by trees (25.78%), shrubs (20%) and climbers (17%).

IV.8.1. Rare and significant medicinal plant resources

Decalepis salicifolia (Bedd. ex Hook.f.) Bruyns is a critically endangered and endemic medicinal plant recorded from Nelliyampathy. The tubers of the plant are used for intestinal ailments, asthmatic problems, skin diseases etc. Some tribal communities use its root decoction to prevent debility from tuberculosis. *Dysoxylum malabaricum* Bedd. ex C.DC. is another endemic taxon which is included in the Endangered category by IUCN. The decoction made from its wood is used against rheumatoid arthritis. *Brugmansia arborea* (L.) Sweet which is found as a garden escape is an Extinct in the Wild category taxa. Small strips from the branches of this taxon are used in painful body parts to make a temporary anaesthetic effect. *Pterocarpus marsupium* Roxb., is a Near Threatened taxon which is traditionally used in the treatment of leucoderma, elephantiasis, diarrhoea, cough, discoloration of hair, rectalgia etc. *Strobilanthes ciliata* Nees. and *Santalum album* L. are two vulnerable species used against hepatic problems. *Vateria indica* L., *Hydnocarpus pentandrus* (Buch.-Ham.) Oken, and *Hydnocarpus alpinus* Wight are those vulnerable taxa used to treat various skin diseases including leprosy. Other vulnerable taxa with medicinal properties includes *Myristica malabarica* Lam. which is used against dysentery, *Aporosa cardiosperma* (Gaertn.) Merr. used to treat headaches, *Saraca asoca* (Roxb.) W.J.de Wilde. useful in uterine and menstrual troubles, *Cayratia pedata* Gagnep. used against ulcer, diarrhoea etc. and *Magnolia nilagirica* (Zenker) Figlar used against haemorrhoids.

Mappia nimmoniana (J.Graham) Byng & Stull is an important medicinal plant from which the promising anti-cancer and anti-HIV drug, Camptothecin (CPT), can be extracted at a large scale. *Embelia ribes* Burm.f., is traditionally used against various skin diseases, digestive problems, wounds etc. Various pharmacological studies conducted on this taxa proved that the taxa has anti-inflammatory and anti-helminthic properties.

IV.8.2. Traditionally used medicinal plants

The members of 'Dasapushpam' such as *Biophytum sensitivum* (L.) DC. (Mukkutti), *Cardiospermum halicacabum* L. (Uzhinja), *Curculigo orchioides* Gaertn. (Nilappana), *Cyanthillium cinereum* (L.) H.Rob. (Poovamkurunnal), *Cynodon dactylon* (L.) Pers. (Karuka), *Emilia sonchifolia* (L.) DC. (Muyalcheviyan), *Ouret lanata* (L.) Kuntze (Cherula) were recorded from the study area. Along with this, the plants which are known to be 'Naalpaamaram' such as *Ficus benghalensis* L. (Peraal), *Ficus microcarpa* L.f. (Ithi), *Ficus racemosa* L. (Athi), *Ficus religiosa* L. (Arayaal) were also recorded.

The medicinal plants which are commonly used for post-partum treatment such as *Ageratum conyzoides* L., *Amaranthus spinosus* L., *Butea monosperma* Kuntze, *Centella asiatica* (L.) Urb., *Embelia ribes* Burm.f., *Tamarindus indica* L., *Zingiber officinale* Roscoe., *Ziziphus oenopolia* (L.) Mill. etc. were distributed in this part of Western Ghats. Medicinal plants which are useful for infants and neonates such as *Azadirachta indica* A.Juss., *Boerhavia diffusa* L., *Cassia fistula* L., *Momordica charantia* L., *Piper longum* L., *Piper nigrum* L., *Ricinus communis* L., *Sesamum indicum* L., *Syzygium cumini* (L.) Skeels., *Ziziphus jujuba* Mill. etc form part of the medicinal plant resources of the location.

IV.9. Alien Invasive elements (Plate 87-90)

Objective addressed

- Documentation of biological invasion at Nelliyampathy hills
- Floristic analysis of invasive taxa

The floristic exploration in Nelliyampathy hills recorded 72 alien invasive elements (ENVIS, 2019) belonging to 59 genera under 24 families (Table 21). Among the different families, Asteraceae accounts for the highest number of invasive taxa with 16 species followed by Fabaceae (9 species), Convolvulaceae (8 species) and Malvaceae (5 species). Genus *Ipomoea* have the highest number of invasive species (6 taxa) followed by *Solanum* and *Senna* (3 species each), and *Ageratum*, *Cleome*, *Cyperus* and *Crotalaria* with 2 species each.

Among the invasive taxa, 42 are native to Tropical America, nine to Tropical Africa, seven to Tropical South America, two taxa each to Tropical North America, Brazil, West Indies and Mediterranean, one taxa each to Tropical East Africa, Tropical Central America, Temperate South America, Europe, Tropical West Asia and Peru (Table 22. & Figure 12.) The analysis showed that most of the invasive elements share American nativity.

Table 21. Invasive taxa recorded from Nelliyampathy hills

Sl. No.	Binomial name	Family	*Nativity
1	*Acmella radicans* (Jacq.) R.K.Jansen	Asteraceae	TSA
2	*Ageratina adenophora* (Spreng.) R.M.King & H.Rob.	Asteraceae	TAM
3	*Ageratum conyzoides* L.	Asteraceae	TAM
4	*Ageratum houstonianum* Mill.	Asteraceae	TAM
5	*Asclepias curassavica* L.	Apocynaceae	TAM
6	*Bidens pilosa* L.	Asteraceae	TAM
7	*Calotropis gigantea* (L.) W.T.Aiton.	Apocynaceae	TAF
8	*Cardamine hirsuta* L.	Brassicaceae	TAM
9	*Celosia argentea* L.	Amaranthaceae	TAF
10	*Chloris barbata* Sw.	Poaceae	TAM
11	*Chromolaena odorata* (L.) R.M.King & H.Rob.	Asteraceae	TAM
12	*Cleome monophylla* L.	Cleomaceae	TAF
13	*Cleome viscosa* L.	Cleomaceae	TAM
14	*Corchorus aestuans* L.	Malvaceae	TAM
15	*Crassocephalum crepidioides* S.Moore.	Asteraceae	TAM
16	*Crotalaria pallida* Aiton.	Fabaceae	TAM
17	*Crotalaria retusa* L.	Fabaceae	TAM
18	*Croton bonplandianus* Baill.	Euphorbiaceae	TSA
19	*Cuscuta chinensis* Lam.	Convolvulaceae	M
20	*Cyperus difformis* L.	Cyperaceae	TAM
21	*Cyperus iria* L.	Cyperaceae	TAM
22	*Dicliptera paniculata* (Forssk.) I. Darbysh.	Acanthaceae	TAM
23	*Echinochloa colona* (L.) Link.	Poaceae	TSA
24	*Emilia sonchifolia* (L.) DC.	Asteraceae	TAM
25	*Euphorbia heterophylla* L.	Euphorbiaceae	TAM
26	*Evolvulus nummularius* (L.) L.	Convolvulaceae	TAM
27	*Fuirena ciliaris* (L.) Roxb.	Cyperaceae	TAM
28	*Galinsoga parviflora* Cav.	Asteraceae	TAM
29	*Gnaphalium polycaulon* Pers.	Asteraceae	TAM
30	*Impatiens balsamina* L.	Balsaminaceae	TAM
31	*Indigofera astragalina* DC.	Fabaceae	TAM
32	*Ipomoea carnea* subsp. *fistulosa* (Mart. *ex* Choisy) D. F. Austin.	Convolvulaceae	TAM
33	*Ipomoea eriocarpa* R.Br.	Convolvulaceae	TAF
34	*Ipomoea hederifolia* L.	Convolvulaceae	TAM
35	*Ipomoea obscura* (L.) Ker Gawl.	Convolvulaceae	TAF
36	*Ipomoea pes-tigridis* L.	Convolvulaceae	TEF
37	*Ipomoea staphylina* Roem. & Schult.	Convolvulaceae	TAF
38	*Lantana camara* L.	Verbenaceae	TAM
39	*Leonotis nepetifolia* (L.) R.Br.	Lamiaceae	TAF
40	*Leucaena leucocephala* (Lam.) de Wit.	Fabaceae	TAM
41	*Ludwigia perennis* L.	Onagraceae	TAF
42	*Mecardonia procumbens* (Mill.) Small.	Plantaginaceae	TNA
43	*Melinis repens* (Willd.) Zizka.	Poaceae	TAM
44	*Melochia corchorifolia* L.	Malvaceae	TAM
45	*Mesosphaerum suaveolens* (L.) Kuntze.	Lamiaceae	TAM
46	*Mikania micrantha* Kunth.	Asteraceae	TAM
47	*Mimosa pudica* L.	Fabaceae	B

48	*Mirabilis jalapa* L.	Nyctaginaceae	P
49	*Oxalis corniculata* L.	Oxalidaceae	E
50	*Parthenium hysterophorus* L.	Asteraceae	TNA
51	*Passiflora foetida* L.	Passifloraceae	TSA
52	*Pedalium murex* L.	Pedaliaceae	TAM
53	*Peperomia pellucida* (L.) Kunth.	Piperaceae	TSA
54	*Pilea microphylla* (L.) Liebm.	Urticaceae	TSA
55	*Saccharum spontaneum* L.	Poaceae	TWA
56	*Scoparia dulcis* L.	Plantaginaceae	TAM
57	*Senna hirsuta* (L.) H.S.Irwin & Barneby	Fabaceae	TAM
58	*Senna occidentalis* (L.) Link.	Fabaceae	TSA
59	*Senna tora* Roxb.	Fabaceae	TSA
60	*Sida acuta* Burm.f.	Malvaceae	TAM
61	*Solanum americanum* Mill.	Solanaceae	TAM
62	*Solanum seaforthianum* Andrews.	Solanaceae	B
63	*Solanum torvum* Sw.	Solanaceae	W
64	*Sonchus oleraceus* L.	Asteraceae	M
65	*Stachytarpheta jamaicensis* (L.) Vahl.	Verbenaceae	TAM
66	*Stylosanthes hamata* Taub.	Fabaceae	TAM
67	*Synedrella nodiflora* Gaertn.	Asteraceae	W
68	*Tridax procumbens* L.	Asteraceae	TCA
69	*Triumfetta rhomboidea* Jacq.	Malvaceae	TAM
70	*Turnera ulmifolia* L.	Passifloraceae	TAM
71	*Urena lobata* L.	Malvaceae	TAF
72	*Xanthium strumarium* L.	Asteraceae	TAM

*TSA - Tropical South America, TAM - Tropical America, TAF - Tropical Africa, M – Mediterranean, TEF - Tropical East Africa, TNA - Tropical North America, B – Brazil, P – Peru, E – Europe, TWA - Tropical West Asia, W – West Indies, TCA - Tropical Central America

Among invasive taxa, herbaceous forms share majority with 48 species, followed by shrubs (14 taxa), Climbers (9 taxa) and the only tree member among them is *Leucaena leucocephala* (Lam.) de Wit., the fabaceae member (Fig. 13.). *Xanthium strumarium* L. and *Impatiens balsamina* L. shows phytogeographical affinity towards Indo-Pacific kingdom. The phenological analysis showed that ten taxa share flowering and fruiting throughout the year, while others have their flowering and fruiting in the months of August-January. This shift in phenology aids the taxa to utilize the cooler climate and heavy winds for their pollination as well as seed dispersal.

Of the collected invasive taxa, nine taxa are listed as the worst invasive alien species in 100 of the World's Worst Invasive Alien Species. But most of them are not considered as an alien invasive taxon in India. They are *Spathodea campanulata* P.Beauv., *Arundo donax* L., *Hiptage benghalensis* (L.) Kurz., *Lantana camara* L., *Leucaena*

leucocephala (Lam.) de Wit., *Mikania micrantha* Kunth, *Ardisia elliptica* Thunb., *Chromolaena odorata* (L.) R.M.King & H.Rob. and *Sphagneticola trilobata* (L.) Pruski.

In Kerala, out of the 82 invasive taxa documented as invasives by Kerala State Biodiversity board (KSBB), 54 are present in Nelliyampathy hills. Most of these species are either degraded forest elements or weeds and cultivated plants. Table 23. represents the invasive taxa listed in invasives of Kerala state by KSBB.

Though many of these taxa are invasive in various regions of our state and country, only few of them show invasiveness in the study area. At the same time, other invasive taxa must also be given attention, since they possess the potentiality to become invasive at any given time or area. Some of the taxa that shows invasiveness in Nelliyampathy includes *Ageratina adenophora* (Spreng.) R. M. King & H. Rob., *Ageratum conyzoides* L., *Ageratum houstonianum* Mill., *Calopogonium mucunoides* Desv., *Chromolaena odorata* (L.) R.M.King & H.Rob., *Croton hirtus* L'Hér., *Hypoestes phyllostachya* Baker., *Ipomoea hederifolia* L., *Lantana camara* L., *Mikania micrantha* Kunth., *Mimosa diplotricha* C. Wright., *Mimosa pudica* L., and *Parthenium hysterophorus* L.

Table 22. Native ranges of Invasive taxa

Sl. No.	Native range	No. of taxa
1	Tropical America	42
2	Tropical Africa	9
3	Tropical South America	7
4	Tropical North America	2
5	Brazil	2
6	Mediterranean	2
7	West Indies	2
8	Tropical East Africa	1
9	Tropical Central America	1
10	Temperate South America	1
11	Europe	1
12	Peru	1
13	Tropical West Asia	1

Table 23. Invasive elements to Kerala

Sl. No.	Binomial name	Family
1	*Ageratina adenophora* (Spreng.) R.M.King & H.Rob.	Asteraceae
2	*Ageratum conyzoides* L.	Asteraceae
3	*Ageratum houstonianum* Mill.	Asteraceae
4	*Alternanthera bettzickiana* (Regel) G.Nicholson.	Amaranthaceae
5	*Alternanthera brasiliana* (L.) Kuntze.	Amaranthaceae
6	*Amaranthus spinosus* L.	Amaranthaceae
7	*Arundo donax* L.	Poaceae
8	*Asclepias curassavica* L.	Apocynaceae
9	*Brugmansia arborea* (L.) Sweet.	Solanaceae
10	*Brugmansia suaveolens* (Willd.) Sweet.	Solanaceae
11	*Calopogonium mucunoides* Desv.	Fabaceae
12	*Camonea vitifolia* (Burm.f.) A.R.Simões & Staples.	Convolvulaceae
13	*Cascabela thevetia* (L.) Lippold.	Apocynaceae
14	*Catharanthus roseus* (L.) G.Don.	Apocynaceae
15	*Cenchrus pedicellatus* (Trin.) Morrone.	Poaceae
16	*Centratherum punctatum* Cass.	Asteraceae
17	*Centrosema molle* Mart. ex Benth.	Fabaceae
18	*Cestrum aurantiacum* Lindl.	Solanaceae
19	*Chromolaena odorata* (L.) R.M.King & H.Rob.	Asteraceae
20	*Cosmos sulphureus* Cav.	Asteraceae
21	*Croton bonplandianus* Baill.	Euphorbiaceae
22	*Croton hirtus* L'Hér.	Euphorbiaceae
23	*Duranta erecta* L.	Verbenaceae
24	*Erigeron karvinskianus* DC.	Asteraceae
25	*Euphorbia heterophylla* L.	Euphorbiaceae
26	*Heliconia psittacorum* L.f.	Heliconiaceae
27	*Hypoestes phyllostachya* Baker.	Acanthaceae
28	*Hyptis capitata* Jacq.	Lamiaceae
29	*Ipomoea aquatica* Forssk.	Convolvulaceae
30	*Ipomoea cairica* (L.) Sweet.	Convolvulaceae
31	*Ipomoea carnea* subsp. *fistulosa* (Mart. ex Choisy) D.F.Austin.	Convolvulaceae
32	*Ipomoea hederifolia* L.	Convolvulaceae
33	*Ipomoea purpurea* (L.) Roth.	Convolvulaceae
34	*Jatropha gossypifolia* L.	Euphorbiaceae
35	*Lantana camara* L.	Verbenaceae
36	*Leucaena leucocephala* (Lam.) de Wit.	Fabaceae
37	*Ludwigia peruviana* (L.) H.Hara.	Onagraceae
38	*Mesosphaerum suaveolens* (L.) Kuntze.	Lamiaceae
39	*Mikania micrantha* Kunth.	Asteraceae
40	*Mimosa diplotricha* C.Wright.	Fabaceae
41	*Mimosa pudica* L.	Fabaceae
42	*Muntingia calabura* L.	Muntingiaceae
43	*Parthenium hysterophorus* L.	Asteraceae
44	*Passiflora foetida* L.	Passifloraceae
45	*Ricinus communis* L.	Euphorbiaceae
46	*Senna hirsuta* (L.) H.S.Irwin & Barneby.	Fabaceae
47	*Senna occidentalis* (L.) Link.	Fabaceae
48	*Senna tora* Roxb.	Fabaceae
49	*Sesbania grandiflora* (L.) Poir.	Fabaceae
50	*Setaria parviflora* (Poir.) Kerguélen.	Poaceae
51	*Sphagneticola trilobata* (L.) Pruski.	Asteraceae
52	*Synedrella nodiflora* Gaertn.	Asteraceae
53	*Tithonia diversifolia* (Hemsl.) A.Gray.	Asteraceae
54	*Tridax procumbens* L.	Asteraceae

IV.10. Life form spectrum analysis of angiosperm vegetation

Objective addressed

- Life form spectrum analysis of Angiosperm vegetation in Nelliyampathy hills

The life form of a particular plant is being decided based on the protective adaptation of them against the critical climatic conditions. Raunkiaer has used the shoot apex or dormant bud protection by a plant for classifying them into various life forms. A total number of eleven different life forms had been recorded among the angiosperm taxa of Nelliyampathy hills (Table 24).

The critical analysis of the vegetation showed that the Phanerophyte life form is the most dominant one in hill tracts of Nelliyampathy with 532 taxa i.e., 35% of the collected taxa falls under phanerophytes. Therophytes are the second dominant life-form with 297 taxa. These are short living taxa which are drought escapers and they have highly protected embryos and seeds, to avoid the stressful climatic conditions. These therophytes recorded are mostly deciduous elements or inhabitants of marshy areas. The therophytes complete their life cycle before the deciduous forest experiences a dry season or the marshy areas become rigid because of high evaporation during dry seasons.

Chamaephytes, Hemicryptophytes and Geophytes are the groups of plants that show a higher degree of protection to the buds than Phanerophytes. They are represented by 13%, 9.2% and 6.2% respectively and these are representatives of either the understory of Evergreen forests or elements of Grasslands. In order to avoid the stressful drought conditions or grazing by the wild animals, they tend to protect their shoot apices or buds for next generation either in the surface level or underground.

Lianas (12%) and epiphytes (3.2%) are other important classes of life forms in the study area. The high percentage of Evergreen and Shola forests supports the higher number of epiphytic taxa as well as Lianas.

Table 24. Raunkiaer life form spectrum analysis (Ellenberg and Dombois, 1967)

Sl. No.	Life form	Number of taxa	Percentage of taxa
1	Phanerophyte	532	34.8%
2	Therophyte	297	19.4%
3	Chamaephyte	199	13%
4	Hemicryptophyte	141	9.2%
5	Geophyte	96	6.2%
6	Liana	186	12.1%
7	Epiphyte	50	3.2%
8	Vascular semi-parasite	16	1%
9	Hydrophyte	9	0.5%
10	Vascular parasite	2	0.1%
11	Vascular saprophyte	1	0.06%

IV.11. Taxonomic singularity and monotypism of angiosperm vegetation

Objectives addressed

- Analysis of taxonomic singularity to assess biodiversity richness
- Identification of monotypic taxa and its distribution

IV.11.1. Taxonomic singularity

Out of the many criteria used to assess biodiversity, taxonomic rarity is an important one. In a specific area, the taxonomic singularity at the level of genus is calculated as the inverse of the number of species and at the family level, it is calculated as the inverse of the number of genera in a particular family. Out of the 774 genera recorded, 501 genera were found to have a single species (Annexure XII) and of the 142 families, 60 families contain a single genus (Table 25). The taxonomic singularity of vegetation at Nelliyampathy at genus level is 0.65 and at family level is 0.42. At the genus level, the taxonomic singularity is comparatively high since 62% of the collected genera contains a single species. But at the family level, taxonomic divergence is high, since 58% of the families are represented by more than a single genus.

Table 25. Families with a single genus

Sl. No.	Family	Genus	Sl. No	Family	Genus
1	Achariaceae	*Hydnocarpus*	21	Droseraceae	*Drosera*
2	Acoraceae	*Acorus*	22	Ebenaceae	*Diospyros*
3	Aizoaceae	*Trianthema*	23	Elaeagnaceae	*Elaeagnus*
4	Ancistrocladaceae	*Ancistrocladus*	24	Elaeocarpaceae	*Elaeocarpus*
5	Balsaminaceae	*Impatiens*	25	Eriocaulaceae	*Eriocaulon*
6	Begoniaceae	*Begonia*	26	Haloragaceae	*Myriophyllum*
7	Berberidaceae	*Berberis*	27	Heliconiaceae	*Heliconia*
8	Burmanniaceae	*Burmannia*	28	Hydrocharitaceae	*Blyxa*
9	Cannabaceae	*Trema*	29	Hypericaceae	*Hypericum*
10	Cannaceae	*Canna*	30	Lentibulariaceae	*Utricularia*
11	Caricaceae	*Carica*	31	Linaceae	*Linum*
12	Centroplacaceae	*Bhesa*	32	Loganiaceae	*Strychnos*
13	Chloranthaceae	*Sarcandra*	33	Magnoliaceae	*Magnolia*
14	Cleomaceae	*Cleome*	34	Malpighiaceae	*Hiptage*
15	Clusiaceae	*Garcinia*	35	Moringaceae	*Moringa*
16	Cornaceae	*Alangium*	36	Muntingiaceae	*Muntingia*
17	Costaceae	*Cheilocostus*	37	Nymphaeaceae	*Nymphaea*
18	Crassulaceae	*Kalanchoe*	38	Nyssaceae	*Mastixia*
19	Dilleniaceae	*Dillenia*	39	Onagraceae	*Ludwigia*
20	Dioscoreaceae	*Dioscorea*	40	Pandanaceae	*Pandanus*
41	Petiveriaceae	*Rivina*	51	Scrophulariaceae	*Buddleja*
42	Pittosporaceae	*Pittosporum*	52	Simaroubaceae	*Ailanthus*
43	Plumbaginaceae	*Plumbago*	53	Smilacaceae	*Smilax*
44	Polygonaceae	*Polygonum*	54	Staphyleaceae	*Turpinia*
45	Portulacaceae	*Portulaca*	55	Stemonuraceae	*Gomphandra*
46	Proteaceae	*Grevillea*	56	Symplocaceae	*Symplocos*
47	Putranjivaceae	*Drypetes*	57	Tetramelaceae	*Tetrameles*
48	Ranunculaceae	*Clematis*	58	Theaceae	*Camellia*
49	Sabiaceae	*Meliosma*	59	Ulmaceae	*Holoptelea*
50	Salvadoraceae	*Azima*	60	Xyridaceae	*Xyris*

IV.11.2. Monotypic taxa

A monotypic genus is the one which consists of only the 'type species' and from Nelliyampathy hills, 6 monotypic genera were recorded (Table 26). These 6 genera consist of single species only, with no other synonymised taxa. Apart from these taxa, 37 genera were recorded with only a single accepted species. They contain more than one species described by different authors. Later, all these taxa got synonymised under a single species.

Table 26. Monotypic taxa recorded from Nelliyampathy hills

Sl. No.	Binomial Name	Family
1	*Allmania nodiflora* (L.) R.Br. ex Wight	Amaranthaceae
2	*Anamirta cocculus* (L.) Wight & Arn.	Menispermaceae
3	*Antiaris toxicaria* (Pers.) Lesch.	Moraceae
4	*Apluda mutica* L.	Poaceae
5	*Arundina graminifolia* (D.Don) Hochr.	Orchidaceae
6	*Chukrasia tabularis* A.Juss.	Meliaceae
7	*Cipadessa baccifera* Miq.	Meliaceae
8	*Cocos nucifera* L.	Arecaceae
9	*Coldenia procumbens* L.	Boraginaceae
10	*Colebrookea oppositifolia* Sm.	Lamiaceae
11	*Cottonia peduncularis* Rchb.f. ex Schiller	Orchidaceae
12	*Erythropalum scandens* Blume	Olacaceae
13	*Falconeria insignis* Royle	Euphorbiaceae
14	*Getonia floribunda* Roxb.	Combretaceae
15	*Hemidesmus indicus* (L.) R.Br.	Apocynaceae
16	*Hewittia malabarica* (L.) Suresh	Convolvulaceae
17	*Holmskioldia sanguinea* Retz.	Lamiaceae
18	*Hultholia mimosoides* (Lam.) Gagnon & G.P.Lewis	Fabaceae
19	*Indianthus virgatus* (Roxb.) Suksathan & Borchs.	Marantaceae
20	*Indobanalia thyrsiflora* (Moq.) A.N.Henry & B.Roy	Amaranthaceae
21	*Kigelia africana* (Lam.) Benth.	Bignoniaceae
22	*Lablab purpureus* (L.) Sweet	Fabaceae
23	*Lawsonia inermis* L.	Lythraceae
24	*Muntingia calabura* L.	Muntingiaceae
25	*Naregamia alata* Wight & Arn.	Meliaceae
26	*Naringi crenulata* (Roxb.) Nicolson	Rutaceae
27	*Nerium oleander* L.	Apocynaceae
28	*Oroxylum indicum* (L.) Benth. ex Kurz	Bignoniaceae
29	*Otonephelium stipulaceum* Radlk.	Sapindaceae
30	*Pajanelia longifolia* (Willd.) K. Schum.	Bignoniaceae
31	*Pedalium murex* L.	Pedaliaceae
32	*Polhillides velutina* (Willd.) H. Ohashi & K.Ohashi	Fabaceae
33	*Polytrias indica* (Houtt.) Veldkamp	Poaceae
34	*Pycnospora lutescens* Schindl.	Fabaceae
35	*Ricinus communis* L.	Euphorbiaceae
36	*Rivina humilis* L.	Petiveriaceae
37	*Sarcandra glabra* (Thunb.) Nakai	Chloranthaceae
38	*Schleichera oleosa* (Lour.) Oken.	Sapindaceae
39	*Spathodea campanulata* P.Beauv.	Bignoniaceae
40	*Synedrella nodiflora* Gaertn.	Asteraceae
41	*Tamarindus indica* L.	Fabaceae
42	*Tamilnadia uliginosa* (Retz.) Tirveng. & Sastre	Rubiaceae
43	*Tetrameles nudiflora* R.Br.	Tetramelaceae

IV.12. Phenotypic plasticity in angiosperm vegetation

Objectives addressed

- Inter-specific diversity in taxa at Nelliyampathy hills
- Phenotypic plasticity and intra specific diversity in taxa as a prelude to speciation

IV.12.1. Inter-specific diversity

Diversity of species within a genus represents inter-specific diversity. Among the 774 genera collected, 273 genera are with more than a single species. The generic diversity of the study area is much higher, therefore the species diversity of the genera becomes significant. Table 27. represents the most speciose genera of the study area.

Table 27. Interspecific diversity in species rich taxa

Sl. No.	Genus	No. of species	Sl. No.	Genus	No. of species
1	*Cyperus*	24	35	*Indigofera*	6
2	*Crotalaria*	22	36	*Vigna*	6
3	*Ipomoea*	17	37	*Leucas*	6
4	*Impatiens*	15	38	*Hibiscus*	6
5	*Ficus*	14	39	*Dendrobium*	6
6	*Strobilanthes*	13	40	*Piper*	6
7	*Solanum*	12	41	*Chrysopogon*	6
8	*Murdannia*	11	42	*Ischaemum*	6
9	*Phyllanthus*	11	43	*Panicum*	6
10	*Cyanotis*	9	44	*Tripogon*	6
11	*Litsea*	9	45	*Pouzolzia*	6
12	*Syzygium*	9	46	*Andrographis*	5
13	*Eragrostis*	9	47	*Justicia*	5
14	*Fimbristylis*	8	48	*Thunbergia*	5
15	*Eriocaulon*	8	49	*Holigarna*	5
16	*Euphorbia*	8	50	*Anaphalis*	5
17	*Psychotria*	8	51	*Cleome*	5
18	*Curcuma*	8	52	*Dioscorea*	5
19	*Eugenia*	8	53	*Elaeocarpus*	5
20	*Utricularia*	7	54	*Croton*	5
21	*Grewia*	7	55	*Cajanus*	5
22	*Sida*	7	56	*Senna*	5
23	*Memecylon*	7	57	*Smithia*	5
24	*Osbeckia*	7	58	*Canscora*	5
25	*Jasminum*	7	59	*Pogostemon*	5
26	*Habenaria*	7	60	*Bulbophyllum*	5
27	*Oberonia*	7	61	*Peperomia*	5
28	*Ixora*	7	62	*Arundinella*	5
29	*Zingiber*	7	63	*Isachne*	5
30	*Blumea*	6	64	*Neanotis*	5
31	*Terminalia*	6	65	*Spermacoce*	5
32	*Commelina*	6	66	*Cissus*	5
33	*Mallotus*	6	67	*Digitaria*	5
34	*Alysicarpus*	6			

IV.12.1.1. *Cyperus* L.

Cyperus is the most speciose genera in Nelliyampathy hills with 24 species (Plate 91; Fig.a-d). The representatives of the genus *Cyperus* prefer marshy or wetland areas to survive. *Cyperus malabaricus* (C.B.Clarke) T. Cooke is the only endemic taxon recorded for the genus. Among the 24 taxa collected, 20 are coming under the Least Concern category. Some of the members prefer a lower altitude of 200m while some of them survive at higher altitudes of 1500m. *Cyperus albescens* (Steud.) Larridon & Govaerts, *Cyperus flavidus* Retz., *Cyperus puncticulatus* Vahl. and *Cyperus polystachyos* Rottb., are typical grassland elements documented from the study area.

IV.12.1.2. *Crotalaria* L.

The second most speciose genera is *Crotalaria* with 22 species (Plate 91, Fig.e-h; Plate 92, Fig. a-d). Among the taxa recorded, nine of them are endemics, 10 are typical grassland elements, two are degraded forest elements and others are deciduous elements. Twenty species prefer higher altitudes of 800 m or above and only two are seen at a much lower altitude of 600 m. Twelve species are herbaceous ones and the remaining are shrubs. *Crotalaria priestleyoides* Benth. is a recollection after a century from the Kerala part of southern Western Ghats. *Crotalaria longipes* Wight & Arn. collected from Nelliyampathy hills, showed higher morphotypic variations from the type specimens described.

IV.12.1.3. *Ipomoea* L.

The genus is represented by seventeen species and the members include moist deciduous elements, dry deciduous elements, grassland elements and degraded forest elements (Plate 92, Fig. e-h). *Ipomoea aquatica* Forssk. is an aquatic species, while others are terrestrial ones. The species of this genus prefers a wide range of altitude from 200m to 1500m. *Ipomoea barlerioides* (Choisy) C.B.Clarke is the only endemic species of the genus which prefers a higher altitude of above 1200 m. *Ipomoea carnea* subsp. *fistulosa* (Mart. ex Choisy) D.F.Austin is the only shrub among them and the remaining ones are climbers.

IV.12.1.4. *Impatiens* L.

This genus is represented by 15 species which includes 12 endemic ones (Plate 93, Fig.a-d). Except for the two deciduous elements, remaining taxa are either evergreen, shola or grassland representatives. *Impatiens parasitica* Bedd. is the only epiphytic taxon recorded and they prefer an altitude of 600 m to 1500 m. Most of the members show chasmophytic adaptations. *Impatiens scapiflora* Wight & Arn. and *Impatiens minae* Ratheesh, Anil Kumar & Sivad. are accualescent herbs seen growing in the vertical rocky cliffs.

IV.12.1.5. *Ficus* L.

The genus *Ficus* comprises 14 species and most of them prefer deciduous ecosystems while others are semi-evergreen or otherwise planted. *Ficus dalhousieae* Miq. and *Ficus beddomei* King are the endemic taxa recorded. The altitudinal preference of the members includes 300 to 1200 m. *Ficus benghalensis* L., *Ficus microcarpa* L.f., *Ficus racemosa* L. and *Ficus religiosa* L. are important medicinal plants.

IV.12.1.6. *Strobilanthes* Blume

This genus is represented by 13 taxa including 10 endemics (Plate 93, Fig.e-h). *Strobilanthes ciliata* Nees. is a Vulnerable taxon recorded from the study area. *Strobilanthes crossandra* (Steud.) J.R.I.Wood, *Strobilanthes barbata* Nees, and *Strobilanthes heyneana* Nees prefers a lower altitude of below 600 m, while others prefer higher altitudes. *Strobilanthes crossandra* (Steud.) J.R.I.Wood is the only herbaceous, deciduous element in the genus, the remaining are shrubs inhabiting semi-evergreen, evergreen, shola or grassland habitats.

IV.12.1.7. *Solanum* L.

The taxon is represented by 12 species (Plate 94, Fig.a-d) and *Solanum seaforthianum* Andrews is the only climber in the study area, whereas the rest are either herbs or shrubs. *Solanum multiflorum* Roth. is endemic as well as a shola representative in the genus. Majority of the species in the genus are degraded forest elements. The range of altitude varies from 200 m to 1200 m.

IV.12.1.8. *Murdannia* Royle

The genus *Murdannia* is represented by eleven species in Nelliyampathy and three among them are endemic ones (Plate 94, Fig. e-h). The habitat preferences vary from moist deciduous to semi-evergreen, evergreen and grasslands. The altitudinal range varies from 200 m to 1100 m. *Murdannia crocea* subsp. *ochracea* (Dalzell) Faden, *Murdannia versicolor* G.Brückn. and *Murdannia zeylanica* G.Brückn. are the endemic taxa recorded from the study location.

IV.12.1.9. *Phyllanthus* L.

The habit of the species varies from herbs to shrubs and trees, and the genus is represented by eleven species. The habitat preference also shows a wide range of variation from dry deciduous to moist deciduous, semi-evergreen, evergreen and shola forests. *Phyllanthus assamicus* Müll.Arg., *Phyllanthus bourdillonii* (Gamble) Chakrab. & N. P. Balakr. and *Phyllanthus hohenackeri* Müll.Arg. are the endemic taxa recorded. The altitude preferences of the taxon vary from 200 to 1500 m.

IV.12.2. Intraspecific variations

Variations are the driving force for evolution in species. The effect of Palghat gap features, altitudinal differences between the unique habitats, limited soil nutrients and other climatic factors highly influence the montane vegetation in Nelliyampathy forests and that might have resulted in the formation of morpho-ecotypes in course of time. The analysis of the vegetation revealed that there exist many taxa with variations in morphological traits and in many of them there exists a continuum in these variations.

IV.12.2.1. *Crotalaria longipes* Wight & Arn.

The comparison of the specimens of this taxon collected from Nelliyampathy hills with the available herbarium specimens, protologue and other literature showed variations including persistent bracts and bracteoles along with sessile tomentose pods. The protologue states the taxon as having deciduous bracts and bracteoles with glabrous pods with stalks as long as the calyx segments. The tomentose nature of the pod and persistence of bracts and bracteoles can be accounted as additional protective structures that might have been developed as adaptive traits for the survival of the taxon in the high altitudinal habitats (Plate 95).

IV.12.2.2. *Richardia scabra* L.

The specimens collected from different locations of the study area showed marked variations from the type specimen. This taxon shows a wide range of variations with respect to number of petals and stamens, shape of leaves, nature of inflorescence, leaf apex and lateral nerves (Plate 96, Fig. a-d.). Table 28. depicts the intra-specific variations recorded in different accessions of *Richardia scabra* L.

Table 28. Intra-specific variation in *Richardia scabra* L.

Characters	Kaikatty (*Jabeena & Maya 080*) & Seetharkundu *(Jabeena & Maya 379)*	Chandramala (*Jabeena & Maya 2815*)	Pullukaadu (*Jabeena & Maya 2952)*	Cheriya manpara (*Jabeena & Maya 4054)*
Petals	five	six	Four	six
Stamens	five	six	Four	six
Leaf lamina	broadly ovate	narrowly oblong	lanceolate	broadly ovate
Leaf apex	acute	slightly acuminate	slightly acuminate	acute
Lateral veins	clearly visible	indistinct	visible	clearly visible
Inflorescence	dense (about 30-flowered)	less crowded (upto 6-flowered)	less crowded (upto 8-flowered)	less crowded (upto 6-flowered)

IV.12.2.3. *Sonerila veldkampiana* Ratheesh, Mini & Sivad.

The specimens of this taxon collected from Pothundy-Kaikatty road, Karassuri and Chakkaliyampara showed continuous variation in vegetative and floral traits. Even the single population also showed variations between individuals. The species shows variation in terms of leaf shape, leaf apex, number of peduncles per plant, number of flowers per inflorescence and flower colour (Plate 96, Fig. e-h.). Table 29. summarizes the intraspecific variation in *Sonerila veldkampiana* Ratheesh, Mini & Sivad. accessions recorded from Nelliyampathy hills.

Table 29. Intra-specific variation in *Sonerila veldkampiana* Ratheesh, Mini & Sivad.

Character	Pothundy-Kaikatty (*Jabeena & Maya 0326)*	Pothundy-Kaikatty (*Jabeena & Maya 3305)* & Karassuri (*Jabeena & Maya 2454)*	Chakkaliyampara (*Jabeena & Maya 2109)*
Leaf lamina	narrowly ovate	broadly ovate	narrowly ovate
Leaf apex	acute	Obtuse	acute
No.of peduncle per plant	one	One	two
Inflorescence	less dense, upto 3-flowered	dense, upto 9-flowered	dense, upto 12-flowered
Flower colour	Pink	pink, white	pink

IV.12.2.4. *Cyanotis cristata* (L.) D. Don.

Variations in this taxon were recorded in the number and nature of bracts, nature of stem and leaves (Plate 97, Fig. a-d.). Table 30. depicts the intra-specific variation in different accessions of *Cyanotis cristata* (L.) D. Don.

Table 30. Intra-specific variation in *Cyanotis cristata* (L.) D.Don.

Character	Manpara (*Jabeena & Maya 179)*	Chakkaliyampara (*Jabeena & Maya 2134)*	Chandramala (*Jabeena & Maya 2788)*	Brookeland (*Jabeena & Maya 4607)*
Stem	green, glabrous	reddish, pubescent	red, pubescent	green, pubescent
Leaf	green, ovate, pubescent	green, ovate, glabrous	cream coloured, oblong, glabrous	green, ovate, pubescent
Inflorescence	green, laxly arranged upto 4 pairs of bracts	green, laxly arranged upto 2 pairs of bracts	red, densely arranged, upto 8 pairs of bracts	green, laxly arranged upto 2 pairs of bracts

IV.12.2.5. *Begonia dipetala* Graham

This taxon collected from Chandramala, Minnampara, Keshavanpara and Brookeland showed a wide range of variations with respect to nature of leaves, inflorescence and the size of the plant. Plant height varies from 10 cm when it grows in rock crevices and fissures, and upto 2 m height where there is sufficient soil (Plate 97, Fig. e-h.). Table 31. tabulates the intra-specific variation recorded in *Begonia dipetala* Graham.

Table 31. Intra-specific variation in *Begonia dipetala* Graham

Character	Chandramala (*Jabeena & Maya 2741)*	Minnampara (*Jabeena & Maya 3220)*	Kesavan Para (*Jabeena & Maya 0735)*	Brookeland (*Jabeena & Maya 4613)*
Leaf	green with white spots, glabrous	green, densely pubescent	reddish green, glabrous	green, pubescent
Inflorescence	lax, 3-5-flowered, peduncle glabrous	dense, 12-15 flowered, peduncle pubescent	dense, 15-18 flowered, peduncle glabrous	lax, 3-5-flowered, peduncle glabrous

IV.12.2.6. *Chassalia curviflora* var. *ophioxyloides* (Wall.) Deb & B.Krishna

The taxon collected from Pothundy-Kaikatty road, Mattumala, Kurissumala and Manpara recorded variations in leaf shape, leaf apex, corolla lobes and coloration in corolla throat (Plate 98, Fig. a-d.). Table 32. depicts the intra-specific variation in *Chassalia curviflora* var. *ophioxyloides* (Wall.) Deb & B.Krishna.

Table 32. Intra-specific variation in *Chassalia curviflora* var. *ophioxyloides* (Wall.) Deb & B. Krishna

Character	Pothundy-Kaikatty road (*Jabeena & Maya 3095)*	Mattumala (*Jabeena & Maya 1898)*	Kurissumala (*Jabeena & Maya 2000)*	Manpara (*Jabeena & Maya 0244)*
Leaf shape	elliptic	Elliptic	obovate	obovate
Leaf apex	acuminate	acuminate	cuspidate	cuspidate
Corolla lobes	blunt	Pointed	Blunt	pointed
Corolla throat	yellow coloured	white coloured	yellow coloured	yellow coloured

IV.12.2.7. *Hibiscus lobatus* (Murray) Kuntze

The taxon collected from Pothumala, Chandramala, Pulayampara and Pullukaadu showed marked variations in terms of aestivation of petals, lobing of leaves, hairiness in the petal and the staminal tube (Plate 98, Fig. e-h). Table 33. summarizes the intra-specific variation recorded in *Hibiscus lobatus* (Murray) Kuntze.

Table 33. Intra-specific variation in *Hibiscus lobatus* (Murray) Kuntze

Character	Pothumala (*Jabeena & Maya 3095)*	Chandramala (*Jabeena & Maya 2755)*	Pulayampara (*Jabeena & Maya 4406)*	Pullukaadu (*Jabeena & Maya 2961)*
Leaf	entire	Entire	lobed	lobed
Aestivation of corolla lobes	imbricate	twisted	twisted	imbricate
Hairiness of petals	glabrous	glabrous	glabrous	pubescent
Staminal tube	elongated	elongated	elongated	compressed

IV.12.2.8. *Canscora perfoliata* Lam.

The specimens collected from Pothumala, Pullukaadu and Kurissumala showed variation in the colouration of petals and sepals and the positioning of the larger anther. The specimens from Pothumala (*Jabeena & Maya 652*) shows flesh-coloured calyx, an orange coloured patch in the corolla throat and slightly protruding larger anther, while the specimens from Kurissumala (*Jabeena & Maya 2003*) showed all these colouration in petals and sepals, but the larger anther is projected outwards. The specimen from Pullukaadu (*Jabeena & Maya 2964*) has green coloured calyx, green colour patch in the corolla throat and included anthers (Plate 99, Fig. a-c).

IV.12.2.9. *Curculigo orchioides* Gaertn.

This taxon collected from various locations of Nelliyampathy showed variations in size, hairiness of leaves and shape and hairiness of petals (Plate 99, Fig. d-h). Table 34. tabulates the intra-specific variation in *Curculigo orchioides* Gaertn.

Table 34. Intra-specific variation in *Curculigo orchioides* Gaertn.

Character	Mattumala (*Jabeena & Maya 2509)*	Kurissumala (*Jabeena & Maya 2034)* & Seetharkundu (*Jabeena & Maya 466)*	Pothumala (*Jabeena & Maya 2541)* & Karassuri (*Jabeena & Maya 2376)*
Shape of petals	oblong	broadly ovate	narrowly ovate
Hairiness of petals	glabrous	Hairy	hairy
Size and shape of leaf	long, narrow lamina	short, broad lamina	long, narrow lamina
Hairiness of leaf	slightly pubescent	densely pubescent	slightly pubescent

IV.12.2.10. *Cyanotis burmannia* Wight

Different accessions of this taxon showed variations in the nature of the stem and leaves. Specimens collected from Karassuri (*Jabeena & Maya 2385*) consists of reddish brown and thick fleshy leaves along with reddish, slightly pubescent stems, while specimens from Pothumala (*Jabeena & Maya 2521*) consist of greenish leaves with densely villous greenish stem (Plate 100, Fig. a-b).

IV.12.2.11. *Rungia pectinata* Nees

This small herbaceous plant collected from Vazhakkundu (*Jabeena & Maya 1726*) showed reddish stem and oblong reddish leaves, while the specimens collected from Pullukaadu (*Jabeena & Maya 2937*) showed greenish stem and elliptic-ovate, green leaves (Plate 100, Fig. c-d).

IV.12.2.12. *Strobilanthes heyneana* Nees

The taxon collected from soil-rich areas of Seetharkundu (*Jabeena & Maya 391*) shows an erect habit with broader, large leaves while the specimens collected from rocky areas (Pothumala, *Jabeena & Maya 624;* Pothundy-Kaikatty, *Jabeena & Maya 694*) show a creeping habit with narrow, reduced leaves (Plate 100, Fig. e-f).

IV.12.2.13. *Grona triflora* (L.) H. Ohashi & K. Ohashi

The specimens collected from Oothukkuzhi (*Jabeena & Maya 3115*) consists of white flowers and mucronate leaf apex in contrast to the common purple coloured flowers and emarginate leaf apex. (Plate 100, Fig. g-h).

IV.12.2.14. *Impatiens sasidharanii* K. M. P. Kumar, Omalsree, Hareesh & V. B. Sreek.

This taxon commonly occurring in the grasslands of Nelliyampathy shows a wide range of flower colouration from white to pink, even in a single population. The specimens collected from Karassuri (*Jabeena & Maya 2438*) consist of purple-coloured streaks in the petals. Colouration of the petals in the taxon shows a wide range of variation, it varies from white to pink. The purple-coloured streaks on wing petals are present in some specimens while absent in some (Plate 101, Fig. a-e).

IV.12.2.15. *Eranthemum capense* L.

The specimens collected from Pothundy-Kaikatty roadsides consist of paniculate inflorescence with about 40 flowers, while the specimens collected from Kurissumala consist of reduced inflorescence of 4-5 flowers (Plate 101, Fig. f-h).

IV.12.2.16. *Curcuma aurantiaca* Zijp.

The specimens collected from Pothumala show reddish colour bracts while the specimens from Kalchady consist of greenish bracts and specimens from Chakkaliyampara consist of white bracts (Plate 102, Fig. a-d).

IV.12.2.17. *Bidens pilosa* L.

The species showed variation in length and shape of leaves, colour of ray florets and length of the peduncle. The specimens from Seetharkundu consists of broadly elliptic leaves with subsessile inflorescence and white ray florets while the specimens from Karassuri and Manpara consists of narrow linear-lanceolate leaves with long peduncle and white ray florets. The specimens from Valuvaachi shows yellow ray florets (Plate 102, Fig. e-h).

IV.12.2.18. *Parasopubia delphiniifolia* (L.) H.-P.Hofm. & Eb.Fisch.

The species showed variation in the colour of corolla, blotches in the corolla throat and the lobing of leaves. The specimens collected from Govindamala consists of pure white corolla without any blotches and deeply lobed, congested leaves while the specimens in other locations are having pink flower with purple colour blotches in the corolla throat and simple, laxly arranged leaves (Plate 103, Fig. a-b).

IV.12.2.19. *Euphorbia hirta* L.

The taxon collected from soil-less, rocky patches of Govindamala is having reddish coloured stem and leaves while others are having normal green leaves and stem (Plate 103, Fig. c-d).

IV.12.3. Proposal for reinstatement of taxon

IV.12.3.1. *Pachystoma hirsuta* (Joseph & Vajravelu) C.S.Kumar & Manilal from ***Pachystoma pubescens*** Blume

The taxon *Pachystoma hirsuta* was published by C. Sathish Kumar and K.S. Manilal in Kew Bulletin in 1987. Later it was synonymized under *Pachystoma pubescens* Blume. But the specimens collected from Nelliyampathy showed marked variation between these two species. Hence *Pachystoma hirsuta* (Joseph & Vajravelu) C. S. Kumar & Manilal can be reinstated from *Pachystoma pubescens* Blume as a species. Table 35. summarizes the differences between these two species (Plate 103, Fig. e-f).

Table 35. Taxonomic delineation of *Pachystoma hirsuta* (Joseph & Vajravelu) C. S. Kumar & Manilal from *Pachystoma pubescens* Blume

Character	*Pachystoma hirsuta*	*Pachystoma pubescens*
Tuber	Discoid	v-shaped
Leaves	upto 10 cm long	upto 20 cm long
Scape	10-15 cm long	25-40 cm long
Bracts	1-3, each subtending a flower, shorter than or equal to pedicels	8-15, each subtending a flower, twice as long as pedicels
Flower colour	bright yellow	pink-purple
Petals	Pubescent	glabrous

IV.12.3.2. *Rhynchoglossum scabrum* Dalzell from ***Rhynchoglossum notonianum*** (Wall.) B.L.Burtt.

The taxon *Rhynchoglossum scabrum* was proposed by Dalzell in Hooker's Journal of Botany and Kew Garden Miscellany in 1850. But subsequent authors considered the species to be a synonym of *Rhynchoglossum notonianum* (Wall.) B. L. Burtt. But on critical analysis of the specimens collected from Nelliyampathy, there are ample differences between the two species and *Rhynchoglossum scabrum* Dalzell can be reinstated as a species. Table 36. depicts the differentiation of *Rhynchoglossum scabrum* and *Rhynchoglossum notonianum* (Plate 103, Fig. g-h).

Table 36. Taxonomic delineation of *Rhynchoglossum scabrum* Dalzell from *Rhynchoglossum notonianum* (Wall.) B. L. Burtt.

Character	*Rhynchoglossum scabrum* Dalzell	*Rhynchoglossum notonianum* (Wall.) B. L. Burtt.
Leaf apex	acute	acuminate
Inflorescence	lax, 5-6-flowered	condensed, 10-15-flowered
Bracts	oblique, filiform	straight, linear
Pedicels	shorter than the subtending bract	longer than the subtending bract
Calyx lobes	pubescent, slightly shorter than the tube	glabrous, slightly longer than the tube
Upper lip of corolla	Entire	bifid
Corolla throat	without a yellow blotch	with a yellow blotch
Anthers	1-celled, all cohering	2-celled, cohering in pairs
Seeds	narrowly ovate-oblong	ellipsoid

IV.13. Floristic additions, extended distribution and taxonomic novelties

Objectives addressed

- Provide an inventory on novel floristic elements in flora of Palakkad district and in Kerala
- Documentation of plant species with extended distribution

IV.13.1. Taxonomic novelties

The taxonomic inventory in Nelliyampathy hills could document seven novel taxa. These belong to the genera, *Glycosmis*, *Tripogon*, *Ischaemum*, *Eugenia*, *Peucedanum*, *Fimbistylis* and *Microstegium*.

IV.13.1.1. *Glycosmis nelliyampathiensis* Jabeena & Maya *sp. nov.* (Plate 104-105).

Type:—INDIA: Kerala: Palakkad district, Nelliyampathy hills, Kurissumala, 10º31'28.9"N, 76º40'04.6"E, 950 m, 22 June 2019, *Jabeena M.K. & Maya C. Nair* 2062 (Holotype: MH; Isotype: CALI, LWG)

Diagnosis:—*Glycosmis nelliyampathiensis* Jabeena & Maya *sp. nov.* morphologically shows similarities with its allied species *G. angustifolia* but differs from the latter by its unifoliolate leaves (vs. pinnate leaves), elliptic leaflets (vs. lanceolate), 1–4 flowered monochasial cymose inflorescence (vs. compound racemose), hairiness at apex of corolla lobes (vs. glabrous), sub-capitate stigma (vs. obtuse) and ellipsoid-oblong fruit (vs. globose or sub-globose).

Description:—Small tree up to 4 m high. Stem terete, younger parts minutely hairy. Leaves born on an articulated petiole, unifoliolate (rarely 2-3 foliolate), up to 5-leaflets in juvenile shoots; leaflets alternate; petiolule 0.3–0.5 cm, grooved above; lamina 7–9 × 3–4 cm, elliptic, acute at base, entire at margin, obtuse at apex, minutely hairy beneath, glabrous above, pellucid gland dotted, midrib prominent, lateral veins obscure. Flowers in axillary 1–4 flowered monochasial cyme, actinomorphic, 0.7–0.8 × 0.4–0.5 cm, bisexual, pentamerous, fragrant. Sepals 5, green, gamosepalous, ca. 0.1 cm long, ovate, acute at apex, outer surface with rusty puberulent hairs, imbricate. Petals 5, 0.5 × 0.2 cm, ovate, obtuse at apex with hyaline hairs, white, imbricate. Stamens 10, all fertile, outer longer 0.3–0.4 × 0.08–0.12 cm, inner shorter 0.15–0.23 × 0.08–0.12 cm; anthers oblong, yellow, adnate, with an apical gland; filaments broad, white, glabrous. Ovary 3-loculed, seated on a swollen gynophore broader than the ovary, ca. 2×1.5 mm, ovoid, gland-dotted, glabrous; style thick, small; stigma sub-capitate; ovule 1 in each locule, pendulous. Fruit a berry with a remnant persistent style, 1-seeded, ca. 1 × 0.7 cm, ellipsoid-oblong, gland dotted, creamy turning pink, glabrous. Seed ca. 0.8 × 0.5 cm, glabrous.

Phenology:—Flowering and fruiting during June–September.

Etymology:—The specific epithet is named after the type locality, Nelliyampathy hill ranges in Palakkad District, Kerala, India.

Distribution and ecology:—Specimens of the new species were collected from four different locations of Nelliyampathy hills of Kerala viz., Kesavan Para, Kurissumala, Mattumala and Chakkaliyampara at an elevation of 950–1100 m. The new species is found growing in semi-evergreen forests along with *Clausena indica* (Dalzell) Oliver and *Aglaia edulis* (Roxburgh) Wallich, and each population consists of 5–8 mature individuals. Currently, the taxon is known only from the hill ranges of Nelliyampathy and exhaustive explorations in Western Ghats are inevitable to confirm the distribution and status assignment.

Additional specimens examined:—INDIA. Kerala: Palakkad District, Nelliyampathy hills, Mattumala, 10˚32′31.8″ N, 76˚42′05.2″ E, 951 m, 15 May 2019, Jabeena M.K. & Maya C. Nair 1794 (CALI); Chakkaliyampara, 10˚31′38.5″ N, 76˚40′19.4″ E, 1033 m, 06 July 2019, Jabeena M.K. & Maya C. Nair 2125 (CALI); 26 August 2019, Jabeena M.K. & Maya C. Nair 2339 (MH); Kesavan Para, 10˚31′31″ N, 76˚39′47″ E, 960 m, 20 August 2020, Jabeena M.K. & Maya C. Nair 4160 (LWG).

Comparison of *Glycosmis nelliyampathiensis sp. nov.* with *G. angustifolia*:— *Glycosmis nelliyampathiensis* Jabeena & Maya *sp. nov*. morphologically shows similarities with its allied species *G. angustifolia* but differs from the latter by its unifoliolate leaves (vs. pinnate leaves), elliptic leaflets (vs. lanceolate), 1–4 flowered monochasial cymose inflorescence (vs. compound racemose), hairiness at apex of corolla lobes (vs. glabrous), sub-capitate stigma (vs. obtuse) and ellipsoid-oblong fruit (vs. globose or sub-globose). Table 37. provides the taxonomic delineation of *Glycosmis nelliyampathiensis sp. nov.* from *G. angustifolia*.

Table 37. Taxonomic delineation of *Glycosmis nelliyampathiensis* from *G. angustifolia*

Characters	*Glycosmis nelliyampathiensis sp. nov.*	*G. angustifolia*
Habit	small tree up to 4 m tall	shrub, 2–3 m tall
Leaves	unifoliolate (rarely 2–3 foliolate). In juvenile stage, leaflets upto 5, alternate	leaves pinnate, leaflets 2–5, alternate or opposite
Leaf Lamina	elliptic, obtuse at apex	narrowly lanceolate, obtusely acuminate at apex
Inflorescence	1–4 flowered monochasial cyme	15-20 flowered short compound raceme
Petal	obtuse with hairy apex	obtusely acuminate with glabrous apex
Stigma	sub-capitate	obtuse
Fruit	ellipsoid-oblong	globose or sub-globose

IV.13.1.2. *Tripogon sp.nov.* (Plate 106-107) - [Communicated and under review 2021]

Description:—Caespitose perennials. Culms terete, erect; nodes glabrous. Leaf blades flat, sparsely villous on both sides; ligules membraneous, eciliate. Inflorescence a solitary terminal spiciform raceme; peduncle glabrous; spikelets 4–7-flowered; callus bearded. Lower glume asymmetrical, broadened on one side, 1-veined, acuminate to mcronulate at apex. Upper glume symmetrical, 1-veined, 1-awned. Lemma 3-veined, 3-lobed at apex, without lobes between the median and lateral awns, the mid-lobe acute at apex or rarely with a minute notch in the lowermost lemma, 3-awned; awns scabridulose; central awn a little longer or about equalling with its lemma; lateral awns about the half the length of median awn. Palea notched at apex, hyaline, 2-veined, 2-keeled; keels minutely winged. Lodicules 2, glabrous. Stamens 3; anthers oblong; filaments glabrous. Ovary glabrous; styles hyaline; stigma feathery.

IV.13.1.3. *Ischaemum sp. nov.* (Plate 108-109) - [Communicated and under review 2021]

Description:— Annuals. Culms decumbent; nodes sparsely villous. Leaf sheath bulbous based and hairy; ligule keeled on both sides, bulbous based and hairy abaxially. Inflorescence terminal, long exerted; racemes two**,** paired, sparsely hairy; peduncle prominently inflated towards apex and bulbous pilose; Sessile spikelet awned; callus inflated, hairy. Lower glume, generally smooth without nodules or rarely with 3–4 interconnecting side nodules below the middle. Upper glume keeled on the back with scabrous keel, 7-nerved. Lower florets male and upper florets bisexual. Lower lemma hyaline, 3-nerved, glabrous. Lower palea 2-keeled, 2-nerved, glabrous. Upper lemma cleft upto two-third, 3-veined and awned from the sinus; Upper palea 2-veined. Pedicellate spikelet shortly awned or awn less; pedicel trigonous. Lower glume non-nodulated, broadly winged on one margin and narrowly winged on the other margin towards apex or wingless, apex shortly clefted, 9–11-nerved. Upper glume keeled along the upper half and rounded along the lower half, 5–7-nerved. Lower florets male and upper florets bisexual. Lower lemma 3-nerved, margins ciliate towards upper half. Lower palea hyaline, 2-keeled, 2-nerved. Upper lemma deeply cleft to one third below at apex with obtuse to acute lobes, 3-veined and awned from the sinus; Upper palea 2-nerved, 2-keeled. Lodicules 2. Stamens 3. Ovary glabrous; stigma feathery. Caryopsis oblong-elliptic.

IV.13.1.4. *Eugenia sp. nov.* (Plate 110-111) - [Communicated and under review 2021]

Description:— Shrub. Branches terete, young parts brown pubescent, glabrous when mature. Leaves petiolate; petiole pubescent; lamina entire at margin; lateral veins parallel, obscure, 10–12 pairs; intra-marginal nerve 1-tiered. Inflorescence axillary solitary or paired,

sometimes clustered at the tip of branches. Flowers white, tinged with red at apex, bisexual; pedicels stout, pubescent. Bracts 2, equal, fulvous tomentose. Bracteoles 2, equal, fulvous tomentose. Calyx lobes 4, unequal, fulvous tomentose outside, glabrous inside, non-persistent; Petals 4, white with red tinge at apex, orbicular, ciliate on margin, reflexed. Stamens many, unequal; anthers dorsifixed. Disc villous. Ovary inferior; hypanthium conical, 2–locular, densely fulvous tomentose; ovules 2 in each locule; style glabrous; stigma simple. Fruit a succulent berry without persistent sepals. Seed one or two.

IV.13.1.5. *Peucedanum sp. nov.* (Plate 112-113) - [Communicated 2021]

Description:— Erect one-stemmed perennial; Stem angled, green with purple ridges; Leaves decompound; leaflets two types, basal leaflets lanceolate, margin deeply serrate, mucronate at apex, sometimes 2-parted; upper leaflets elliptic, serrate, mucronate at apex. Rachis sheathing at base. petiole angled, hirtullous. Inflorescence compound umbel; umbels 3–4 rayed, rays subequal, involucre bracts oblong, purple. Flowers all perfect, pedicellate, subequal; involucel 4, unequal ovate, margin entire, acute or slightly acuminate at apex, persistent, purple, ciliate hairs present on both sides. Sepals united, teeth prominent, margin entire; Petals obovate, acute at apex, strongly inflexed, white; Stamens spreading, filaments white, anthers purple, oblong or sub-globular, dorsally inserted; Stylopodium broadly conical, pinkish; styles slender, deflexed. Mericarp ellipsoid; vittae prominent, 6 commissural and 3–4 lateral.

IV.13.1.6. *Fimbristylis sp. nov.* (Plate 114-115) [Communicated 2021]

Description:—Annual tufted herbs with fibrous roots. Rhizomes absent. Culms erect, glabrous, 5-angled, leaved at base. Leaves about half the length of culm; blades glabrous except scaberulous margins towards apex; ligule none; Corymbs simple to compound, loosely bearing 5–15 spikelets; involucral bracts 3–6, setaceous, shorter than the corymbs, scaberulous, acuminate at apex; rays 2–4 in number, 3–5-angled. Spikelets solitary, ovoid to ellipsoid, acute at apex, terete, contorted, pale yellowish-brown, 8–16-flowered; rachilla broadly winged. Glumes spiral, broadly ovate, keeled on the back, mucronate at apex, 1–nerved, sides pale yellow to pale brown. Stamens 3; anthers oblong, yellow. Ovary sub-globose; style ciliate, bulbously thickened at the base; stigmas 3, shorter than the style, ciliate. Nut sub-globosly obovoid, obtusely trigonous, verruculose, pale brown; epidermal cells transversely oblong.

IV.13.1.7. *Microstegium sp. nov.* (Plate 116-117) [Communicated 2021]

Description:— Perennial herb. Culms rambling; nodes cottony hairy. Leaves shortly petioled. Ligules conspicuous, adpressed hairy towards the base. Leaf sheath hairy throughout. Inflorescence 4–6 sub-digitate raceme; raceme flexuosus, densely ciliate in 2 rows. Sessile spikelet oblong, awned. Callus sparsely villous. Lower glume oblong-lanceolate, margins ciliate towards upper half, chartaceous, 5-nerved, dorsally grooved, margins infolded. Upper glume ovate-lanceolate, apex acute, not awned, strongly keeled on dorsal side, chartaceous, 5-nerved, margins infolded, hyaline, ciliolate; Lower lemma absent. Upper lemma represented by a hyaline base of awn, inconspicuous, linear-oblong, not incised at apex, awn geniculate. Palea absent. Lodicules 2, obovate, faintly 2–3 nerved. Stamens 3; anthers oblong; filaments hyaline, glabrous. Ovary oblong, glabrous; style hyaline, glabrous; stigma feathery. Pedicelled spikelets lanceolate. Pedicels densely hairy. Callus sparsely hairy. Glumes and florets similar to that of sessile flowers.

IV.13.2. Recollection and Floristic addition to Flowering Plants of Kerala

IV.13.2.1. *Crotalaria priestleyoides* Benth. *ex* Baker [Communicated 2021]

This taxon could be relocated from Nelliyampathy hills during the present investigation (Plate 118-119). The only record of this taxon in Kerala was from Idukki (Kumali) district and from a thorough literature survey, it became apparent that this species had not been collected from Kerala since Meebold's collection in 1910. Hence the collection of this taxon from Nelliyampathy became a recollection of this taxon after a century and also there was a need for a second-step lectotypification of this taxon.

Description:—A much branched trailing herb, upto 35 cm long, covered with brown silky hairs. Stem prostrate, terete, slender, densely hairy. Leaves membranous, simple, alternate, sub-sessile (petiole up to 0.1 cm) 0.6–2 × 0.4–0.9 cm, elliptic or obovate, base acute, margin entire, apex round, mucronate, sparsely hairy above, densely hairy below; midrib impressed above and raised below; lateral nerves 4–5 pairs, indistinct. Stipules absent. Inflorescence terminal, 4–8 flowered raceme with a short peduncle which looks like a capitulum; peduncle 1-2(-6) mm long, hairy. Flowers pedicellate, bracteate; pedicel 3–4 mm long, hairy. Bracts 2, equal, 1.3–1.5 × 0.2–0.4 cm, lanceolate, acuminate at apex, hairy outside, glabrous inside, persistent; bracteoles 2, similar to bracts, 0.9–1 cm long. Calyx bilipped, 5-lobed, lobes unequal, free near to the base, 1.5–1.7 × 0.3–0.4 cm, hairy outside, glabrous inside; upper lip 2-lobed, lanceolate, apex acute; lower lip 3-lobed, linear, acuminate at apex. Corolla as long as the calyx, yellow; standard 0.9–1.2 × 0.9–1.0 cm, obovate, glabrous except few hairs on

the back; wing petals 0.7–0.9 × 0.2–0.3 cm, oblong, glabrous, keel 0.9–1.0 × ca. 0.5 cm, beak of keel spirally twisted. Staminal sheath 0.6 cm long; filament glabrous; anthers dimorphic (5+5), 5 large, linear, ca. 0.15 cm, 5 small, globose, ca. 0.025 cm long. Ovary 0.25 cm long, ovoid, glabrous; style ca. 0.6 cm long, hairy towards the apex; stigma blunt. Pods sessile, included in the calyx, 1.2–1.4 × 0.6–0.7 cm, oblong, tip hooked, blackish brown, glabrous. Seeds 12–15, ca. 0. 25 × ca. 0.25 cm, reniform, brown, smooth, polished.

Phenology:— October to December.

Habitat:— The species is found among exposed grasslands above at an altitude of 1300 m along with other legumes such as *Crotalaria nana* Burm. f. (1768: 48), *C. multiflora* Benth. (1843: 478) and *Flemingia strobilifera* (Linnaeus 1753: 746) W. T. Aiton (1812: 350) etc.

Distribution:— The plant is native and endemic to Peninsular India with distribution in the states of Kerala, Tamil Nadu, Karnataka and Maharashtra (Ansari 2008).

Nomenclatural Notes:— The name *Crotalaria priestleyoides* was first proposed by Bentham (1866: 214) in Beddomes's publication '*Transactions of the Linnaean Society*'. But the name is considered as invalid because of the lack of collection details and later the name is validated by Baker (1879: 74) in Hooker's '*Flora of British India'*. In the protologue, Baker cited the collection as '*Concan, Law, Stocks; Anamallays, Beddome*'. They did not specify the herbarium/herbaria where the collections are preserved. While revising the genus *Crotalaria* in India, Ansari (2008: 129) designate a lectotype for the name as "Hab. Cocan & C., *Stocks* s.n. (CAL 103418!)". However, Ansari (2008: 74) inadvertently lecto typified the name with the CAL specimen. He did not provide or discussed any data on the remaining syntypes or isolectotypes. During the study, we could trace out four multiple sheets of these heterogenous collection housed at various herbaria viz. CAL (Stock; CAL 103418), K (Stock; K000591060 and Law & Stock; K000591060) and P (Stock; P02750840) herbaria respectively, which can be considered as syntypes following Art. 40, Note 1 (McNeill *et al.* 2014, Turland *et al.* 2018). Efforts to trace out Beddome's Collection from different herbaria (K, P, MH, CAL, E) were in vain. So, Ansari's lectotypification should be considered as first-step Lectotypification (Art. 9.17: Turland *et al.* 2018). Hence, we have designated the specimen K000591060 consists of four fragments, both with reproductive parts as the second-step lectotype following the Art. 9.17 (Turland *et al.* 2018).

Specimens examined:—INDIA**. Kerala:** Palakkad district, Nelliyampathy hills, Hill top, 17 August 2014, *K.M. Prabhukumar* 8736 (CMPR); Palakkad district, Nelliyampathy hills, Hill top, 20 January 2018, *Jabeena M. K. & Maya C. Nair* 1110 (GVCH); 01 February 2020, *Jabeena M. K. & Maya C. Nair* 3988 (GVCH).

IV.13.2.3. Floristic additions to Palakkad District (Plate 120-124)

Among the 1529 taxa collected, 588 taxa were found to be an addition to Flora of Palghat (Vajravelu, 1990). The taxa listed as addition to Palakkad District Flora (Vajravelu, 1990) from Nelliyampathy hills are summarized in Annexure XIII.

IV.13.2.4. Extended distribution to Palakkad district (Plate 125-127)

With reference to Sasidharan (2011) and Kumar (2015), the explorations in Nelliyampathy could identify 122 taxa having an extended distribution to Palakkad district. List of taxa are given in Annexure XIV.

IV.14. Analysis of vegetation across Palghat Gap

The species diversity of Nelliyampathy was compared with that of Silent Valley, Attappady and Parambikulam using PAST software. The list of species from Silent Valley (Manilal, 1988), Parambikulam (Sasidharan, 2002) and Attappady (Anil Kumar, 2015) were taken and reconfirmed their status using POWO (2021). These taxa along with the species composition from Nelliyampathy hills were used for analysis using PAST. Analysis of vegetation across the Palghat Gap clearly depicts the effect of Palghat Gap in species distribution. Nelliyampathy and Parambikulam regions on the southern side of Palghat Gap branch out from a common node of the dendrogram while Silent Valley and Attappady regions on the northern side of Palghat Gap shared a different node. The similarity index calculated between the regions is given in Table 38.

Table 38. Similarity index of different forest zones across Palghat Gap

	Nelliyampathy	Silent Valley	Parambikulam	Attappady
Nelliyampathy	1	0.430	0.597	0.561
Silent Valley	0.430	1	0.454	0.459
Parambikulam	0.597	0.454	1	0.593
Attappady	0.561	0.459	0.593	1

The output dendrogram from the PAST software indicates a stronger similarity index between Nelliyampathy and Parambikulam than other two regions (Fig. 14). The high similarity index between Nelliyampathy and Parambikulam may be because of two reasons. First one is that both these regions are the continuous mountain stretches hence dispersal of seeds and distribution of pollinators will be similar in these two regions. Without a geographical barrier, species distribution will be more or less similar. Second reason might be

the 32 Km wide Palghat Gap between these regions, that hinders the species dispersal across the Gap, which in turn leads to maintenance of unique species distribution on both sides of the Gap.

Both Nelliyampathy and Parambikulam regions have more similarity towards Attappady than Silent Valley hills. This may be due to the habitat diversity and similarity between these regions than the Attappady area.

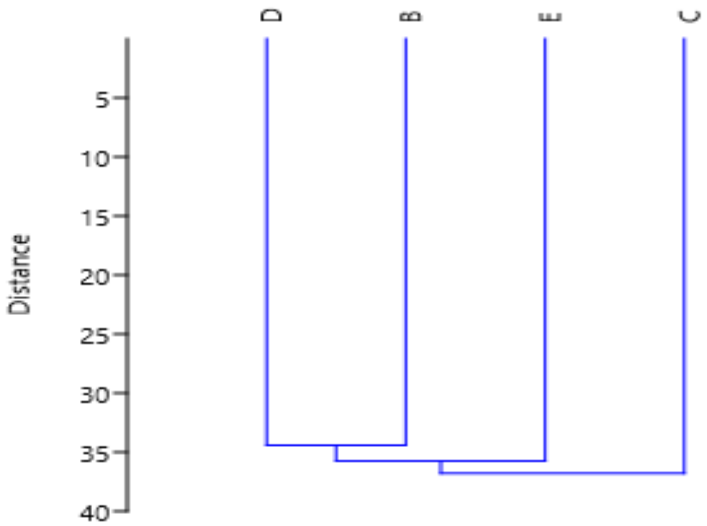


Figure 14. Dendrogram obtained from PAST software

B – Nelliyampathy C – Silent Valley D – Parambikulam E – Attappady

IV.15. Bio-monitoring of angiosperm diversity and shift in vegetation

IV.15.1. Seasonal analysis of floristic wealth

The moist deciduous trees of the study area shed their leaves in the extreme dry seasons of the year. With the onset of monsoon, new leaves start to appear and these trees come alive thereafter. After this period, the forest floor also becomes barren due to the penetration of heavy sunlight by opening up of canopy as a result of leaf shedding in the autumn season. The shed-off leaves help in humus accumulation by rain water in the forthcoming season (Plate 128).

The semi-evergreen forests of Nelliyampathy harbour deciduous elements in between, which shed off their leaves in the hot summer season. With the onset of monsoon, the forest

floor got filled with shade-loving plants. Most of the semi-evergreen patches in Nelliyampathy could be delineated from the evergreen forest areas in these dry seasons only. In the wet seasons, they will be equivalent to the evergreen patches, but during the drier seasons, due to leaf shedding and emptying of forest floor elements, these areas could be easily distinguished from evergreen patches.

Seasonal vegetational fluctuation is comparatively little in the evergreen as well as shola patches. The taller evergreen trees in the upper and middle-storeys protect the forest floor elements from the harsh sunlight and increased temperature regimes in drier seasons. But the frequency of epiphytic elements in these forest patches showed variations in its incidences. The epiphytes are predominant in the monsoon and immediate post-monsoon seasons.

The open montane grasslands showed instability in frequency of floristic elements with the consecutive dry and wet seasons. In the wet seasons, the grasslands are dominated by small herbaceous taxa along with various bryophytes and lichens. By the onset of summer, many of them complete their life cycle and most parts of the grasslands become denuded. Only some grass species and some drought resistant taxa survive these extreme dry climates.

IV.15.2. Seasonally active microhabitats

Many of the microhabitats identified in the study area are seasonal, i.e., they are vigorous with vegetation in specific seasons of the year. With the onset of monsoon, microhabitats like Ephemeral Flush Vegetation, Rock Crevices and Fissures, Exposed Rock Surfaces, Rocky cliffs and Crest edges, Seasonal Drainage Channels and Temporary Pools become active. Wet phase in rocky patches in exposed and forest floors is characterized by some unique associations of ephemeral herbaceous floral elements in specific microhabitats like seasonal pools. The first fall of southwest monsoon during late May or early June stimulates the germination of seeds and the growth of many wetland taxa, particularly herbaceous annuals. Gradual shift in vegetation is evident as water recedes from such habitats and a dry phase is established with the dominance of grasses.

Taxa such as *Ariopsis peltata* Nimmo., *Begonia* sp., *Impatiens sp., Arisaema* sp., *Pellionia heyneana* Wedd., *Cyanotis* sp., *Murdannia sp., Drosera* sp., *Geissaspis* sp., *Sonerila* sp., *Peperomia* sp., *Pilea* sp. etc. are seen in immediate monsoon and post-monsoon seasons. Most of the ground orchids are also seen in this active season. By the constant water availability in the monsoon period and the nutrients accumulated through leaching, the seeds of various angiosperms and spores of bryophytes and pteridophytes germinate and these microhabitats become vibrant with life. With the retreat of monsoon, the climate becomes

drier, and these microhabitats also attain latency and enter into an inactive phase with the dried plant parts as well as the perennating organs. These microhabitats enter into a 'hibernating period' waiting for another monsoon to come.

IV.15.3. Phenological analysis

The graphical representation of the phonological observations resulted in two major peaks in the months of November and March i.e., one major peak in post-monsoon and another much smaller peak in the pre-monsoon season (Figure 15). Critical analysis of the various habit forms of the taxa predominant in each month, gives out some interesting observations.

The herbaceous taxa showed their luxuriant flowering in the monsoon and post-monsoon periods while the arborescent taxa show flowering and fruiting predominantly in the pre-monsoon periods. Climbers and the shrubby taxa have their flowering and fruiting almost constant in all the seasons, without any specificity (Fig. 16).

IV.16. Ethnobotanical studies on the tribal groups

Objectives addressed

- Survey on ethnobotanical knowledgebase of the tribal groups of Nelliyampathy hills
- Utilitarian profiling of non-wood forest products procured by the tribal community inhabiting the study area

IV.16.1. Tribal inhabitants of Nelliyampathy hills

The tribal inhabitants of Nelliyampathy range belong to the Kadar community and they dwell at two settlements viz. Cherunelli and Kalchady (Plate 129). The Kadar group is known as the nomadic food gatherers who believed in supernatural powers of plants and relied on them for various treatments. However, the current generations of them are either labourers at the forest department or at the farms and plantations in Nelliyampathy hills.

IV.16.2. Ethnic knowledgebase on floristic elements

The survey on ethno biologically significant taxa among the tribal community revealed that, a total of 119 angiosperm taxa belonging to 99 genera and 47 families were found to be used by them for various purposes (Plate 130). Fabaceae is the most represented family among them with 13 species, followed by Malvaceae (8 species), Arecaceae and Moraceae (6 species each). Genus *Dioscorea* accounts for the highest number of taxa with 5 species followed by *Ficus*, *Sterculia* and *Piper* with 3 species each. The analysis showed that the dependence of the tribal population is more on the trees for various products. The high percentage of evergreen and semi-evergreen forests in the study area supports the continuous

supply of these commodities throughout the year. The list of ethnobotanically significant taxa recorded along with their local names and their utility is given in Annexure XV.

Among the 119 taxa recorded, 63 were used as food resources. Various plant parts of these taxa are used in preparing dishes viz. rhizomes of *Dioscorea sp.,* and *Colocasia esculenta* (L.) Schott., leaves of *Alternanthera sessilis* (L.) DC., *Celosia argentea* L., *Laportea interrupta* (L.) Chew and *Senna tora* Roxb., fruits of *Baccaurea courtallensis* (Wight) Müll.Arg., *Flacourtia montana* J.Graham, *Ziziphus oenopolia* (L.) Mill. and *Pithecellobium dulce* (Roxb.) Benth., seeds of *Artocarpus heterophyllus* Lam., *Cullenia exarillata* A.Robyns, *Sterculia foetida* L. and *Terminalia bellirica* (Gaertn.) Roxb. They utilize *Piper nigrum* L. and *Zingiber neesanum* (J.Graham) Ramamoorthy as spices for their traditional foods. Apart from these wild species, they used to cultivate some species like *Dioscorea alata* L., *Abelmoschus esculentus* (L.) Moench, *Capsicum frutescens* L., *Psidium guajava* L. etc. Unlike other tribal groups, they do not rear any livestocks. The only pet animal with them is a dog.

Out of the collected taxa, fifty-two species were found to be used in different ailments. The rhizome part of *Acorus calamus* L., is used against diarrhoea, latex of *Alstonia scholaris* (L.) R.Br. is used to treat skin diseases, roots of *Cyclea peltata* (Lam.) Hook. f. & Thomson is used against stomach problems and leaves of *Carica papaya* L. is used immediately after delivery. The tubers of *Diploclisia glaucescens* (Blume) Diels., are used against poisonous bites by insects and they call this taxon as 'Chilanthikkizhangu' which indicates the species is used against insect bites. *Ensete superbum* (Roxb.) Cheesman is used to treat urinary disorders and they call the species 'Kalluvazha' which treats 'Moothrakkallu' or the kidney stone. The plant parts such as root, leaves, rhizome, tuber etc. of other species are used to treat disorders like rheumatism, body pain, wound healing etc.

Apart from medical ailments and food, they use 33 taxa for miscellaneous purposes such as basket making, house construction, bathing, as insect repellents, ornament making etc. Some of the examples include *Luffa aegyptiaca* Mill. used as a bathing brush, *Senegalia rugata* Britton & Rose as soap, *Azadirachta indica* A. Juss. as insect repellent, *Ochlandra travancorica* Gamble used in basket making, *Coix lacryma-jobi* L. to make ornaments etc. They worship some trees as sacred and consider them to have a power to destroy evil spirits and a symbol of purity. Some of the taxa include *Azadirachta indica* A. Juss. (Veppumaram), *Ficus benghalensis* L. (Peraal) and *Alstonia scholaris* (L.) R.Br. (Palamaram).

Among the 119 taxa collected, 15 were found to be endemic and 59 have a phytogeographical affinity towards the Indo-Pacific realm only. This is an indication that the

traditional use of plants by the tribal community is primarily targeted on those plants which are native and have restricted local distribution. The most common taxa used by these two tribal groups is *Bambusa bambos* (L.) Voss. They use the tender shoots and seeds of this taxa as food, the paste made from its culms is used in wound healing and its culms are used to make basketeries and also in house construction.

IV.16.3. Non-Wood Forest Products

The tribal community of Nelliyampathy hills utilize many taxa for their daily livelihood. About 29 taxa were found to be collected from the study area by the tribal people. Table 39. summarizes the taxa from which the tribes collect plant parts for various purposes. These taxa were found to be collected in large quantities and were sold in markets.

Table 39. Non-Wood Forest Products from Nelliyampathy hills

Sl. No.	Binomial name	APG Family	Traditional name
1	*Abutilon indicum* (L.) Sweet.	Malvaceae	Ooram
2	*Anamirta cocculus* (L.) Wight & Arn.	Menispermaceae	Pollakai
3	*Callicarpa tomentosa* (L.) L.	Lamiaceae	Cheru Thekku
4	*Canarium strictum* Roxb.	Burseraceae	Kunkilyam
5	*Cyclea peltata* (Lam.) Hook.f. & Thomson	Menispermaceae	Paadakkizhangu
6	*Cynanchum annularium* (Roxb.) Liede & Khanum.	Apocynaceae	Adapathiyan
7	*Helicteres isora* L.	Malvaceae	Valampiri
8	*Hemidesmus indicus* (L.) R.Br.	Apocynaceae	Nannari
9	*Hydnocarpus pentandrus* (Buch.-Ham.) Oken.	Achariaceae	Marottikkuru
10	*Justicia adhatoda* L.	Acanthaceae	Aadalodakam
11	*Mangifera indica* L.	Anacardiaceae	Moochi
12	*Momordica dioica* Roxb. ex Willd.	Cucurbitaceae	Kattupadavalam
13	*Myristica beddomei* King.	Myristicaceae	Pathiripoovu
14	*Piper longum* L.	Piperaceae	Kattuthippali
15	*Polhillides velutina* (Willd.) H.Ohashi & K.Ohashi.	Fabaceae	Orila
16	*Pseudarthria viscida* (L.) Wight & Arn.	Fabaceae	Moovila
17	*Senegalia caesia* (L.) Maslin, Seigler & Ebinger.	Fabaceae	Incha
18	*Senegalia torta* (Roxb.) Maslin, Seigler & Ebinger.	Fabaceae	Pattinja
19	*Sida acuta* Burm. f.	Malvaceae	Kurunthotti
20	*Sida cordifolia* L.	Malvaceae	Kurunthotti
21	*Sida rhombifolia* L.	Malvaceae	Kurunthotti
22	*Sida rhombifolia* subsp. *alnifolia* (L.) Ugbor.	Malvaceae	Kurunthotti
23	*Solanum violaceum* Ortega.	Solanaceae	Puthirichunda
24	*Stereospermum chelonoides* (L. f.) DC.	Bignoniaceae	Karimkaya
25	*Strobilanthes ciliata* Nees.	Acanthaceae	Karimkurunji
26	*Tetrameles nudiflora* R.Br.	Tetramelaceae	Cheenikka
27	*Tinospora cordifolia* (Willd.) Miers ex Hook. f. & Thomson	Menispermaceae	Chittamrithu
28	*Tragia involucrata* L.	Euphorbiaceae	Kodithoova
29	*Uraria rufescens* Schindl.	Fabaceae	Moovila

IV.17. Geo-Spatial characterization and vegetation mapping

Objectives addressed

- Construction of a location map and study area map of Nelliyampathy hills
- Land Use Land Cover (LULC) classification of Nelliyampathy hills and the vegetation profile
- Analysis of vegetation cover and change within two decades
- Analysis of forest cover across altitudinal gradients
- Analysis of forest cover according to slope of study area
- Normalized Difference Vegetation Index (NDVI) analysis
- Mapping of IUCN red listed taxa and endemic genera from the study area
- Mapping of major flood affected regions in the study areas

IV.17.1. Location map and study area map of Nelliyampathy hills

The study area, Nelliyampathy hills, lies to the southwestern side of the Palghat Gap falls under two different ranges of Nemmara Forest Division viz., Nelliyampathy range and Kollengode range. The entire area lies between 10º20' and 10º48' North latitudes and 76º30' and 76º55' East longitudes.

IV.17.2. Land Use Land Cover (LULC) map of Nelliyampathy hills

LULC classification of the hill tracts were performed for 2 different decades viz., 2000 and 2020. This is to get a general picture of changes in the land use as well as the land cover between these two decades. Eight land cover classes were obtained such as Evergreen/Semi-evergreen forests, Deciduous forests, Grasslands, Plantations, Forest plantations, Water bodies, Built-up lands and Barren lands. The classification map is given in Fig. 17. and Fig. 18., and the details are given in Table 40. along with Fig. 19. and 20.

Table 40. LU/LC classification of Nelliyampathy hills in two different decades

Sl. No.	LULC class	2000	2020
1	Evergreen/ Semi evergreen/ Shola forests	8177.04 ha	8727.29 ha
2	Deciduous forests	4926.15 ha	5065.19 ha
3	Forest plantations	2853.18 ha	2034.71 ha
4	Grasslands	1859.58 ha	2612.96 ha
5	Barren lands	1556.91 ha	839.11 ha
6	Plantations	874.89 ha	1018.25 ha
7	Waterbodies	294.93 ha	254.47 ha
8	Built-up lands	65.7 ha	57.51 ha

IV.17.3. Analysis of Forest cover change within two decades

The major forest types in Nelliyampathy include Evergreen forests, Semi-evergreen forests, Grasslands, Shola forests and Semi-evergreen forests. Since strict demarcation between evergreen and semi-evergreen forests are difficult, these two forest covers were included in the same class. Similarly, the shola forests are nothing but the evergreen patches at high altitudes between the grasslands, the satellite imagery could not differentiate between these two classes also. Hence the evergreen forest cover class included in this study includes Evergreen, Semi-evergreen as well as Shola forests.

Among the various forest cover classes, the Evergreen type forms the dominant vegetation in the hill tracts of Nelliyampathy with about 42.27 percent of total land area. This is followed by deciduous forests (24.55%) and Grasslands (12.69%). Apart from these forest covers in the area, there are many plantations (4.97%) and forest plantations (12.69%) which included the captured plantation areas whose lease periods expired. These forest plantations are often allowed for natural forest regeneration.

The analysis on the forest cover change computed for time periods of 2000 and 2020 clearly depicts the change in each forest cover class between the two decades. The result indicates that there is an increase in the Grassland vegetation in the study area by a percentage of 3.67 and Evergreen Forest cover by a percentage of 2.59. A slight increase in the deciduous forests was also observed by a percentage of 0.65 as well as plantations by 0.73%. On the other hand, a percentage decrease of 3.95 was observed for forest plantations and 3.47% for barren lands. Many forest plantations are now left for forest regeneration and that could be the reason for the decrease in forest plantations and increase in semi-evergreen / evergreen areas. The percentage of forest covers in two different decades is summarized in Table 41. and they are represented as maps in Fig. 21-30.

Type 41. Analysis of forest cover change in two decades

Sl. No.	Type of forest Cover	2000	2020
1	Evergreen/Semi-Evergreen/Shola forests	39.68%	42.27%
2	Deciduous forests	23.9%	24.55%
3	Grasslands	9.02%	12.69%
4	Forest plantations	13.84%	9.89%
5	Plantations	4.24%	4.97%
6	Barren lands	7.55%	4.08%

IV.17.4. Forest cover across altitudinal gradients

An elevation map of the study area was prepared considering five different elevation classes such as below 300m, 300-600m, 600-900m, 900-1200m and above 1200m. About 50% of the study area falls in the 4th zone while 21% falls in the 3rd zone, 11% falls in the Ist zone and 9% each in IInd and Vth zone. The lower two zones are primarily composed of deciduous forests while the upper three zones are predominantly covered with evergreen/semi-evergreen patches. Table 42. indicates the distribution of various forest types in different altitudes and Figure 31. and 32. provides the altitudinal zonation and Digital Elevation Model of the study area respectively.

Table 42. Forest cover within altitudinal gradients

Forest type	Ist Zone (Below 300m)	IInd Zone (300-600m)	IIIrd Zone (600-900m)	IVth Zone (900-1200m)	Vth Zone (Above 1200m)
Evergreen/Semi-evergreen forests	2.01%	8.88%	44.18%	55.67%	50.55%
Deciduous forests	66.96%	76.91%	34.62%	9.45%	7.89%
Grasslands	3.18%	8.31%	12.65%	14.93%	39.70%
Plantations	10.10%	-	0.1%	5.40%	-
Forest plantations	-	-	4.96%	14.2%	0.72%
Barren lands	4.58%	5.87%	3.47%	0.87%	0.12%
Water body	13.14%	-	-	-	-
Built-up lands	-	-	-	0.39%	-

IV.17.5. Slope wise zonation of forest cover

A slope wise zonation map of the study area (Fig. 33) was created and obtained three classes, such as gentle slope areas (0-15), medium slope areas (15-30) and steep slope areas (30-75). The analysis revealed that about 48% of the study area falls under the gentle slope areas while 36% falls in the steep slope category and 16% in moderate slope zone. The majority of Grasslands and the Shola forests of the area fall under the steep slope category. Other plantations and Moist Deciduous forests are common in moderate slope and Gentle slope areas.

IV.17.6. Normalized Difference Vegetation Index (NDVI)

Normalized Difference Vegetation Index calculated showed three types of forest areas with respect to forest cover density, viz. non-forest areas with an NDVI value -0.1 to 0.2, moderately dense forest areas with a value of 0.2 to 0.4 and dense forest areas with a value of

0.4 to 0.68. The non-forest area occupies 7% of the study area in 2020, while it was just 2.34% in 2000. Moderately dense forest area seems to be 56.31% of the study area in 2020 while it was 48% in 2000. Dense forest areas occupied 36.67% in 2020 while it was 49% in 2000. Fig. 34. and 35. provides the NDVI classification of the study area.

The high percentage of moderately dense and dense forest areas in Nelliyampathy showed the health condition of the vegetation. But there has been a decrease in the dense forest areas in the last two decades. This may be because of the increase in grassland and moist deciduous areas in the study area. Another reason for the decrease may be due to the pruning and chopping of selected plants in the monoculture regions in order to maintain proper shade for cultivars.

IV.17.7. Mapping of major flood affected regions in the study areas

The flood in 2018 seriously affected the study area and these specific locations were plotted in the study area map to assess the possibilities that lead to such a disaster (Fig. 36.). From the generated maps it became evident that most of the flood affected regions are on the Ghat road and the estate areas where monoculture practises are being carried out.

IV.18. Post flood modifications and bio-resilience

Objective addressed

- Analysis of post flood habitat modification by landslides in Nelliyampathy hills
- Impact of post flood drought in angiosperm vegetation
- Assessment of biodiversity loss, habitat loss and bio-resilience in landslides of August 2018

The worst flood in the history of Kerala that occurred in 2018 had seriously affected the hill tracts of Nelliyampathy. The Ghat road, the only way to the hills, got destroyed at many locations and this resulted in the isolation of Nelliyampathy for more than two weeks. The heavy landslides posed serious threats and damages to the species inhabiting the area. Landslides and mudslides along with uprooting of trees were observed in between Pothundy to Kaikatty Ghat road, Kundaranchola, Marappalam, Chandramala, Kotengad, Vannathippalam, Padagiri, Cherunelli, Brookland Estate, Sooryapara of Nelliyampathy range and Vazhakkundu, Mattumala, Seetharkundu regions of Kollengode range (Table 43.).

IV.18.1. Land-slide affected areas (Plate 131-133)

IV.18.1.1. Nelliyampathy Range

The major regions in Nelliyampathy range affected by flood include Kundaranchola, Brookeland and Chandramala region. Pothundy to Kaikatty is the only Ghat road for transportation to Nelliyampathy hills. This road had been seriously affected in the flood and a total number of four major landslides and nine mudslides occurred in between Pothundy to Kundaranchola. These were located from 10° 32' 6.4824" N and 76° 37' 16.698" E to 10° 31' 9.2496" N and 76° 37' 44.0328" E. These places were having an elevation between 105 m and 184 m from sea level.

The hill tracts consist of many tea and coffee plantations. These estates were reported with severe loss of land and vegetation. There were 12 such locations affected which are situated in an elevation ranging from 870 m to 1004 m from Chandramala to Brooke land. The area spanning from latitude of 10° 26' 52.0548" N and 76° 39' 40.8024" E to 10° 31' 49.7388" N and 76° 42' 8.7048" E witnessed landslides and mudslides. Apart from the massive landslide in the hamlet of Brooke land, all the landslides were relatively medium-sized.

Padagiri area is one of the most biodiversity rich areas with many endemic and threatened taxa. The area lies at an altitude of 900-1000 m. Minor landslides and uprooting of taxa occurred in this area too. Kalchady and Cherunelli are the two areas where the tribal population reside and a series of landslides, mudslides and uprooting of large trees have occurred in both these regions. Both these regions are at the forest margins.

IV.18.1.2. Kollengode range

The major areas in Kollengode range affected by the flood include Vazhakkundu, Mattumala and Seetharkundu. Vazhakkundu lies at an elevation of 865m, which is predominantly a moist deciduous and semi-evergreen ecosystem, while Mattumala region represents a major evergreen and grassland ecosystem in the study area which lies in an altitude of 1000-1300 m. Seetharkundu is a major tourist spot in Nelliyampathy which was affected by the flood. This area lies at an altitude of 900-1000m.

Table 43. Flood affected locations in Nelliyampathy hills

Sl. No.	Location	Latitude	Longitude	Altitude
1	Brooke Land	10º27'2.08" N	76º39'50.2" E	970m
2	Brooke Land	10º26'52.0" N	76º39'40.8" E	962m
3	Chandramala giri shed	10º31'49.7" N	76º42'08.7" E	900m
4	Chandramala giri shed	10º31'37.0" N	76º42'14.3" E	875m
5	Cherunelli	10º32'06.1" N	76º40'43.0" E	600m
6	Kalchady	10º31'21.7" N	76º35'54.2" E	93m
7	Koonampalam Mosque	10º27'26.9" N	76º40'16.1" E	912m
8	Koonampalam Mosque	10º27'24.0" N	76º40'14.0" E	982m
9	Koonampalam Mosque	10º27'22.6" N	76º40'12.2" E	1004m
10	Kottengad [Way to Dam}	10º31'07.6" N	76º42'19.7" E	876m
11	Kottengad [Way to Dam}	10º31'09.7" N	76º45'52.0" E	888m
12	Kottengad {Car bend}	10º31'20.8" N	76º42'20.7" E	870m
13	Kottengad {Check dam}	10º31'27.3" N	76º42'21.3" E	870m
14	Mattumala	10º31'43.0" N	76º43'10.0" E	1000m
15	Padagiri	10º29'57.3" N	76º40'38.8" E	932m
16	Pothundy-Kundaranchola	10º31'54.4" N	76º37'16.2" E	118m
17	Pothundy-Kundaranchola	10º31'56.1" N	76º37'16.3" E	110m
18	Pothundy-Kundaranchola	10º31'49.5" N	76º37'21.1" E	105m
19	Pothundy-Kundaranchola	10º31'48.1" N	76º37'21.8" E	126m
20	Pothundy-Kundaranchola	10º31'37.5" N	76º37'30.6" E	140m
21	Seetharkundu	10º32'18.3" N	76º40'14.3" E	912m
22	Mannathypalam	10º28'49.8" N	76º40'13.9" E	894m
23	Vazhakkundu	10º31'22.0" N	76º43'32.5" E	996m

IV.18.2. Post flood habitat modification by landslides

Visible habitat modifications and species loss is evident in the land-slide affected areas. The streams got flooded causing heavy damages to the riparian vegetation in the uphill area and many new small streams and rivulets were formed after the heavy landslide. Uprooting of larger trees caused opening up of canopy that adversely affected the survival of small herbaceous shade-loving taxa. Several areas both in plantations as well as within forests were denuded and the associated erosion removed the fertile topsoil and the perennating organs of many herbaceous taxa along with the running water. This in turn affected the seasonal regeneration of these perennial plants and their survival. The minerals and nutrients with the topsoil got accumulated in the lower altitudes of the mountain valleys and the population density of many invasive taxa in these regions increased manifold. Chasmophytes are another group of plants that got seriously affected by landslides and floods. The dormant

seeds in the crevices and fissures got washed out in the running water and the boulders which were their habitat got disrupted and they got dislocated into lower altitudinal exposed areas.

The tree species on the steep slope areas of the road have got their root system exposed due to the road construction. The heavy rainfall and the soil erosion thereafter enhanced the uprooting of the tall trees on road margins. Due to the uprooting of many taxa, the canopy had opened up, and the surviving taxa experienced a higher temperature after the flood. Table 44. shows the list of uprooted taxa recorded from the landslide hit areas.

Large trees with deep root systems are the major survivors of these areas. Along with these large trees, the tree associated climbers and lianas also have survived. Table 45. represents the survivor taxa recorded in Nelliyampathy. The surviving taxa suffered a higher temperature than the temperature before the calamity since the canopy cover got reduced due to uprooting of plants.

Due to heavy rainfall and soil erosion, the soil cover on the forest floor decreased and after these areas were seen inhabited by primary colonizers. These primary colonizers include mainly herbs and small shrubs which could easily complete their life cycle in prevailing environments. Table 46. comprises the primary colonizers in the land-slide affected areas

During the heavy erosion, the propagules of invading taxa got widely dispersed and these invasive taxa altered the natural vegetation of the forest area. The landslides provided a chance for the invasive taxa to spread over the area. Table 47. summarizes the invasive species recorded in these areas.

The data showed that there is no uniformity in the uprooted taxa and survivor taxa across the landslide hit areas. One taxon which was uprooted in a specific region had survived in another location. It could be due to the difference in soil strength, slope of the area, the age of the plant and nature of their root system.

Table 44. Uprooted taxa in flood-affected regions

Sl. No.	Binomial Name	Family
1	*Acronychia pedunculata* Miq.	Rutaceae
2	*Allophylus concanicus* Radlk.	Sapindaceae
3	*Alstonia venenata* R.Br.	Apocynaceae
4	*Antidesma montanum* Blume	Phyllanthaceae
5	*Bambusa bambos* (L.) Voss	Poaceae
6	*Cipadessa baccifera* Miq.	Meliaceae
7	*Coffea arabica* L.	Rubiaceae
8	*Cullenia exarillata* A.Robyns	Malvaceae
9	*Epithema ceylanicum* Wight	Gesneriaceae
10	*Ficus microcarpa* L.f.	Moraceae
11	*Ficus racemosa* L.	Moraceae
12	*Globba sessiliflora* Sims	Zingiberaceae
13	*Grevillea robusta* A.Cunn. ex R.Br.	Proteaceae
14	*Grewia tiliifolia* Vahl	Malvaceae
15	*Helicteres isora* L.	Malvaceae
16	*Henckelia fischeri* (Gamble) A. Weber & B. L. Burtt	Gesneriaceae
17	*Impatiens diversifolia* Wall. ex Wight & Arn.	Balsaminaceae
18	*Impatiens flaccida* Arn.	Balsaminaceae
19	*Jasminum coarctatum* Roxb.	Oleaceae
20	*Litsea coriacea* (B.Heyne ex Nees) Hook. f.	Lauraceae
21	*Macaranga peltata* Müll. Arg.	Euphorbiaceae
22	*Mallotus philippensis* (Lam.) Müll. Arg.	Euphorbiaceae
23	*Morinda coreia* Buch.-Ham.	Rubiaceae
24	*Piper umbellatum* L.	Piperaceae
25	*Premna tomentosa* Willd.	Lamiaceae
26	*Schleichera oleosa* (Lour.) Oken	Sapindaceae
27	*Smilax zeylanica* L.	Smilacaceae
28	*Spondias pinnata* (L. f.) Kurz	Anacardiaceae
29	*Syzygium cumini* (L.) Skeels	Myrtaceae
30	*Syzygium densiflorum* Wall. ex Wight & Arn.	Myrtaceae
31	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae
32	*Thunbergia fragrans* Roxb.	Acanthaceae
33	*Xanthophyllum flavescens* Roxb.	Polygalaceae

Table 45. Survived taxa in flood-affected regions

Sl. No.	Binomial Name	Family
1	*Ailanthus excelsa* Roxb.	Simaroubaceae
2	*Alstonia scholaris* (L.) R.Br.	Apocynaceae
3	*Anamirta cocculus* (L.) Wight & Arn.	Menispermaceae
4	*Arenga wightii* Griff.	Arecaceae
5	*Azadirachta indica* A.Juss.	Meliaceae
6	*Bombax ceiba* L.	Malvaceae
7	*Camonea umbellata* (L.) A.R.Simões & Staples	Convolvulaceae
8	*Chionanthus mala-elengi* (Dennst.) P.S.Green	Oleaceae
9	*Chukrasia tabularis* A.Juss.	Meliaceae
10	*Cipadessa baccifera* Miq.	Meliaceae
11	*Cullenia exarillata* A.Robyns	Malvaceae
12	*Erythrina stricta* Roxb.	Fabaceae
13	*Ficus microcarpa* L.f.	Moraceae
14	*Grewia tiliifolia* Vahl.	Malvaceae
15	*Helicteres isora* L.	Malvaceae
16	*Hibiscus surattensis* L.	Malvaceae
17	*Jasminum malabaricum* Wight	Oleaceae
18	*Macaranga peltata* Müll.Arg.	Euphorbiaceae
19	*Mallotus philippensis* (Lam.) Müll.Arg.	Euphorbiaceae
20	*Peperomia pellucida* (L.) Kunth.	Piperaceae
21	*Rhinacanthus nasutus* (L.) Kurz.	Acanthaceae
22	*Setaria parviflora* (Poir.) Kerguélen	Poaceae
23	*Streblus asper* Lour.	Moraceae
24	*Syzygium cumini* (L.) Skeels	Myrtaceae
25	*Tectona grandis* L.f.	Lamiaceae
26	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae
27	*Tinospora cordifolia* (Willd.) Miers ex Hook.f. & Thomson	Menispermaceae
28	*Trema orientale* Blume	Cannabaceae
29	*Xylia xylocarpa* (Roxb.) W.Theob.	Fabaceae

Table 46. Primary colonizers in flood-affected regions

Sl. No.	Binomial Name	Family
1	*Abutilon guineense* (Schumach.) Baker f. & Exell	Malvaceae
2	*Achyranthes aspera* L.	Amaranthaceae
3	*Acmella paniculata* (Wall. ex DC.) R. K. Jansen	Asteraceae
4	*Acmella radicans* (Jacq.) R.K.Jansen	Asteraceae
5	*Ageratina adenophora* (Spreng.) R. M. King & H. Rob.	Asteraceae
6	*Alternanthera sessilis* (L.) DC.	Amaranthaceae
7	*Amaranthus spinosus* L.	Amaranthaceae
8	*Apluda mutica* L.	Poaceae
9	*Bidens pilosa* L.	Asteraceae
10	*Biophytum reinwardtii* (Zucc.) Klotzsch	Oxalidaceae
11	*Blumea belangeriana* DC.	Asteraceae
12	*Boerhavia diffusa* L.	Nyctaginaceae
13	*Camellia sinensis* (L.) Kuntze	Theaceae
14	*Camonea umbellata* (L.) A. R. Simões & Staples	Convolvulaceae
15	*Cardiospermum halicacabum* L.	Sapindaceae
16	*Cayratia pedata* Gagnep.	Vitaceae
17	*Cenchrus pedicellatus* (Trin.) Morrone	Poaceae
18	*Centella asiatica* (L.) Urb.	Apiaceae
19	*Chrysopogon aciculatus* Trin.	Poaceae
20	*Chukrasia tabularis* A.Juss.	Meliaceae
21	*Clematis zeylanica* Poir.	Ranunculaceae
22	*Cleome rutidosperma* var. *burmanni* (Wight & Arn.) M. O. Siddiqui & S.N.Dixit	Cleomaceae
23	*Coffea arabica* L.	Rubiaceae
24	*Crassocephalum crepidioides* S.Moore	Asteraceae
25	*Crotalaria spectabilis* Roth.	Fabaceae
26	*Croton hirtus* L'Hér.	Euphorbiaceae
27	*Cyanotis burmannia* Wight	Commelinaceae
28	*Cyanotis pilosa* Schult.f.	Commelinaceae
29	*Cyanthillium cinereum* (L.) H.Rob.	Asteraceae
30	*Cyperus diffusus* Vahl.	Cyperaceae
31	*Cyperus iria* L.	Cyperaceae
32	*Cyperus richardii* Steud.	Cyperaceae
33	*Cyrtococcum oxyphyllum* Stapf.	Poaceae
34	*Dactyloctenium aegyptium* (L.) Willd.	Poaceae
35	*Dicliptera foetida* Blatt.	Acanthaceae
36	*Digitaria ciliaris* (Retz.) Koeler	Poaceae
37	*Drymaria cordata* (L.) Willd. ex Schult.	Caryophyllaceae
38	*Elatostema acuminatum* (Poir.) Brongn.	Urticaceae
39	*Eragrostis tenella* (L.) P.Beauv. ex Roem. & Schult.	Poaceae
40	*Eranthemum capense* L.	Acanthaceae
41	*Eryngium foetidum* L.	Apiaceae
42	*Euphorbia hirta* L.	Euphorbiaceae
43	*Glinus oppositifolius* Aug. DC.	Molluginaceae

44	*Globba sessiliflora* Sims.	Zingiberaceae
45	*Helicteres isora* L.	Malvaceae
46	*Ipomoea hederifolia* L.	Convolvulaceae
47	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae
48	*Lantana camara* L.	Verbenaceae
49	*Laportea bulbifera* (Siebold & Zucc.) Wedd.	Urticaceae
50	*Macaranga peltata* Müll.Arg.	Euphorbiaceae
51	*Mimosa diplotricha* C.Wright	Fabaceae
52	*Mimosa pudica* L.	Fabaceae
53	*Mitracarpus hirtus* DC.	Rubiaceae
54	*Momordica dioica* Roxb. ex Willd.	Cucurbitaceae
55	*Oplismenus burmanni* (Retz.) P.Beauv.	Poaceae
56	*Parthenium hysterophorus* L.	Asteraceae
57	*Peperomia pellucida* (L.) Kunth.	Piperaceae
58	*Persicaria chinensis* (L.) H.Gross.	Polygonaceae
59	*Phyllanthus amarus* Schumach. & Thonn.	Phyllanthaceae
60	*Pouzolzia zeylanica* (L.) Benn.	Urticaceae
61	*Premna tomentosa* Willd.	Lamiaceae
62	*Pupalia lappacea* (L.) Juss.	Amaranthaceae
63	*Rhinacanthus nasutus* (L.) Kurz.	Acanthaceae
64	*Rhynchoglossum notonianum* (Wall.) B.L.Burtt.	Gesneriaceae
65	*Richardia scabra* L.	Rubiaceae
66	*Ruellia prostrata* Poir.	Acanthaceae
67	*Scoparia dulcis* L.	Plantaginaceae
68	*Sida cordifolia* L.	Malvaceae
69	*Sida rhombifolia* L.	Malvaceae
70	*Sigesbeckia orientalis* L.	Asteraceae
71	*Solanum torvum* Sw.	Solanaceae
72	*Spermacoce alata* Aubl.	Rubiaceae
73	*Syzygium cumini* (L.) Skeels.	Myrtaceae
74	*Tinospora cordifolia* (Willd.) Miers ex Hook.f. & Thomson	Menispermaceae
75	*Torenia hirsuta* Willd.	Linderniaceae
76	*Tragia involucrata* L.	Euphorbiaceae
77	*Tridax procumbens* L.	Asteraceae
78	*Xenostegia tridentata* (L.) D.F.Austin & Staples	Convolvulaceae

Table 47. Invasive taxa in flood-affected regions

Sl. No.	Binomial Name	Family
1	*Ageratum conyzoides* L.	Asteraceae
2	*Ageratum houstonianum* Mill.	Asteraceae
3	*Chromolaena odorata* (L.) R.M.King & H.Rob.	Asteraceae
4	*Cleome viscosa* L.	Cleomaceae
5	*Cyperus iria* L.	Cyperaceae
6	*Hevea brasiliensis* (Willd. ex A.Juss.) Müll.Arg.	Euphorbiaceae
7	*Hultholia mimosoides* (Lam.) Gagnon & G.P.Lewis	Fabaceae
8	*Ipomoea hederifolia* L.	Convolvulaceae
9	*Mecardonia procumbens* (Mill.) Small.	Plantaginaceae
10	*Mikania micrantha* Kunth.	Asteraceae
11	*Mimosa diplotricha* C.Wright	Fabaceae
12	*Mimosa pudica* L.	Fabaceae
13	*Mitracarpus hirtus* DC.	Rubiaceae
14	*Oxalis corniculata* L.	Oxalidaceae
15	*Parthenium hysterophorus* L.	Asteraceae
16	*Passiflora foetida* L.	Passifloraceae
17	*Peperomia pellucida* (L.) Kunth.	Piperaceae
18	*Senna occidentalis* (L.) Link.	Fabaceae
19	*Sida acuta* Burm.f.	Malvaceae
20	*Solanum americanum* Mill.	Solanaceae
21	*Solanum torvum* Sw.	Solanaceae
22	*Synedrella nodiflora* Gaertn.	Asteraceae
23	*Triumfetta rhomboidea* Jacq.	Malvaceae

IV.18.3. Impact of post flood drought in angiosperm vegetation

A marked difference in the phenology of angiosperm vegetation could be recorded after the flood. Normally the smaller herbaceous taxa like *Impatiens flaccida* Arn., *Impatiens scapiflora* Wight & Arn., *Impatiens viscosa* Bedd., *Sonerila veldkampiana* Ratheesh, Mini & Sivad., *Sonerila wallichii* Benn., etc. tends to be in flowering by the month of July. But after the flood, these taxa sprouted only by August and showed a phenological shift of about two months. The lack of top soil along with minerals and nutrients might have been the reason for the delay in their flowering and fruiting.

When the herbaceous taxa showed a delay in their sprouting as well as flowering, many tree members such as *Sterculia guttata* Roxb., *Sterculia urens* Roxb., *Terminalia paniculata* Roth, *Cipadessa baccifera* Miq., etc. showed early flowering in the month of August itself and all these taxa were deciduous members which showed early flowering. This might be because of the fact that the ground soil got extremely dry after the flood. Since the

canopy also opened up, more sunlight penetrated the ground and this also resulted in drying up of the soil. Due to excessive dryness, these deciduous taxa might have shown early flowering and fruiting.

IV.19. Threats to habitats and biodiversity loss (Plate 134-136)

Nelliyampathy hills, a biodiversity rich area with higher number of endemic and threatened taxa, faces various threats to its diversity. The reasons for such a depletion include both natural and man-made factors.

IV.19.1. Natural causes

IV.19.1.1. Natural calamities

Natural calamities like floods, landslides and mudslides have serious effects on the biodiversity of Nelliyampathy hills. Since the slope of hills is a major factor, the landslides can cause serious erosion and result in the uprooting of major trees. The Ghat road is the only path to reach the hills. The erosion had caused the roots of many larger trees to get exposed and these trees easily fall off due to a minor landslide or mudslide. This has been witnessed during the floods of 2018 and 2019.

IV.19.1.2. Forest fire

Forest fire is another natural calamity which destroys the biodiversity of a specific area within no time. The deciduous patches of the hill tracts are the most susceptible areas for the forest fire. The forest department used to create fire lines in order to reduce the risk of forest fire and their spread. Mira Flores, Beatrice, Vaakappallam, Rossary, Konayar, Kundaranchola and Marappalam are the major fire lines maintained by the forest department.

IV.19.1.3. Invasive species

The alien invasive plants always disturb the wellbeing of natural flora. The higher altitudes of the hills are seriously affected by the invasive taxa such as *Hypoestes phyllostachya* Baker, *Ageratina adenophora* (Spreng.) R.M.King & H.Rob., *Ageratum conyzoides* L., *Ageratum houstonianum* Mill., *Parthenium hysterophorus* L., etc. The growth of many native taxa got affected by the invasion of these taxa.

IV.19.2. Anthropogenic causes

IV.19.2.1. Plantations

Nelliyampathy hills hosts a number of estates of Tea, Coffee, Cardamom etc. and it is quite likely that these estates would have encroached into the Reserve Forest area. Larger areas of monocultures are very susceptible to natural calamities. The flood in 2018 and 2019 seriously affected many estates. This in turn affects the stability of the wilderness nearby

these estates. In addition, many trees in the forest land around the estates have been selectively removed to provide partial shade to the crops.

IV.19.2.2. Tourism

The scenic beauty of Nelliyampathy hills attracts many tourists and there are a quite number of tourist spots and resorts in the hills. Major viewpoints of the hills include Seetharkundu, Kesavan Para, Mattumala, Karassuri and Karappara. These areas are rich in endemics as well as threatened plants. Earlier, the high-altitude hill range, Manpara was also a tourist spot. But considering the biological richness and the problems raised due to tourism there, tourism to this spot has temporarily been banned.

IV.19.2.3. Plant Introduction

Since the hill tracts have many human settlements called as 'paadi', most of them being inhabited by workers of various estates, they used to grow many ornamental plants in and around their settlements. Many areas like Valuvaachi, Ranimedu, Pullukaadu colony etc., those plants used for cultivation escape into wild areas. Many of these plants are introduced taxa like *Thunbergia alata* Bojer ex Sims, *Kalanchoe blossfeldiana* Poelln., *Clerodendrum thomsoniae* Balf., *Turnera ulmifolia* L., *Heliconia psittacorum* L.f., *Zinnia elegans* Jacq., etc. Even though they are not invasive in nature now, these taxa can disturb the natural vegetation of the hill tracts and can be invasive later. Proper management of these introduced plants are required to avoid their encroachment into the wild habitats.

IV.19.2.4. Agricultural practices

The inhabitants of the hills utilize their surroundings for agricultural purposes. Encroachment of forest land for the purpose of agriculture was observed in various parts of the hills like Pullukaadu colony, Ranimedu, Valuvaachi etc. If the margins of forest areas are continuously cleared and used for agriculture practices, the native flora and the biodiversity over these areas may got disrupted.

IV.19.2.5. Grazing

The people of Nelliyampathy rear cattle as part of their daily livelihood. The uncontrolled grazing of these domestic animals in the hills make small herbaceous taxa susceptible and in the long run, they may got vanished out from the natural vegetation

IV.19.2.6. Selective felling and encroachment to forest land

Selective felling of larger trees and encroachment of forest land by private estates and other privately owned places is another threat in Nelliyampathy. This leads to habitat reduction for the wild animals and thereby increasing their exposure to more vulnerable environments.

IV.19.2.7. Urbanization

There are only two tribal populations in the hills and all other inhabitants are immigrants. Earlier the workers of the estates were the human inhabitants of Nelliyampathy hills. A minimum number of shops and stores were there for their day-to-day life. But later, the hill tracts became a popular tourist spot of Palakkad and the area started urbanization with various resorts, restaurants and larger shops. This urbanization process has caused serious habitat destruction and human intervention caused habitat degradation.

IV.19.2.8. Habitat fragmentation

The only Ghat road to the hill tracts and various small panchayath roads to the human settlements are crossing the deep interior forest regions. Road construction into interior plantations and for forestry purposes like selective felling etc. also cause habitat fragmentation. Habitat fragmentation in turn will lead to more human-animal interactions and in the near future, such incidents from these virgin areas are likely to be covered by the media.

IV.19.2.9. Plastic dumping

The human settlements and the tourism activities cause a serious threat to the habitat through plastic waste products. The plastic bags, packing materials and household wastes get dumped on the fertile soil of the area which affects the fertility of soil. Faunal population are more affected by plastic wastes, since they directly consume many of them along with their food.

IV.19.2.10. Pesticide application

Larger quantities of pesticides being used in various plantations pose a serious threat to the insect population of the area. The leaching occurs during rain and results in the accumulation of a higher amounts of pesticides in various regions, especially the water courses. Since most of them are wide spectrum pesticides, these may affect the non-targeted species of insects too. Some sensitive pollinators can also be affected and this in turn can affect the floral life too. Further studies are wanted in this dimension to make conclusive remarks of pesticide application.

V. DISCUSSION AND CONCLUSION

V.1. Background of the research problem

Western Ghats, one of the major hotspots in the World, is marked with its high species diversity, endemism and vulnerability. The long stretches of hill tracts are interrupted by a 32 km wide Palghat Gap in the Palakkad district. As it acts as a corridor between the two states, the Gap influences the floral and faunal composition on either side of the Gap. Nelliyampathy hills, which lies to the south-western side of Palghat Gap is blessed with various ecosystems and high species diversity. In the past six years, 13 new taxa were discovered from the hill tracts of Nelliyampathy, which is an indication of lack of thorough exploration in the hill tract area. In the present scenario, where the loss of biodiversity is so severe in the tropical areas, conservation of tropical forests became inevitable. An assessment of biodiversity at a regional basis through extensive field exploration, identification and documentation of faunal and floral wealth is the pioneer step towards any efforts in conservation. As these hill tracts are one of the preferred tourist destinations in Western Ghats, the knowledgebase on the existing diversity combined with the threats operating in such vulnerable ecosystems become inevitable in planning for sustainability in terms of ecosystems and responsible tourism. The analysis of floristic elements of Nelliyampathy will help in understanding the effect of Palghat Gap in the distribution of vegetation in nearby areas also.

V.2. Analysis of vegetation

The floristic explorations in Nelliyampathy accounted for 1529 taxa which belonged to 142 families. While comparing the species diversity with that of published literature on floristic diversity elsewhere, it is evident that there exists high species diversity within a smaller extent of geographical area. As per the documented evidence, even from the whole district of Palakkad with an extent of 4400 km^2, 1355 species were recorded. In the case of species diversity and extent of area, Nelliyampathy hills stand neck to neck with Parambikulam Wildlife Sanctuary. All other biodiversity rich zones with species diversity of above 1500 taxa had an area of more than 700 Km^2 (Table 48).

Table 48. Comparative analysis of species diversity of various regions

Sl. No.	Flora	Number of taxa	Area (Km^2)
1	**Flora of Nelliyampathy hills (Present study)**	**1529**	**206**
2	Flora of Dhoni hills (Rekha, 2019)	668	33
3	Flora of Aralam Wildlife Sanctuary (Dantas, 2017)	1018	55
4	Flora of Kollengode range (Soumya, 2018)	955	68
5	Flora of Silent Valley National Park (Manilal, 1988)	966	90
6	Flora of Shenduruny Wildlife Sanctuary (Sasidharan, 1997)	951	100
7	Flora of Nilambur (Sivarajan & Mathew, 1997)	1132	150
8	Flora of Achankovil forest range (Jose, 2015)	1040	269
9	Flora of Parambikulam Wildlife Sanctuary (Sasidharan, 2002)	1432	274
10	Flora of Calicut (Manilal & Sivarajan, 1982)	983	600
11	Flora of Attappady hills (Anilkumar, 2015)	1670	746
12	Flora of Periyar Tiger Reserve (Sasidharan, 1998)	1978	777
13	Flowering plants of Thrissur forests (Sasidharan & Sivarajan, 1996)	1225	1041
14	Flora of Alappuzha district (Sunil, 2000)	1111	1414
15	Flora of Wayanad district (Narayanan, 2009)	2034	2136
16	Flora of Thiruvananthapuram (Mohanan & Henry, 1994)	1270	2191
17	Flora of Pathanamthitta (Anilkumar et al., 2015)	1249	2697
18	Flora of Malappuram district (Babu, 1990)	813	3548
19	Flora of Cannanore (Ramachandran & Nair, 1988)	1132	3670
20	Flora of Palghat (Vajravelu, 1990)	1397	4400

The floristic survey at Nelliyampathy hills of Nemmara forest division on the south of Palghat Gap revealed the presence of 1529 taxa belonging to 774 genera and 142 families. Among the eleven clades recorded, Rosids was the most speciose clade with 536 species followed by Asterids (376 taxa), Commelinids (250 taxa) and Monocots (118 taxa). With respect to the generic diversity also, Rosids account for the highest number with 279 genera, followed by Asterids (196 genera), Commelinids (96 genera) and Monocots (71 genera). Distribution of species and genera among different clades is given in Fig.37.

Order Poales is the most speciose one with 184 taxa followed by Lamiales (166 taxa), Fabales (139 taxa), Gentianales (124 taxa) and Malpighiales (100 taxa). While considering generic diversity, Lamiales accounts for the highest number of genera (84) followed by Gentianales (75 genera), Poales (73 genera), Fabales (70 genera) and Malpighiales (52 genera).

Family Poaceae was the most speciose family with 136 taxa followed by Fabaceae (134), Rubiaceae (72), Asteraceae (66) and Orchidaceae (64). This is in accordance with the statistics of plant diversity in India, where Poaceae is the largest family while Fabaceae, Rubiaceae, Asteraceae and Orchidaceae come in the top five families in the country (Singh, 2015). The family with the highest number of genera is Fabaceae with 68 taxa followed by Poaceae (64). The families Asteraceae (43), Rubiaceae (39) and Orchidaceae (35) follow the sequence in order. Graphical representation of the orders and families with the highest number of species are depicted in fig. 38. and 39.

Genus *Cyperus* is the most speciose one with 24 taxa followed by *Crotalaria* (22), *Ipomoea* (17), *Impatiens* (15) and *Ficus* (14), and are summarized in fig. 40. and Table 49.

Table 49. Diversity profile of Vegetation in Nelliyampathy hills

Sl. no.	Orders with higher number of genera	Orders with higher number of species	Families with higher number of genera	Families with higher number of species	Genera with higher number of species
1	Lamiales (84)	Poales (184)	Fabaceae (68)	Poaceae (136)	*Cyperus* (24)
2	Gentianales (75)	Lamiales (166)	Poaceae (64)	Fabaceae (134)	*Crotalaria* (22)
3	Poales (73)	Fabales (139)	Asteraceae (43)	Asteraceae (66)	*Ipomoea* (17)
4	Fabales (70)	Gentianales (124)	Rubiaceae (39)	Orchidaceae (64)	*Impatiens* (15)
5	Malpighiales (52)	Malpighiales (100)	Orchidaceae (35)	Acanthaceae (55)	*Ficus* (14)
6	Asparagales (46)	Asparagales (82)	Apocynaceae (30)	Malvaceae (52)	*Strobilanthes* (13)
7	Asterales (45)	Asterales (71)	Lamiaceae (26)	Euphorbiaceae (45)	*Solanum* (12)
8	Sapindales (42)	Sapindales (61)	Euphorbiaceae (22)	Lamiaceae (45)	*Murdannia* (11)
9	Malvales (28)	Malvales (60)	Malvaceae (22)	Cyperaceae (40)	*Phyllanthus* (11)

Wide variations in the elevation range as well as the aspect of slope influences the distribution of taxa in the hill tracts of Nelliyampathy. Nelliyampathy hills harbours a high concentration of high-altitude taxa as well as typical grassland and shola elements. Of the total study area, 36% falls in the steep slope area with a slope of 30º-75º and 15% falls in moderate slope area with a slope of 15º-30º. The slope of an area becomes important because the aspect of slope decides the effect of wind in the region and the taxa thriving in these areas.

In the Palghat Gap region where there is high wind velocity compared with nearby areas, this aspect of slope decides the elemental composition of this specific region.

The hill tracts of Nelliyampathy is blessed with varying habitats from moist deciduous forests to open montane grasslands. The topography and the altitudinal gradation are the reasons for differential distribution of various habitats along with associated rich biodiversity. Among the habitats, the dominant vegetation is the wet evergreen forests of medium elevation type with the *Cullenia exarillata-Mesua ferrea-Palaquium ellipticum* series. Another important habitat type is the high altitude open montane grasslands. An assessment of vegetation in Nelliyampathy hills revealed that it possesses 20.28% evergreen elements, 20.16% grassland elements, 12.6% moist deciduous elements, 12.6% shola elements, 10.2% degraded elements, 8.5% wetland elements, 6.2% riparian elements, 4.8% semi-evergreen elements and 4.6% sacred groove elements. The dominance of evergreen and grassland elements are because of the large patches of evergreen forests and open montane grasslands in the study area. Deciduous elements are concentrated in the lower altitudes, and are getting reduced while moving on to the higher altitudes. On the other hand, Evergreen and Semi-evergreen elements are low in lower altitudes and it gradually show an increasing trend upto an altitude of 1200m. The area above 1200m altitude is predominantly open grasslands that is the reason why the evergreen and semi-evergreen elements are low in this zone. Grassland and shola elements show an increasing trend with the increase in altitude. The degraded forest elements and cultivated taxa showed a diminishing trend with increase in altitude and is correlated with the lesser human interventions in the higher altitudes.

The study area comprises varying altitudes from 100m-1600m and this varying altitude reflects in the vegetation distribution and elemental composition in Nelliyampathy hills. Tree species dominate the lower altitudes and their concentration decreases with increasing altitude, while herbaceous taxa are the dominant ones in higher altitudes. This is so because at higher altitudes, wind velocity will be higher, therefore small herbaceous taxa are better adapted in these regions than huge trees. The middle altitudes are with a higher percentage of shrubs and climbers.

Out of the five altitudinal zones viz., below 300m, 300-600m, 600-900m, 900-1200m and above 1200m, species diversity is maximum in the altitudinal zones of 600-900m and 900-1200m. In these altitudinal zones, there exists evergreen forests, semi-evergreen areas, small moist deciduous patches and also grasslands. Maybe because of the presence of all

these types of ecosystems, species diversity also increases. Apart from this, a major portion of the study area falls under these altitudinal zones, which can also contribute to a higher species diversity. The diversity is low in the lower altitudinal zones as well as higher altitudinal zones, while the middle altitudinal zones account for the maximum species diversity. This can be explained by the elevational diversity gradient which states that species diversity increases with increasing elevation to a certain point and creates a diversity bulge at the middle altitudes.

A comprehensive account of the floristic composition of Palakkad district was given in Flora of Palghat district (Vajravelu, 1990). The work encompasses a total number of 1397 taxa from a total area of 4,400 sq. km. The present investigation results in 1529 taxa from a total area of 206 sq.km. The possible reason for lack of citation of these elements may be due to inadequate explorations to this area with seasonal variations combined with lack of exhaustive collection from all the locations of Nelliyampathy hills. Among the 1397 taxa recorded in Flora of Palghat district, 360 taxa were from Nelliyampathy especially from the localities like Ayyappankovil, Kaikatty, Kurissumala, Olippara, Karappara, Pothumala, Karassuri, Marappalam, Pothundy, Manalaroo, Minnampara, Orange farm, Thuthampara and Padagiri. Later Sasidharan (2011) compiled a total of 2936 taxa from Palakkad district and of these taxa, 475 were documented as having distribution in Nelliyampathy hills. Most of the rare plants recorded by both Vajravelu (1990) and Sasidharan (2011) from Nelliyampathy hills could be relocated in the current documentation.

Apart from the taxa recorded earlier, several new taxa were recorded from Nelliyampathy hills. In the past 6 years, 13 new taxa were described from the hill tracts of Nelliyampathy and it includes *Impatiens sasidharanii* K. M. P. Kumar, Omalsree, Hareesh & V.B.Sreek., *Impatiens sasidharanii* var. *hirsuta* K.M.P.Kumar, Omalsree, Hareesh & V.B.Sreek., *Sonerila balasubramaniamii* Murugesan, *Tripogon bimucronatus* Thoiba & Sunil, *Sonerila nairii* Soumya & Maya, *Oldenlandia vasudevanii* Soumya & Maya, *Sonerila victoriae* Soumya & Maya, *Utricularia sunilii* Naveen Kum. & K. M. P. Kumar, *Begonia bachulkarii* Aitawade, Joseph John & S. R. Yadav, *Elaeocarpus gadgilii* A.M. Maya, V. Suresh & K.M.P. Kumar, *Eugenia pokkudanii* A.M. Maya, K.M. Prabhukumar & V. Suresh, *Glycosmis nelliyampathiensis* Jabeena & Maya and *Litsea anamalayana* Robi & Udayan

The uniqueness of an area reflects in the percentage of endemic elements, and the vulnerability of the region reflects in the percentage of threatened taxa. In order to conserve

an area, one should focus on these two criteria. The floristic analysis revealed that a total number of 66 taxa were included under various IUCN Categories. Among them, the five Critically Endangered taxa are Western Ghat endemics and of which 4 are strict endemics to Southern Western Ghats. Out of the 18 Endangered taxa, 15 are endemic to Western Ghats and of which, 11 are restricted to southern Western Ghats. Among the 31 Vulnerable taxa, 19 are endemics and 7 out of 10 Near threatened taxa are also endemic to various geo zones.

Since the majority of tropical species are not yet evaluated by IUCN, other criteria used in assessing the threat status of floral elements of Nelliyampathy, was by correlating with the checklist of threatened plants in India (Barik *et al.,* 2018). According to this checklist, 308 taxa from Nelliyampathy are considered to be threatened. Orchidaceae is the most vulnerable family with the highest number of threatened taxa followed by Fabaceae, Poaceae, Apocynaceae and Commelinaceae. This is so because, majority of the Orchidaceae members are narrow endemics, hence their distribution too will be to a lesser extent. This makes them more prone to environmental stresses since their ecological amplitude is also limited. From the distribution mapping of these IUCN categorized taxa, various hotspots could be observed in Nelliyampathy and most of them were found focussed at an altitude above 800 m.

Of all the taxa recorded from this area, one by fourth of them show endemism. Among them, southern Western Ghat endemics are in a higher proportion. This depicts the narrow dispersal ranges and uniqueness of the taxa distributed in Nelliyampathy. Among the endemics, herbaceous forms dominate, since long range dispersals of these small plants are comparatively difficult to greater extents than trees or shrubs. On analysis it was also revealed that, majority of the collected endemics have an evergreen or open grassland habitat preference.

Critical assessment on distribution of endemics across families revealed that Poaceae accounts for the highest number of endemic taxa, which is in accordance with the data generated for the country as a whole. And also, Orchidaceae, Fabaceae, Rubiaceae and Acanthaceae follow the top five families with endemism (Singh *et al*., 2015). But in an analysis of percentage endemism, Balsaminaceae is the family with the highest percentage of endemism and this is so because this family comprises mostly narrow endemic ones. Likewise Lauraceae and Melastomataceae also showed higher percentages of endemism.

On an altitude-wise analysis, the number of endemic as well as threatened taxa are higher in the high altitude zone (900-1200 m). But percentage endemism and percentage threat are higher in the uppermost zone (above 1200 m). Hence it can be ascertained that, the

threatened plants as well as endemics are more concentrated on the higher altitudinal zones and they have a narrow dispersal range and are more prone to the environmental stresses than the plants in the lower altitudes.

Analysis of the phytogeographical affinity showed that 59% of the vegetation of Nelliyampathy hills are confined to the Indo-Pacific zone. Other than the Indo-Pacific zone, the collected taxa showed higher affinity towards the African zone and least affinity towards the Australian zone. The higher affinity towards the African zone may be because of the landmass continuity explained by continental drift hypothesis and the lesser affinity towards the Australian Kingdom may be due to the early separation 3 million years ago. Another interesting fact is that most of the invasive species and naturalized weeds have affinity towards South American and African phyto-geographic Kingdoms. This is supported by earlier studies of Paul (2012). The analysis inferred that about 5% taxa do not have an affinity towards the Indo-Pacific zone. These are either cultivated plants or degraded forest elements.

Because of the 32km wide Palghat Gap in the long stretch of Western Ghats, the nearby areas experience a high wind velocity and hence the frequency of anemochorous taxa is also higher in these regions. Nelliyampathy hills which lie in the vicinity of Palghat Gap also experience the effect of high wind velocity and consequently, the concentration of anemochorous taxa is also high in this geozone. Among these anemochorous taxa, representation from Asteraceae are more as the family is typically adapted for wind dispersal, with small sized achenes and pappus hairs which aid in their far dispersal. Among the anemochorous taxa collected, 48% are herbaceous and 20% of the collected anemochorous taxa from Nelliyampathy hills were endemic too. This may be due to the fact that these endemics are either open montane grassland or shola elements and the altitudinal preferences of these taxa may hinder the far dispersal and larger area of distribution. In the thick canopy of Evergreen as well as Shola patches, epiphytic mode of life ensures the plant a greater habitable surface than the ground floor. The frequency of epiphytes is too high in the study area because of the predominance of wet evergreen forests along with small shola patches in between the open montane grasslands. Earlier studies (Gentry and Dodson, 1987; Benzing, 1990; Wolf, 1994) had proved that elevation and water availability are the two major factors influencing the distribution of epiphytes of a specific region. The present study also revealed that the epiphytic species richness is high in the higher altitudes above 800 m. The results are in accordance with the earlier reports of Cardelus *et al*. (2006), which highlights that the cloud forest at 1000m elevation showed maximum epiphytic species richness and it also reports that combination of temperature with precipitation or humidity has marked influence

in epiphytic species distribution. That's why the more humid areas of wet evergreen and shola forests harbour the high concentration of epiphytic taxa and Orchidaceae accounts for the highest number of epiphytes in the study area. Earlier studies suggest that the family Orchidaceae is more suited for epiphytic life form since 70% of the Orchidaceae members prefer an epiphytic mode of life (Gravendeel, 2004). They suggested that the small body size, short life cycle and specialized clinging roots of orchids owe for an epiphytic mode of life.

Apart from the epiphytes, climbers and lianas also utilize the availability of a physical support to reach the canopy to ensure sufficient sunlight for them in a closed habitat like evergreen or shola patches. In most of the tropical forests, lianas contribute 5 – 10% of the biomass above ground and in dense liana forests, it might go up to 30% (De Walt and Chave, 2004). Despite their lower contribution towards above ground biomass, they account for about 40% of leaf canopy cover and biomass (Rodríguez-Ronderos *et al.*, 2016). Liana abundance and biomass vary broadly among tropical forests in terms of climate and disturbance (Schnitzer, 2005; De Walt *et al.*, 2010) and have risen exponentially in several tropical forests especially in neotropics in the recent decades (Wright *et al.*, 2015). Their frequency in the study area also is too high because of the predominance of evergreen forests as well as small shola patches.

Nelliyampathy hills harbours various special adaptive traits in plants such as parasitism, saprophytism and carnivory. Semi-parasites are more frequent than the holo-parasites. *Epipogium roseum* (D. Don) Lindl. is the only saprophytic angiosperm recorded from Nelliyampathy. Carnivory is shown by those plant species which inhabit the nutrient deficient substratum. Members of *Drosera* and *Utricularia* are the carnivorous species recorded from the study area.

The open rocky outcrops as well as the boulders present in the study area harbour a higher number of chasmophytic taxa. About 36% of the angiosperm diversity of Nelliyampathy is chasmophytic in nature and herbaceous taxa predominates among the chasmophytes. This is so because the small herbaceous plants require minimal nutrients and the water transpiration rate and water loss will also be minimal. Poaceae (63 taxa) accounts for the highest number of chasmophytes followed by Asteraceae (53 taxa). These results are exactly in accordance with the exclusive studies on the chasmophytic flora of southern Western Ghats of Coimbatore (Thomas, 2013). He pointed out that the grasses generally have relatively shallow, fibrous root systems that makes them well suited for intensively

exploiting upper volumes of fissure soil. This could be the reason for the predominance of Poaceae members among chasmophytic taxa.

Studies revealed various adaptive traits among chasmophytes to survive in harsh edaphic conditions and they include a well-developed root system for exploiting the minerals and nutrients deposited in the small crevices and fissures, and for proper anchorage to the substratum, reduction of sub-aerial parts for improving water transporting efficacy, reduced plant size, shorter life span, succulent nature for fluid balance, pubescence to reduce water transpiration rate, subterranean perennating organs which could tolerate acute water shortage and the semi-parasitism and carnivory in order to supplement the nutrient deficiency.

The chasmophytes recorded from the study area include occasional as well as obligatory ones. Many taxa preferring other specialized habitats were found to be occurring in exposed rock surfaces (Thomas, 2013; Thomas and Rajendran, 2012). The epiphytic taxon *Aerides crispa* Lindl. and species of *Peperomia* which grows on the forest floor and *Parasopubia delphiniifolia* (L.) H.-P. Hofm. & Eb.Fisch., which grows on the marshy areas of grasslands were found to thrive on the exposed rock surfaces and small crevices. The phenotypic plasticity is too high among chasmophytes. The species like *Richardia scabra* L., *Curculigo orchioides* Gaertn., *Begonia dipetala* Graham, and *Sonerila sp.* were showing extreme morphotypic variations. Since these variations are the driving force for speciation, many novel taxa were reported among this group. *Sonerila nairii* M. Soumya & Maya, *Sonerila victoriae* M. Soumya & Maya, *Impatiens sasidharanii* K.M.P. Kumar, Omalsree, Hareesh & V.B. Sreek., *Utricularia sunilii* Naveen Kum. & K.M.P. Kumar, are some of the novel taxa reported from chasmophytic habitats of Nelliyampathy hills.

High human interventions by way of tourism in the study area got reflected in the higher incidence of invasive elements. Along with the people settled in Nelliyampathy hills, tourist activities also promote the colonization of invasive elements. In most cases, the invasive taxa are seen in the forest fringes where the human activities are more. The fringes of the trekking path are covered by the invasive taxa in most of the tourist spots. These invasive elements tend to increase their area of occurrence and in many areas, they disturb the distribution of native flora.

Asteraceae members predominate among the invasive species and the reason may be attributed to, the capitulum inflorescence, higher seed count, adaptation for wind dispersal through pappus formation etc. which helps them in distant dispersal and in range expansion.

Apart from these characteristics, Martin-Fores (2018) states that the invasive potential of Asteraceae can be attributed to its dimorphic fruits (Wind-dispersed as well as animal-dispersed) which results in a bet-hedging dispersal strategy.

The geography of a region characterizes the earth by its climate in a way that is manifested by the adaptation of plants to various seasons. According to Raunkiaer (1934), the degree of protection of a shoot apex or the dormant bud by a plant to the critical or rigorous seasons is considered to be the best adaptation, and utilized this character to classify the plants into different life forms. The study also pointed out that one species may fall under a different category in a different geographical zone.

The critical analysis of the vegetation in Nelliyampathy showed that the phanerophytic life form is the most dominant one with 532 taxa i.e. 35% of the recorded taxa falls under phanerophytes. This is in accordance with the views of Raunkiaer that the evergreen phanerophytes, being the least protected type of life form, is predominant in the tropical climate which is characterized by the constantly warm and humid climates. The high percentage of evergreen and semi-evergreen forests and the tropical climate supports the dominance of these phanerophytes. The phanerophytes and therophytes survive in warmer regions of the equator and northwards they decrease and disappear. The higher percentage of phanerophytes and therophytes in the present study area correlates with the views of Raunkiaer on the life forms.

On an altitude-wise analysis, the least protected forms of phanerophytes and chamaephytes are dominant in lower zones, and are decreasing with higher altitudes. Hemicryptophytes are protected forms which have their remnant shoot system on the ground surface. They steadily increase with increasing altitude, since in higher altitudes, more protected forms are required for survival. Geophytes are also the protected forms with storage organs embedded in the soil and they are almost constant in distribution in all altitudinal regimes. Therophytes, the small herbaceous annuals, show a constant increase with increasing altitude. This is so because they prefer more open areas than the shady ground floors of moist deciduous, evergreen or semi-evergreen forests. Epiphytes also increase with increasing altitude and are often greater in number in evergreen and shola forests.

Among the forty-three monotypic genera recorded from Nelliyampathy, Fabaceae has the highest number of taxa. But according to Rana and Ranade (2009), Poaceae accounts for the highest number of monotypic taxa in India and Fabaceae is in the second position. The herbaceous taxa are the dominant ones among monotypic genera in India with about 64% of the total monotypic genera (Rana and Ranade, 2009). The efficient colonizing ability of herbs

is pointed out as a reason for herb being the dominant habit among monotypic taxa. But in the study area, the herbaceous representation in monotypes is only 28%. On the other hand, tree members are the dominant ones among monotypes with about 40% and this may be due to their longevity and perennial habit which are less efficient in colonizing new areas. Rana and Ranade (2009), Golam & Araki *et al.,* (2010) and Bora (2015) share a thought that the monotypic trees in a forest can be considered as relics of past vegetation. Hence the predominance of tree members among monotypic genera shows the antiquity of the vegetation of that particular area. Only three among the collected monotypic genera show endemism which are *Indobanalia thyrsiflora* (Moq.) A. N. Henry & B. Roy, *Naregamia alata* Wight & Arn. and *Otonephelium stipulaceum* Radlk. On the other hand taxa like *Kigelia africana* (Lam.) Benth., *Spathodea campanulata* P.Beauv., *Holmskioldia sanguinea* Retz. and *Nerium oleander* L. are either introduced or planted for ornamental purposes. This is also discussed by Rana and Ranade (2009) that some trees that may have been introduced in the past, but have not spread, diversified or hybridized with native trees due to reproductive and post-mating barriers, and have thereby remained isolated as monotypic taxa.

Taxonomic rarity calculated using taxonomic singularity is one of the important tool in assessing the biodiversity of a particular area. At the generic level, the taxonomic singularity is comparatively high since 62% of the collected genera contains a single species. But at the family level, taxonomic divergence is high, since 58% of the families are represented by more than a single genus. The high concentration of monotypic genera as well as taxonomic rarity of Nelliyampathy hills points out to the conservation significance of the area.

Phenotypic plasticity at species level as well as intra-specific level were analyzed critically. Cyperus shows the highest interspecific diversity with 24 species. This is so because the majority of these species prefer marshy areas or grasslands to grow. Since the study area is blessed with numerous annual and perennial water bodies, marshy areas are seen along with open montane grasslands. Another reason for this genus to be most speciose is on nomenclatural ground. Many species under the genera *Lipocarpha, Kyllinga, Mariscus, Pycreus* and *Rikillia* got merged into *Cyperus* making the genus more speciose. *Crotalaria* is the second largest genera with 22 species. The dominance may be due to the diversity of habitat and ecological preferences by this taxon and their chief colonization in open grasslands and forest edges (Rather *et al*., 2018). Moreover, the genus includes both annual and perennial species, the habit range between prostrate or erect herbs, under-shrubs, robust

shrubs or rarely trees (Rather *et al*., 2018). Like other Fabaceae members, *Crotalaria* possesses traits such as increased fruit setting rates, single pod bearing numerous seeds and an effective seed dispersal mechanism which would have helped them to successfully thrive in harsh environmental conditions.

The genus *Ipomoea* accounts for 17 species and the majority are degraded forest elements indicating the deterioration in the forests of Nelliyampathy. Only two species are confined to the Indo-Pacific kingdom while others show affinity towards African, Holarctic and South American kingdoms. The vast distribution of each taxon along with their climbing behaviour would have contributed to its high diversity.

As discussed by Shaju (2010), that the two thirds of endemic *Impatiens* in Kerala are confined to higher altitudes in montane forests, Nelliyampathy also harbours a good number of high altitude *Impatiens*. One of the major reasons for the high interspecific diversity among this taxon is due to the predominance of higher altitude regions in Nelliyampathy as well as the rocky areas which helps in the emergence of chasmophytic species of *Impatiens*.

The intra-specific variations or the morphotypic variations are quite frequent among many taxa recorded from Nelliyampathy hills. These variations may be due to the differences in the topography of the region. The major differences noted are in the characters such as pubescence, coloration, inflorescence, size of the plants and plant parts. All these characters are highly influenced by the altitudinal variations. May be because of the wide variations in the altitudinal ranges, Nelliyampathy harbours quite a number of morphotypic variants.

During the last several years many new taxa and new records of occurrence were reported from Kerala (BSI, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020). The novel taxa are the result of speciation which is the sum total of variations among the population. Since morphotypic variations are high among the species recorded from the Palghat Gap area, seven novel taxa could be delimited in the present study also. *Glycosmis nelliyampathiensis* Jabeena & Maya and *Microstegium sp. nov.* are semi-evergreen and evergreen elements while the new species from the genus *Tripogon, Fimbristylis, Ischaemum* are confined to high altitude open montane grasslands and the species from the genus *Eugenia* and *Peucedanum* are distributed along the margins of grasslands. The predominant grasslands and small patches of evergreen elements in between these grasslands could be considered as regions where variations are frequent and speciation is on its way. The survival strategies by the germplasm that try hard to adapt themselves to the varying environmental disturbances posed by the Gap by way of alterations in temperature regimes, wind velocity and humid climate might be one of the reasons for the existence of variable

populations in these high range areas. Such continued strategies might be causing speciation at micro ecosystem levels and could be the reason for citing new and new taxa from these vibrant ecosystems.

The high number of taxa which were found to be additions to Flora of Palghat (Vajravelu, 1990) and having extended distribution to Palakkad district (Sasidharan, 2011; Anil Kumar, 2015) are the results of thorough explorations in the deep interior forest areas as well as high altitude grasslands and small pockets of evergreen patches in between them.

The analysis of vegetation across the Palghat Gap using PAST software depicts the effect of Palghat Gap in species distribution. The dendrogram demarcates Nelliyampathy and Parambikulam regions that are contiguous vegetation zones on the southern lip of Palghat Gap from Silent Valley and Attappady regions on the northern side of Palghat Gap. This is an indication that the Gap plays a crucial role in distribution of propagules across, and the difference in elemental composition on either side of the Gap might be the result of edaphic and climatic factors prevailing on both sides combined with the Gap exerted pressures. The vegetation of Nelliyampathy shows close affinity with floral elements of Parambikulam, since both these zones share the same stretch of mountain chains and the species distribution among these two are quite common. On other hand, Nelliyampathy shares a higher affinity towards floristic elements of Attappady than the Silent Valley flora because of the similarity in habitat diversity and topography of the two regions.

The effects of seasonal variations are evident among different ecosystems around the world. The moist deciduous forest areas on drier seasons become barren due to the penetration of heavy sunlight by opening up of canopy mostly due to leaf shedding in the autumn season. But this season marks the onset of flowering in such trees, which evidently could also be an adaptation for efficient floral display for maximization of pollination and fruit set. The semi-evergreen areas also experience leaf shedding and emptying of forest floor elements in the drier seasons due to scattered distribution of typical deciduous elements among evergreens. In evergreen and shola patches, the seasonal variations don't have a visible influence though seasonality is well expressed in floristic elements. The epiphytic taxa in these patches shows seasonal fluctuations. They are predominant in the monsoon and immediate post-monsoon seasons. Open montane grassland areas have critical changes in the dry and wet seasons. These areas are represented by herbaceous taxa along with various

bryophytes and lichens in the wet seasons while in dry seasons, colonization of grass elements and some drought resistant taxa could only be seen.

Seasonal variations are more profound in microhabitats than in macrohabitats. The microhabitats such as Ephemeral Flush Vegetation, Rock Crevices and Fissures, Exposed Rock Surfaces, Rocky cliffs and Crest edges, Seasonal Drainage Channels and Temporary Pools are active in the monsoon and immediate post-monsoon seasons. With the retreat of monsoon, the climate becomes drier, and these microhabitats enter into an inactive phase waiting for another monsoon to come. The flowering and fruit setting in plant species is greatly influenced by the water availability especially in herbaceous forms. These taxa showed their luxuriant flowering in the monsoon and post-monsoon periods while the arborescent taxa entered into flowering and fruiting predominantly in the pre-monsoon periods.

Various plant species are being used by the Kadar tribes settled in the study area for medicinal ailments, as food resources and for miscellaneous purposes. The data collected from the tribal groups coincides with the ethnobotanical studies on tribal groups of Palakkad district carried out by Remesh (2015). The analysis showed that the dependence of the tribal population is more on the trees for various products. The high percentage of evergreen and semi-evergreen forests in the study area supports the continuous supply of these commodities throughout the year. The traditional use of plants by the tribal community is primarily targeted on those plants which are native and have restricted local distribution.

V.3. Geo-Spatial analysis

The land use land cover analysis showed the frequency of occurrence of Evergreen and semi-evergreen regions in Nelliyampathy hills are on higher end compared to other vegetation types. The earlier study on the Forest and wildland fire risk assessment using geospatial techniques conducted on Nemmara forest division by Ajin *et al.,* (2015) also accounts for this dominance of Evergreen Forest areas in the Nelliyampathy region. This study also accounts for the dominance of deciduous forests next to evergreen in Nelliyampathy region which was proved in the present study. The analysis of slope of the area revealed that the gentle slope areas harbour the majority of vegetation followed by steep slope areas. Among the various forest cover classes, evergreen type forms the dominant vegetation followed by deciduous forests.

The analysis on the forest cover change in two decades showed an increase in grassland vegetation, Evergreen zones and a slight increase in moist deciduous areas and private plantations. On the other hand, a decline was shown by forest plantations and barren lands. The increase in grassland and moist deciduous areas could be one of the reasons for the decrease in the dense forest NDVI areas in 2020 than in 2000. Another reason for the decrease may be due to the pruning and chopping of selected plants in the monoculture regions in order to maintain proper shade for cultivars. The lower altitudinal zones are primarily composed of deciduous forests while the upper three zones are predominantly covered with evergreen/semi-evergreen patches. This observation is exactly in accordance with that of the Ecological studies of the Parambikulam Tiger Reserve in the Western Ghats of India, using Remote Sensing and GIS (Magesh, 2014) where the author stated that the Evergreen forests are generally present on higher hill slopes, while mixed moist deciduous forests are present on lower hill slopes and foothills of Parambikulam Tiger reserve.

V.4. Threats and post flood status

The post-flood monitoring in the flood-affected regions showed habitat modifications and species loss. Because of the uprooting of larger trees, the canopy had opened up which affects the survival of small shade-loving taxa. Heavy erosion removed the fertile topsoil along with the perennating organs of many herbaceous taxa that affected the seasonal regeneration of these perennial plants. During the heavy erosion, the propagules of invading taxa got widely dispersed and these invasive taxa started to alter the natural vegetation of the forest area. The data showed that there is no uniformity in the uprooted taxa, survivor taxa etc. across the landslide hit areas. One taxa which was uprooted in a specific region had survived in another location. The edaphic conditions and geographical features also play a crucial role in the uprooting or survival of a taxa. In the case of phenological changes after the flood, the herbaceous taxa showed a delay in their sprouting as well as flowering, while many tree members showed early flowering in the month of August itself. This may be because of the excessive dryness in the area after the flood.

V.5. Conclusions with major findings

- The extensive exploration in Nelliyampathy hills documented 1529 taxa including 1504 species, 9 subspecies and 16 varieties falling under 11 Clades, 44 orders, 142 families and 744 genera
- Rosids is the most speciose clade with 546 taxa followed by Asterids (380 taxa) and Commelinids (251 taxa)
- Poales is the largest order with 184 taxa followed by Lamiales (166 taxa) and Fabales (139 taxa)
- Poaceae is the largest family with 136 taxa followed by Fabaceae (134 taxa) and Rubiaceae (72 taxa)
- Herbaceous forms predominate with 769 taxa, followed by 298 trees, 278 shrubs and 184 climbers.
- Habitat diversity ranges between West Coast Tropical Evergreen forests, West Coast Tropical Semi-evergreen forests, Southern Moist Mixed Deciduous forests, Southern Montane Wet Grasslands, Shola Vegetation, Bamboo Brakes, Riparian and Wetland stretches, Perennial ponds and Plantations.
- Apart from the macrohabitats, the microhabitats include Ephemeral Flush Vegetation, Exposed Rock Surfaces, Rock Crevices and Fissures, Boulders, Rocky cliffs and Crest edges, Seasonal Drainage Channels, Soil Filled Depressions and Temporary Pools.
- Evergreen elements account the highest with 171 taxa followed by grassland elements (170 taxa), Moist Deciduous forests (106 taxa) and shola elements (106 taxa)
- The altitudinal zone between 900-1200 m forms the most diverse zone with 1211 taxa followed by 600-900 m zone with 738 taxa
- According to IUCN categorization, 66 taxa fall under various threat categories which includes 2 Extinct in the Wild, 5 Critically Endangered, 18 Endangered, 31 Vulnerable and 10 Near Threatened taxa. According to the list of threatened plants in India (Barik et al., 2018), 308 collected taxa fall in the threatened category
- Out of the 379 endemic taxa, 46% are endemic to southern Western Ghats, 25.6% Western Ghats endemic, 17% Peninsular Indian endemics, 4.5% endemics to Kerala, 3.7% endemic to India, 3.2% endemic to South India
- Apart from Indo-Pacific affinity, taxa are showing highest affinity towards African and South American kingdoms and least towards Australian

- 124 anemochorous taxa were recorded which utilizes the high wind velocity in Palghat Gap region
- Special adaptations like parasitism, semi-parasitism, saprophytism, carnivory and epiphytism could be observed among the vegetation
- The chasmophytic diversity with 551 taxa belonging to 64 families were with diverse adaptations of extensive root system, rosette or cushion-like habit, scapigerous nature, herbaceous habit, therophytic life-form, succulence, pubescence, subterranean perennating organs, semi-parasitism and carnivory
- Ninety-five wild ornamentals, 98 wild edibles and 151 wild relatives of cultivated crops were documented
- About 25% of the documented taxa showed medicinal property. Herbaceous taxa are predominantly used in medicinal ailments than others
- Seventy-two alien invasive elements and 88 degraded forest elements were recorded
- Phanerophytes is the predominant life-form in Nelliyampathy with about 35% followed by therophytes (19%)
- Forty-three monotypic genera were recorded from Nelliyampathy. Taxonomic singularity at genus level is 0.65 and at family level is 0.42
- *Cyperus* is the most speciose genera with 24 species followed by *Crotalaria* with 22 species, *Ipomoea* with 17 species and *Impatiens* with 15 species
- Morphotypic variations could be observed among 19 different species
- Reinstatement of *Pachystoma hirsuta* (Joseph & Vajravelu) C.S.Kumar & Manilal from *P. pubescens* Blume and *Rhynchoglossum scabrum* Dalzell from *Rhynchoglossum notonianum* (Wall.) B. L. Burtt. were proposed
- Seven new species were documented viz., *Glycosmis nelliyampathiensis, Tripogon sp. nov., Ischaemum sp. nov., Eugenia sp. nov., Microstegium sp. nov., Fimbristylis sp. nov.* and *Peucedanum sp. nov.*
- Collection of *Crotalaria priestleyoides* Benth. ex Baker is a recollection after a century from Kerala part of southern Western Ghats
- Comparison with Flora of Palghat district (Vajravelu, 1990) revealed an addition of 588 taxa. Among them, 122 were having an extended distribution to Palakkad district
- Analysis of vegetation across Palghat Gap using PAST software revealed distinctiveness in the species distribution between northern and southern lips of Palghat Gap

- One hundred and nineteen taxa with ethnobotanical significance could be documented from the two tribal colonies of the study area
- The Land Use/Land Cover analysis revealed eight different classes viz., Evergreen/semi-evergreen, deciduous, forest plantations, private plantations, grasslands, waterbodies, built up lands and barren lands
- Out of the total forest cover, evergreen/semi-evergreen patches dominate with 42% of the total area followed by deciduous (24.5%), grasslands (12.7%), forest plantations (9.9%) and crop plantations (5%)
- Forest cover change analysis between two decades revealed that there is an increase of 2.59% in Evergreen forest cover, 0.65% increase in deciduous forest cover and 3.67% increase in grasslands while the forest plantation areas are decreased by 3.95% and barren lands are decreased by 3.47 percentage
- Altitude-wise zonation revealed that Evergreen/semi-evergreen forests predominate the IVth zone viz. 900-1200 m altitudinal zone, while grasslands predominate the upper zone, i.e., 1200-1500 m zone and deciduous forests predominates the lower altitudinal zones
- Slope-wise zonation depicts that majority of the study area falls under gentle slope areas (0-15 degree) with 48% of the study area followed by steep slope (30-75) with 36% and moderate slope (15-30) with 16% of the total study area
- NDVI analysis of forest cover in two different decades showed a marked deterioration in the health of the vegetation in Nelliyampathy
- Majority of the land-slide affected areas mapped were either in the Ghat road or at the monoculture plantation areas
- Uprooting of larger trees, opening up of canopy, diminishing of ground flora, heating up of forest floor and phenological shift are the major post-flood habitat modifications observed in Nelliyampathy
- Apart from the natural causes like natural calamities, forest fire and invasive species, there is too much of anthropogenic stresses in Nelliyampathy which includes plantations, tourism, plant introduction, agricultural practices, grazing, selective felling and encroachment to forest land, urbanization, habitat fragmentation by constructions and road construction in interior forests, plastic dumping, pesticide application in tea and cardamom plantations.

V.6. Recommendations

Critical evaluation of the biodiversity elements including flora and fauna in an ecological perspective is the need of the hour to plan strategies for the maintenance of the health of the ecosystem at Nelliyampathy hills. Strict laws for regulation and proper implementation of responsible tourism need to be carried out to minimize the human intervention to the core zones of Nelliyampathy. Regulations are required for monoculture plantations and use of pesticides. Control measures are required for selective pruning of larger trees near estate areas as most of such actions cross the permitted levels of pruning. Observations on forced tree drying within the plantations are exceeding and must be prohibited with strict rules and regulations. The on-going process of recovering of leased out estates on expiry of lease period must be continued and the forest department must ensure their rejuvenation into natural vegetation. The existing forest management practices in the control of forest fire by maintaining fire lines must be continued.

Afforestation with native elements and safeguarding the hill tracts could definitely preserve the vegetation in these tracts. It is essential to provide awareness in regular intervals to local communities on the values of biodiversity and forest ecosystems. Policy makers should aim at conserving ecologically fragile areas by reducing overexploitation, illegal poaching of forest fringe areas and promotion of responsible tourism in Nelliyampathy hills.

Recent observations on introduction of exotic ornamental plants for beautifying Nelliyampathy hills must be regulated which obviously add to the threat caused by uncontrolled introduction of garden plants by the human inhabitants of the study area. Control measures for the colonizing invasive elements must be there in any of the policies that are being made on the conservation of the ecosystem in this Ghat zone. The proposed Ghat road from Nelliyampathy to Parambikulam through the core zones of Manpara must be reviewed and decisions should not hamper the natural inhabitants of this ecologically fragile land. Proper waste management systems are required in the hill tracts for both human inhabitants as well as the tourist visitors to the hills.

Forest based mapping and surveys should be conducted frequently to demarcate forestlands and private ownerships where the vegetation is fragmented by coffee and tea plantations. Case studies with research should be encouraged to monitor the health and status of vegetation, which could be done with mutual cooperation between government, researchers, forest professionals, educators and journalists for long term benefits.

Implementation of conservation measures in highly diverse tourist zones such as Mattumala, Anamada, Manpara, Kesavan Para etc. and montane grassland peaks of Pothumala and Karassuri must be guaranteed for preservation of unique flora. Ensuring the carrying capacity of each tourist spot with permissions of predetermined number of tourist visitors per day must be implemented. Proper regulation in providing incentives to tourists will also help to maintain quality of air, water and soil along with controlling pollution which will in turn promote responsible tourism.

Natural disasters of landslides and mudslides that hit the biodiverse area in recent years is a result of by human interventions through increased constructions for the promotion of tourism, road constructions and plantation activities in Ghat zone. Proper implementation of existing laws must be ensured by local self-government with necessary augmentations from the department of forests.

The floristic exploration in Nelliyampathy hills has revealed the high species diversity existing within a small expanse of land and this must be considered as an incentive for formulating better policies for the maintenance of the ecological wealth of the region. Ecological service value of the forests and the ecosystem as whole must be the priority over all other considerations and forests should not be viewed as a revenue earner. Educational tourism must be promoted for a team of scientists and researchers by the forest officials so that very complex forest ecosystems can be thoroughly understood and protected, and the immense information potential of forests should not be left unexplored. Such interactions will inculcate a sense of possession in the young minds and an awareness of the importance of forest with a genuine appreciation of nature and natural resources that needs to be passed on to the future generations.

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Annexure I

Evergreen elements in Nelliyampathy hills

Sl. No.	Binomial Name	Family
1	*Acilepis ornata* (Talbot) H.Rob. & Skvarla.	Asteraceae
2	*Acmella calva* (DC.) R.K.Jansen	Asteraceae
3	*Aglaia edulis* (Roxb.) Wall.	Meliaceae
4	*Aglaia perviridis* Hiern.	Meliaceae
5	*Aglaia tomentosa* Teijsm. & Binn.	Meliaceae
6	*Alpinia malaccensis* (Burm.f.) Roscoe	Zingiberaceae
7	*Amomum hypoleucum* Thwaites	Zingiberaceae
8	*Amorphophallus commutatus* (Schott) Engl.	Araceae
9	*Ampelocissus latifolia* (Roxb.) Planch.	Vitaceae
10	*Ancistrocladus heyneanus* Wall. ex J.Graham.	Ancistrocladaceae
11	*Antidesma alexiteria* L.	Phyllanthaceae
12	*Arenga wightii* Griff.	Arecaceae
13	*Arisaema barnesii* C.E.C.Fisch.	Araceae
14	*Arisaema tortuosum* (Wall.) Schott	Araceae
15	*Asystasia crispata* Benth.	Acanthaceae
16	*Begonia cordifolia* Thwaites	Begoniaceae
17	*Begonia fallax* A.DC.	Begoniaceae
18	*Bhesa indica* (Bedd.) Ding Hou.	Centroplacaceae
19	*Bulbophyllum stocksii* (Benth. ex Hook.f.) J.J.Verm.	Orchidaceae
20	*Calamus rotang* L.	Arecaceae
21	*Calophyllum polyanthum* Wall.	Calophyllaceae
22	*Canarium strictum* Roxb.	Burseraceae
23	*Canscora pauciflora* Dalzell	Gentianaceae
24	*Caryota urens* L.	Arecaceae
25	*Chilocarpus denudatus* Blume	Apocynaceae
26	*Cinnamomum macrocarpum* Hook.f.	Lauraceae
27	*Commelina paludosa* Blume	Commelinaceae
28	*Connarus sclerocarpus* G.Schellenb.	Connaraceae
29	*Croton zeylanicus* Müll.Arg.	Euphorbiaceae
30	*Cryptocarya anamalayana* Gamble	Lauraceae
31	*Cullenia exarillata* A.Robyns	Malvaceae
32	*Cyanotis fasciculata* (B.Heyne ex Roth) Schult.f.	Commelinaceae
33	*Cyanotis pilosa* Schult.f.	Commelinaceae
34	*Cyanotis vivipara* Dalzell	Commelinaceae
35	*Cyperus diffusus* Vahl.	Cyperaceae
36	*Debregeasia longifolia* (Burm.f.) Wedd.	Urticaceae
37	*Debregeasia wallichiana* Wedd.	Urticaceae
38	*Dendrobium jerdonianum* Wight	Orchidaceae
39	*Dendrocnide sinuata* (Blume) Chew.	Urticaceae
40	*Dicliptera foetida* Blatt.	Acanthaceae
41	*Dillenia indica* L.	Dilleniaceae
42	*Dipterocarpus bourdillonii* Brandis	Dipterocarpaceae
43	*Donella lanceolata* (Blume) Aubrév.	Sapotaceae
44	*Drypetes oblongifolia* (Bedd.) Airy Shaw	Putranjivaceae
45	*Drypetes wightii* Pax & K.Hoffm.	Putranjivaceae
46	*Dumasia villosa* DC.	Fabaceae
47	*Dysoxylum malabaricum* Bedd. ex C.DC.	Meliaceae
48	*Elaeocarpus monocera* Cav.	Elaeocarpaceae
49	*Elaeodendron paniculatum* Wight & Arn.	Celastraceae
50	*Elatostema acuminatum* (Poir.) Brongn.	Urticaceae
51	*Elatostema sessile* J.R.Forst. & G.Forst.	Urticaceae

52	*Entada rheedei* Spreng	Fabaceae
53	*Epipogium roseum* Lindl.	Orchidaceae
54	*Eugenia agasthiyamalayana* Gopalan & Murugan	Myrtaceae
55	*Eugenia indica* (Wight) Chithra	Myrtaceae
56	*Eugenia roxburghii* DC.	Myrtaceae
57	*Eugenia wynadensis* Bedd.	Myrtaceae
58	*Euonymus angulatus* Wight	Celastraceae
59	*Euonymus indicus* B.Heyne ex Wall.	Celastraceae
60	*Euphorbia santapaui* A.N.Henry	Euphorbiaceae
61	*Euphorbia vajravelui* Binojk. & N.P.Balakr.	Euphorbiaceae
62	*Falconeria insignis* Royle	Euphorbiaceae
63	*Flemingia wallichii* Wight & Arn.	Fabaceae
64	*Garcinia talbotii* Raizada	Clusiaceae
65	*Globba sessiliflora* Sims.	Zingiberaceae
66	*Gomphostemma heyneanum* Wall.	Lamiaceae
67	*Grewia umbellifera* Bedd.	Malvaceae
68	*Gymnema decaisneanum* Wight	Apocynaceae
69	*Habenaria crinifera* Lindl.	Orchidaceae
70	*Hedychium venustum* Wight	Zingiberaceae
71	*Helixanthera wallichiana* Danser	Loranthaceae
72	*Henckelia fischeri* (Gamble) A.Weber & B.L.Burtt.	Gesneriaceae
73	*Heritiera papilio* Bedd.	Malvaceae
74	*Holigarna beddomei* Hook.f.	Anacardiaceae
75	*Holigarna ferruginea* Marchand	Anacardiaceae
76	*Holigarna grahamii* Kurz.	Anacardiaceae
77	*Holigarna nigra* Bourd.	Anacardiaceae
78	*Hunteria zeylanica* Gardner ex Thwaites	Apocynaceae
79	*Impatiens gardneriana* Wight	Balsaminaceae
80	*Indobanalia thyrsiflora* (Moq.) A.N.Henry & B.Roy	Amaranthaceae
81	*Ixora cuneifolia* Roxb.	Rubiaceae
82	*Ixora ravikumarii* Kottaim	Rubiaceae
83	*Jasminum calophyllum* Wall. & G.Don.	Oleaceae
84	*Lasianthus jackianus* Wight	Rubiaceae
85	*Lasianthus rostratus* Wight	Rubiaceae
86	*Ligustrum robustum* subsp. *walkeri* (Decne.) P.S.Green	Oleaceae
87	*Litsea bourdillon*ii Gamble	Lauraceae
88	*Litsea stocksii* (Meisn.) Hook.f.	Lauraceae
89	*Luisia tenuifolia* Blume	Orchidaceae
90	*Mallotus beddomei* Hook.f.	Euphorbiaceae
91	*Mallotus resinosus* Merr.	Euphorbiaceae
92	*Meiogyne pannosa* (Dalzell) J.Sinclair	Annonaceae
93	*Meistera acuminata* (Thwaites) Škorničk. & M.F.Newman	Zingiberaceae
94	*Meistera cannicarpa* (Wight) Škorničk. & M.F.Newman	Zingiberaceae
95	*Meistera masticatorium* (Thwaites) Škorničk. & M.F.Newman	Zingiberaceae
96	*Meistera sahyadrica* (V.P.Thomas & M.Sabu) Škorničk. & M.F.Newman	Zingiberaceae
97	*Memecylon angustifolium* Wight	Melastomataceae
98	*Memecylon heyneanum* Benth. ex Wight & Arn.	Melastomataceae
99	*Mesua ferrea* var. *coromandeliana* (Wight) N.P.Singh	Calophyllaceae
100	*Mesua ferrea* L.	Calophyllaceae
101	*Microcos heterotricha* Burret	Malvaceae
102	*Millettia rubiginosa* Wight & Arn.	Fabaceae
103	*Munronia pinnata* (Wall.) W.Theob.	Meliaceae
104	*Murdannia zeylanica* G.Brückn.	Commelinaceae
105	*Mycetia acuminata* Kuntze.	Rubiaceae
106	*Myristica fragrans* Houtt.	Myristicaceae

107	*Myristica malabarica* Lam.	Myristicaceae
108	*Neanotis decipiens* (Hook.f.) W.H.Lewis	Rubiaceae
109	*Neolamarckia cadamba* (Roxb.) Bosser	Rubiaceae
110	*Neurocalyx calycinus* B.L.Rob.	Rubiaceae
111	*Nostolachma crassifolia* (Gamble) Deb & J.Lahiri	Rubiaceae
112	*Oberonia anamalayana* J.Joseph	Orchidaceae
113	*Oberonia bicornis* Lindl.	Orchidaceae
114	*Oberonia brachyphylla* Blatt. & McCann	Orchidaceae
115	*Oberonia chandrasekharanii* V.J.Nair, V.S.Ramach. & R.Ansari	Orchidaceae
116	*Ophiorrhiza pectinata* Arn.	Rubiaceae
117	*Oreocnide integrifolia* (Gaudich.) Miq.	Urticaceae
118	*Orophea erythrocarpa* Bedd.	Annonaceae
119	*Orophea uniflora* Hook.f. & Thomson	Annonaceae
120	*Palaquium ellipticum* (Dalzell) Baill.	Sapotaceae
121	*Palaquium ravii* Sasidh. & Vink.	Sapotaceae
122	*Paracroton integrifolius* (Airy Shaw) N.P.Balakr. & Chakrab.	Euphorbiaceae
123	*Paramignya monophylla* Wight	Rutaceae
124	*Peperomia heyneana* Miq.	Piperaceae
125	*Peperomia portulacoides* (Lam.) A. Dietr.	Piperaceae
126	*Phyllanthus bourdillonii* (Gamble) Chakrab. & N.P.Balakr.	Phyllanthaceae
127	*Phyllanthus hohenackeri* Müll.Arg.	Phyllanthaceae
128	*Pilea kingii* C.E.C.Fisch.	Urticaceae
129	*Pogostemon benghalensis* Kuntze.	Lamiaceae
130	*Porpax filiformis* (Wight) Schuit.	Orchidaceae
131	*Pothos scandens* L.	Araceae
132	*Psychotria anamallayana* Bedd.	Rubiaceae
133	*Psychotria dalzellii* Hook.f.	Rubiaceae
134	*Psychotria globicephala* Gamble	Rubiaceae
135	*Psychotria nilgiriensis* Deb & M.Gangop.	Rubiaceae
136	*Rubus fairholmianus* Gardner	Rosaceae
137	*Rungia wightiana* Nees.	Acanthaceae
138	*Sageraea laurina* Dalzell	Annonaceae
139	*Saprosma glomerata* Bedd.	Rubiaceae
140	*Saraca asoca* (Roxb.) W.J.de Wilde	Fabaceae
141	*Schefflera wallichiana* (Wight & Arn.) Harms	Araliaceae
142	*Schoenorchis smeeana* (Rchb.f.) Jalal, Jayanthi & Schuit.	Orchidaceae
143	*Scutellaria violacea* B.Heyne ex Benth.	Lamiaceae
144	*Sonerila nairii* M.Soumya & Maya	Melastomataceae
145	*Strobilanthes anamallaica* J.R.I.Wood	Acanthaceae
146	*Strobilanthes anceps* Nees.	Acanthaceae
147	*Strobilanthes consanguinea* T.Anderson	Acanthaceae
148	*Strobilanthes lawsonii* Gamble	Acanthaceae
149	*Strobilanthes rubicunda* T.Anderson	Acanthaceae
150	*Strobocalyx arborea* Sch.Bip.	Asteraceae
151	*Symplocos macrophylla* Wall. ex DC.	Symplocaceae
152	*Symplocos racemosa* Roxb.	Symplocaceae
153	*Syzygium cumini* (L.) Skeels	Myrtaceae
154	*Syzygium gardneri* Thwaites	Myrtaceae
155	*Syzygium laetum* (Buch.-Ham.) Gandhi	Myrtaceae
156	*Syzygium mundagam* (Bourd.) Chithra	Myrtaceae
157	*Syzygium palghatense* Gamble	Myrtaceae
158	*Tabernaemontana gamblei* Subr. & A.N.Henry	Apocynaceae
159	*Tainia bicornis* Rchb.f.	Orchidaceae
160	*Tarenna canarica* (Bedd.) Bremek.	Rubiaceae
161	*Tarenna monosperma* (Wight & Arn.) D.C.S.Raju	Rubiaceae

162	*Terminalia travancorensis* Wight & Arn.	Combretaceae
163	*Torenia travancorica* Gamble	Linderniaceae
164	*Trichosanthes villosula* Cogn.	Cucurbitaceae
165	*Turpinia malabarica* Gamble	Staphyleaceae
166	*Wajira grahamiana* (Wight & Arn.) Thulin & Lavin	Fabaceae
167	*Xantolis tomentosa* Raf.	Sapotaceae
168	*Zanthoxylum ovalifolium* Wight	Rutaceae
169	*Zingiber sabuanum* K.M.P.Kumar & A.Joe	Zingiberaceae
170	*Zingiber wightianum* Thwaites	Zingiberaceae
171	*Zingiber zerumbet* (L.) Sm.	Zingiberaceae

Annexure II

Moist-deciduous elements in Nelliyampathy hills

Sl. No.	Binomial Name	Family
1	*Abelmoschus moschatus* Medik.	Malvaceae
2	*Acampe praemorsa* (Roxb.) Blatt. & McCann	Orchidaceae
3	*Achyranthes aspera* var. *porphyristachya* (Wall. ex Moq.) Hook.f.	Amaranthaceae
4	*Acilepis divergens* (DC.) H.Rob. & Skvarla	Asteraceae
5	*Aeschynomene indica* L.	Fabaceae
6	*Alloteropsis cimicina* Stapf	Poaceae
7	*Alysicarpus glumaceus* (Vahl) DC.	Fabaceae
8	*Alysicarpus parviflorus* Dalzell	Fabaceae
9	*Amorphophallus paeoniifolius* (Dennst.) Nicolson	Araceae
10	*Andrographis elongata* (Vahl) T.Anderson	Acanthaceae
11	*Apluda mutica* L.	Poaceae
12	*Apocopis cochinchinensis* A.Camus	Poaceae
13	*Aristolochia indica* L.	Aristolochiaceae
14	*Axonopus compressus* (Sw.) P.Beauv.	Poaceae
15	*Azanza lampas* Alef.	Malvaceae
16	*Baliospermum solanifolium* (Burm.) Suresh	Euphorbiaceae
17	*Barleria prattensis* Santapau	Acanthaceae
18	*Cajanus heynei* (Wight & Arn.) Maesen	Fabaceae
19	*Cajanus scarabaeoides* (L.) Thouars	Fabaceae
20	*Canscora alata* (Roth) Wall.	Gentianaceae
21	*Capillipedium assimile* (Steud.) A.Camus	Poaceae
22	*Cassia fistula* L.	Fabaceae
23	*Catunaregam spinosa* (Thunb.) Tirveng.	Rubiaceae
24	*Chamaecrista mimosoides* (L.) Greene	Fabaceae
25	*Cissus vitiginea* L.	Vitaceae
26	*Clematis zeylanica* Poir.	Ranunculaceae
27	*Codariocalyx motorius* H.Ohashi	Fabaceae
28	*Commelina clavata* C.B.Clarke	Commelinaceae
29	*Cosmos caudatus* Kunth	Asteraceae
30	*Crotalaria prostrata* Rottler	Fabaceae
31	*Cyperus zollingeri* Steud.	Cyperaceae
32	*Cyrtococcum patens* (L.) A.Camus	Poaceae
33	*Dendrobium ovatum* Kraenzl	Orchidaceae
34	*Dioscorea bulbifera* L.	Dioscoreaceae
35	*Drosera indica* L.	Droseraceae
36	*Elephantopus scaber* L.	Asteraceae
37	*Erythrina stricta* Roxb.	Fabaceae
38	*Eulophia graminea* Lindl.	Orchidaceae
39	*Euphorbia thymifolia* L.	Euphorbiaceae
40	*Exacum lawii* C.B.Clarke	Gentianaceae
41	*Exacum sessile* L.	Gentianaceae
42	*Ficus exasperata* Vahl	Moraceae
43	*Ficus tsjakela* Burm.f.	Moraceae
44	*Garuga pinnata* Roxb.	Burseraceae
45	*Globba marantina* L.	Zingiberaceae
46	*Gonostegia pentandra* (Roxb.) Miq.	Urticaceae

47	*Grewia tiliifolia* Vahl	Malvaceae
48	*Hedychium coronarium* J.Koenig	Zingiberaceae
49	*Hibiscus surattensis* L.	Malvaceae
50	*Huberantha cerasoides* (Roxb.) Chaowasku	Annonaceae
51	*Hultholia mimosoides* (Lam.) Gagnon & G.P.Lewis	Fabaceae
52	*Impatiens flaccida* Arn.	Balsaminaceae
53	*Indigofera prostrata* Willd.	Fabaceae
54	*Ipomoea alba* L.	Convolvulaceae
55	*Ipomoea capitellata* Choisy	Convolvulaceae
56	*Justicia gendarussa* Burm.f.,	Acanthaceae
57	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae
58	*Lagerstroemia microcarpa* Wight	Lythraceae
59	*Launaea acaulis* (Roxb.) Babc. ex Kerr	Asteraceae
60	*Luisia tristis* Hook.f.	Orchidaceae
61	*Macaranga peltata* Müll.Arg.	Euphorbiaceae
62	*Madhuca longifolia* J.F.Macbr.	Sapotaceae
63	*Miliusa tomentosa* (Roxb.) Finet & Gagnep	Annonaceae
64	*Mitragyna parvifolia* Korth.	Rubiaceae
65	*Naregamia alata* Wight & Arn.	Meliaceae
66	*Oberonia mucronata* (D.Don) Ormerod & Seidenf.	Orchidaceae
67	*Oroxylum indicum* (L.) Benth. ex Kurz.	Bignoniaceae
68	*Oryza meyeriana* Baill.	Poaceae
69	*Osbeckia muralis* Naudin	Melastomataceae
70	*Panicum notatum* Retz.	Poaceae
71	*Piper retrofractum* Vahl	Piperaceae
72	*Polygala arvensis* Willd.	Polygalaceae
73	*Polygala chinensis* L.	Polygalaceae
74	*Pouzolzia auriculata* Wight	Urticaceae
75	*Pouzolzia caudata* Benn.	Urticaceae
76	*Pouzolzia cymosa* Wight	Urticaceae
77	*Pseudarthria viscida* (L.) Wight & Arn.	Fabaceae
78	*Pupalia lappacea* (L.) Juss.	Amaranthaceae
79	*Rauvolfia serpentina* Benth. ex Kurz.	Apocynaceae
80	*Rhinacanthus nasutus* (L.) Kurz	Acanthaceae
81	*Rhynchostylis retusa* (L.) Blume	Orchidaceae
82	*Rostellularia neesii* (Ramamoorthy) A.K.Mukh.	Acanthaceae
83	*Rotheca serrata* (L.) Steane & Mabb.	Lamiaceae
84	*Senegalia pennata* (L.) Maslin	Fabaceae
85	*Senegalia rugata* Britton & Rose	Fabaceae
86	*Senna tora* Roxb.	Fabaceae
87	*Sida rhombifolia* subsp. *alnifolia* (L.) Ugbor.	Malvaceae
88	*Smilax perfoliata* Lour.	Smilacaceae
89	*Smithsonia maculata* (Dalzell) C.J.Saldanha	Orchidaceae
90	*Sporobolus indicus* (L.) R.Br.	Poaceae
91	*Sterculia foetida* L.	Malvaceae
92	*Sterculia villosa* Roxb. ex Sm.	Malvaceae
93	*Stereospermum chelonoides* (L.f.) DC.	Bignoniaceae
94	*Striga angustifolia* (D.Don) Saldanha	Orobanchaceae
95	*Tamilnadia uliginosa* (Retz.) Tirveng. & Sastre	Rubiaceae
96	*Theriophonum infaustum* N.E.Br.	Araceae
97	*Tiliacora racemosa* Colebr.	Menispermaceae

98	*Tinospora cordifolia* (Willd.) Miers ex Hook.f. & Thomson	Menispermaceae
99	*Urena sinuata* L.	Malvaceae
100	*Vanda tessellata* Hook. ex G.Don	Orchidaceae
101	*Vanda testacea* Rchb.f.	Orchidaceae
102	*Vigna dalzelliana* (Kuntze) Verdc.	Fabaceae
103	*Vigna vexillata* (L.) A.Rich.	Fabaceae
104	*Vigna vexillata* var. *wightii* (Benth. ex Bedd.) Babu & S.K.Sharma	Fabaceae
105	*Xylia xylocarpa* (Roxb.) W.Theob.	Fabaceae
106	*Zingiber nimmonii* Dalzell	Zingiberaceae

Annexure III

Grassland elements in Nelliyampathy hills

Sl. No.	Binomial Name	Family
1	*Acilepis dendigulensis* (DC.) H.Rob.	Asteraceae
2	*Alysicarpus bupleurifolius* (L.) DC.	Fabaceae
3	*Alysicarpus heyneanus* Wight & Arn.	Fabaceae
4	*Alysicarpus naikianus* Pokle	Fabaceae
5	*Anaphalis lawii* Gamble	Asteraceae
6	*Anaphalis leptophylla* DC.	Asteraceae
7	*Anaphalis subdecurrens* Gamble	Asteraceae
8	*Anaphalis wightiana* DC.	Asteraceae
9	*Andrographis alata* (Vahl) Nees	Acanthaceae
10	*Anisochilus carnosus* (L.f.) Wall.	Lamiaceae
11	*Arthraxon castratus* Nayaran. ex Bor.	Poaceae
12	*Arthraxon lancifolius* Hochst.	Poaceae
13	*Arundina graminifolia* (D.Don) Hochr.	Orchidaceae
14	*Arundinella ciliata* Nees ex Miq.	Poaceae
15	*Arundinella mesophylla* Nees ex Steud.	Poaceae
16	*Arundinella pumila* Steud.	Poaceae
17	*Arundinella setosa* Trin.	Poaceae
18	*Bothriochloa insculpta* (Hochst. ex A.Rich.) A.Camus	Poaceae
19	*Bothriochloa pertusa* (L.) A.Camus	Poaceae
20	*Brachycorythis iantha* (Wight) Summerh.	Orchidaceae
21	*Brachycorythis splendida* Summerh.	Orchidaceae
22	*Buchnera hispida* D.Don.	Orobanchaceae
23	*Bulbostylis densa* (Wall.) Hand.-Mazz.	Cyperaceae
24	*Burmannia coelestis* D.Don.	Burmanniaceae
25	*Cajanus lineatus* (Wight & Arn.) Maesen	Fabaceae
26	*Cajanus rugosus* (Wight & Arn.) Maesen	Fabaceae
27	*Canscora roxburghii* Arn. ex Miq.	Gentianaceae
28	*Ceropegia ensifolia* Bedd	Apocynaceae
29	*Ceropegia fimbriifera* Bedd.	Apocynaceae
30	*Chlorophytum indicum* (Willd.) Dress	Amaryllidaceae
31	*Chrysopogon asper* B.Heyne ex Blatt. & McCann	Poaceae
32	*Chrysopogon hackelii* (Hook.f.) C.E.C.Fisch.	Poaceae
33	*Chrysopogon nodulibarbis* (Hochst.) Henrard	Poaceae
34	*Commelina longifolia* Lam.	Commelinaceae
35	*Crepidium purpureum* (Lindl.) Szlach.	Orchidaceae
36	*Crinum latifolium* L.	Amaryllidaceae
37	*Crotalaria calycina* Schrank	Fabaceae
38	*Crotalaria fysonii* Dunn	Fabaceae
39	*Crotalaria multiflora* Benth.	Fabaceae
40	*Crotalaria notonii* Wight & Arn.	Fabaceae
41	*Crotalaria obtecta* Graham ex Wight & Arn.	Fabaceae
42	*Crotalaria priestleyoides* Benth.	Fabaceae
43	*Crotalaria scabrella* Wight & Arn.	Fabaceae
44	*Crotalaria umbellata* Wight	Fabaceae
45	*Curcuma montana* Roxb.	Zingiberaceae
46	*Curcuma neilgherrensis* Wight	Zingiberaceae

47	*Curcuma pseudomontana* J.Graham	Zingiberaceae
48	*Cyanotis arachnoidea* C.B.Clarke	Commelinaceae
49	*Cyanotis tuberosa* (Roxb.) Schult.f.	Commelinaceae
50	*Cymbopogon citratus* Stapf	Poaceae
51	*Cymbopogon martini* (Roxb.) Will.Watson	Poaceae
52	*Cyperus albescens* (Steud.) Larridon & Govaerts	Cyperaceae
53	*Cyperus flavidus* Retz.	Cyperaceae
54	*Cyperus neochinensis* (Tang & F.T.Wang) Bauters	Cyperaceae
55	*Cyperus polystachyos* Rottb.	Cyperaceae
56	*Cyperus puncticulatus* Vahl.	Cyperaceae
57	*Decalepis salicifolia* (Bedd. ex Hook.f.) Bruyns	Apocynaceae
58	*Dichanthium annulatum* Stapf.	Poaceae
59	*Dichanthium caricosum* (L.) A.Camus	Poaceae
60	*Dichanthium foulkesii* (Hook.f.) S.K.Jain & Deshp.	Poaceae
61	*Dimeria bialata* C.E.C.Fisch.	Poaceae
62	*Dimeria deccanensis* Bor.	Poaceae
63	*Dimeria kanjirapallilana* Jacob	Poaceae
64	*Dimeria ornithopoda* Trin.	Poaceae
65	*Drosera peltata* Thunb.	Droseraceae
66	*Eragrostiella bifaria* (Vahl) Bor.	Poaceae
67	*Eragrostis gangetica* Steud.	Poaceae
68	*Eriocaulon palghatense* R.Ansari & N.P.Balakr.	Eriocaulaceae
69	*Eriocaulon pectinatum* Ruhland	Eriocaulaceae
70	*Eriocaulon truncatum* Buch.-Ham. ex Mart.	Eriocaulaceae
71	*Euclasta oligantha* (Hochst. ex Steud.) M.R.Almeida	Poaceae
72	*Eugenia discifera* Gamble	Myrtaceae
73	*Fimbristylis argentea* Vahl.	Cyperaceae
74	*Fimbristylis cinnamometorum* (Vahl) Kunth.	Cyperaceae
75	*Fimbristylis microcarya* F.Muell.	Cyperaceae
76	*Fimbristylis salbundia* Kunth.	Cyperaceae
77	*Fimbristylis sunilii* Jabeena & Maya	Cyperaceae
78	*Fimbristylis tuckeri* Viji, Pandur. & Deepu	Cyperaceae
79	*Fuirena ciliaris* (L.) Roxb.	Cyperaceae
80	*Garnotia elata* Janowski	Poaceae
81	*Garnotia tenella* Janowski	Poaceae
82	*Glyphochloa forficulata* (C.E.C.Fisch.) Clayton	Poaceae
83	*Gnaphalium polycaulon* Pers.	Asteraceae
84	*Habenaria barnesii* Summerh.	Orchidaceae
85	*Habenaria heyneana* Lindl.	Orchidaceae
86	*Habenaria longicorniculata* J.Graham	Orchidaceae
87	*Habenaria rariflora* A.Rich.	Orchidaceae
88	*Hackelochloa granularis* Kuntze.	Poaceae
89	*Henckelia humboldtiana* (Gardner) A.Weber & B.L.Burtt.	Gesneriaceae
90	*Henckelia incana* Spreng.	Gesneriaceae
91	*Henckelia wightii* (C.B.Clarke) A.Weber & B.L.Burtt.	Gesneriaceae
92	*Heracleum rigens* Wall.	Apiaceae
93	*Heteropogon fischerianus* Bor.	Poaceae
94	*Impatiens balsamina* L.	Balsaminaceae
95	*Impatiens minae* Ratheesh, Anil Kumar & Sivad.	Balsaminaceae
96	*Impatiens sasidharanii* K.M.P.Kumar, Omalsree, Hareesh & V.B.Sreek.	Balsaminaceae

97	*Impatiens sasidharanii* var. *hirsuta* K.M.P.Kumar, Omalsree, Hareesh & V.B.Sreek.	Balsaminaceae
98	*Impatiens trichocarpa* Hook.f.	Balsaminaceae
99	*Indigofera pedicellata* Wight & Arn.	Fabaceae
100	*Indigofera wightii* Graham ex Wight & Arn.	Fabaceae
101	*Isachne fischeri* Bor.	Poaceae
102	*Isachne gracilis* C.E.Hubb.	Poaceae
103	*Isachne setosa* C.E.C.Fisch.	Poaceae
104	*Isachne walkeri* Arn. ex Steud.	Poaceae
105	*Ischaemum rangacharianum* C.E.C.Fisch.	Poaceae
106	*Ischaemum sunilii* Jabeena, Nithya, Sunil & Maya	Poaceae
107	*Ischaemum timorense* Kunth.	Poaceae
108	*Ischaemum zeylanicola* Bor.	Poaceae
109	*Isodon lophanthoides* (Buch.-Ham. ex D.Don) H.Hara.	Lamiaceae
110	*Isodon nilgherricus* (Benth.) H.Hara.	Lamiaceae
111	*Isodon wightii* (Benth.) H.Hara.	Lamiaceae
112	*Jansenella griffithiana* (Müll.Hal.) Bor.	Poaceae
113	*Knoxia wightiana* Wall. & G.Don	Rubiaceae
114	*Laggera alata* (DC.) Sch.Bip. ex Oliv.	Asteraceae
115	*Leucas chinensis* (Retz.) Sm.	Lamiaceae
116	*Leucas vestita* Benth.	Lamiaceae
117	*Linum mysurense* B.Heyne ex Benth.	Linaceae
118	*Liparis wightiana* Thwaites	Orchidaceae
119	*Lobelia alsinoides* Lam.	Campanulaceae
120	*Lysimachia ovalis* (Ruiz & Pav.) U.Manns & Anderb.	Primulaceae
121	*Microstegium manparensis* Jabeena, Sunil & Maya	Poaceae
122	*Murdannia dimorpha* G.Brückn.	Commelinaceae
123	*Murdannia pauciflora* G.Brückn.	Commelinaceae
124	*Murdannia semiteres* (Dalzell) Santapau	Commelinaceae
125	*Murdannia spirata* G.Brückn.	Commelinaceae
126	*Neanotis tubulosa* (G.Don) Mabb.	Rubiaceae
127	*Oryza rufipogon* Griff.	Poaceae
128	*Osbeckia travancorica* Bedd. ex Gamble	Melastomataceae
129	*Pachystoma pubescens* Blume	Orchidaceae
130	*Paspalum canarae* (Steud.) Veldkamp	Poaceae
131	*Pecteilis susannae* (L.) Raf.	Orchidaceae
132	*Peucedanum anamallayense* C.B.Clarke	Apiaceae
133	*Peucedanum pradeepianum* K.M.P.Kumar, Hareesh & Balach.	Apiaceae
134	*Phoenix loureiroi* Kunth.	Arecaceae
135	*Pimpinella leschenaultii* DC.	Apiaceae
136	*Pogostemon mollis* Benth.	Lamiaceae
137	*Polygala persicariifolia* DC.	Polygalaceae
138	*Polygala rosmarinifolia* Wight & Arn.	Polygalaceae
139	*Pouzolzia scabra* Wight	Urticaceae
140	*Pseudopogonatherum trispicatum* (Schult.) Ohwi	Poaceae
141	*Satyrium nepalense* D.Don.	Orchidaceae
142	*Schoenoplectiella mucronata* (L.) J.Jung & H.K.Choi.	Cyperaceae
143	*Scleria oblata* S.T.Blake ex J.Kern.	Cyperaceae
144	*Smithia blanda* Wall.	Fabaceae
145	*Smithia conferta* Sm.	Fabaceae
146	*Smithia gracilis* Benth.	Fabaceae

147	*Smithia hirsuta* Dalzell	Fabaceae
148	*Smithia venkobarowii* Gamble	Fabaceae
149	*Sonerila veldkampiana* Ratheesh, Mini & Sivad.	Melastomataceae
150	*Sonerila wallichii* Benn.	Melastomataceae
151	*Sopubia trifida* Buch.-Ham. ex D.Don.	Orobanchaceae
152	*Sporobolus pilifer* (Trin.) Kunth.	Poaceae
153	*Sporobolus virginicus* Kunth.	Poaceae
154	*Swertia angustifolia* Buch.-Ham. ex D.Don.	Gentianaceae
155	*Swertia corymbosa* (Griseb.) Wight ex C.B.Clarke	Gentianaceae
156	*Swertia lawii* Burkill.	Gentianaceae
157	*Themeda cymbaria* Hack.	Poaceae
158	*Tripogon bimucronatus* Thoiba & Sunil	Poaceae
159	*Tripogon bromoides* Roth.	Poaceae
160	*Tripogon capillatus* Jaub. & Spach.	Poaceae
161	*Tripogon sugathakumarii* Jabeena, Sunil & Maya	Poaceae
162	*Tripogon wightii* Hook.f.	Poaceae
163	*Utricularia caerulea* L.	Lentibulariaceae
164	*Utricularia graminifolia* Vahl.	Lentibulariaceae
165	*Utricularia lazulina* P.Taylor	Lentibulariaceae
166	*Utricularia praeterita* P.Taylor	Lentibulariaceae
167	*Utricularia striatula* Sm.	Lentibulariaceae
168	*Wahlenbergia erecta* (Roth ex Roem. & Schult.) Tuyn	Campanulaceae
169	*Zenkeria elegans* Trin.	Poaceae
170	*Zingiber anamalayanum* Sujanapal & Sasidh.	Zingiberaceae

Annexure IV

Diversity of Shola elements in Nelliyampathy hills

Sl. No.	Binomial Name	Family
1	*Abelmoschus angulosus* Wight & Arn.	Malvaceae
2	*Acalypha brachystachya* Hornem.	Euphorbiaceae
3	*Actinodaphne bourdillonii* Gamble	Lauraceae
4	*Actinodaphne salicina* Meisn.	Lauraceae
5	*Aeschynanthus perrottetii* A.DC.	Gesneriaceae
6	*Agrostistachys indica* Dalzell	Euphorbiaceae
7	*Allophylus concanicus* Radlk.	Sapindaceae
8	*Antidesma montanum* Blume	Phyllanthaceae
9	*Aphanamixis polystachya* (Wall.) R.Parker	Meliaceae
10	*Ardisia pauciflora* B.Heyne ex Roxb.	Primulaceae
11	*Argyreia elliptica* (Roth) Choisy	Convolvulaceae
12	*Argyreia hirsuta* Wight & Arn.	Convolvulaceae
13	*Arisaema leschenaultii* Blume	Araceae
14	*Beilschmiedia wightii* Benth. & Hook.f.	Lauraceae
15	*Berberis tinctoria* Lesch.	Berberidaceae
16	*Biophytum intermedium* Wight	Oxalidaceae
17	*Bulbophyllum fischeri* Seidenf.	Orchidaceae
18	*Canavalia africana* Dunn ex Hutch.	Fabaceae
19	*Chlorophytum malabaricum* Baker	Amaryllidaceae
20	*Chukrasia tabularis* A.Juss.	Meliaceae
21	*Coelogyne nervosa* A.Rich.	Orchidaceae
22	*Crotalaria spectabilis* Roth.	Fabaceae
23	*Croton laccifer* L.	Euphorbiaceae
24	*Cyanotis villosa* (Spreng.) Schult.f.	Commelinaceae
25	*Dendrobium aqueum* Lindl.	Orchidaceae
26	*Dendrobium herbaceum* Lindl.	Orchidaceae
27	*Dichrocephala integrifolia* (L.f.) Kuntze.	Asteraceae
28	*Dioscorea spicata* Roth.	Dioscoreaceae
29	*Elaeocarpus munroii* Mast.	Elaeocarpaceae
30	*Elaeocarpus tuberculatus* Roxb.	Elaeocarpaceae
31	*Elaeodendron glaucum* Pers.	Celastraceae
32	*Embelia ribes* Burm.f.	Primulaceae
33	*Emilia ramulosa* Gamble	Asteraceae
34	*Eugenia mabaeoides* Wight	Myrtaceae
35	*Excoecaria oppositifolia* var. *crenulata* (Wight) Chakrab. & M.Gangop.	Euphorbiaceae
36	*Fagraea ceilanica* Thunb.	Gentianaceae
37	*Galinsoga parviflora* Cav.	Asteraceae
38	*Girardinia diversifolia* (Link) Friis.	Urticaceae
39	*Hedychium spicatum* Sm.	Zingiberaceae
40	*Helichrysum buddlejoides* DC. ex Wight	Asteraceae
41	*Heracleum candolleanum* Gamble	Apiaceae
42	*Heynea trijuga* Roxb.	Meliaceae
43	*Hydrocotyle conferta* Wight	Araliaceae
44	*Hypericum mysurense* B.Heyne ex Wight & Arn.	Hypericaceae
45	*Impatiens parasitica* Bedd.	Balsaminaceae

46	*Impatiens viscosa* Bedd.	Balsaminaceae
47	*Jasminum coarctatum* Roxb.	Oleaceae
48	*Jasminum flexile* Vahl.	Oleaceae
49	*Laportea bulbifera* (Siebold & Zucc.) Wedd.	Urticaceae
50	*Lasianthus acuminatus* Wight	Rubiaceae
51	*Lecanthus peduncularis* (Royle) Wedd.	Urticaceae
52	*Ligustrum robustum* subsp. *perrottetii* (A.DC.) de Juana	Oleaceae
53	*Litsea floribunda* Gamble	Lauraceae
54	*Litsea wightiana* (Nees) Wall. ex Hook.f.	Lauraceae
55	*Lobelia nicotianifolia* Roth.	Campanulaceae
56	*Maesa indica* (Roxb.) Sweet	Primulaceae
57	*Mallotus tetracoccus* Kurz.	Euphorbiaceae
58	*Mappia nimmoniana* (J.Graham) Byng & Stull	Icacinaceae
59	*Mastixia arborea* C.B.Clarke	Nyssaceae
60	*Meliosma simplicifolia* Walp.	Sabiaceae
61	*Memecylon bremeri* M.B.Viswan	Melastomataceae
62	*Memecylon umbellatum* Burm.f.	Melastomataceae
63	*Miliusa indica* Lesch. ex A.DC.	Annonaceae
64	*Neanotis indica* (DC.) W.H.Lewis	Rubiaceae
65	*Neanotis monosperma* (Wall. ex Wight & Arn.) W.H.Lewis	Rubiaceae
66	*Neolitsea cassia* (L.) Kosterm.	Lauraceae
67	*Neolitsea scrobiculata* Gamble	Lauraceae
68	*Oberonia verticillata* Wight	Orchidaceae
69	*Ophiopogon intermedius* D.Don.	Amaryllidaceae
70	*Osbeckia gracilis* Bedd.	Melastomataceae
71	*Panicum gardneri* Thwaites	Poaceae
72	*Papilionanthe subulata* (J.Koenig) Garay	Orchidaceae
73	*Peperomia tetraphylla* Hook. & Arn.	Piperaceae
74	*Phoebe wightii* Meisn.	Lauraceae
75	*Phyllanthus assamicus* Müll.Arg.	Phyllanthaceae
76	*Phyllanthus candolleanus* (Wight & Arn.) Chakrab. & N.P.Balakr.	Phyllanthaceae
77	*Phyllanthus rheedei* Wight	Phyllanthaceae
78	*Phyllanthus velutinus* Müll.Arg.	Phyllanthaceae
79	*Phyllocephalum scabridum* (DC.) K. Kirkman.	Asteraceae
80	*Pilea melastomoides* (Poir.) Wedd.	Urticaceae
81	*Pinalia mysorensis* Kuntze.	Orchidaceae
82	*Piper wightii* Miq.	Piperaceae
83	*Pittosporum neelgherrense* Wight & Arn.	Pittosporaceae
84	*Pittosporum tetraspermum* Wight & Arn.	Pittosporaceae
85	*Pogostemon pubescens* Benth.	Lamiaceae
86	*Porpax braccata* (Lindl.) Schuit., Y.P.Ng & H.A.Pedersen	Orchidaceae
87	*Pseudoxytenanthera bourdillonii* (Gamble) H.B.Naithani	Poaceae
88	*Rauvolfia verticillata* (Lour.) Baill.	Apocynaceae
89	*Scutellaria wightiana* Benth.	Lamiaceae
90	*Sirhookera lanceolata* Kuntze.	Orchidaceae
91	*Smilax aspera* L.	Smilacaceae
92	*Smilax wightii* A.DC.	Smilacaceae
93	*Solanum multiflorum* Roth.	Solanaceae
94	*Sonchus oleraceus* L.	Asteraceae
95	*Strobilanthes heyneana* Nees.	Acanthaceae
96	*Strobilanthes neoaspera* Venu & P.Daniel	Acanthaceae

97	*Symplocos acuminata* Miq.	Symplocaceae
98	*Symplocos obtusa* Wall. ex G.Don.	Symplocaceae
99	*Syzygium densiflorum* Wall. ex Wight & Arn.	Myrtaceae
100	*Syzygium lanceolatum* Wight & Arn.	Myrtaceae
101	*Taxillus recurvus* (Wall. ex DC.) Tiegh.	Loranthaceae
102	*Taxillus tomentosus* (B.Heyne ex Roth) Tiegh.	Loranthaceae
103	*Toddalia asiatica* (L.) Lam.	Rutaceae
104	*Trichoglottis tenera* Rchb.f.	Orchidaceae
105	*Trichosanthes anaimalaiensis* Bedd.	Cucurbitaceae
106	*Wendlandia thyrsoidea* Steud.	Rubiaceae

Annexure V

Diversity of Wetland taxa in Nelliyampathy hills

Sl. No.	Binomial Name	Family
1	*Acmella ciliata* (Kunth) Cass.	Asteraceae
2	*Acorus calamus* L.	Acoraceae
3	*Alternanthera sessilis* (L.) DC.	Amaranthaceae
4	*Bonnaya ciliata* Spreng.	Linderniaceae
5	*Bonnaya veronicifolia* Spreng.	Linderniaceae
6	*Coix lacryma-jobi* L.	Poaceae
7	*Craterostigma nummulariifolium* (D.Don) Eb.Fisch.	Linderniaceae
8	*Cyperus brevifolius* (Rottb.) Endl. ex Hassk.	Cyperaceae
9	*Cyperus difformis* L.	Cyperaceae
10	*Cyperus diffusus* Vahl.	Cyperaceae
11	*Cyperus flavescens* L.	Cyperaceae
12	*Cyperus malabaricus* (C.B.Clarke) T.Cooke	Cyperaceae
13	*Cyperus neochinensis* (Tang & F.T.Wang) Bauters	Cyperaceae
14	*Cyperus polystachyos* Rottb.	Cyperaceae
15	*Cyperus pumilus* L.	Cyperaceae
16	*Cyperus puncticulatus* Vahl.	Cyperaceae
17	*Cyperus richardii* Steud.	Cyperaceae
18	*Cyperus substramineus* Kük.	Cyperaceae
19	*Cyperus tenuispica* Steud.	Cyperaceae
20	*Dactyloctenium aegyptium* (L.) Willd.	Poaceae
21	*Drosera burmanni* Vahl.	Droseraceae
22	*Echinochloa colona* (L.) Link.	Poaceae
23	*Eleocharis dulcis* (Burm.f.) Trin. ex Hensch.	Cyperaceae
24	*Eragrostis patula* Steud.	Poaceae
25	*Eriocaulon eurypeplon* Körn.	Eriocaulaceae
26	*Eriocaulon thwaitesii* Körn.	Eriocaulaceae
27	*Eriocaulon truncatum* Buch.-Ham. ex Mart.	Eriocaulaceae
28	*Eriocaulon xeranthemum* Mart.	Eriocaulaceae
29	*Eriochloa procera* (Retz.) C.E.Hubb.	Poaceae
30	*Fimbristylis salbundia* Kunth.	Cyperaceae
31	*Floscopa scandens* Lour.	Commelinaceae
32	*Fuirena ciliaris* (L.) Roxb.	Cyperaceae
33	*Garnotia courtallensis* Thwaites	Poaceae
34	*Geissaspis cristata* Wight & Arn.	Fabaceae
35	*Ipomoea carnea* subsp. *fistulosa* (Mart. ex Choisy) D.F.Austin	Convolvulaceae
36	*Isachne globosa* (Thunb.) Kuntze.	Poaceae
37	*Ischaemum commutatum* Hack.	Poaceae
38	*Ischaemum molle* Hook.f.	Poaceae
39	*Isodon nigrescens* (Benth.) H.Hara.	Lamiaceae
40	*Leptochloa chinensis* Nees.	Poaceae
41	*Lindernia hyssopioides* Haines	Linderniaceae
42	*Lindernia rotundifolia* (L.) Alston	Linderniaceae
43	*Lindernia tamilnadensis* M.G.Prasad & Sunojk.	Linderniaceae
44	*Lobelia alsinoides* Lam.	Campanulaceae
45	*Lobelia heyniana* Roem. & Schult.	Campanulaceae
46	*Ludwigia hyssopifolia* (G.Don) Exell.	Onagraceae

47	*Ludwigia peruviana* (L.) H.Hara.	Onagraceae
48	*Melastoma malabathricum* L.	Melastomataceae
49	*Murdannia crocea* subsp. *ochracea* (Dalzell) Faden	Commelinaceae
50	*Murdannia esculenta* (Wall. ex C.B.Clarke) Abeyw.	Commelinaceae
51	*Oryza rufipogon* Griff.	Poaceae
52	*Panicum paludosum* Roxb.	Poaceae
53	*Panicum repens* L.	Poaceae
54	*Panicum repens* L.	Poaceae
55	*Rorippa indica* (L.) Hiern.	Brassicaceae
56	*Saccharum spontaneum* L.	Poaceae
57	*Sacciolepis indica* (L.) Chase	Poaceae
58	*Scleria oblata* S.T.Blake ex J.Kern.	Cyperaceae
59	*Smithia blanda* Wall.	Fabaceae
60	*Smithia conferta* Sm.	Fabaceae
61	*Smithia hirsuta* Dalzell	Fabaceae
62	*Torenia bicolor* Dalzell	Linderniaceae
63	*Torenia hirsuta* Willd.	Linderniaceae
64	*Utricularia caerulea* L.	Lentibulariaceae
65	*Utricularia graminifolia* Vahl.	Lentibulariaceae
66	*Utricularia lazulina* P. Taylor	Lentibulariaceae
67	*Utricularia reticulata* Sm.	Lentibulariaceae
68	*Utricularia sunilii* Naveen Kum. & K. M. P. Kumar	Lentibulariaceae
69	*Vandellia anagallis* (Burm.f.) T.Yamaz	Linderniaceae
70	*Vandellia pusilla* Merr.	Linderniaceae
71	*Xyris pauciflora* Willd.	Xyridaceae

Annexure VI

Degraded forest elements in Nelliyampathy hills

Sl. No.	Binomial Name	Family
1	*Acmella paniculata* (Wall. ex DC.) R. K. Jansen	Asteraceae
2	*Acmella radicans* (Jacq.) R.K.Jansen	Asteraceae
3	*Ageratina adenophora* (Spreng.) R. M. King & H. Rob.	Asteraceae
4	*Ageratum houstonianum* Mill.	Asteraceae
5	*Alternanthera bettzickiana* (Regel) G. Nicholson	Amaranthaceae
6	*Amaranthus viridis* L.	Amaranthaceae
7	*Argyreia populifolia* Choisy	Convolvulaceae
8	*Arundinella leptochloa* Hook.f.	Poaceae
9	*Asclepias curassavica* L.	Apocynaceae
10	*Asystasia gangetica* (L.) T.Anderson	Acanthaceae
11	*Blumea axillaris* DC.	Asteraceae
12	*Blumea barbata* DC.	Asteraceae
13	*Buddleja asiatica* Lour.	Scrophulariaceae
14	*Camonea vitifolia* (Burm.f.) A.R.Simões & Staples	Convolvulaceae
15	*Canna indica* L.	Cannaceae
16	*Cardamine africana* L.	Brassicaceae
17	*Chloris barbata* Sw.	Poaceae
18	*Chrysopogon aciculatus* Trin.	Poaceae
19	*Cleome monophylla* L.	Cleomaceae
20	*Cleome rutidosperma* var. *burmanni* (Wight & Arn.) M.O.Siddiqui & S.N.Dixit	Cleomaceae
21	*Clerodendrum infortunatum* L.	Lamiaceae
22	*Corchorus aestuans* L.	Malvaceae
23	*Crotalaria pallida* Aiton.	Fabaceae
24	*Crotalaria salicifolia* B.Heyne ex Wight & Arn.	Fabaceae
25	*Croton bonplandianus* Baill.	Euphorbiaceae
26	*Curcuma aromatica* Salisb.	Zingiberaceae
27	*Cyanotis cristata* (L.) D.Don.	Commelinaceae
28	*Cynoglossum zeylanicum* (Sw. ex Lehm.) Thunb. ex Brand	Boraginaceae
29	*Cyperus cyperinus* (Retz.) Valck.Sur.	Cyperaceae
30	*Cyperus iria* L.	Cyperaceae
31	*Cyperus maderaspatanus* Willd.	Cyperaceae
32	*Cyperus mindorensis* (Steud.) Huygh	Cyperaceae
33	*Digitaria setigera* Roth.	Poaceae
34	*Dioscorea pentaphylla* L.	Dioscoreaceae
35	*Drosera burmanni* Vahl.	Droseraceae
36	*Dysphania ambrosioides* (L.) Mosyakin & Clemants	Amaranthaceae
37	*Eleutheranthera ruderalis* (Sw.) Sch.Bip.	Asteraceae
38	*Eragrostis nigra* Nees ex Steud.	Poaceae
39	*Eragrostis tenella* (L.) P.Beauv. ex Roem. & Schult.	Poaceae
40	*Euphorbia heterophylla* L.	Euphorbiaceae
41	*Euphorbia hirta* L.	Euphorbiaceae
42	*Evolvulus nummularius* (L.) L.	Convolvulaceae
43	*Exallage auricularia* (L.) Bremek.	Rubiaceae
44	*Fimbristylis dichotoma* (L.) Vahl.	Cyperaceae
45	*Gynura pseudochina* (L.) DC.	Asteraceae

46	*Hyptis capitata* Jacq.	Lamiaceae
47	*Indigofera hendecaphylla* Jacq.	Fabaceae
48	*Ipomoea hederifolia* L.	Convolvulaceae
49	*Ipomoea obscura* (L.) Ker Gawl.	Convolvulaceae
50	*Ipomoea triloba* L.	Convolvulaceae
51	*Laportea interrupta* (L.) Chew	Urticaceae
52	*Leea indica* (Burm.f.) Merr.	Vitaceae
53	*Lepidium didymum* L.	Brassicaceae
54	*Mecardonia procumbens* (Mill.) Small	Plantaginaceae
55	*Melochia corchorifolia* L.	Malvaceae
56	*Mesosphaerum suaveolens* (L.) Kuntze.	Lamiaceae
57	*Mimosa diplotricha* C.Wright	Fabaceae
58	*Mitracarpus hirtus* DC.	Rubiaceae
59	*Oldenlandia corymbosa* L.	Rubiaceae
60	*Oplismenus compositus* P.Beauv.	Poaceae
61	*Orthosiphon thymiflorus* (Roth) Sleesen.	Lamiaceae
62	*Oxalis corniculata* L.	Oxalidaceae
63	*Oxalis latifolia* Kunth.	Oxalidaceae
64	*Passiflora foetida* L.	Passifloraceae
65	*Peperomia pellucida* (L.) Kunth.	Piperaceae
66	*Phyllanthus amarus* Schumach. & Thonn.	Phyllanthaceae
67	*Physalis peruviana* L.	Convolvulaceae
68	*Richardia scabra* L.	Rubiaceae
69	*Ruellia prostrata* Poir.	Acanthaceae
70	*Scleria lithosperma* (L.) Sw.	Cyperaceae
71	*Scleromitrion diffusum* (Willd.) R.J.Wang	Rubiaceae
72	*Senna hirsuta* (L.) H.S.Irwin & Barneby	Fabaceae
73	*Setaria parviflora* (Poir.) Kerguélen	Poaceae
74	*Setaria pumila* Roem. & Schult.	Poaceae
75	*Sida rhombifolia* L.	Malvaceae
76	*Solanum americanum* Mill.	Solanaceae
77	*Solanum erianthum* D.Don.	Solanaceae
78	*Solanum seaforthianum* Andrews	Solanaceae
79	*Solanum torvum* Sw.	Solanaceae
80	*Solanum virginianum* L.	Solanaceae
81	*Stellaria media* (L.) Vill.	Caryophyllaceae
82	*Thunbergia tomentosa* Wall. ex Nees.	Acanthaceae
83	*Triumfetta rhomboidea* Jacq.	Malvaceae
84	*Urena lobata* L.	Malvaceae
85	*Urochloa subquadripara* (Trin.) R.D.Webster	Poaceae
86	*Vicoa indica* DC.	Asteraceae
87	*Zehneria mysorensis* Wight	Cucurbitaceae
88	*Zornia gibbosa* Span.	Fabaceae

Annexure VII

Diversity of Threatened plants of Nelliyampathy hills

Sl. No.	Binomial Name	Family
1	*Abelmoschus esculentus* (L.) Moench.	Malvaceae
2	*Abelmoschus moschatus* Medik.	Malvaceae
3	*Acampe praemorsa* (Roxb.) Blatt. & McCann.	Orchidaceae
4	*Acmella paniculata* (Wall. ex DC.) R.K.Jansen	Asteraceae
5	*Acorus calamus* L.	Acoraceae
6	*Adenostemma lavenia* (L.) Kuntze.	Asteraceae
7	*Aerides crispa* Lindl.	Orchidaceae
8	*Aerides ringens* C.E.C.Fisch.	Orchidaceae
9	*Aglaia perviridis* Hiern.	Meliaceae
10	*Allophylus concanicus* Radlk.	Sapindaceae
11	*Alpinia malaccensis* (Burm.f.) Roscoe	Zingiberaceae
12	*Alstonia venenata* R.Br.	Apocynaceae
13	*Alysicarpus bupleurifolius* (L.) DC.	Fabaceae
14	*Amaranthus blitum* L.	Amaranthaceae
15	*Amorphophallus commutatus* (Schott) Engl.	Araceae
16	*Amorphophallus paeoniifolius* (Dennst.) Nicolson	Araceae
17	*Anaphalis lawii* Gamble	Asteraceae
18	*Andrographis paniculata* (Burm.f.) Wall. ex Nees.	Acanthaceae
19	*Anisochilus argenteus* Gamble	Lamiaceae
20	*Anodendron parviflorum* (Roxb.) I.M.Turner	Apocynaceae
21	*Antidesma montanum* Blume	Phyllanthaceae
22	*Aphanamixis polystachya* (Wall.) R.Parker	Meliaceae
23	*Aporosa bourdillonii* Stapf.	Phyllanthaceae
24	*Arenga wightii* Griff.	Arecaceae
25	*Argostemma courtallense* Arn.	Rubiaceae
26	*Arisaema tortuosum* (Wall.) Schott.	Araceae
27	*Aristolochia acuminata* Lam.	Aristolochiaceae
28	*Aristolochia indica* L.	Aristolochiaceae
29	*Artemisia nilagirica* (C.B.Clarke) Pamp.	Asteraceae
30	*Artocarpus hirsutus* Lam.	Moraceae
31	*Arundina graminifolia* (D.Don) Hochr.	Orchidaceae
32	*Arundinella ciliata* Nees ex Miq.	Poaceae
33	*Arundo donax* L.	Poaceae
34	*Asparagus racemosus* Willd.	Asparagaceae
35	*Atalantia monophylla* (L.) DC.	Rutaceae
36	*Baliospermum solanifolium* (Burm.) Suresh	Euphorbiaceae
37	*Beilschmiedia gemmiflora* (Blume) Kosterm.	Lauraceae
38	*Beilschmiedia wightii* Benth. & Hook.f.	Lauraceae
39	*Blyxa echinosperma* (C.B.Clarke) Hook.f.	Hydrocharitaceae
40	*Boehmeria depauperata* Wedd.	Urticaceae
41	*Boesenbergia pulcherrima* Kuntze.	Zingiberaceae
42	*Bombax insigne* Wall.	Malvaceae
43	*Brachycorythis splendida* Summerh.	Orchidaceae
44	*Breynia quadrangularis* (J.G.Klein ex Willd.) Chakrab. & N.P.Balakr.	Phyllanthaceae
45	*Bulbophyllum fischeri* Seidenf.	Orchidaceae

46	*Bulbophyllum stocksii* (Benth. ex Hook.f.) J.J.Verm., Schuit. & de Vogel	Orchidaceae
47	*Bulbophyllum tremulum* Wight	Orchidaceae
48	*Bulbostylis densa* (Wall.) Hand.-Mazz.	Cyperaceae
49	*Butea monosperma* Kuntze.	Malvaceae
50	*Cajanus rugosus* (Wight & Arn.) Maesen	Fabaceae
51	*Canarium strictum* Roxb.	Burseraceae
52	*Canthium rheedei* DC.	Rubiaceae
53	*Capparis moonii* Wight	Capparaceae
54	*Capparis roxburghii* DC.	Capparaceae
55	*Carissa spinarum* L.	Apocynaceae
56	*Cayratia pedata* Gagnep.	Vitaceae
57	*Celastrus paniculatus* Willd.	Celastraceae
58	*Ceropegia fimbriifera* Bedd.	Apocynaceae
59	*Ceropegia maculata* Bedd.	Apocynaceae
60	*Chamaecrista leschenaultiana* (DC.) O.Deg.	Fabaceae
61	*Cheilocostus speciosus* (J.Koenig) C.D.Specht.	Costaceae
62	*Chilocarpus denudatus* Blume	Apocynaceae
63	*Chionanthus mala-elengi* (Dennst.) P.S.Green	Oleaceae
64	*Chonemorpha fragrans* Alston	Apocynaceae
65	*Chrysopogon aciculatus* Trin.	Poaceae
66	*Chukrasia tabularis* A.Juss.	Meliaceae
67	*Cinnamomum macrocarpum* Hook.f.	Lauraceae
68	*Cinnamomum malabathrum* (Lam.) J.Presl.	Lauraceae
69	*Cissus vitiginea* L.	Vitaceae
70	*Clematis gouriana* Roxb. ex DC.	Ranunculaceae
71	*Cleome rutidosperma* var. *burmanni* (Wight & Arn.) M.O.Siddiqui & S.N.Dixit	Cleomaceae
72	*Cochlospermum religiosum* (L.) Alston	Bixaceae
73	*Codariocalyx motorius* H.Ohashi	Fabaceae
74	*Coelogyne breviscapa* Lindl.	Orchidaceae
75	*Coelogyne nervosa* A.Rich.	Orchidaceae
76	*Coix lacryma-jobi* L.	Poaceae
77	*Coleus barbatus* (Andrews) Benth. ex G.Don.	Lamiaceae
78	*Commelina clavata* C.B.Clarke	Commelinaceae
79	*Commelina wightii* Raizada	Commelinaceae
80	*Craterostigma nummulariifolium* (D.Don) Eb.Fisch., Schäferh. & Kai Müll. Arg.	Linderniaceae
81	*Crepidium purpureum* (Lindl.) Szlach.	Orchidaceae
82	*Crepidium resupinatum* (G.Forst.) Szlach.	Orchidaceae
83	*Crotalaria clarkei* Gamble	Fabaceae
84	*Crotalaria fysonii* Dunn.	Fabaceae
85	*Crotalaria grahamiana* Wight & Arn.	Fabaceae
86	*Crotalaria longipes* Wight & Arn.	Fabaceae
87	*Crotalaria notonii* Wight & Arn.	Fabaceae
88	*Crotalaria obtecta* Graham ex Wight & Arn.	Fabaceae
89	*Crotalaria priestleyoides* Benth.	Fabaceae
90	*Crotalaria scabrella* Wight & Arn.	Fabaceae
91	*Curculigo orchioides* Gaertn.	Hypoxidaceae
92	*Curcuma montana* Roxb.	Zingiberaceae
93	*Curcuma pseudomontana* J.Graham	Zingiberaceae

94	*Cuscuta chinensis* Lam.	Convolvulaceae
95	*Cyanotis arachnoidea* C.B.Clarke	Commelinaceae
96	*Cyanotis burmannia* Wight	Commelinaceae
97	*Cyanotis fasciculata* (B.Heyne ex Roth) Schult.f.	Commelinaceae
98	*Cyanotis pilosa* Schult.f.	Commelinaceae
99	*Cyanotis tuberosa* (Roxb.) Schult.f.	Commelinaceae
100	*Cyanotis vivipara* Dalzell	Commelinaceae
101	*Cymbidium aloifolium* (L.) Sw.	Orchidaceae
102	*Cynanchum annularium* (Roxb.) Liede & Khanum	Apocynaceae
103	*Cyperus dubius* Rottb.	Cyperaceae
104	*Cyperus polystachyos* Rottb.	Cyperaceae
105	*Cyrtococcum oxyphyllum* Stapf.	Poaceae
106	*Decalepis salicifolia* (Bedd. ex Hook.f.) Bruyns.	Apocynaceae
107	*Dendrobium aphyllum* C.E.C.Fisch.	Orchidaceae
108	*Dendrobium aqueum* Lindl.	Orchidaceae
109	*Dendrobium barbatulum* Lindl.	Orchidaceae
110	*Dendrobium herbaceum* Lindl.	Orchidaceae
111	*Dendrobium jerdonianum* Wight	Orchidaceae
112	*Dendrobium ovatum* Kraenzl.	Orchidaceae
113	*Dendrolobium triangulare* Schindl.	Fabaceae
114	*Derris scandens* Benth.	Fabaceae
115	*Dichrocephala integrifolia* (L.f.) Kuntze.	Asteraceae
116	*Dicliptera cuneata* Nees.	Acanthaceae
117	*Dioscorea alata* L.	Dioscoreaceae
118	*Dioscorea bulbifera* L.	Dioscoreaceae
119	*Dioscorea pentaphylla* L.	Dioscoreaceae
120	*Dioscorea spicata* Roth.	Dioscoreaceae
121	*Diospyros candolleana* Wight	Ebenaceae
122	*Diplocentrum congestum* Wight	Orchidaceae
123	*Dipterocarpus bourdillonii* Brandis	Dipterocarpaceae
124	*Dipterocarpus indicus* Bedd.	Dipterocarpaceae
125	*Drosera burmanni* Vahl.	Droseraceae
126	*Drosera indica* L.	Droseraceae
127	*Drosera peltata* Thunb.	Droseraceae
128	*Drymaria cordata* (L.) Willd. ex Schult.	Caryophyllaceae
129	*Dumasia villosa* DC.	Fabaceae
130	*Dysphania ambrosioides* (L.) Mosyakin & Clemants	Amaranthaceae
131	*Elaeocarpus monocera* Cav.	Elaeocarpaceae
132	*Elaeocarpus munroii* Mast.	Elaeocarpaceae
133	*Elaeocarpus serratus* L.	Elaeocarpaceae
134	*Embelia ribes* Burm.f.	Primulaceae
135	*Entada rheedei* Spreng.	Fabaceae
136	*Epipogium roseum* Lindl.	Orchidaceae
137	*Eragrostiella bifaria* (Vahl) Bor.	Poaceae
138	*Eragrostis viscosa* Trin.	Poaceae
139	*Eriocaulon eurypeplon* Körn.	Eriocaulaceae
140	*Eriocaulon longicuspis* Hook.f.	Eriocaulaceae
141	*Erythrina suberosa* Roxb.	Fabaceae
142	*Erythropalum scandens* Blume	Olacaceae
143	*Eugenia discifera* Gamble	Myrtaceae
144	*Eugenia wynadensis* Bedd.	Myrtaceae

145	*Eulophia graminea* Lindl.	Orchidaceae
146	*Euonymus angulatus* Wight	Celastraceae
147	*Euphorbia prostrata* Aiton	Euphorbiaceae
148	*Euphorbia santapaui* A.N.Henry	Euphorbiaceae
149	*Euphorbia vajravelui* Binojk. & N.P.Balakr.	Euphorbiaceae
150	*Exacum lawii* C.B.Clarke	Gentianaceae
151	*Exacum tetragonum* Roxb.	Gentianaceae
152	*Exallage auricularia* (L.) Bremek.	Rubiaceae
153	*Ficus nervosa* Roth.	Moraceae
154	*Ficus racemosa* L.	Moraceae
155	*Fimbristylis argentea* Vahl.	Cyperaceae
156	*Fimbristylis cinnamometorum* (Vahl) Kunth.	Cyperaceae
157	*Galinsoga parviflora* Cav.	Asteraceae
158	*Garcinia morella* (Gaertn.) Desr.	Clusiaceae
159	*Garcinia talbotii* Raizada	Clusiaceae
160	*Garnotia tenella* Janowski	Poaceae
161	*Glochidion zeylanicum* (Gaertn.) A.Juss.	Phyllanthaceae
162	*Gloriosa superba* L.	Colchicaceae
163	*Glycosmis pentaphylla* (Retz.) DC.	Rutaceae
164	*Grewia flavescens* Juss.	Malvaceae
165	*Gymnema latifolium* Wall. ex Wight	Apocynaceae
166	*Gymnema sylvestre* (Retz.) R.Br. ex Sm.	Apocynaceae
167	*Habenaria barnesii* Summerh.	Orchidaceae
168	*Habenaria digitata* Lindl.	Orchidaceae
169	*Habenaria heyneana* Lindl.	Orchidaceae
170	*Habenaria longicorniculata* J.Graham	Orchidaceae
171	*Habenaria rariflora* A.Rich.	Orchidaceae
172	*Hedychium coronarium* J.Koenig	Zingiberaceae
173	*Hedychium spicatum* Sm.	Zingiberaceae
174	*Heracleum candolleanum* Gamble	Apiaceae
175	*Heracleum rigens* Wall.	Apiaceae
176	*Heynea trijuga* Roxb.	Meliaceae
177	*Hibiscus surattensis* L.	Malvaceae
178	*Holigarna beddomei* Hook.f.	Anacardiaceae
179	*Hydnocarpus alpinus* Wight	Achariaceae
180	*Hydnocarpus pentandrus* (Buch.-Ham.) Oken	Achariaceae
181	*Hydrocotyle conferta* Wight	Araliaceae
182	*Impatiens dasysperma* Wight	Balsaminaceae
183	*Impatiens oppositifolia* L.	Balsaminaceae
184	*Indigofera wightii* Graham ex Wight & Arn.	Fabaceae
185	*Ipomoea indica* (Burm.) Merr.	Convolvulaceae
186	*Isachne fischeri* Bor.	Poaceae
187	*Isodon nilgherricus* (Benth.) H.Hara.	Lamiaceae
188	*Jansenella griffithiana* (Müll.Hal.) Bor.	Poaceae
189	*Jasminum flexile* Vahl.	Oleaceae
190	*Jasminum malabaricum* Wight	Oleaceae
191	*Kalanchoe olivacea* Dalzell	Crassulaceae
192	*Knema attenuata* (Wall. ex Hook.f. & Thomson) Warb.	Myristicaceae
193	*Knoxia sumatrensis* (Retz.) DC.	Rubiaceae
194	*Laportea interrupta* (L.) Chew.	Urticaceae
195	*Leea indica* (Burm.f.) Merr.	Vitaceae

196	*Linum mysurense* B.Heyne ex Benth.	Linaceae
197	*Litsea mysorensis* Gamble	Lauraceae
198	*Lobelia alsinoides* Lam.	Campanulaceae
199	*Lobelia nicotianifolia* Roth.	Campanulaceae
200	*Luisia tenuifolia* Blume	Orchidaceae
201	*Luisia tristis* Hook.f.	Orchidaceae
202	*Macaranga peltata* Müll.Arg.	Euphorbiaceae
203	*Machilus glaucescens* (Nees) Wight	Lauraceae
204	*Madhuca longifolia* J.F.Macbr.	Sapotaceae
205	*Magnolia champaca* (L.) Baill. ex Pierre	Magnoliaceae
206	*Magnolia nilagirica* (Zenker) Figlar	Magnoliaceae
207	*Mappia nimmoniana* (J.Graham) Byng & Stull.	Icacinaceae
208	*Megathyrsus maximus* (Jacq.) B.K.Simon & S.W.L.Jacobs	Poaceae
209	*Memecylon angustifolium* Wight	Melastomataceae
210	*Mesua ferrea* L.	Calophyllaceae
211	*Miquelia dentata* Bedd.	Icacinaceae
212	*Murdannia crocea* subsp. *ochracea* (Dalzell) Faden	Commelinaceae
213	*Murdannia dimorpha* G.Brückn.	Commelinaceae
214	*Murdannia japonica* (Thunb.) Faden	Commelinaceae
215	*Murdannia semiteres* (Dalzell) Santapau	Commelinaceae
216	*Murdannia versicolor* G.Brückn.	Commelinaceae
217	*Myristica malabarica* Lam.	Myristicaceae
218	*Neanotis monosperma* (Wall. ex Wight & Arn.) W.H.Lewis	Rubiaceae
219	*Neanotis rheedei* (Wall. ex Wight & Arn.) W.H.Lewis	Rubiaceae
220	*Oberonia anamalayana* J.Joseph	Orchidaceae
221	*Oberonia bicornis* Lindl.	Orchidaceae
222	*Oberonia brachyphylla* Blatt. & McCann.	Orchidaceae
223	*Oberonia brunoniana* Wight	Orchidaceae
224	*Oberonia chandrasekharanii* V.J.Nair, V.S.Ramach. & R.Ansari	Orchidaceae
225	*Oberonia verticillata* Wight	Orchidaceae
226	*Ophiorrhiza pectinata* Arn.	Rubiaceae
227	*Ophiorrhiza trichocarpos* Blume	Rubiaceae
228	*Oreocnide integrifolia* (Gaudich.) Miq.	Urticaceae
229	*Orophea uniflora* Hook.f. & Thomson	Annonaceae
230	*Oroxylum indicum* (L.) Benth. ex Kurz.	Bignoniaceae
231	*Oryza rufipogon* Griff.	Poaceae
232	*Otonephelium stipulaceum* Radlk.	Sapindaceae
233	*Panicum curviflorum* Hornem.	Poaceae
234	*Panicum repens* L.	Poaceae
235	*Pecteilis susannae* (L.) Raf.	Orchidaceae
236	*Peperomia blanda* (Jacq.) Kunth.	Piperaceae
237	*Peperomia tetraphylla* Hook. & Arn.	Piperaceae
238	*Peucedanum anamallayense* C.B.Clarke	Apiaceae
239	*Pholidota imbricata* Hook.	Orchidaceae
240	*Phyllanthus assamicus* Müll.Arg.	Phyllanthaceae
241	*Phyllanthus bourdillonii* (Gamble) Chakrab. & N.P.Balakr.	Phyllanthaceae
242	*Phyllanthus emblica* L.	Phyllanthaceae
243	*Phyllanthus rheedei* Wight.	Phyllanthaceae
244	*Phyllocephalum indicum* (Less.) K.Kirkman	Asteraceae
245	*Phyllocephalum scabridum* (DC.) K.Kirkman	Asteraceae
246	*Pilea microphylla* (L.) Liebm., Kongel. Danske Vidensk. Selsk.	Urticaceae

	Skr., Naturvidensk.	
247	*Pinalia mysorensis* Kuntze.	Orchidaceae
248	*Piper longum* L.	Piperaceae
249	*Piper nigrum* L.	Piperaceae
250	*Plumbago zeylanica* L.	Plumbaginaceae
251	*Pogostemon pubescens* Benth.	Lamiaceae
252	*Polygala chinensis* L.	Polygalaceae
253	*Polygala rosmarinifolia* Wight & Arn.	Polygalaceae
254	*Polypleurum wallichii* (R.Br. ex Griff.) Warm	Podostemaceae
255	*Polystachya concreta* (Jacq.) Garay & H.R.Sweet	Orchidaceae
256	*Pouzolzia auriculata* Wight	Urticaceae
257	*Premna tomentosa* Willd.	Lamiaceae
258	*Prunus ceylanica* Miq.	Rosaceae
259	*Pseudarthria viscida* (L.) Wight & Arn.	Fabaceae
260	*Psychotria globicephala* Gamble	Rubiaceae
261	*Psydrax umbellatus* (Wight) Bridson	Rubiaceae
262	*Pterocarpus marsupium* Roxb.	Fabaceae
263	*Pycnospora lutescens* Schindl.	Fabaceae
264	*Rauvolfia serpentina* Benth. ex Kurz.	Apocynaceae
265	*Rhynchosia rufescens* (Willd.) DC.	Fabaceae
266	*Rhynchostylis retusa* (L.) Blume	Orchidaceae
267	*Rotala mexicana* Cham. & Schltdl.	Lythraceae
268	*Rotheca serrata* (L.) Steane & Mabb.	Lamiaceae
269	*Rubia cordifolia* L.	Rubiaceae
270	*Santalum album* L.	Santalaceae
271	*Saraca asoca* (Roxb.) W.J.de Wilde.	Fabaceae
272	*Schoenorchis smeeana* (Rchb.f.) Jalal, Jayanthi & Schuit.	Orchidaceae
273	*Scleria lithosperma* (L.) Sw.	Cyperaceae
274	*Smilax wightii* A.DC.	Smilacaceae
275	*Smilax zeylanica* L.	Smilacaceae
276	*Smithsonia maculata* (Dalzell) C.J.Saldanha	Orchidaceae
277	*Solanum elaeagnifolium* Cav.	Solanaceae
278	*Stachyphrynium spicatum* K.Schum.	Marantaceae
279	*Stereospermum chelonoides* (L.f.) DC.	Bignoniaceae
280	*Stereospermum tetragonum* DC.	Bignoniaceae
281	*Strobilanthes ciliata* Nees.	Acanthaceae
282	*Strobilanthes dupeni* Bedd. ex C.B.Clarke	Acanthaceae
283	*Strychnos wallichiana* Steud. ex A.DC.	Loganiaceae
284	*Swertia angustifolia* Buch.-Ham. ex D.Don.	Gentianaceae
285	*Swertia corymbosa* (Griseb.) Wight ex C.B.Clarke	Gentianaceae
286	*Swertia lawii* Burkill	Gentianaceae
287	*Symplocos racemosa* Roxb.	Symplocaceae
288	*Syzygium palghatense* Gamble	Myrtaceae
289	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.	Combretaceae
290	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae
291	*Tinospora cordifolia* (Willd.) Miers ex Hook.f. & Thomson	Menispermaceae
292	*Toddalia asiatica* (L.) Lam.	Rutaceae
293	*Toona hexandra* M.Roem.	Meliaceae
294	*Trianthema portulacastrum* L.	Aizoaceae
295	*Trichosanthes cucumerina* L.	Cucurbitaceae
296	*Tripogon capillatus* Jaub. & Spach.	Poaceae

297	*Turnera ulmifolia* L.	Passifloraceae
298	*Typhonium flagelliforme* (Roxb. ex G.Lodd.) Blume	Araceae
299	*Vanda tessellata* Hook. ex G.Don.	Orchidaceae
300	*Vanda testacea* Rchb.f.	Orchidaceae
301	*Vateria indica* L.	Dipterocarpaceae
302	*Vepris bilocularis* Engl.	Rutaceae
303	*Viburnum punctatum* Buch.-Ham. ex D.Don.	Adoxaceae
304	*Vincetoxicum indicum* (Burm.f.) Mabb.	Apocynaceae
305	*Wendlandia thyrsoidea* Steud.	Rubiaceae
306	*Xanthium strumarium* L.	Asteraceae
307	*Xantolis tomentosa* Raf.	Sapotaceae
308	*Xenostegia tridentata* (L.) D.F.Austin & Staples	Convolvulaceae

Annexure VIII

Endemic plant diversity in Nelliyampathy hills

Sl. No.	Binomial Name	Family	Geographical range
1	*Acalypha malabarica* Müll.Arg.	Euphorbiaceae	Endemic to Peninsular India
2	*Acilepis dendigulensis* (DC.) H.Rob.	Asteraceae	Endemic to Western Ghats
3	*Acilepis ornata* (Talbot) H.Rob. & Skvarla.	Asteraceae	Endemic to Southern Western Ghats
4	*Actinodaphne bourdillonii* Gamble	Lauraceae	Endemic to Southern Western Ghats
5	*Actinodaphne salicina* Meisn.	Lauraceae	Endemic to Southern Western Ghats
6	*Actinodaphne wightiana* (Kuntze) Noltie.	Lauraceae	Endemic to Southern Western Ghats
7	*Aerides crispa* Lindl.	Orchidaceae	Endemic to Western Ghats
8	*Aeschynanthus perrottetii* A.DC.	Gesneriaceae	Endemic to Western Ghats
9	*Aganope thyrsiflora* (Benth.) Polhill	Fabaceae	Endemic to Southern Western Ghats
10	*Agrostistachys indica* Dalzell.	Euphorbiaceae	Endemic to Peninsular India
11	*Allophylus concanicus* Radlk.	Sapindaceae	Endemic to Western Ghats
12	*Alstonia venenata* R.Br.	Apocynaceae	Endemic to Peninsular India
13	*Amorphophallus commutatus* (Schott) Engl.	Araceae	Endemic to Western Ghats
14	*Anaphalis lawii* Gamble	Asteraceae	Endemic to Peninsular India
15	*Anaphalis leptophylla* DC.	Asteraceae	Endemic to Southern Western Ghats
16	*Anaphalis wightiana* DC.	Asteraceae	Endemic to Peninsular India
17	*Andrographis atropurpurea* (Dennst.) Alston	Acanthaceae	Endemic to Western ghats
18	*Andrographis elongata* (Vahl) T. Anderson	Acanthaceae	Endemic to Western ghats
19	*Anisochilus argenteus* Gamble	Lamiaceae	Endemic to South India
20	*Aporosa bourdillonii* Stapf.	Phyllanthaceae	Endemic to Southern Western Ghats
21	*Arenga wightii* Griff.	Arecaceae	Endemic to Western Ghats
22	*Argostemma courtallense* Arn.	Rubiaceae	Endemic to India
23	*Arisaema barnesii* C.E.C.Fisch.	Araceae	Endemic to Southern Western Ghats
24	*Arisaema leschenaultii* Blume	Araceae	Endemic to Southern Western Ghats
25	*Arisaema nilamburense* Sivad.	Araceae	Endemic to Southern

			Western Ghats (Kerala)
26	*Arthraxon castratus* Nayaran. ex Bor.	Poaceae	Endemic to Peninsular India
27	*Artocarpus hirsutus* Lam.	Moraceae	Endemic to Southern Western Ghats
28	*Arundinella ciliata* Nees ex Miq., in Verh.	Poaceae	Endemic to Peninsular India
29	*Arundinella mesophylla* Nees ex Steud.	Poaceae	Endemic to South India
30	*Asparagus gonocladus* Baker	Asparagaceae	Endemic to Western Ghats
31	*Asystasia crispata* Benth.	Acanthaceae	Endemic to Southern Western Ghats
32	*Baccaurea courtallensis* (Wight) Müll.Arg.	Phyllanthaceae	Endemic to Peninsular India
33	*Barleria acuminata* Wight	Acanthaceae	Endemic to Peninsular India
34	*Barleria prattensis* Santapau	Acanthaceae	Endemic to Western ghats
35	*Barleria tomentosa* Roth.	Acanthaceae	Endemic to Peninsular India
36	*Begonia bachulkarii* Aitawade, Kattuk. & S. R	Begoniaceae	Endemic to Kerala
37	*Begonia fallax* A.DC.	Begoniaceae	Endemic to Peninsular India
38	*Beilschmiedia gemmiflora* (Blume) Kosterm.	Lauraceae	Endemic to Peninsular India
39	*Beilschmiedia wightii* Benth. & Hook.f.	Lauraceae	Endemic to Southern Western Ghats
40	*Boesenbergia pulcherrima* Kuntze.	Zingiberaceae	Endemic to Southern Western Ghats
41	*Brachycorythis iantha* (Wight) Summerh.	Orchidaceae	Endemic to India
42	*Brachycorythis splendida* Summerh.	Orchidaceae	Endemic to Southern Western Ghats
43	*Bridelia stipularis* Blume	Phyllanthaceae	Endemic to Peninsular India
44	*Bulbophyllum fimbriatum* Rchb.f.	Orchidaceae	Endemic to Southern Western Ghats
45	*Bulbophyllum stocksii* (Benth. ex Hook.f.) J.J.Verm., Schuit. & de Vogel	Orchidaceae	Endemic to Southern Western Ghats
46	*Bulbophyllum tremulum* Wight	Orchidaceae	Endemic to Southern Western Ghats
47	*Cajanus lineatus* (Wight & Arn.) Maesen.	Fabaceae	Endemic to Western Ghats
48	*Canscora pauciflora* Dalzell	Gentianaceae	Endemic to Western Ghats
49	*Canscora perfoliata* Lam.	Gentianaceae	Endemic to Western Ghats
50	*Canthium rheedei* DC.	Rubiaceae	Endemic to Peninsular India
51	*Capparis rheedei* DC.	Capparaceae	Endemic to Western Ghats
52	*Ceropegia ensifolia* Bedd.	Apocynaceae	Endemic to Southern Western Ghats

53	*Ceropegia fimbriifera* Bedd.	Apocynaceae	Endemic to Southern Western Ghats
54	*Chionanthus mala-elengi* (Dennst.) P.S.Green	Oleaceea	Endemic to Peninsular India
55	*Chlorophytum indicum* (Willd.) Dress.	Asparagaceae	Endemic to Western Ghats
56	*Chlorophytum malabaricum* Baker	Asparagaceae	Endemic to Peninsular India
57	*Chrysopogon asper* B.Heyne ex Blatt. & McCann.	Poaceae	Endemic to Peninsular India
58	*Chrysopogon hackelii* (Hook.f.) C.E.C.Fisch.	Poaceae	Endemic to Peninsular India
59	*Chrysopogon purushothamanii* Ravi, N.Mohanan & Kiran Raj	Poaceae	Endemic to Kerala
60	*Cinnamomum macrocarpum* Hook.f.	Lauraceae	Endemic to Southern Western Ghats
61	*Cinnamomum malabathrum* (Lam.) J.Presl.	Lauraceae	Endemic to Southern Western Ghats
62	*Clausena austroindica* B.C.Stone & K.Narayanan	Rutaceae	Endemic to Southern Western Ghats
63	*Coelogyne breviscapa* Lindl.	Orchidaceae	Endemic to Southern Western Ghats
64	*Coelogyne nervosa* A.Rich.	Orchidaceae	Endemic to Southern Western Ghats
65	*Commelina wightii* Raizada	Commelinaceae	Endemic to Southern Western Ghats
65	*Connarus sclerocarpus* G.Schellenb.	Connaraceae	Endemic to Southern Western Ghats
66	*Crotalaria clarkei* Gamble	Fabaceae	Endemic to Western Ghats
67	*Crotalaria fysonii* Dunn.	Fabaceae	Endemic to Southern Western Ghats
68	*Crotalaria grahamiana* Wight & Arn.	Fabaceae	Endemic to Southern Western Ghats
69	*Crotalaria heyneana* Graham ex Wight & Arn.	Fabaceae	Endemic to Southern Western Ghats
70	*Crotalaria longipes* Wight & Arn.	Fabaceae	Endemic to Southern Western Ghats
71	*Crotalaria notonii* Wight & Arn.	Fabaceae	Endemic to India
72	*Crotalaria obtecta* Graham ex Wight & Arn.	Fabaceae	Endemic to Southern Western Ghats
73	*Crotalaria priestleyoides* Benth.	Fabaceae	Endemic to South India
74	*Crotalaria salicifolia* B.Heyne ex Wight & Arn.	Fabaceae	Endemic to Peninsular India
75	*Croton malabaricus* Bedd.	Euphorbiaceae	Endemic to Southern Western Ghats
76	*Cryptocarya anamalayana* Gamble	Lauraceae	Endemic to Southern Western Ghats
77	*Cucumis silentvalleyi* (Manilal, T.Sabu & P.Mathew) Ghebret. & Thulin	Cucurbitaceae	Endemic to Southern Western Ghats
78	*Cullenia exarillata* A.Robyns.	Malvaceae	Endemic to Southern Western Ghats
79	*Curcuma aurantiaca* Zijp.	Zingiberaceae	Endemic to Western

			Ghats
80	*Curcuma decipiens* Dalzell	Zingiberaceae	Endemic to Peninsular India
81	*Curcuma montana* Roxb.	Zingiberaceae	Endemic to Peninsular India
82	*Curcuma neilgherrensis* Wight	Zingiberaceae	Endemic to Western Ghats
83	*Curcuma pseudomontana* J.Graham	Zingiberaceae	Endemic to Peninsular India
84	*Curcuma vamana* M.Sabu & Mangaly	Zingiberaceae	Endemic to Southern Western Ghats
85	*Cyanotis vivipara* Dalzell	Commelinaceae	Endemic to Western Ghats
86	*Cymbopogon martini* (Roxb.) Will.Watson	Poaceae	Endemic to Peninsular India
87	*Cyperus malabaricus* (C.B.Clarke) T.Cooke	Cyperaceae	Endemic to Peninsular India
88	*Cyrtococcum longipes* A.Camus	Poaceae	Endemic to Western Ghats
89	*Dalechampia velutina* Wight	Euphorbiaceae	Endemic to Peninsular India
90	*Decalepis salicifolia* (Bedd. ex Hook.f.) Bruyns.	Apocynaceae	Endemic to Southern Western Ghats
91	*Dendrobium aqueum* Lindl.	Orchidaceae	Endemic to Western Ghats
92	*Dendrobium barbatulum* Lindl.	Orchidaceae	Endemic to Peninsular India
93	*Dendrobium ovatum* Kraenzl.	Orchidaceae	Endemic to Western Ghats
94	*Derris brevipes* Baker	Fabaceae	Endemic to Western Ghats
95	*Dichanthium foulkesii* (Hook.f.) S.K.Jain & Deshp.	Poaceae	Endemic to Southern Western Ghats
96	*Dicliptera cuneata* Nees.	Acanthaceae	Endemic to Peninsular India
97	*Dictyospermum montanum* Wight	Commelinaceae	Endemic to Peninsular India
98	*Dimeria bialata* C.E.C.Fisch.	Poaceae	Endemic to South India
99	*Dimeria deccanensis* Bor.	Poaceae	Endemic to Southern Western Ghats
100	*Dimeria kanjirapallilana* Jacob	Poaceae	Endemic to Peninsular India
101	*Dimeria ornithopoda* Trin.	Poaceae	Endemic to South India
102	*Dimorphocalyx glabellus* var. *lawianus* (Hook.f.) Chakrab. & N.P.Balakr.	Euphorbiaceae	Endemic to Western Ghats
103	*Dioscorea alata* L.	Dioscoreaceae	Endemic to India
104	*Diospyros candolleana* Wight	Ebenaceae	Endemic to Peninsular India
105	*Diplocentrum congestum* Wight	Orchidaceae	Endemic to Peninsular India
106	*Dipterocarpus bourdillonii* Brandis	Dipterocarpaceae	Endemic to Western

			Ghats
107	*Dipterocarpus indicus* Bedd.	Dipterocarpaceae	Endemic to Western Ghats
108	*Drypetes venusta* Pax & K.Hoffm.	Putranjivaceae	Endemic to Southern Western Ghats
109	*Drypetes wightii* Pax & K.Hoffm.	Putranjivaceae	Endemic to Southern Western Ghats
110	*Dysoxylum malabaricum* Bedd. ex C.DC.	Meliaceae	Endemic to Southern Western Ghats
111	*Elaeocarpus monocera* Cav.	Elaeocarpaceae	Endemic to Southern Western Ghats
112	*Elaeocarpus munroii* Mast.	Elaeocarpaceae	Endemic to Southern Western Ghats
113	*Elaeocarpus variabilis* Zmarzty	Elaeocarpaceae	Endemic to Western Ghats
114	*Emilia ramulosa* Gamble	Asteraceae	Endemic to Southern Western Ghats
115	*Emilia scabra* DC. ex Wight	Asteraceae	Endemic to India
116	*Ensete superbum* (Roxb.) Cheesman	Musaceae	Endemic to Peninsular India
117	*Epiprinus mallotiformis* (Müll.Arg.) Croizat	Euphorbiaceae	Endemic to Southern Western Ghats
118	*Epithema ceylanicum* Wight	Gesneriaceae	Endemic to Western Ghats
119	*Eragrostis riparia* Nees.	Poaceae	Endemic to Peninsular India
120	*Eriocaulon eurypeplon* Körn.	Eriocaulaceae	Endemic to Peninsular India
121	*Eriocaulon palghatense* R.Ansari & N.P.Balakr.	Eriocaulaceae	Endemic to Southern Western Ghats
122	*Eriocaulon pectinatum* Ruhland	Eriocaulaceae	Endemic to Western Ghats
123	*Euclasta oligantha* (Hochst. ex Steud.) M.R.Almeida	Poaceae	Endemic to Southern Western Ghats
124	*Eugenia agasthiyamalayana* Gopalan & Murugan	Myrtaceae	Endemic to Southern Western Ghats
125	*Eugenia indica* (Wight) Chithra	Myrtaceae	Endemic to Southern Western Ghats
126	*Eugenia mabaeoides* Wight	Myrtaceae	Endemic to Southern Western Ghats
127	*Eugenia wynadensis* Bedd.	Myrtaceae	Endemic to Southern Western Ghats
128	*Euonymus angulatus* Wight	Celastraceae	Endemic to Southern Western Ghats
129	*Euonymus indicus* B.Heyne ex Wall.	Celastraceae	Endemic to Western Ghats
130	*Euphorbia santapaui* A.N.Henry	Euphorbiaceae	Endemic to Southern Western Ghats
131	*Euphorbia vajravelui* Binojk. & N.P.Balakr.	Euphorbiaceae	Endemic to Southern Western Ghats
132	*Exacum lawii* C.B.Clarke	Gentianaceae	Endemic to Western Ghats
133	*Exacum tetragonum* Roxb.	Gentianaceae	Endemic to Peninsular

			India
134	*Fibraurea darshanii* Udayan & K.Ravik.	Menispermaceae	Endemic to Southern Western Ghats
135	*Ficus beddomei* King	Moraceae	Endemic to Western Ghats
136	*Ficus dalhousieae* Miq.	Moraceae	Endemic to Southern Western Ghats
137	*Fimbristylis narayanii* C.E.C.Fisch.	Cyperaceae	Endemic to Kerala
138	*Fimbristylis sunilii* Jabeana & Maya	Cyperaceae	Endemic to Kerala
139	*Fimbristylis tuckeri* Viji, Pandur. & Deepu	Cyperaceae	Endemic to Western Ghats
140	*Flacourtia montana* J.Graham	Salicaceae	Endemic to India
141	*Garcinia talbotii* Raizada	Clusiaceae	Endemic to Western Ghats
142	*Garnotia arundinacea* Hook.f.	Poaceae	Endemic to Southern Western Ghats
143	*Garnotia elata* Janowski	Poaceae	Endemic to Peninsular India
144	*Geissaspis cristata* var. *tenella* (Benth.) M.R.Almeida	Fabaceae	Endemic to Western Ghats
145	*Globba sessiliflora* Sims.	Zingiberaceae	Endemic to India
146	*Glycosmis nelliyampathiensis* Jabeena & Maya	Rutaceae	Endemic to Kerala
147	*Glyphochloa forficulata* (C.E.C.Fisch.) Clayton	Poaceae	Endemic to Peninsular India
148	*Gomphostemma heyneanum* Wall.	Lamiaceae	Endemic to Southern Western Ghats
149	*Gonostegia pentandra* (Roxb.) Miq.	Urticaceae	Endemic to Southern Western Ghats
150	*Grewia gamblei* J.R.Drumm. ex Dunn.	Malvaceae	Endemic to Southern Western Ghats
151	*Grewia polygama* Roxb.	Malvaceae	Endemic to Southern Western Ghats
152	*Grewia umbellifera* Bedd.	Malvaceae	Endemic to Western Ghats
153	*Griffithella hookeriana* (Tul.) Warm.	Podostemaceae	Endemic to Western Ghats
154	*Gymnema latifolium* Wall. ex Wight	Apocynaceae	Endemic to Western Ghats
155	*Gymnosporia heyneana* (Roth) M.A.Lawson	Celastraceae	Endemic to Peninsular India
156	*Habenaria barnesii* Summerh. in C.E.C.Fisch.	Orchidaceae	Endemic to Southern Western Ghats
157	*Habenaria rariflora* A.Rich.	Orchidaceae	Endemic to Western Ghats
158	*Hedychium venustum* Wight	Zingiberaceae	Endemic to Western Ghats
159	*Heliotropium rottleri* Lehm.	Boraginaceae	Endemic to Peninsular India
160	*Helixanthera intermedia* Danser	Loranthaceae	Endemic to Southern Western Ghats
161	*Helixanthera wallichiana* Danser	Loranthaceae	Endemic to Western

			Ghats
162	*Henckelia fischeri* (Gamble) A.Weber & B.L.Burtt.	Gesneriaceae	Endemic to Southern Western Ghats
163	*Henckelia incana* Spreng.	Gesneriaceae	Endemic to Peninsular India
164	*Henckelia wightii* (C.B.Clarke) A.Weber & B.L.Burtt.	Gesneriaceae	Endemic to Southern Western Ghats
165	*Heracleum candolleanum* Gamble	Apiaceae	Endemic to Southern Western Ghats
166	*Heracleum rigens* Wall.	Apiaceae	Endemic to Southern Western Ghats
167	*Heteropogon fischerianus* Bor.	Poaceae	Endemic to India
168	*Holigarna arnottiana* Hook.f.	Anacardiaceae	Endemic to Southern Western Ghats
169	*Holigarna beddomei* Hook.f.	Anacardiaceae	Endemic to Southern Western Ghats
170	*Holigarna ferruginea* Marchand.	Anacardiaceae	Endemic to Western Ghats
171	*Holigarna grahamii* Kurz.	Anacardiaceae	Endemic to Western Ghats
172	*Holigarna nigra* Bourd.	Anacardiaceae	Endemic to Southern Western Ghats
173	*Hopea parviflora* Bedd.	Dipterocarpaceae	Endemic to Western Ghats
174	*Hopea ponga* (Dennst.) Mabb.	Dipterocarpaceae	Endemic to Western Ghats
175	*Hydnocarpus pentandrus* (Buch.-Ham.) Oken.	Achariaceae	Endemic to Western Ghats
176	*Hydrocotyle conferta* Wight	Araliaceae	Endemic to Southern Western Ghats
177	*Hymenodictyon obovatum* Wall.	Rubiaceae	Endemic to Western Ghats
178	*Impatiens capensis* Meerb.	Balsaminaceae	Endemic to Southern Western Ghats
179	*Impatiens dasysperma* Wight	Balsaminaceae	Endemic to Western Ghats
180	*Impatiens diversifolia* Wall. ex Wight & Arn.	Balsaminaceae	Endemic to Western Ghats
181	*Impatiens gardneriana* Wight	Balsaminaceae	Endemic to Southern Western Ghats
182	*Impatiens minae* Ratheesh, Anil Kumar & Sivad.	Balsaminaceae	Endemic to Kerala
183	*Impatiens minor* (DC.) Bennet	Balsaminaceae	Endemic to Peninsular India
184	*Impatiens parasitica* Bedd.	Balsaminaceae	Endemic to Southern Western Ghats
185	*Impatiens sasidharanii* K.M.P.Kumar, Omalsree, Hareesh & V.B.Sreek.	Balsaminaceae	Endemic to Kerala
186	*Impatiens sasidharanii* var. *hirsuta* K.M.P.Kumar, Omalsree, Hareesh & V.B.Sreek.	Balsaminaceae	Endemic to Kerala
187	*Impatiens scapiflora* Wight & Arn.	Balsaminaceae	Endemic to Southern Western Ghats

188	*Impatiens trichocarpa* Hook.f.	Balsaminaceae	Endemic to Southern Western Ghats
189	*Impatiens viscosa* Bedd.	Balsaminaceae	Endemic to Southern Western Ghats
190	*Indigofera trita* var. *marginulata* (Grah. ex Wight & Arn.) Sanjappa	Fabaceae	Endemic to India
191	*Indobanalia thyrsiflora* (Moq.) A.N.Henry & B.Roy	Amaranthaceae	Endemic to Southern Western Ghats
192	*Indotristicha ramosissima* (Wight) P.Royen	Podostemaceae	Endemic to Southern Western Ghats
193	*Ipomoea barlerioides* (Choisy) C.B.Clarke	Convolvulaceae	Endemic to India
194	*Isachne fischeri* Bor.	Poaceae	Endemic to Southern Western Ghats
195	*Isachne gracilis* C.E.Hubb.	Poaceae	Endemic to Peninsular India
196	*Isachne setosa* C.E.C.Fisch.	Poaceae	Endemic to Western Ghats
197	*Ischaemum sunilii* Jabeena, Nithya, K.M.P.Kumar & Maya	Poaceae	Endemic to Kerala
198	*Isodon lophanthoides* (Buch.-Ham. ex D.Don) H.Hara	Lamiaceae	Endemic to Western Ghats
199	*Isodon nilgherricus* (Benth.) H.Hara	Lamiaceae	Endemic to Southern Western Ghats
200	*Isodon wightii* (Benth.) H.Hara	Lamiaceae	Endemic to Peninsular India
201	*Ixora brachiata* Roxb	Rubiaceae	Endemic to Western Ghats
202	*Ixora ravikumarii* Kottaim	Rubiaceae	Endemic to Southern Western Ghats
203	*Jasminum cordifolium* Wall. & G.Don	Oleaceae	Endemic to Southern Western Ghats
204	*Jasminum malabaricum* Wight	Oleaceae	Endemic to Western Ghats
205	*Justicia santapaui* Bennet	Acanthaceae	Endemic to Western ghats
206	*Justicia wynaadensis* B.Heyne	Acanthaceae	Endemic to Western ghats
207	*Kamettia caryophyllata* (Roxb.) Nicolson & Suresh	Apocynaceae	Endemic to Southern Western Ghats
208	*Knema attenuata* (Wall. ex Hook.f. & Thomson) Warb.	Myristicaceae	Endemic to Western Ghats
209	*Knoxia wightiana* Wall. & G.Don.	Rubiaceae	Endemic to Peninsular India
210	*Kunstleria keralensis* C.N.Mohanan & N.C.Nair	Fabaceae	Endemic to Southern Western Ghats
211	*Lagerstroemia microcarpa* Wight	Lythraceae	Endemic to Western Ghats
212	*Lasianthus acuminatus* Wight	Rubiaceae	Endemic to Southern Western Ghats
213	*Lasianthus jackianus* Wight	Rubiaceae	Endemic to Southern Western Ghats
214	Lasianthus rostratus Wight	Rubiaceae	Endemic to Southern Western Ghats

215	*Leucas sahyadriensis* Sunojk.	Lamiaceae	Endemic to South India
216	*Leucas vestita* Benth.	Lamiaceae	Endemic to Southern Western Ghats
217	*Ligustrum robustum subsp. perrottetii* (A.DC.) de Juana	Oleaceae	Endemic to Western Ghats
218	*Litsea bourdillonii* Gamble	Lauraceae	Endemic to Southern Western Ghats
219	*Litsea coriacea* (B.Heyne ex Nees) Hook.f.	Lauraceae	Endemic to Peninsular India
220	*Litsea floribunda* Gamble	Lauraceae	Endemic to Western Ghats
221	*Litsea glabrata* (Wall.) Hook.f.	Lauraceae	Endemic to Southern Western Ghats
222	*Litsea laevigata* Gamble	Lauraceae	Endemic to Southern Western Ghats
223	*Litsea mysorensis* Gamble	Lauraceae	Endemic to South India
224	*Litsea oleoides* Hook.f.	Lauraceae	Endemic to Southern Western Ghats
225	*Litsea stocksii* (Meisn.) Hook.f.	Lauraceae	Endemic to Southern Western Ghats
226	*Litsea wightiana* (Nees) Wall. ex Hook.f.	Lauraceae	Endemic to Southern Western Ghats
227	*Loeseneriella bourdillonii* (Gamble) D.C.S.Raju	Celastraceae	Endemic to Southern Western Ghats
228	*Mallotus atrovirens* Müll.Arg.	Euphorbiaceae	Endemic to Southern Western Ghats
229	*Mallotus beddomei* Hook.f.	Euphorbiaceae	Endemic to Southern Western Ghats
230	*Mallotus resinosus* Merr.	Euphorbiaceae	Endemic to Peninsular India
231	*Mastixia arborea* C.B.Clarke	Nyssaceae	Endemic to Western Ghats
232	*Medinilla beddomei* C.B.Clarke	Melastomataceae	Endemic to Southern Western Ghats
233	*Meiogyne pannosa* (Dalzell) J.Sinclair	Annonaceae	Endemic to Western Ghats
234	*Meistera acuminata* (Thwaites) Škorničk. & M.F.Newman	Zingiberaceae	Endemic to Southern Western Ghats
235	*Meistera cannicarpa* (Wight) Škorničk. & M.F.Newman	Zingiberaceae	Endemic to Western Ghats
236	*Meistera sahyadrica* (V.P.Thomas & M.Sabu) Škorničk. & M.F.Newman	Zingiberaceae	Endemic to Kerala
237	*Memecylon bremeri* M.B.Viswan.	Melastomataceae	Endemic to South India
238	*Memecylon heyneanum* Benth. ex Wight & Arn.	Melastomataceae	Endemic to Western Ghats
239	*Memecylon randerianum* S.M.Almeida & M.R.Almeida	Melastomataceae	Endemic to Southern Western Ghats
240	*Memecylon talbotianum* D.Brandis	Melastomataceae	Endemic to Western Ghats
241	*Memecylon wallichii* Ridl.	Melastomataceae	Endemic to Southern Western Ghats
242	*Mesua ferrea* var. *coromandeliana* (Wight) N. P. Singh	Calophyllaceae	Endemic to Southern Western Ghats

243	*Microcos heterotricha* Burret	Malvaceae	Endemic to Western Ghats
244	*Microstegium manparensis* Jabeena, Sunil & Maya	Poaceae	Endemic to Kerala
245	*Millettia rubiginosa* Wight & Arn.	Fabaceae	Endemic to Southern Western Ghats
246	*Miquelia dentata* Bedd.	Icacinaceae	Endemic to Southern Western Ghats
247	*Monoon fragrans* (Dalzell) B.Xue & R.M.K.Saunders	Annonaceae	Endemic to Southern Western Ghats
248	*Murdannia crocea* subsp. *ochracea* (Dalzell) Faden	Commelinaceae	Endemic to Peninsular India
249	*Murdannia versicolor* G.Brückn.	Commelinaceae	Endemic to Peninsular India
250	*Murdannia zeylanica* G.Brückn.	Commelinaceae	Endemic to Western Ghats
251	*Mussaenda frondosa* L.	Rubiaceae	Endemic to Peninsular India
252	*Mycetia acuminata* Kuntze.	Rubiaceae	Endemic to Western Ghats
253	*Myriophyllum oliganthum* (Wight & Arn.) F.Muell.	Haloragaceae	Endemic to Peninsular India
254	*Myristica malabarica* Lam.	Myristicaceae	Endemic to Western Ghats
255	*Naregamia alata* Wight & Arn.	Meliaceae	Endemic to Peninsular India
256	*Neanotis decipiens* (Hook.f.) W.H.Lewis	Rubiaceae	Endemic to Western Ghats
257	*Neanotis indica* (DC.) W.H.Lewis	Rubiaceae	Endemic to Western Ghats
258	*Neanotis monosperma* (Wall. ex Wight & Arn.) W.H.Lewis	Rubiaceae	Endemic to Peninsular India
259	*Neanotis rheedei* (Wall. ex Wight & Arn.) W.H.Lewis	Rubiaceae	Endemic to Western Ghats
260	*Neolitsea scrobiculata* Gamble	Lauraceae	Endemic to Western Ghats
261	*Nostolachma crassifolia* (Gamble) Deb & J.Lahiri	Rubiaceae	Endemic to Western Ghats
262	*Oberonia anamalayana* J.Joseph	Orchidaceae	Endemic to Southern Western Ghats
263	*Oberonia brachyphylla* Blatt. & McCann.	Orchidaceae	Endemic to Southern Western Ghats
264	*Oberonia brunoniana* Wight	Orchidaceae	Endemic to Southern Western Ghats
265	*Oberonia chandrasekharanii* V.J.Nair, V.S.Ramach. & R.Ansari	Orchidaceae	Endemic to Southern Western Ghats
266	*Ochlandra travancorica* Gamble	Poaceae	Endemic to Southern Western Ghats
267	*Olea dioica* Roxb.	Oleaceae	Endemic to India
268	*Ophiopogon intermedius* D.Don.	Asparagaceae	Endemic to India
269	*Ormosia travancorica* Bedd.	Fabaceae	Endemic to Southern Western Ghats
270	*Orophea uniflora* Hook.f. & Thomson	Annonaceae	Endemic to Southern

			Western Ghats
271	*Osbeckia brachystemon* Naudin	Melastomataceae	Endemic to Southern Western Ghats
272	*Osbeckia gracilis* Bedd.	Melastomataceae	Endemic to Southern Western Ghats
273	*Osbeckia muralis* Naudin	Melastomataceae	Endemic to Western Ghats
274	*Osbeckia travancorica* Bedd. ex Gamble	Melastomataceae	Endemic to Southern Western Ghats
275	*Osbeckia wightiana* Benth.	Melastomataceae	Endemic to Peninsular India
276	*Otonephelium stipulaceum* Radlk.	Sapindaceae	Endemic to Southern Western Ghats
277	*Palaquium ellipticum* (Dalzell) Baill.	Sapotaceae	Endemic to Western Ghats
278	*Palaquium ravii* Sasidh. & Vink.	Sapotaceae	Endemic to Southern Western Ghats
279	*Peperomia blanda* (Jacq.) Kunth.	Piperaceae	Endemic to Peninsular India
280	*Peucedanum anamallayense* C.B.Clarke	Apiaceae	Endemic to Southern Western Ghats
281	*Peucedanum pradeepianum* K.M.P.Kumar, Hareesh & Balach.	Apiaceae	Endemic to Kerala
282	*Phoebe wightii* Meisn.	Lauraceae	Endemic to Peninsular India
283	*Phyllanthus assamicus* Müll.Arg.	Phyllanthaceae	Endemic to Western Ghats
284	*Phyllanthus bourdillonii* (Gamble) Chakrab. & N.P.Balakr.	Phyllanthaceae	Endemic to Peninsular India
285	*Phyllanthus hohenackeri* Müll.Arg.	Phyllanthaceae	Endemic to Peninsular India
286	*Phyllocephalum courtallense* (Wight) Narayana	Asteraceae	Endemic to Southern Western Ghats
287	*Phyllocephalum scabridum* (DC.) K.Kirkman	Asteraceae	Endemic to Western Ghats
288	*Pilea kingii* C.E.C.Fisch.	Urticaceae	Endemic to Southern Western Ghats
289	*Pinalia mysorensis* Kuntze.	Orchidaceae	Endemic to Western Ghats
290	*Piper retrofractum* Vahl.	Piperaceae	Endemic to Southern Western Ghats
291	*Piper wightii* Miq.	Piperaceae	Endemic to Southern Western Ghats
292	*Pogostemon benghalensis* Kuntze.	Lamiaceae	Endemic to India
293	*Pogostemon mollis* Benth.	Lamiaceae	Endemic to Western Ghats
294	*Porpax filiformis (*Wight) Schuit.	Orchidaceae	Endemic to Western Ghats
295	*Pouzolzia caudata* Benn.	Urticaceae	Endemic to Southern Western Ghats
296	*Pouzolzia cymosa* Wight	Urticaceae	Endemic to Southern Western Ghats
297	*Pouzolzia scabra* Wight	Urticaceae	Endemic to South India

298	*Pouzolzia wightii* Benn.	Urticaceae	Endemic to Southern Western Ghats
299	*Premna paucinervis* Gamble	Lamiaceae	Endemic to South India
300	*Pseudoxytenanthera bourdillonii* (Gamble) H.B.Naithani	Poaceae	Endemic to Southern Western Ghats
301	*Psychotria anamallayana* Bedd.	Rubiaceae	Endemic to Southern Western Ghats
302	*Psychotria dalzellii* Hook.f.	Rubiaceae	Endemic to Western Ghats
303	*Psychotria flavida* Talbot	Rubiaceae	Endemic to Southern Western Ghats
304	*Psychotria globicephala* Gamble	Rubiaceae	Endemic to Southern Western Ghats
305	*Psychotria macrocarpa* Hook.f.	Rubiaceae	Endemic to Southern Western Ghats
306	*Psychotria nilgiriensis* Deb & M.Gangop.	Rubiaceae	Endemic to Southern Western Ghats
307	*Psychotria nudiflora* Wight & Arn.	Rubiaceae	Endemic to Southern Western Ghats
308	*Psydrax umbellatus* (Wight) Bridson	Rubiaceae	Endemic to Southern Western Ghats
309	*Radermachera xylocarpa* K.Schum.	Bignoniaceae	Endemic to Peninsular India
310	*Reinwardtiodendron anamalaiense* (Bedd.) Mabb.	Meliaceae	Endemic to Southern Western Ghats
311	*Rostellularia neesii* (Ramamoorthy) A.K.Mukh.	Acanthaceae	Endemic to Western ghats
312	*Rotala malampuzhensis* R.V.Nair ex C.D.K.Cook.	Lythraceae	Endemic to Southern Western Ghats
313	*Rubus racemosus* Roxb.	Rosaceae	Endemic to Southern Western Ghats
314	*Ruellia prostrata* Poir.	Acanthaceae	Endemic to India
315	*Rungia wightiana* Nees.	Acanthaceae	Endemic to Southern Western Ghats
316	*Sageraea laurina* Dalzell	Annonaceae	Endemic to Western Ghats
317	*Saprosma glomerata* Bedd.	Rubiaceae	Endemic to Western Ghats
318	*Schoenorchis smeeana* (Rchb.f.) Jalal, Jayanthi & Schuit.	Orchidaceae	Endemic to Southern Western Ghats
319	*Scutellaria wightiana* Benth.	Lamiaceae	Endemic to Peninsular India
320	*Smilax wightii* A.DC.	Smilacaceae	Endemic to Southern Western Ghats
321	*Smithia gracilis* Benth.	Fabaceae	Endemic to Southern Western Ghats
322	*Smithia venkobarowii* Gamble	Fabaceae	Endemic to Southern Western Ghats
323	*Smithsonia maculata* (Dalzell) C.J.Saldanha	Orchidaceae	Endemic to Southern Western Ghats
324	*Solanum multiflorum* Roth.	Solanaceae	Endemic to Peninsular India
325	*Sonerila nairii* M.Soumya & Maya	Melastomataceae	Endemic to Kerala

326	*Sonerila veldkampiana* Ratheesh, Mini & Sivad.	Melastomataceae	Endemic to Southern Western Ghats
327	*Sonerila victoriae* M.Soumya & Maya	Melastomataceae	Endemic to Kerala
328	*Sonerila wallichii* Benn.	Melastomataceae	Endemic to Southern Western Ghats
329	*Stachyphrynium spicatum* K.Schum.	Marantaceae	Endemic to Southern Western Ghats
330	*Strobilanthes anamallaica* J.R.I.Wood.	Acanthaceae	Endemic to Southern Western Ghats
331	*Strobilanthes barbata* Nees.	Acanthaceae	Endemic to Western Ghats
332	*Strobilanthes ciliata* Nees.	Acanthaceae	Endemic to Southern Western Ghats
333	*Strobilanthes consanguinea* T.Anderson	Acanthaceae	Endemic to Southern Western Ghats
334	*Strobilanthes dupeni* Bedd. ex C.B.Clarke	Acanthaceae	Endemic to Southern Western Ghats
335	*Strobilanthes lanata* Nees.	Acanthaceae	Endemic to Southern Western Ghats
336	*Strobilanthes lawsonii* Gamble	Acanthaceae	Endemic to Southern Western Ghats
337	*Strobilanthes neoaspera* Venu & P.Daniel	Acanthaceae	Endemic to Western Ghats
338	*Strobilanthes pulneyensis* C.B.Clarke	Acanthaceae	Endemic to Southern Western Ghats
339	*Strobilanthes rubicunda* T.Anderson	Acanthaceae	Endemic to Southern Western Ghats
340	*Swertia corymbosa* (Griseb.) Wight ex C.B.Clarke	Gentianaceae	Endemic to Peninsular India
341	*Swertia lawii* Burkill.	Gentianaceae	Endemic to Southern Western Ghats
342	*Symplocos macrophylla* Wall. ex DC.	Symplocaceae	Endemic to Southern Western Ghats
343	*Syzygium densiflorum* Wall. ex Wight & Arn.	Myrtaceae	Endemic to Southern Western Ghats
344	*Syzygium laetum* (Buch.-Ham.) Gandhi	Myrtaceae	Endemic to Southern Western Ghats
345	*Syzygium mundagam* (Bourd.) Chithra	Myrtaceae	Endemic to Southern Western Ghats
346	*Syzygium palghatense* Gamble	Myrtaceae	Endemic to Southern Western Ghats
347	*Tabernaemontana gamblei* Subr. & A.N.Henry	Apocynaceae	Endemic to Southern Western Ghats
348	*Tarenna canarica* (Bedd.) Bremek.	Rubiaceae	Endemic to Southern Western Ghats
349	*Tarenna monosperma* (Wight & Arn.) D.C.S.Raju	Rubiaceae	Endemic to Southern Western Ghats
350	*Taxillus cuneatus* Danser	Loranthaceae	Endemic to Western Ghats
351	*Taxillus recurvus* (Wall. ex DC.) Tiegh.	Loranthaceae	Endemic to Western Ghats
352	*Terminalia paniculata* Roth.	Combretaceae	Endemic to Peninsular India

353	*Terminalia travancorensis* Wight & Arn.	Combretaceae	Endemic to Western Ghats
354	*Themeda sabarimalayana* Sreek. & V.J.Nair	Poaceae	Endemic to Southern Western Ghats
355	*Theriophonum infaustum* N.E.Br.	Araceae	Endemic to Southern Western Ghats
356	*Thottea sivarajanii* E.S.S.Kumar, A.E.S.Khan & Binu	Aristolochiaceae	Endemic to Southern Western Ghats (Kerala)
357	*Thunbergia mysorensis* (Wight) T.Anderson	Acanthaceae	Endemic to Western Ghats
358	*Thunbergia tomentosa* Wall. ex Nees.	Acanthaceae	Endemic to Southern Western Ghats
359	*Torenia bicolor* Dalzell	Linderniaceae	Endemic to Western Ghats
360	*Torenia hirsuta* Willd.	Linderniaceae	Endemic to Southern Western Ghats
361	*Trichosanthes anaimalaiensis* Bedd.	Cucurbitaceae	Endemic to Southern Western Ghats
362	*Trichosanthes villosula* Cogn.	Cucurbitaceae	Endemic to Peninsular India
363	*Tripogon bimucronatus* Thoiba & Sunil	Poaceae	Endemic to South India
364	*Tripogon ravianus* Sunil & Pradeep	Poaceae	Endemic to South India
365	*Tripogon sugathakumarii* Jabeena, Sunil & Maya	Poaceae	Endemic to Kerala
366	*Tripogon wightii* Hook.f.	Poaceae	Endemic to Peninsular India
367	*Utricularia lazulina* P.Taylor	Lentibulariaceae	Endemic to Western Ghats
368	*Utricularia praeterita* P.Taylor	Lentibulariaceae	Endemic to Peninsular India
369	*Utricularia sunilii* Naveen Kum. & K.M.P.Kumar	Lentibulariaceae	Endemic to Kerala
370	*Vateria indica* L.	Dipterocarpaceae	Endemic to Western Ghats
371	*Vepris bilocularis* Engl.	Rutaceae	Endemic to Southern Western Ghats
372	*Vigna dalzelliana* (Kuntze) Verdc.	Fabaceae	Endemic to Western Ghats
373	*Vigna vexillata* var. *wightii* (Benth. ex Bedd.) Babu & S.K.Sharma	Fabaceae	Endemic to Southern Western Ghats
374	*Xanthophyllum flavescens* Roxb.	Polygalaceae	Endemic to Western Ghats
375	*Zenkeria elegans* Trin.	Poaceae	Endemic to Southern Western Ghats
376	*Zingiber anamalayanum* Sujanapal & Sasidh.	Zingiberaceae	Endemic to Southern Western Ghats
377	*Zingiber neesanum* (J.Graham) Ramamoorthy	Zingiberaceae	Endemic to Western Ghats
378	*Zingiber nimmonii* Dalzell	Zingiberaceae	Endemic to Western Ghats
379	*Zingiber sabuanum* K.M.P.Kumar & A.Joe.	Zingiberaceae	Endemic to Kerala

Annexure IX

Anemochorous taxa in Nelliyampathy hills

Sl. No.	Binomial Name	APG Family
1	*Acilepis dendigulensis* (DC.) H.Rob.	Asteraceae
2	*Acilepis divergens* (DC.) H.Rob. & Skvarla.	Asteraceae
3	*Acilepis ornata* (Talbot) H.Rob. & Skvarla.	Asteraceae
4	*Acmella calva* (DC.) R.K.Jansen	Asteraceae
5	*Acmella ciliata* (Kunth) Cass.	Asteraceae
6	*Acmella paniculata* (Wall. ex DC.) R.K.Jansen	Asteraceae
7	*Acmella radicans* (Jacq.) R.K.Jansen	Asteraceae
8	*Adenostemma lavenia* (L.) Kuntze	Asteraceae
9	*Aganosma cymosa* (Roxb.) G.Don	Apocynaceae
10	*Ageratina adenophora* (Spreng.) R.M.King & H.Rob.	Asteraceae
11	*Ageratum conyzoides* L.	Asteraceae
12	*Ageratum houstonianum* Mill.	Asteraceae
13	*Ailanthus excelsus* Roxb.	Simaroubaceae
14	*Ailanthus triphysus* (Dennst.) Alston	Simaroubaceae
15	*Alstonia scholaris* (L.) R.Br.	Apocynaceae
16	*Alstonia venenata* R.Br.	Apocynaceae
17	*Anaphalis lawii* Gamble	Asteraceae
18	*Anaphalis leptophylla* DC.	Asteraceae
19	*Anaphalis subdecurrens* Gamble	Asteraceae
20	*Anaphalis wightiana* DC.	Asteraceae
21	*Anethum graveolens* L.	Apiaceae
22	*Artemisia nilagirica* (C.B.Clarke) Pamp.	Asteraceae
23	*Asclepias curassavica* L.	Apocynaceae
24	*Bidens pilosa* L.	Asteraceae
25	*Blumea axillaris* DC.	Asteraceae
26	*Blumea barbata* DC.	Asteraceae
27	*Blumea belangeriana* DC.	Asteraceae
28	*Blumea hieraciifolia* DC.	Asteraceae
29	*Blumea membranacea* DC.	Asteraceae
30	*Blumea virens* DC.	Asteraceae
31	*Bombax ceiba* L.	Malvaceae
32	*Bombax insigne* Wall.	Malvaceae
33	*Calyptocarpus vialis* Less.	Asteraceae
34	*Cardiospermum halicacabum* L.	Sapindaceae
35	*Ceiba pentandra* (L.) Gaertn.	Malvaceae
36	*Centratherum punctatum* Cass.	Asteraceae
37	*Ceropegia ensifolia* Bedd.	Apocynaceae
38	*Ceropegia fimbriifera* Bedd.	Apocynaceae
39	*Ceropegia maculata* Bedd.	Apocynaceae
40	*Chonemorpha fragrans* Alston	Apocynaceae
41	*Chromolaena odorata* (L.) R.M.King & H.Rob.	Asteraceae
42	*Chukrasia tabularis* A.Juss.	Meliaceae
43	*Clematis gouriana* Roxb. ex DC.	Ranunculaceae
44	*Clematis zeylanica* Poir.	Ranunculaceae
45	*Cochlospermum religiosum* (L.) Alston	Bixaceae
46	*Combretum latifolium* Blume	Combretaceae

47	*Crassocephalum crepidioides* S.Moore	Asteraceae
48	*Cryptolepis dubia* (Burm.f.) M.R.Almeida	Apocynaceae
49	*Cyanthillium cinereum* (L.) H.Rob.	Asteraceae
50	*Cynanchum annularium* (Roxb.) Liede & Khanum	Apocynaceae
51	*Dalbergia lanceolaria* L.f.	Fabaceae
52	*Dalbergia latifolia* Roxb.	Fabaceae
53	*Dalbergia sissoides* Graham ex Wight & Arn.	Fabaceae
54	*Decalepis salicifolia* (Bedd. ex Hook.f.) Bruyns	Apocynaceae
55	*Dipterocarpus bourdillonii* Brandis	Dipterocarpaceae
56	*Dipterocarpus indicus* Bedd.	Dipterocarpaceae
57	*Elephantopus scaber* L.	Asteraceae
58	*Emilia ramulosa* Gamble	Asteraceae
59	*Emilia scabra* DC. ex Wight	Asteraceae
60	*Emilia sonchifolia* (L.) DC.	Asteraceae
61	*Erigeron bonariensis* L.	Asteraceae
62	*Erigeron canadensis* L.	Asteraceae
63	*Erigeron karvinskianus* DC.	Asteraceae
64	*Galinsoga parviflora* Cav.	Asteraceae
65	*Gnaphalium polycaulon* Pers.	Asteraceae
66	*Gouania microcarpa* DC.	Rhamnaceae
67	*Grevillea robusta* A.Cunn. ex R.Br.	Proteaceae
68	*Gymnema decaisneanum* Wight	Apocynaceae
69	*Gymnema latifolium* Wall. ex Wight	Apocynaceae
70	*Gymnema sylvestre* (Retz.) R.Br. ex Sm.	Apocynaceae
71	*Gynura pseudochina* (L.) DC.	Asteraceae
72	*Harpullia arborea* (Blanco) Radlk.	Sapindaceae
73	*Helichrysum buddleioides* DC. ex Wight	Asteraceae
74	*Heracleum candolleanum* Gamble	Apiaceae
75	*Heracleum rigens* Wall.	Apiaceae
76	*Hiptage benghalensis* (L.) Kurz.	Malphigiaceae
77	*Hopea parviflora* Bedd.	Dipterocarpaceae
78	*Hopea ponga* (Dennst.) Mabb.	Dipterocarpaceae
79	*Ichnocarpus frutescens* (L.) W.T.Aiton	Apocynaceae
80	*Jacaranda mimosifolia* D.Don.	Bignoniaceae
81	*Lagerstroemia microcarpa* Wight	Lythraceae
82	*Laggera alata* (DC.) Sch.Bip. ex Oliv.	Asteraceae
83	*Launaea acaulis* (Roxb.) Babc. ex Kerr.	Asteraceae
84	*Mikania micrantha* Kunth.	Asteraceae
85	*Mikania scandens* (L.) Willd.	Asteraceae
86	*Moringa pterygosperma* Gaertn.	Moringaceae
87	*Nerium oleander* L.	Apocynaceae
88	*Nicandra physalodes* (L.) Gaertn.	Solanaceae
89	*Oroxylum indicum* (L.) Benth. ex Kurz	Bignoniaceae
90	*Pajanelia longifolia* (Willd.) K.Schum.	Bignoniaceae
91	*Parthenium hysterophorus* L.	Asteraceae
92	*Pergularia daemia* (Forssk.) Chiov.	Apocynaceae
93	*Peucedanum anamallayense* C.B.Clarke	Apiaceae
94	*Peucedanum pradeepianum* K.M.P.Kumar, Hareesh & Balach.	Apiaceae
95	*Phyllocephalum courtallense* (Wight) Narayana	Asteraceae
96	*Phyllocephalum indicum* (Less.) K.Kirkman	Asteraceae
97	*Phyllocephalum scabridum* (DC.) K.Kirkman	Asteraceae

98	*Physalis peruviana* L.	Solanaceae
99	*Plumeria rubra* L.	Apocynaceae
100	*Pterocarpus marsupium* Roxb.	Fabaceae
101	*Pterospermum diversifolium* Blume	Malvaceae
102	*Pterospermum rubiginosum* B.Heyne ex G.Don	Malvaceae
103	*Pyrostegia venusta* Miers.	Bignoniaceae
104	*Solidago canadensis* L.	Asteraceae
105	*Sonchus oleraceus* L.	Asteraceae
106	*Spathodea campanulata* P.Beauv.	Bignoniaceae
107	*Sphagneticola trilobata* (L.) Pruski.	Asteraceae
108	*Stereospermum chelonoides* (L.f.) DC.	Bignoniaceae
109	*Stereospermum tetragonum* DC.	Bignoniaceae
110	*Strobocalyx arborea* Sch.Bip.	Asteraceae
111	*Swietenia macrophylla* King.	Meliaceae
112	*Synedrella nodiflora* Gaertn.	Asteraceae
113	*Tagetes erecta* L.	Asteraceae
114	*Taraxacum javanicum* Soest.	Asteraceae
115	*Tecoma stans* (L.) Kunth.	Bignoniaceae
116	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.	Combretaceae
117	*Terminalia paniculata* Roth.	Combretaceae
118	*Tithonia diversifolia* (Hemsl.) A.Gray.	Asteraceae
119	*Toona hexandra* M.Roem.	Meliaceae
120	*Tridax procumbens* L.	Asteraceae
121	*Vicoa indica* DC.	Asteraceae
122	*Vincetoxicum indicum* (Burm.f.) Mabb.	Apocynaceae
123	*Wattakaka volubilis* Stapf.	Apocynaceae
124	*Wrightia tinctoria* R.Br.	Apocynaceae

Annexure X

Diversity of climbers and lianas of Nelliyampathy hills

Sl. No.	IPNI name	APG Family
1	*Acacia pennata* Willd.	Fabaceae
2	*Aganope thyrsiflora* (Benth.) Polhill	Fabaceae
3	*Aganosma cymosa* (Roxb.) G.Don.	Apocynaceae
4	*Alangium salviifolium* (L.f.) Wangerin	Cornaceae
5	*Allamanda cathartica* L.	Apocynaceae
6	*Ampelocissus latifolia* (Roxb.) Planch.	Vitaceae
7	*Anamirta cocculus* (L.) Wight & Arn.	Menispermaceae
8	*Ancistrocladus heyneanus* Wall. ex J. Graham	Ancistrocladaceae
9	*Anodendron parviflorum* (Roxb.) I. M. Turner	Apocynaceae
10	*Argyreia elliptica* (Roth) Choisy	Convolvulaceae
11	*Argyreia hirsuta* Wight & Arn.	Convolvulaceae
12	*Argyreia populifolia* Choisy	Convolvulaceae
13	*Aristolochia acuminata* Lam.	Aristolochiaceae
14	*Aristolochia indica* L.	Aristolochiaceae
15	*Artabotrys zeylanicus* Hook.f. & Thomson	Annonaceae
16	*Cajanus heynei* (Wight & Arn.) Maesen.	Fabaceae
17	*Cajanus rugosus* (Wight & Arn.) Maesen.	Fabaceae
18	*Cajanus scarabaeoides* (L.) Thouars.	Fabaceae
19	*Calamus rotang* L.	Arecaceae
20	*Calamus thwaitesii* Becc.	Arecaceae
21	*Calopogonium mucunoides* Desv.	Fabaceae
22	*Camonea umbellata* (L.) A.R.Simões & Staples.	Convolvulaceae
23	*Camonea vitifolia* (Burm.f.) A.R.Simões & Staples.	Convolvulaceae
24	*Canavalia africana* Dunn ex Hutch.	Fabaceae
25	*Cardiospermum halicacabum* L.	Sapindaceae
26	*Causonis japonica* (Thunb.) Raf.	Vitaceae
27	*Cayaponia laciniosa* (L.) C.Jeffrey.	Cucurbitaceae
28	*Cayratia pedata* Gagnep.	Vitaceae
29	*Celastrus paniculatus* Willd.	Celastraceae
30	*Centrosema molle* Mart. ex Benth.	Fabaceae
31	*Ceropegia maculata* Bedd.	Apocynaceae
32	*Cestrum aurantiacum* Lindl.	Solanaceae
33	*Chilocarpus denudatus* Blume	Apocynaceae
34	*Chonemorpha fragrans* Alston	Apocynaceae
35	*Cissampelos pareira* L.	Menispermaceae
36	*Cissus discolor* Blume	Vitaceae
37	*Cissus latifolia* Lam.	Vitaceae
38	*Cissus quadrangularis* L.	Vitaceae
39	*Cissus repens* Lam. (1783).	Vitaceae
40	*Cissus vitiginea* L.	Vitaceae
41	*Clematis gouriana* Roxb. ex DC.	Ranunculaceae
42	*Clematis zeylanica* Poir.	Ranunculaceae
43	*Clerodendrum thomsoniae* Balf.	Lamiaceae

44	*Clitoria ternatea* L.	Fabaceae
45	*Coccinia grandis* (L.) Voigt.	Cucurbitaceae
46	*Combretum latifolium* Blume	Combretaceae
47	*Connarus monocarpos* L.	Connaraceae
48	*Connarus sclerocarpus* G.Schellenb.	Connaraceae
49	*Cryptolepis dubia* (Burm.f.) M.R.Almeida.	Apocynaceae
50	*Cucumis maderaspatanus* L.	Cucurbitaceae
51	*Cucumis melo* L.	Cucurbitaceae
52	*Cucumis sativus* L.	Cucurbitaceae
53	*Cucumis silentvalleyi* (Manilal, T.Sabu & P.Mathew) Ghebret. & Thulin.	Cucurbitaceae
54	*Cyclea peltata* (Lam.) Hook.f. & Thomson.	Menispermaceae
55	*Cynanchum annularium* (Roxb.) Liede & Khanum.	Apocynaceae
56	*Dalechampia velutina* Wight	Euphorbiaceae
57	*Derris brevipes* Baker	Fabaceae
58	*Derris scandens* Benth.	Fabaceae
59	*Desmos chinensis* Lour.	Annonaceae
60	*Dioscorea alata* L.	Dioscoreaceae
61	*Dioscorea bulbifera* L.	Dioscoreaceae
62	*Dioscorea oppositifolia* L.	Dioscoreaceae
63	*Dioscorea pentaphylla* L.	Dioscoreaceae
64	*Dioscorea spicata* Roth.	Dioscoreaceae
65	*Diploclisia glaucescens* (Blume) Diels.	Menispermaceae
66	*Diplocyclos palmatus* (L.) C.Jeffrey.	Cucurbitaceae
67	*Dolichos trilobus* L.	Fabaceae
68	*Dumasia villosa* DC.	Fabaceae
69	*Elaeagnus indica* Serv.	Elaeagnaceae
70	*Embelia ribes* Burm.f.	Primulaceae
71	*Entada rheedei* Spreng.	Fabaceae
72	*Epipremnum pinnatum* (L.) Engl.	Araceae
73	*Erythropalum scandens* Blume	Olacaceae
74	*Fibraurea darshanii* Udayan & K.Ravik.	Menispermaceae
75	*Getonia floribunda* Roxb.	Combretaceae
76	*Gloriosa superba* L.	Colchicaceae
77	*Gouania microcarpa* DC.	Rhamnaceae
78	*Grewia umbellifera* Bedd.	Malvaceae
79	*Gymnema decaisneanum* Wight	Apocynaceae
80	*Gymnema latifolium* Wall. ex Wight	Apocynaceae
81	*Gymnema sylvestre* (Retz.) R.Br. ex Sm.	Apocynaceae
82	*Hemidesmus indicus* (L.) R.Br.	Apocynaceae
83	*Heterotis rotundifolia* (Sm.) Jacq.-Fél.	Melastomataceae
84	*Hewittia malabarica* (L.) Suresh	Convolvulaceae
85	*Hiptage benghalensis* (L.) Kurz.	Malphigiaceae
86	*Hoya pauciflora* Wight	Apocynaceae
87	*Hultholia mimosoides* (Lam.) Gagnon & G.P.Lewis	Fabaceae
88	*Ichnocarpus frutescens* (L.) W.T.Aiton	Apocynaceae
89	*Ipomoea alba* L.	Convolvulaceae

90	*Ipomoea barlerioides* (Choisy) C.B.Clarke	Convolvulaceae
91	*Ipomoea batatas* (L.) Lam.	Convolvulaceae
92	*Ipomoea cairica* (L.) Sweet	Convolvulaceae
93	*Ipomoea capitellata* Choisy.	Convolvulaceae
94	*Ipomoea eriocarpa* R.Br.	Convolvulaceae
95	*Ipomoea hederifolia* L.	Convolvulaceae
96	*Ipomoea indica* (Burm.) Merr.	Convolvulaceae
97	*Ipomoea obscura* (L.) Ker Gawl.	Convolvulaceae
98	*Ipomoea pes-tigridis* L.	Convolvulaceae
99	*Ipomoea purpurea* (L.) Roth.	Convolvulaceae
100	*Ipomoea sagittifolia* Burm.f.	Convolvulaceae
101	*Ipomoea staphylina* Roem. & Schult.	Convolvulaceae
102	*Ipomoea triloba* L.	Convolvulaceae
103	*Ipomoea wightii* Choisy	Convolvulaceae
104	*Jasminum angustifolium* Willd.	Oleaceae
105	*Jasminum calophyllum* Wall. & G.Don.	Oleaceae
106	*Jasminum coarctatum* Roxb.	Oleaceae
107	*Jasminum cordifolium* Wall. & G.Don.	Oleaceae
108	*Jasminum flexile* Vahl.	Oleaceae
109	*Jasminum malabaricum* Wight	Oleaceae
110	*Jasminum multiflorum* Andrews.	Oleaceae
111	*Kamettia caryophyllata* (Roxb.) Nicolson & Suresh.	Apocynaceae
112	*Kunstleria keralensis* C.N.Mohanan & N.C.Nair	Fabaceae
113	*Lablab purpureus* (L.) Sweet.	Fabaceae
114	*Loeseneriella bourdillonii* (Gamble) D.C.S.Raju.	Celastraceae
115	*Mezoneuron cucullatum* (Roxb.) Wight & Arn.	Fabaceae
116	*Microcos heterotricha* Burret.	Malvaceae
117	*Mikania micrantha* Kunth.	Asteraceae
118	*Mikania scandens* (L.) Willd.	Asteraceae
119	*Millettia rubiginosa* Wight & Arn.	Fabaceae
120	*Mimosa diplotricha* C.Wright	Fabaceae
121	*Miquelia dentata* Bedd.	Icacinaceae
122	*Momordica charantia* L.	Cucurbitaceae
123	*Momordica dioica* Roxb. ex Willd.	Cucurbitaceae
124	*Mucuna bracteata* DC. ex Kurz.	Fabaceae
125	*Myxopyrum smilacifolium* Blume	Oleaceae
126	*Neonotonia wightii* (Arn.) J.A.Lackey	Fabaceae
127	*Oxyceros rugulosus* (Thwaites) Tirveng.	Rubiaceae
128	*Paramignya monophylla* Wight	Rutaceae
129	*Passiflora foetida* L.	Passifloraceae
130	*Passiflora vitifolia* Kunth.	Passifloraceae
131	*Pergularia daemia* (Forssk.) Chiov.	Apocynaceae
132	*Piper argyrophyllum* Miq.	Piperaceae
133	*Piper nigrum* L.	Piperaceae
134	*Piper retrofractum* Vahl.	Piperaceae
135	*Piper wightii* Miq.	Piperaceae
136	*Pothos scandens* L.	Araceae

137	*Premna paucinervis* Gamble	Lamiaceae
138	*Pristimera arnottiana* (Wight) R.H.Archer	Celastraceae
139	*Pseudarthria viscida* (L.) Wight & Arn.	Fabaceae
140	*Pycnospora lutescens* Schindl.	Fabaceae
141	*Pyrostegia venusta* Miers.	Bignoniaceae
142	*Rhynchosia hirta* (Andrews) Meikle & Verdc.	Fabaceae
143	*Rourea minor* (Gaertn.) Alston	Connaraceae
144	*Rubia cordifolia* L.	Rubiaceae
145	*Rubus fairholmianus* Gardner	Rosaceae
146	*Rubus niveus* Thunb.	Rosaceae
147	*Rubus racemosus* Roxb.	Rosaceae
148	*Sarcostigma kleinii* Wight & Arn.	Icacinaceae
149	*Scutia myrtina* Kurz.	Rhamnaceae
150	*Senegalia caesia* (L.) Maslin, Seigler & Ebinger	Fabaceae
151	*Senegalia rugata* Britton & Rose	Fabaceae
152	*Senegalia torta* (Roxb.) Maslin, Seigler & Ebinger	Fabaceae
153	*Shuteria involucrata* (Wall.) Wight & Arn. ex Walp.	Fabaceae
154	*Smilax aspera* L.	Smilacaceae
155	*Smilax perfoliata* Lour.	Smilacaceae
156	*Smilax wightii* A.DC.	Smilacaceae
157	*Smilax zeylanica* L.	Smilacaceae
158	*Solanum seaforthianum* Andrews	Solanaceae
159	*Solena amplexicaulis* (Lam.) Gandhi	Cucurbitaceae
160	*Spatholobus parviflorus* Kuntze.	Fabaceae
161	*Stephania japonica* (Thunb.) Miers.	Menispermaceae
162	*Stephania wightii* (Arn. ex Wight) Dunn.	Menispermaceae
163	*Strychnos wallichiana* Steud. ex A.DC.	Loganiaceae
164	*Thunbergia alata* Bojer ex Sims.	Acanthaceae
165	*Thunbergia fragrans* Roxb.	Acanthaceae
166	*Thunbergia mysorensis* (Wight) T.Anderson	Acanthaceae
167	*Thunbergia tomentosa* Wall. ex Nees.	Acanthaceae
168	*Tiliacora racemosa* Colebr.	Menispermaceae
169	*Tinospora cordifolia* (Willd.) Miers ex Hook.f. & Thomson	Menispermaceae
170	*Toddalia asiatica* (L.) Lam.	Rutaceae
171	*Trichosanthes anaimalaiensis* Bedd.	Cucurbitaceae
172	*Trichosanthes cucumerina* L.	Cucurbitaceae
173	*Trichosanthes tubiflora* (Wight & Arn.) H.J.de Boer.	Cucurbitaceae
174	*Trichosanthes villosula* Cogn.	Cucurbitaceae
175	*Vanilla planifolia* Andrews	Orchidaceae
176	*Vigna dalzelliana* (Kuntze) Verdc.	Fabaceae
177	*Vigna umbellata* (Thunb.) Ohwi & H.Ohashi	Fabaceae
178	*Vigna vexillata* (L.) A.Rich.	Fabaceae
179	*Vigna vexillata* var. *wightii* (Benth. ex Bedd.) Babu & S.K.Sharma	Fabaceae
180	*Vincetoxicum indicum* (Burm.f.) Mabb.	Apocynaceae
181	*Wajira grahamiana* (Wight & Arn.) Thulin & Lavin.	Fabaceae
182	*Wattakaka volubilis* Stapf.	Apocynaceae

183	*Zehneria mysorensis* Wight	Cucurbitaceae
184	*Zehneria scabra* Sond.	Cucurbitaceae
185	*Ziziphus nummularia* (Burm.f.) Wight & Arn.	Rhamnaceae
186	*Ziziphus oenopolia* (L.) Mill.	Rhamnaceae

Annexure XI

Medicinal plant diversity in Nelliyampathy hills

Sl. No.	IPNI name	APG Family
1	*Abelmoschus moschatus* Medik.	Malvaceae
2	*Acalypha paniculata* Miq.	Euphorbiaceae
3	*Acampe praemorsa* (Roxb.) Blatt. & McCann.	Orchidaceae
4	*Achyranthes aspera* L.	Amaranthaceae
5	*Acmella calva* (DC.) R.K.Jansen	Asteraceae
6	*Acmella ciliata* (Kunth) Cass.	Asteraceae
7	*Acorus calamus* L.	Acoraceae
8	*Acronychia pedunculata* Miq.	Rutaceae
9	*Adina cordifolia* (Roxb.) Hook.f. & Benth.	Rubiaceae
10	*Aeschynomene indica* L.	Fabaceae
11	*Aganosma cymosa* (Roxb.) G.Don.	Apocynaceae
12	*Ageratina adenophora* (Spreng.) R.M.King & H.Rob.	Asteraceae
13	*Ageratum conyzoides* L.	Asteraceae
14	*Ailanthus excelsus* Roxb.	Simaroubaceae
15	*Ailanthus triphysus* (Dennst.) Alston	Simaroubaceae
16	*Albizia lebbeck* (L.) Benth.	Fabaceae
17	*Allophylus cobbe* (L.) Forsyth f.	Sapindaceae
18	*Allophylus serratus* Kurz.	Sapindaceae
19	*Alstonia scholaris* (L.) R.Br.	Apocynaceae
20	*Alstonia venenata* R.Br.	Apocynaceae
21	*Alternanthera sessilis* (L.) DC.	Amaranthaceae
22	*Amaranthus spinosus* L.	Amaranthaceae
23	*Amomum pterocarpum* Thwaites	Zingiberaceae
24	*Amorphophallus paeoniifolius* (Dennst.) Nicolson	Araceae
25	*Anacardium occidentale* L.	Anacardiaceae
26	*Anamirta cocculus* (L.) Wight & Arn.	Menispermaceae
27	*Ancistrocladus heyneanus* Wall. ex J.	Ancistrocladaceae
28	*Andrographis paniculata* (Burm.f.) Wall. ex Nees.	Acanthaceae
29	*Anethum graveolens* L.	Apiaceae
30	*Anisochilus carnosus* (L.f.) Wall.	Lamiaceae
31	*Antiaris toxicaria* (Pers.) Lesch.	Moraceae
32	*Antidesma acidum* Retz.	Phyllanthaceae
33	*Aphanamixis polystachya* (Wall.) R.Parker	Meliaceae
34	*Aporosa cardiosperma* (Gaertn.) Merr.	Phyllanthaceae
35	*Areca catechu* L.	Arecaceae
36	*Arisaema leschenaultii* Blume.	Araceae
37	*Arisaema tortuosum* (Wall.) Schott.	Araceae
38	*Aristolochia acuminata* Lam.	Aristolochiaceae
39	*Aristolochia indica* L.	Aristolochiaceae
40	*Artemisia nilagirica* (C.B.Clarke) Pamp.	Asteraceae
41	*Arundo donax* L.	Poaceae
42	*Asparagus gonocladus* Baker	Asparagaceae
43	*Asparagus racemosus* Willd.	Asparagaceae

44	*Atalantia monophylla* (L.) DC.	Rutaceae
45	*Azadirachta indica* A.Juss.	Meliaceae
46	*Azanza lampas* Alef.	Malvaceae
47	*Azima tetracantha* Lam.	Salvadoraceae
48	*Bacopa monnieri* (L.) Wettst.	Plantaginaceae
49	*Baliospermum solanifolium* (Burm.) Suresh	Euphorbiaceae
50	*Bambusa bambos* (L.) Voss.	Poaceae
51	*Barleria prattensis* Santapau.	Acanthaceae
52	*Berberis tinctoria* Lesch.	Berberidaceae
53	*Biophytum intermedium* Wight	Oxalidaceae
54	*Biophytum reinwardtii* (Zucc.) Klotzsch.	Oxalidaceae
55	*Biophytum sensitivum* (L.) DC.	Oxalidaceae
56	*Bixa orellana* L.	Bixaceae
57	*Blumea belangeriana* DC.	Asteraceae
58	*Boerhavia diffusa* L.	Nyctaginaceae
59	*Boerhavia erecta* L.	Nyctaginaceae
60	*Bombax ceiba* L.	Malvaceae
61	*Brassica juncea* (L.) Czern.	Brassicaceae
62	*Breynia quadrangularis* (J.G.Klein ex Willd.) Chakrab. & N.P.Balakr.	Phyllanthaceae
63	*Breynia vitis-idaea* (Burm.f.) C.E.C.Fisch.	Phyllanthaceae
64	*Bridelia stipularis* Blume	Phyllanthaceae
65	*Brugmansia arborea* (L.) Sweet	Solanaceae
66	*Bulbophyllum sterile* (Lam.) Suresh	Orchidaceae
67	*Butea monosperma* Kuntze.	Fabaceae
68	*Cajanus cajan* (L.) Huth.	Fabaceae
69	*Callicarpa tomentosa* (L.) L.	Lamiaceae
70	*Calotropis gigantea* (L.) W.T.Aiton	Apocynaceae
71	*Camellia sinensis* (L.) Kuntze.	Theaceae
72	*Canarium strictum* Roxb.	Burseraceae
73	*Canscora diffusa* (Vahl) R.Br. ex Roem. & Schult.	Gentianaceae
74	*Canscora pauciflora* Dalzell	Gentianaceae
75	*Canthium rheedei* DC.	Rubiaceae
76	*Capsicum frutescens* L.	Solanaceae
77	*Cardiospermum halicacabum* L.	Sapindaceae
78	*Careya arborea* Roxb.	Lecythidaceae
79	*Carica papaya* L.	Caricaceae
80	*Caryota urens* L.	Arecaceae
81	*Cassia fistula* L.	Fabaceae
82	*Catharanthus roseus* (L.) G.Don.	Apocynaceae
83	*Catunaregam spinosa* (Thunb.) Tirveng.	Rubiaceae
84	*Cayratia pedata* Gagnep.	Vitaceae
85	*Celastrus paniculatus* Willd.	Celastraceae
86	*Centella asiatica* (L.) Urb.	Apiaceae
87	*Chamaecrista mimosoides* (L.) Greene.	Fabaceae
88	*Chionanthus mala-elengi* (Dennst.) P.S.Green.	Oleaceea
89	*Cinnamomum malabathrum* (Lam.) J.Presl.	Lauraceae

90	*Cipadessa baccifera* Miq.	Meliaceae
91	*Cissampelos pareira* L.	Menispermaceae
92	*Cissus discolor* Blume	Vitaceae
93	*Cissus latifolia* Lam.	Vitaceae
94	*Cissus quadrangularis* L.	Vitaceae
95	*Cissus vitiginea* L.	Vitaceae
96	*Citrus aurantiifolia* (Christm.) Swingle.	Rutaceae
97	*Clausena austroindica* B.C.Stone & K.Narayanan	Rutaceae
98	*Clausena indica* Oliv.	Rutaceae
99	*Clematis gouriana* Roxb. ex DC.	Ranunculaceae
100	*Clematis zeylanica* Poir.	Ranunculaceae
101	*Cleome monophylla* L.	Cleomaceae
102	*Cleome viscosa* L.	Cleomaceae
103	*Clerodendrum infortunatum* L.	Lamiaceae
104	*Clitoria ternatea* L.	Fabaceae
105	*Coccinia grandis* (L.) Voigt.	Cucurbitaceae
106	*Cochlospermum religiosum* (L.) Alston	Bixaceae
107	*Colebrookea oppositifolia* Sm.	Lamiaceae
108	*Coleus barbatus* (Andrews) Benth. ex G.Don.	Lamiaceae
109	*Colocasia esculenta* (L.) Schott.	Araceae
110	*Commelina benghalensis* L.	Commelinaceae
111	*Connarus monocarpos* L.	Connaraceae
112	*Crepidium purpureum* (Lindl.) Szlach.	Orchidaceae
113	*Crepidium resupinatum* (G.Forst.) Szlach.	Orchidaceae
114	*Crinum asiaticum* L.	Amaryllidaceae
115	*Crotalaria retusa* L.	Fabaceae
116	*Cryptolepis dubia* (Burm.f.) M.R.Almeida.	Apocynaceae
117	*Cucumis sativus* L.	Cucurbitaceae
118	*Curculigo orchioides* Gaertn.	Hypoxidaceae
119	*Curcuma aromatica* Salisb.	Zingiberaceae
120	*Curcuma longa* L.	Zingiberaceae
121	*Cyanthillium cinereum* (L.) H.Rob.	Asteraceae
122	*Cymbopogon citratus* Stapf.	Poaceae
123	*Cymbopogon flexuosus* (Nees ex Steud.) Will.Watson	Poaceae
124	*Cymbopogon martini* (Roxb.) Will.Watson	Poaceae
125	*Cynanchum annularium* (Roxb.) Liede & Khanum.	Apocynaceae
126	*Cynodon dactylon* (L.) Pers.	Poaceae
127	*Dactyloctenium aegyptium* (L.) Willd.	Poaceae
128	*Decalepis salicifolia* (Bedd. ex Hook.f.) Bruyns.	Apocynaceae
129	*Dendrolobium triangulare* Schindl.	Fabaceae
130	*Dendrophthoe falcata* (L.f.) Ettingsh.	Loranthaceae
131	*Derris scandens* Benth.	Fabaceae
132	*Dillenia pentagyna* Roxb.	Dilleniaceae
133	*Dioscorea alata* L.	Dioscoreaceae
134	*Dioscorea bulbifera* L.	Dioscoreaceae
135	*Dioscorea oppositifolia* L.	Dioscoreaceae
136	*Diospyros ebenum* J.Koenig.	Ebenaceae

137	*Diospyros montana* Roxb.	Ebenaceae
138	*Diploclisia glaucescens* (Blume) Diels.	Menispermaceae
139	*Diplocyclos palmatus* (L.) C.Jeffrey.	Cucurbitaceae
140	*Drimia indica* (Roxb.) Jessop.	Asparagaceae
141	*Drosera peltata* Thunb.	Droseraceae
142	*Dysoxylum malabaricum* Bedd. ex C.DC.	Meliaceae
143	*Dysphania ambrosioides* (L.) Mosyakin & Clemants.	Amaranthaceae
144	*Ecbolium ligustrinum* (Vahl) Vollesen.	Acanthaceae
145	*Elaeocarpus tuberculatus* Roxb.	Elaeocarpaceae
146	*Eleocharis dulcis* (Burm.f.) Trin. ex Hensch.	Cyperaceae
147	*Elephantopus scaber* L.	Asteraceae
148	*Elettaria cardamomum* (L.) Maton.	Zingiberaceae
149	*Embelia ribes* Burm.f.	Primulaceae
150	*Emilia ramulosa* Gamble	Asteraceae
151	*Emilia scabra* DC. ex Wight	Asteraceae
152	*Emilia sonchifolia* (L.) DC.	Asteraceae
153	*Ensete superbum* (Roxb.) Cheesman	Musaceae
154	*Entada rheedei* Spreng.	Fabaceae
155	*Eryngium foetidum* L.	Apiaceae
156	*Erythrina variegata* L.	Fabaceae
157	*Eucalyptus globulus* Labill.	Myrtaceae
158	*Eulophia graminea* Lindl.	Orchidaceae
159	*Euonymus indicus* B.Heyne ex Wall.	Celastraceae
160	*Euphorbia hirta* L.	Euphorbiaceae
161	*Euphorbia thymifolia* L.	Euphorbiaceae
162	*Exacum tetragonum* Roxb.	Gentianaceae
163	*Exallage auricularia* (L.) Bremek.	Rubiaceae
164	*Ficus benghalensis* L.	Moraceae
165	*Ficus microcarpa* L.f.	Moraceae
166	*Ficus racemosa* L.	Moraceae
167	*Ficus religiosa* L.	Moraceae
168	*Flacourtia indica* (Burm.f.) Merr.	Salicaceae
169	*Flacourtia jangomas* (Lour.) Raeusch.	Salicaceae
170	*Flemingia macrophylla* (Willd.) Kuntze ex Merr.	Fabaceae
171	*Flueggea virosa* (Roxb. ex Willd.) Royle.	Phyllanthaceae
172	*Galinsoga parviflora* Cav.	Asteraceae
173	*Garcinia morella* (Gaertn.) Desr.	Clusiaceae
174	*Garuga pinnata* Roxb.	Burseraceae
175	*Geophila repens* (L.) I.M.Johnst.	Rubiaceae
176	*Getonia floribunda* Roxb.	Combretaceae
177	*Glinus oppositifolius* Aug.DC.	Molluginaceae
178	*Gloriosa superba* L.	Colchicaceae
179	*Glycosmis pentaphylla* (Retz.) DC.	Rutaceae
180	*Gmelina arborea* Roxb. ex Sm.	Lamiaceae
181	*Grewia tiliifolia* Vahl.	Malvaceae
182	*Grona triflora* (L.) H.Ohashi & K.Ohashi.	Fabaceae
183	*Guazuma ulmifolia* Lam.	Malvaceae

184	*Gymnema decaisneanum* Wight	Apocynaceae
185	*Gymnema sylvestre* (Retz.) R.Br. ex Sm.	Apocynaceae
186	*Harpullia arborea* (Blanco) Radlk.	Sapindaceae
187	*Hedychium coronarium* J.Koenig.	Zingiberaceae
188	*Helicteres isora* L.	Malvaceae
189	*Heliotropium indicum* L.	Boraginaceae
190	*Hemidesmus indicus* (L.) R.Br.	Apocynaceae
191	*Heracleum candolleanum* Gamble	Apiaceae
192	*Heracleum rigens* Wall.	Apiaceae
193	*Hewittia malabarica* (L.) Suresh	Convolvulaceae
194	*Hibiscus hispidissimus* Griff.	Malvaceae
195	*Hibiscus rosa-sinensis* L.	Malvaceae
196	*Hibiscus surattensis* L.	Malvaceae
197	*Hiptage benghalensis* (L.) Kurz.	Malphigiaceae
198	*Holarrhena pubescens* Wall. & G.Don.	Apocynaceae
199	*Holigarna arnottiana* Hook.f.	Anacardiaceae
200	*Holoptelea integrifolia* (Roxb.) Planch.	Ulmaceae
201	*Homonoia riparia* Lour.	Euphorbiaceae
202	*Hultholia mimosoides* (Lam.) Gagnon & G.P.Lewis	Fabaceae
203	*Hydnocarpus alpinus* Wight	Achariaceae
204	*Hydnocarpus pentandrus* (Buch.-Ham.) Oken.	Achariaceae
205	*Hydrocotyle javanica* Thunb.	Araliaceae
206	*Hygrophila auriculata* (Schumach.) Heine.	Acanthaceae
207	*Hygrophila ringens* (L.) R.Br. ex Steud.	Acanthaceae
208	*Hypericum mysurense* B.Heyne ex Wight & Arn.	Hypericaceae
209	*Ichnocarpus frutescens* (L.) W.T.Aiton	Apocynaceae
210	*Iphigenia indica* (L.) Kunth.	Colchicaceae
211	*Ipomoea aquatica* Forssk.	Convolvulaceae
212	*Ipomoea batatas* (L.) Lam.	Convolvulaceae
213	*Ipomoea obscura* (L.) Ker Gawl.	Convolvulaceae
214	*Ipomoea pes-tigridis* L.	Convolvulaceae
215	*Ipomoea sagittifolia* Burm.f.	Convolvulaceae
216	*Ixora coccinea* L.	Rubiaceae
217	*Jasminum angustifolium* Willd.	Oleaceae
218	*Justicia adhatoda* L.	Acanthaceae
219	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae
220	*Knema attenuata* (Wall. ex Hook.f. & Thomson) Warb.	Myristicaceae
221	*Lannea coromandelica* (Houtt.) Merr.	Anacardiaceae
222	*Lawsonia inermis* L.	Lythraceae
223	*Leea indica* (Burm.f.) Merr.	Vitaceae
224	*Leucas aspera* Link.	Lamiaceae
225	*Leucas lavandulifolia* Sm.	Lamiaceae
226	*Linum mysurense* B.Heyne ex Benth.	Linaceae
227	*Lobelia nicotianifolia* Roth.	Campanulaceae
228	*Ludwigia hyssopifolia* (G.Don) Exell.	Onagraceae
229	*Macaranga peltata* Müll.Arg.	Euphorbiaceae
230	*Machilus glaucescens* (Nees) Wight	Lauraceae

231	*Madhuca longifolia* J.F.Macbr.	Sapotaceae
232	*Magnolia champaca* (L.) Baill. ex Pierre.	Magnoliaceae
233	*Magnolia nilagirica* (Zenker) Figlar.	Magnoliaceae
234	*Mappia nimmoniana* (J.Graham) Byng & Stull.	Icacinaceae
235	*Maranta arundinacea* L.	Marantaceae
236	*Mastixia arborea* C.B.Clarke	Nyssaceae
237	*Melastoma malabathricum* L.	Melastomataceae
238	*Melicope lunu-ankenda* (Gaertn.) T.G.Hartley.	Rutaceae
239	*Memecylon randerianum* S.M.Almeida & M.R.Almeida.	Melastomataceae
240	*Memecylon umbellatum* Burm.f.	Melastomataceae
241	*Mentha arvensis* L.	Lamiaceae
242	*Mesua ferrea* L.	Calophyllaceae
243	*Mesua thwaitesii* Planch. & Triana.	Calophyllaceae
244	*Microstachys chamaelea* (L.) Müll.Arg.	Euphorbiaceae
245	*Mimosa pudica* L.	Fabaceae
246	*Mimusops elengi* L.	Sapotaceae
247	*Momordica charantia* L.	Cucurbitaceae
248	*Momordica dioica* Roxb. ex Willd.	Cucurbitaceae
249	*Morinda coreia* Buch.-Ham.	Rubiaceae
250	*Moringa pterygosperma* Gaertn.	Moringaceae
251	*Murraya koenigii* (L.) Spreng.	Rutaceae
252	*Murraya paniculata* (L.) Jack.	Rutaceae
253	*Musa* × *paradisiaca* L.	Musaceae
254	*Mussaenda frondosa* L.	Rubiaceae
255	*Myristica beddomei* King.	Myristicaceae
256	*Myristica fragrans* Houtt.	Myristicaceae
257	*Myristica malabarica* Lam.	Myristicaceae
258	*Myxopyrum smilacifolium* Blume	Oleaceae
259	*Naregamia alata* Wight & Arn.	Meliaceae
260	*Naringi crenulata* (Roxb.) Nicolson	Rutaceae
261	*Neolamarckia cadamba* (Roxb.) Bosser.	Rubiaceae
262	*Nerium oleander* L.	Apocynaceae
263	*Nicoteba betonica* Lindau.	Acanthaceae
264	*Nymphaea rubra* Roxb. ex Salisb.	Nymphaeaceae
265	*Ocimum gratissimum* L.	Lamiaceae
266	*Ocimum tenuiflorum* L.	Lamiaceae
267	*Oldenlandia corymbosa* L.	Rubiaceae
268	*Oldenlandia herbacea* (L.) Roxb.	Rubiaceae
269	*Olea dioica* Roxb.	Oleaceae
270	*Ophiorrhiza mungos* L.	Rubiaceae
271	*Oroxylum indicum* (L.) Benth. ex Kurz.	Bignoniaceae
272	*Ouret lanata* (L.) Kuntze.	Amaranthaceae
273	*Oxalis corniculata* L.	Oxalidaceae
274	*Pavetta indica* L.	Rubiaceae
275	*Pedalium murex* L.	Pedaliaceae
276	*Phyllanthus amarus* Schumach. & Thonn.	Phyllanthaceae
277	*Phyllanthus emblica* L.	Phyllanthaceae

278	*Phyllanthus gardnerianus* Baill. ex Müll.Arg.	Phyllanthaceae
279	*Phyllanthus virgatus* G.Forst.	Phyllanthaceae
280	*Physalis peruviana* L.	Solanaceae
281	*Piper longum* L.	Piperaceae
282	*Piper nigrum* L.	Piperaceae
283	*Piper retrofractum* Vahl.	Piperaceae
284	*Piper wightii* Miq.	Piperaceae
285	*Pittosporum neelgherrense* Wight & Arn.	Pittosporaceae
286	*Pittosporum tetraspermum* Wight & Arn.	Pittosporaceae
287	*Plumbago zeylanica* L.	Plumbaginaceae
288	*Polyalthia longifolia* (Sonn.) Thwaites.	Annonaceae
289	*Polygala arvensis* Willd.	Polygalaceae
290	*Polygala chinensis* L.	Polygalaceae
291	*Pothos scandens* L.	Araceae
292	*Pouzolzia zeylanica* (L.) Benn.	Urticaceae
293	*Premna tomentosa* Willd.	Lamiaceae
294	*Pseudarthria viscida* (L.) Wight & Arn.	Fabaceae
295	*Pterocarpus marsupium* Roxb.	Fabaceae
296	*Pterospermum rubiginosum* B.Heyne ex G.Don.	Malvaceae
297	*Rauvolfia serpentina* Benth. ex Kurz.	Apocynaceae
298	*Rauvolfia tetraphylla* L.	Apocynaceae
299	*Reinwardtiodendron anamalaiense* (Bedd.) Mabb.	Meliaceae
300	*Rhinacanthus nasutus* (L.) Kurz.	Acanthaceae
301	*Ricinus communis* L.	Euphorbiaceae
302	*Rotheca serrata* (L.) Steane & Mabb.	Lamiaceae
303	*Rubia cordifolia* L.	Rubiaceae
304	*Saccharum spontaneum* L.	Poaceae
305	*Santalum album* L.	Santalaceae
306	*Sapindus trifoliatus* L.	Sapindaceae
307	*Saraca asoca* (Roxb.) W.J.de Wilde.	Fabaceae
308	*Sarcostigma kleinii* Wight & Arn.	Icacinaceae
309	*Schleichera oleosa* (Lour.) Oken.	Sapindaceae
310	*Scoparia dulcis* L.	Plantaginaceae
311	*Senegalia caesia* (L.) Maslin.	Fabaceae
312	*Senna occidentalis* (L.) Link.	Fabaceae
313	*Senna tora* Roxb.	Fabaceae
314	*Sesamum indicum* L.	Pedaliaceae
315	*Sesbania grandiflora* (L.) Poir.	Fabaceae
316	*Sida acuta* Burm.f.	Malvaceae
317	*Sida cordata* (Burm.f.) Borss.Waalk.	Malvaceae
318	*Sida cordifolia* L.	Malvaceae
319	*Sida rhombifolia* L.	Malvaceae
320	*Sida rhombifolia* subsp. *alnifolia* (L.) Ugbor.	Malvaceae
321	*Sigesbeckia orientalis* L.	Asteraceae
322	*Smilax aspera* L.	Smilacaceae
323	*Smilax zeylanica* L.	Smilacaceae
324	*Solanum aculeatissimum* Jacq.	Solanaceae

325	*Solanum americanum* Mill.	Solanaceae
326	*Solanum multiflorum* Roth.	Solanaceae
327	*Solanum torvum* Sw.	Solanaceae
328	*Solanum trilobatum* L.	Solanaceae
329	*Solanum violaceum* Ortega.	Solanaceae
330	*Solanum virginianum* L.	Solanaceae
331	*Solena amplexicaulis* (Lam.) Gandhi.	Cucurbitaceae
332	*Solidago canadensis* L.	Asteraceae
333	*Sonchus oleraceus* L.	Asteraceae
334	*Spondias pinnata* (L.f.) Kurz.	Anacardiaceae
335	*Stephania wightii* (Arn. ex Wight) Dunn.	Menispermaceae
336	*Sterculia guttata* Roxb.	Malvaceae
337	*Sterculia urens* Roxb.	Malvaceae
338	*Streblus asper* Lour.	Moraceae
339	*Strobilanthes barbata* Nees.	Acanthaceae
340	*Strobilanthes ciliata* Nees.	Acanthaceae
341	*Symplocos acuminata* Miq.	Symplocaceae
342	*Symplocos racemosa* Roxb.	Symplocaceae
343	*Syzygium aromaticum* (L.) Merr. & L.M.Perry.	Myrtaceae
344	*Syzygium cumini* (L.) Skeels.	Myrtaceae
345	*Tabernaemontana divaricata* (L.) R.Br. ex Roem. & Schult.	Apocynaceae
346	*Tamarindus indica* L.	Fabaceae
347	*Tectona grandis* L.f.	Lamiaceae
348	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn.	Combretaceae
349	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae
350	*Terminalia travancorensis* Wight & Arn.	Combretaceae
351	*Themeda triandra* Forssk.	Poaceae
352	*Thottea siliquosa* (Lam.) Ding Hou.	Aristolochiaceae
353	*Tiliacora racemosa* Colebr.	Menispermaceae
354	*Tinospora cordifolia* (Willd.) Miers ex Hook.f. & Thomson	Menispermaceae
355	*Toddalia asiatica* (L.) Lam.	Rutaceae
356	*Tragia involucrata* L.	Euphorbiaceae
357	*Trichosanthes cucumerina* L.	Cucurbitaceae
358	*Triumfetta rhomboidea* Jacq.	Malvaceae
359	*Vanda tessellata* Hook. ex G.Don.	Orchidaceae
360	*Vanda testacea* Rchb.f.	Orchidaceae
361	*Vateria indica* L.	Dipterocarpaceae
362	*Vigna mungo* (L.) Hepper.	Fabaceae
363	*Vigna radiata* var. *sublobata* (Roxb.) Verdc.	Fabaceae
364	*Vigna umbellata* (Thunb.) Ohwi & H.Ohashi.	Fabaceae
365	*Vincetoxicum indicum* (Burm.f.) Mabb.	Apocynaceae
366	*Vitex leucoxylon* L.f.	Lamiaceae
367	*Wattakaka volubilis* Stapf.	Apocynaceae
368	*Wrightia tinctoria* R.Br.	Apocynaceae
369	*Xanthium strumarium* L.	Asteraceae
370	*Xenostegia tridentata* (L.) D.F.Austin & Staples.	Convolvulaceae
371	*Xenostegia tridentata* subsp. *hastata* (Ooststr.) Parmar.	Convolvulaceae

372	*Zingiber officinale* Roscoe.	Zingiberaceae
373	*Zingiber zerumbet* (L.) Sm.	Zingiberaceae
374	*Ziziphus jujuba* Mill.	Rhamnaceae
375	*Ziziphus oenopolia* (L.) Mill.	Rhamnaceae

Annexure XII

Genera with single species

Sl. No.	Genus	Sl. No.	Genus	Sl. No.	Genus
1	*Acacia*	40	*Ariopsis*	79	*Canna*
2	*Acampe*	41	*Aristida*	80	*Capillipedium*
3	*Achetaria*	42	*Artabotrys*	81	*Cardiospermum*
4	*Achyranthes*	43	*Artemisia*	82	*Careya*
5	*Acorus*	44	*Arundina*	83	*Carica*
6	*Acronychia*	45	*Arundo*	84	*Carissa*
7	*Actephila*	46	*Asclepias*	85	*Caryota*
8	*Adenostemma*	47	*Averrhoa*	86	*Cascabela*
9	*Adina*	48	*Axonopus*	87	*Casearia*
10	*Aeginetia*	49	*Azadirachta*	88	*Cassia*
11	*Aeschynanthus*	50	*Azanza*	89	*Catharanthus*
12	*Aeschynomene*	51	*Azima*	90	*Catunaregam*
13	*Aganope*	52	*Baccaurea*	91	*Causonis*
14	*Aganosma*	53	*Bacopa*	92	*Cayaponia*
15	*Agave*	54	*Baliospermum*	93	*Cayratia*
16	*Ageratina*	55	*Bambusa*	94	*Ceiba*
17	*Alangium*	56	*Benkara*	95	*Celastrus*
18	*Allamanda*	57	*Berberis*	96	*Celosia*
19	*Allmania*	58	*Bhesa*	97	*Cenchrus*
20	*Alloteropsis*	59	*Bidens*	98	*Centella*
21	*Alpinia*	60	*Bischofia*	99	*Centotheca*
22	*Alseodaphne*	61	*Bixa*	100	*Centratherum*
23	*Ampelocissus*	62	*Blyxa*	101	*Centrosema*
24	*Anacardium*	63	*Boehmeria*	102	*Cestrum*
25	*Anamirta*	64	*Boesenbergia*	103	*Chassalia*
26	*Ancistrocladus*	65	*Bougainvillea*	104	*Cheilocostus*
27	*Anethum*	66	*Brassica*	105	*Cheirostylis*
28	*Anisomeles*	67	*Buchnera*	106	*Chilocarpus*
29	*Annona*	68	*Buddleja*	107	*Chionanthus*
30	*Anodendron*	69	*Burmannia*	108	*Chloris*
31	*Anthurium*	70	*Butea*	109	*Chonemorpha*
32	*Antiaris*	71	*Callicarpa*	110	*Chromolaena*
33	*Aphanamixis*	72	*Calophyllum*	111	*Chukrasia*
34	*Apluda*	73	*Calopogonium*	112	*Cipadessa*
35	*Arachis*	74	*Calotropis*	113	*Cissampelos*
36	*Archidendron*	75	*Calyptocarpus*	114	*Cleidion*
37	*Areca*	76	*Camellia*	115	*Cleisostoma*
38	*Arenga*	77	*Canarium*	116	*Cleistanthus*
39	*Argostemma*	78	*Canavalia*	117	*Clitoria*
118	*Coccinia*	160	*Diploclisia*	202	*Galinsoga*
119	*Cochlospermum*	161	*Diplocyclos*	203	*Gardenia*
120	*Cocos*	162	*Dolichos*	204	*Garuga*
121	*Codariocalyx*	163	*Donella*	205	*Geissaspis*
122	*Coix*	164	*Dracaena*	206	*Geophila*
123	*Coldenia*	165	*Drimia*	207	*Getonia*
124	*Colebrookea*	166	*Dumasia*	208	*Girardinia*

125	*Coleus*	167	*Duranta*	209	*Givotia*
126	*Colocasia*	168	*Dysoxylum*	210	*Gliricidia*
127	*Combretum*	169	*Dysphania*	211	*Glochidion*
128	*Corchorus*	170	*Ecbolium*	212	*Gloriosa*
129	*Cottonia*	171	*Echinochloa*	213	*Glyphochloa*
130	*Couroupita*	172	*Elaeagnus*	214	*Gmelina*
131	*Crassocephalum*	173	*Eleocharis*	215	*Gnaphalium*
132	*Craterostigma*	174	*Elephantopus*	216	*Gomphandra*
133	*Crateva*	175	*Elettaria*	217	*Gomphostemma*
134	*Crossandra*	176	*Eleusine*	218	*Gomphrena*
135	*Cryptolepis*	177	*Eleutheranthera*	219	*Gonostegia*
136	*Cullenia*	178	*Embelia*	220	*Gouania*
137	*Cuphea*	179	*Ensete*	221	*Grevillea*
138	*Cuscuta*	180	*Entada*	222	*Griffithella*
139	*Cyanthillium*	181	*Enteropogon*	223	*Grona*
140	*Cyathocalyx*	182	*Epipogium*	224	*Guazuma*
141	*Cyathula*	183	*Epipremnum*	225	*Gymnosporia*
142	*Cyclea*	184	*Epiprinus*	226	*Gynura*
143	*Cymbidium*	185	*Epithema*	227	*Hackelochloa*
144	*Cynanchum*	186	*Eragrostiella*	228	*Harpullia*
145	*Cynodon*	187	*Eranthemum*	229	*Helichrysum*
146	*Cynoglossum*	188	*Eriochloa*	230	*Helicteres*
147	*Dactyloctenium*	189	*Eryngium*	231	*Hemidesmus*
148	*Dalechampia*	190	*Erythropalum*	232	*Heritiera*
149	*Decalepis*	191	*Euclasta*	233	*Heterotis*
150	*Delonix*	192	*Eulophia*	234	*Hevea*
151	*Dendrocalamus*	193	*Evolvulus*	235	*Hewittia*
152	*Dendrocnide*	194	*Exallage*	236	*Hexasepalum*
153	*Dendrolobium*	195	*Excoecaria*	237	*Heynea*
154	*Dendrophthoe*	196	*Fagraea*	238	*Hiptage*
155	*Desmos*	197	*Falconeria*	239	*Holarrhena*
156	*Dichrocephala*	198	*Fibraurea*	240	*Holmskioldia*
157	*Dictyospermum*	199	*Filicium*	241	*Holoptelea*
158	*Dimocarpus*	200	*Floscopa*	242	*Homonoia*
159	*Dimorphocalyx*	201	*Fuirena*	243	*Hoppea*
244	*Hoya pauciflora*	287	*Manihot*	330	*Nicandra*
245	*Huberantha*	288	*Mappia*	331	*Nicoteba*
246	*Hultholia*	289	*Maranta*	332	*Nostolachma*
247	*Hunteria*	290	*Margaritaria*	333	*Nothopegia*
248	*Hymenodictyon*	291	*Mastixia*	334	*Ochlandra*
249	*Hypericum*	292	*Mecardonia*	335	*Olax*
250	*Hypoestes*	293	*Medinilla*	336	*Olea*
251	*Hypoxis*	294	*Megathyrsus*	337	*Ophiopogon*
252	*Hyptis*	295	*Meiogyne*	338	*Oreocnide*
253	*Ichnocarpus*	296	*Melaleuca*	339	*Ormosia*
254	*Indianthus*	297	*Melampodium*	340	*Oroxylum*
255	*Indobanalia*	298	*Melastoma*	341	*Orthosiphon*
256	*Indotristicha*	299	*Melicope*	342	*Otonephelium*
257	*Iphigenia*	300	*Melinis*	343	*Ottochloa*
258	*Isonandra*	301	*Meliosma*	344	*Ouret*

259	*Jacaranda*	302	*Melochia*	345	*Oxyceros*
260	*Jansenella*	303	*Mentha*	346	*Pachystoma*
261	*Kamettia*	304	*Mesosphaerum*	347	*Pajanelia*
262	*Kigelia*	305	*Mezoneuron*	348	*Pancratium*
263	*Knema*	306	*Microstachys*	349	*Pandanus*
264	*Kunstleria*	307	*Microstegium*	350	*Papilionanthe*
265	*Lablab*	308	*Millettia*	351	*Paramignya*
266	*Lagerstroemia*	309	*Mimusops*	352	*Parasopubia*
267	*Laggera*	310	*Miquelia*	353	*Parthenium*
268	*Lannea*	311	*Mirabilis*	354	*Pecteilis*
269	*Launaea*	312	*Mitracarpus*	355	*Pedalium*
270	*Lawsonia*	313	*Mitragyna*	356	*Pellionia*
271	*Lecanthus*	314	*Morinda*	357	*Pentas*
272	*Leea*	315	*Moringa*	358	*Pergularia*
273	*Leonotis*	316	*Mucuna*	359	*Perotis*
274	*Leptochloa*	317	*Munronia*	360	*Phaulopsis*
275	*Leptonychia*	318	*Muntingia*	361	*Phoenix*
276	*Leucaena*	319	*Musa*	362	*Pholidota*
277	*Linum*	320	*Mussaenda*	363	*Physalis*
278	*Liparis*	321	*Mycetia*	364	*Piliostigma*
279	*Loeseneriella*	322	*Myriophyllum*	365	*Pinalia*
280	*Lysimachia*	323	*Myxopyrum*	366	*Pithecellobium*
281	*Macaranga*	324	*Naregamia*	367	*Platostoma*
282	*Machilus*	325	*Naringi*	368	*Plumbago*
283	*Madhuca*	326	*Neolamarckia*	369	*Plumeria*
284	*Maesa*	327	*Neonotonia*	370	*Pogonatherum*
285	*Malvaviscus*	328	*Nerium*	371	*Polhillides*
286	*Mangifera*	329	*Neurocalyx*	372	*Polyalthia*
373	*Polycarpon*	416	*Sapindus*	459	*Tainia*
374	*Polypleurum*	417	*Saprosma*	460	*Tamarindus*
375	*Polystachya*	418	*Saraca*	461	*Tamilnadia*
376	*Polytrias*	419	*Sarcandra*	462	*Taraxacum*
377	*Pongamia*	420	*Sarcostigma*	463	*Tecoma*
378	*Portulaca*	421	*Satyrium*	464	*Tectona*
379	*Pothos*	422	*Schleichera*	465	*Tetrameles*
380	*Pristimera*	423	*Schoenoplectiella*	466	*Teucrium*
381	*Prunus*	424	*Schoenorchis*	467	*Theriophonum*
382	*Pseudarthria*	425	*Scleromitrion*	468	*Tiliacora*
383	*Pseudechinolaena*	426	*Scolopia*	469	*Tinospora*
384	*Pseudopogonatherum*	427	*Scoparia*	470	*Tithonia*
385	*Pseudoxytenanthera*	428	*Scurrula*	471	*Toddalia*
386	*Psidium*	429	*Scutia*	472	*Toona*
387	*Psydrax*	430	*Sesamum*	473	*Tragia*
388	*Pterocarpus*	431	*Sesbania*	474	*Trema*
389	*Pterygota*	432	*Shuteria*	475	*Trianthema*
390	*Pupalia*	433	*Sigesbeckia*	476	*Trichoglottis*
391	*Pycnospora*	434	*Sirhookera*	477	*Tridax*
392	*Pyrostegia*	435	*Smithsonia*	478	*Trigastrotheca*
393	*Radermachera*	436	*Solena*	479	*Turnera*
394	*Reinwardtiodendron*	437	*Solidago*	480	*Turpinia*
395	*Remusatia*	438	*Sonchus*	481	*Typhonium*

396	*Rhinacanthus*	439	*Sopubia*	482	*Uraria*
397	*Rhopalephora*	440	*Spathiphyllum*	483	*Vanilla*
398	*Rhynchoglossum*	441	*Spathodea*	484	*Vateria*
399	*Rhynchostylis*	442	*Spatholobus*	485	*Vepris*
400	*Richardia*	443	*Sphagneticola*	486	*Viburnum*
401	*Ricinus*	444	*Spinacia*	487	*Vicoa*
402	*Rivina*	445	*Spodiopogon*	488	*Wahlenbergia*
403	*Rorippa*	446	*Spondias*	489	*Wajira*
404	*Rotheca*	447	*Stachyphrynium*	490	*Wattakaka*
405	*Rottboellia*	448	*Stachytarpheta*	491	*Wendlandia*
406	*Rourea*	449	*Stellaria*	492	*Wrightia*
407	*Rubia*	450	*Streblus*	493	*Xanthium*
408	*Ruellia*	451	*Strobocalyx*	494	*Xanthophyllum*
409	*Saccharum*	452	*Strombosia*	495	*Xantolis*
410	*Sacciolepis*	453	*Strychnos*	496	*Xylia*
411	*Sageraea*	454	*Stylosanthes*	497	*Xyris*
412	*Salvia*	455	*Swietenia*	498	*Zanthoxylum*
413	*Samanea*	456	*Synedrella*	499	*Zenkeria*
414	*Sambucus*	457	*Tadehagi*	500	*Zeylanidium*
415	*Santalum*	458	*Tagetes*	501	*Zinnia*

Annexure XIII

Additions to Flora of Palakkad District

Sl. No.	Binomial Name	Family
1	*Acalypha malabarica* Müll.Arg.	Euphorbiaceae
2	*Achetaria azurea* (Linden) V.C.Souza.	Plantaginaceae
3	*Achyranthes aspera* var. *porphyristachya* (Wall. ex Moq.) Hook.f.	Amaranthaceae
4	*Acilepis dendigulensis* (DC.) H.Rob.	Asteraceae
5	*Acilepis ornata* (Talbot) H.Rob. & Skvarla.	Asteraceae
6	*Acmella ciliata* (Kunth) Cass.	Asteraceae
7	*Acmella paniculata* (Wall. ex DC.) R.K.Jansen	Asteraceae
8	*Acmella radicans* (Jacq.) R.K.Jansen	Asteraceae
9	*Acorus calamus* L.	Acoraceae
10	*Actephila excelsa* (Dalzell) Müll.Arg.	Phyllanthaceae
11	*Actinodaphne bourdillonii* Gamble	Lauraceae
12	*Actinodaphne salicina* Meisn.	Lauraceae
13	*Aerides crispa* Lindl.	Orchidaceae
14	*Aerides ringens* C.E.C.Fisch.	Orchidaceae
15	*Ageratina adenophora* (Spreng.) R.M.King & H.Rob.	Asteraceae
16	*Ageratum houstonianum* Mill.	Asteraceae
17	*Aglaia edulis* (Roxb.) Wall.	Meliaceae
18	*Ailanthus excelsus* Roxb.	Simaroubaceae
19	*Ailanthus triphysus* (Dennst.) Alston	Simaroubaceae
20	*Allamanda cathartica* L.	Apocynaceae
21	*Allophylus serratus* Kurz.	Sapindaceae
22	*Alloteropsis cimicina* Stapf.	Poaceae
23	*Alternanthera bettzickiana* (Regel) G.Nicholson	Amaranthaceae
24	*Alternanthera brasiliana* (L.) Kuntze.	Amaranthaceae
25	*Alysicarpus naikianus* Pokle	Fabaceae
26	*Alysicarpus parviflorus* Dalzell	Fabaceae
27	*Amaranthus blitum* L.	Amaranthaceae
28	*Amaranthus tricolor* L.	Amaranthaceae
29	*Amomum hypoleucum* Thwaites	Zingiberaceae
30	*Amorphophallus commutatus* (Schott) Engl.	Araceae
31	*Amorphophallus paeoniifolius* (Dennst.) Nicolson	Araceae
32	*Anaphalis lawii* Gamble	Asteraceae
33	*Anaphalis leptophylla* DC.	Asteraceae
34	*Anaphalis subdecurrens* Gamble	Asteraceae
35	*Anaphalis wightiana* DC.	Asteraceae
36	*Andrographis atropurpurea* (Dennst.) Alston	Acanthaceae
37	*Andrographis elongata* (Vahl) T.Anderson	Acanthaceae
38	*Andrographis paniculata* (Burm.f.) Wall. ex Nees.	Acanthaceae
39	*Anethum graveolens* L.	Apiaceae
40	*Anthurium andraeanum* Linden.	Araceae

41	*Antidesma alexiteria* L.	Phyllanthaceae
42	*Apocopis cochinchinensis* A.Camus	Poaceae
43	*Apocopis mangalorensis* (Hochst. ex Steud.) Henrard	Poaceae
44	*Aporosa bourdillonii* Stapf.	Phyllanthaceae
45	*Archidendron bigeminum* (L.) I.C.Nielsen	Fabaceae
46	*Ardisia elliptica* Thunb.	Primulaceae
47	*Argyreia elliptica* (Roth) Choisy	Convolvulaceae
48	*Argyreia populifolia* Choisy	Convolvulaceae
49	*Arisaema nilamburense* Sivad.	Araceae
50	*Arisaema tortuosum* (Wall.) Schott.	Araceae
51	*Aristida setacea* Retz.	Poaceae
52	*Arthraxon castratus* Nayaran. ex Bor.	Poaceae
53	*Arthraxon hispidus* (Thunb.) Makino	Poaceae
54	*Arthraxon lancifolius* Hochst.	Poaceae
55	*Arundinella setosa* Trin.	Poaceae
56	*Asparagus racemosus* Willd.	Asparagaceae
57	*Asystasia crispata* Benth.	Acanthaceae
58	*Atalantia monophylla* (L.) DC.	Rutaceae
59	*Atalantia racemosa* Wight & Arn.	Rutaceae
60	*Axonopus compressus* (Sw.) P.Beauv.	Poaceae
61	*Azima tetracantha* Lam.	Salvadoraceae
62	*Barleria acuminata* Wight ex Nees.	Acanthaceae
63	*Barleria tomentosa* Roth.	Acanthaceae
64	*Begonia bachulkarii* Aitawade	Begoniaceae
65	*Begonia cordifolia* (Wight) Thwaites	Begoniaceae
66	*Begonia dipetala* Graham	Begoniaceae
67	*Begonia fallax* A.DC.	Begoniaceae
68	*Beilschmiedia gemmiflora* (Blume) Kosterm	Lauraceae
69	*Beilschmiedia wightii* Benth. & Hook.f.	Lauraceae
70	*Benkara malabarica* (Lam.) Tirveng	Rubiaceae
71	*Berberis tinctoria* Lesch.	Berberidaceae
72	*Bhesa indica* (Bedd.) Ding Hou	Centroplacaceae
73	*Biophytum intermedium* Wight	Oxalidaceae
74	*Biophytum sensitivum* (L.) DC.	Oxalidaceae
75	*Biophytum umbraculum* Welw.	Oxalidaceae
76	*Bixa orellana* L.	Bixaceae
77	*Blumea hieraciifolia* DC.	Asteraceae
78	*Blumea membranacea* DC.	Asteraceae
79	*Blumea virens* DC.	Asteraceae
80	*Bonnaya ciliata* Spreng.	Linderniaceae
81	*Bothriochloa insculpta* (Hochst. ex A.Rich.) A.Camus	Poaceae
82	*Bothriochloa pertusa* (L.) A.Camus	Poaceae
83	*Brachycorythis splendida* Summerh.	Orchidaceae
84	*Brugmansia arborea* (L.) Sweet	Solanaceae

85	*Brugmansia suaveolens* (Willd.) Sweet	Solanaceae
86	*Bulbophyllum fimbriatum* Rchb.f.	Orchidaceae
87	*Bulbostylis densa* (Wall.) Hand.-Mazz.	Cyperaceae
88	*Cajanus lineatus* (Wight & Arn.) Maesen	Fabaceae
89	*Cajanus scarabaeoides* (L.) Thouars	Fabaceae
90	*Calliandra houstoniana* var. *calothyrsus* (Meisn.) Barneby	Fabaceae
91	*Calliandra tergemina* var. *emarginata* (Humb. & Bonpl. ex Willd.) Barneby	Fabaceae
92	*Calophyllum polyanthum* Wall.	Calophyllaceae
93	*Calyptocarpus vialis* Less.	Asteraceae
94	*Canna indica* L.	Cannaceae
95	*Canscora alata* (Roth) Wall.	Gentianaceae
96	*Canthium coromandelicum* (Burm.f.) Alston	Rubiaceae
97	*Capillipedium assimile* (Steud.) A.Camus	Poaceae
98	*Capparis roxburghii* DC.	Capparaceae
99	*Capparis zeylanica* L.	Capparaceae
100	*Capsicum annuum* L.	Solanaceae
101	*Capsicum frutescens* L.	Solanaceae
102	*Cardamine africana* L.	Brassicaceae
103	*Cardamine hirsuta* L.	Brassicaceae
104	*Cayaponia laciniosa* (L.) C.Jeffrey	Cucurbitaceae
105	*Centratherum punctatum* Cass.	Asteraceae
106	*Ceropegia fimbriifera* Bedd.	Apocynaceae
107	*Ceropegia maculata* Bedd.	Apocynaceae
108	*Cestrum aurantiacum* Lindl.	Solanaceae
109	*Cheirostylis parvifolia* Lindl.	Orchidaceae
110	*Chloris barbata* Sw.	Poaceae
111	*Chlorophytum heynei* Baker	Asparagaceae
112	*Chlorophytum malabaricum* Baker	Asparagaceae
113	*Chlorophytum nimmonii* Dalzell	Asparagaceae
114	*Chonemorpha fragrans* Alston	Apocynaceae
115	*Chrysopogon asper* B.Heyne ex Blatt. & McCann.	Poaceae
116	*Chrysopogon nodulibarbis* (Hochst.) Henrard.	Poaceae
117	*Chrysopogon purushothamanii* Ravi, N.Mohanan & Kiran Raj	Poaceae
118	*Chrysopogon zizanioides* (L.) Roberty	Poaceae
119	*Cissus latifolia* Lam.	Vitaceae
120	*Cissus quadrangularis* L.	Vitaceae
121	*Citrus* × *aurantium* L.	Rutaceae
122	*Citrus aurantiifolia* (Christm.) Swingle	Rutaceae
123	*Citrus maxima* (Burm.) Merr.	Rutaceae
124	*Clausena anisata* (Willd.) Hook.f.	Rutaceae
125	*Cleisostoma tenuifolium* (L.) Garay	Orchidaceae
126	*Cleome rutidosperma* var. *burmanni* (Wight & Arn.) M.O.Siddiqui & S.N.Dixit	Cleomaceae
127	*Cleome spinosa* Jacq.	Cleomaceae

128	*Coelogyne nervosa* A.Rich.	Orchidaceae
129	*Coffea liberica* W.Bull ex Hiern.	Rubiaceae
130	*Commelina clavata* C.B.Clarke	Commelinaceae
131	*Cosmos caudatus* Kunth.	Asteraceae
132	*Crepidium resupinatum* (G.Forst.) Szlach.	Orchidaceae
133	*Crinum asiaticum* L.	Amaryllidaceae
134	*Crossandra infundibuliformis* (L.) Nees.	Acanthaceae
135	*Crotalaria clarkei* Gamble	Fabaceae
136	*Crotalaria grahamiana* Wight & Arn.	Fabaceae
137	*Crotalaria micans* Link.	Fabaceae
138	*Crotalaria obtecta* Graham ex Wight & Arn.	Fabaceae
139	*Crotalaria prostrata* Rottler	Fabaceae
140	*Crotalaria walkeri* Arn.	Fabaceae
141	*Cryptocarya anamalayana* Gamble	Lauraceae
142	*Cucumis sativus* L.	Cucurbitaceae
143	*Cucumis silentvalleyi* (Manilal, T.Sabu & P.Mathew) Ghebret. & Thulin	Cucurbitaceae
144	*Curcuma aromatica* Salisb.	Zingiberaceae
145	*Curcuma aurantiaca* Zijp.	Zingiberaceae
146	*Curcuma decipiens* Dalzell	Zingiberaceae
147	*Curcuma longa* L.	Zingiberaceae
148	*Curcuma montana* Roxb.	Zingiberaceae
149	*Curcuma neilgherrensis* Wight	Zingiberaceae
150	*Curcuma vamana* M.Sabu & Mangaly	Zingiberaceae
151	*Cuscuta chinensis* Lam.	Convolvulaceae
152	*Cyanotis burmannia* Wight	Commelinaceae
153	*Cyanotis thwaitesii* Hassk.	Commelinaceae
154	*Cyanotis tuberosa* (Roxb.) Schult.f.	Commelinaceae
155	*Cyathula prostrata* Blume	Amaranthaceae
156	*Cymbopogon citratus* Stapf.	Poaceae
157	*Cymbopogon martini* (Roxb.) Will.Watson	Poaceae
158	*Cyperus brevifolius* (Rottb.) Endl. ex Hassk.	Cyperaceae
159	*Cyperus flavescens* L.	Cyperaceae
160	*Cyperus haspan* L.	Cyperaceae
161	*Cyperus malabaricus* (C.B.Clarke) T.Cooke	Cyperaceae
162	*Cyperus neochinensis* (Tang & F.T.Wang) Bauters	Cyperaceae
163	*Cyperus puncticulatus* Vahl.	Cyperaceae
164	*Cyrtococcum longipes* A.Camus	Poaceae
165	*Cyrtococcum oxyphyllum* Stapf.	Poaceae
166	*Cyrtococcum patens* (L.) A.Camus	Poaceae
167	*Cyrtococcum trigonum* A.Camus	Poaceae
168	*Dactyloctenium aegyptium* (L.) Willd.	Poaceae
169	*Debregeasia wallichiana* Wedd.	Urticaceae
170	*Decalepis salicifolia* (Bedd. ex Hook.f.) Bruyns	Apocynaceae
171	*Dendrobium jerdonianum* Wight	Orchidaceae

172	*Dendrocalamus strictus* Nees.	Poaceae
173	*Desmos chinensis* Lour.	Annonaceae
174	*Dichanthium caricosum* (L.) A.Camus	Poaceae
175	*Dichanthium foulkesii* (Hook.f.) S.K.Jain & Deshp.	Poaceae
176	*Dicliptera cuneata* Nees.	Acanthaceae
177	*Dicliptera paniculata* (Forssk.) I.Darbysh.	Acanthaceae
178	*Digitaria bicornis* (Lam.) Roem. & Schult.	Poaceae
179	*Digitaria longiflora* (Retz.) Pers.	Poaceae
180	*Digitaria radicosa* (J.Presl) Miq.	Poaceae
181	*Dillenia indica* L.	Dilleniaceae
182	*Dimeria bialata* C.E.C.Fisch.	Poaceae
183	*Dimeria deccanensis* Bor.	Poaceae
184	*Dimeria kanjirapallilana* Jacob	Poaceae
185	*Dioscorea alata* L.	Dioscoreaceae
186	*Dioscorea spicata* Roth.	Dioscoreaceae
187	*Diospyros ebenum* J.Koenig	Ebenaceae
188	*Diospyros montana* Roxb.	Ebenaceae
189	*Diplocentrum congestum* Wight	Orchidaceae
190	*Diplocentrum recurvum* Lindl.	Orchidaceae
191	*Dipterocarpus bourdillonii* Brandis	Dipterocarpaceae
192	*Dracaena roxburghiana* (Schult.f.) Byng & Christenh.	Asparagaceae
193	*Drimia indica* (Roxb.) Jessop	Asparagaceae
194	*Drymaria villosa* Cham. & Schltdl.	Caryophyllaceae
195	*Drypetes wightii* Pax & K.Hoffm.	Putranjivaceae
196	*Duranta erecta* L.	Verbenaceae
197	*Ecbolium ligustrinum* (Vahl) Vollesen	Acanthaceae
198	*Elaeagnus indica* Serv.	Elaeagnaceae
199	*Elaeocarpus monocera* Cav.	Elaeocarpaceae
200	*Elaeodendron glaucum* Pers.	Celastraceae
201	*Elaeodendron paniculatum* Wight & Arn.	Celastraceae
202	*Elatostema cuneatum* Wight	Urticaceae
203	*Elatostema sessile* J.R.Forst. & G.Forst.	Urticaceae
204	*Eleocharis dulcis* (Burm.f.) Trin. ex Hensch.	Cyperaceae
205	*Eleutheranthera ruderalis* (Sw.) Sch.Bip.	Asteraceae
206	*Emilia ramulosa* Gamble	Asteraceae
207	*Emilia scabra* DC. ex Wight	Asteraceae
208	*Enteropogon dolichostachyus* (Lag.) Keng.	Poaceae
209	*Epipremnum pinnatum* (L.) Engl.	Araceae
210	*Eragrostis nigra* Nees ex Steud.	Poaceae
211	*Eragrostis patula* Steud.	Poaceae
212	*Eragrostis tenella* (L.) P.Beauv. ex Roem. & Schult.	Poaceae
213	*Eragrostis viscosa* Trin.	Poaceae
214	*Erigeron karvinskianus* DC.	Asteraceae
215	*Eriocaulon eurypeplon* Körn.	Eriocaulaceae

216	*Eriocaulon longicuspis* Hook.f.	Eriocaulaceae
217	*Eriocaulon nepalense* var. *luzulifolium* (Mart.) Praj. & J.Parn.	Eriocaulaceae
218	*Eriocaulon palghatense* R.Ansari & N.P.Balakr.	Eriocaulaceae
219	*Eriocaulon pectinatum* Ruhland	Eriocaulaceae
220	*Eriocaulon thwaitesii* Körn.	Eriocaulaceae
221	*Eriocaulon xeranthemum* Mart.	Eriocaulaceae
222	*Eriochloa procera* (Retz.) C.E.Hubb.	Poaceae
223	*Eryngium foetidum* L.	Apiaceae
224	*Erythrina suberosa* Roxb.	Fabaceae
225	*Eucalyptus tereticornis* Sm.	Myrtaceae
226	*Euclasta oligantha* (Hochst. ex Steud.) M.R.Almeida	Poaceae
227	*Eugenia agasthiyamalayana* Gopalan & Murugan	Myrtaceae
228	*Eugenia discifera* Gamble	Myrtaceae
229	*Eugenia mabaeoides* Wight	Myrtaceae
230	*Eugenia roxburghii* DC.	Myrtaceae
231	*Eugenia uniflora* L.	Myrtaceae
232	*Eugenia wynadensis* Bedd.	Myrtaceae
233	*Euonymus indicus* B.Heyne ex Wall.	Celastraceae
234	*Euphorbia rothiana* Spreng.	Euphorbiaceae
235	*Euphorbia santapaui* A.N.Henry	Euphorbiaceae
236	*Exacum lawii* C.B.Clarke	Gentianaceae
237	*Exacum sessile* L.	Gentianaceae
238	*Excoecaria oppositifolia* var. *crenulata* (Wight) Chakrab. & M.Gangop.	Euphorbiaceae
239	*Fibraurea darshanii* Udayan & K.Ravik.	Menispermaceae
240	*Filicium decipiens* (Wight & Arn.) Thwaites	Sapindaceae
241	*Fimbristylis argentea* Vahl.	Cyperaceae
242	*Fimbristylis cinnamometorum* (Vahl) Kunth.	Cyperaceae
243	*Fimbristylis microcarya* F.Muell.	Cyperaceae
244	*Fimbristylis salbundia* Kunth.	Cyperaceae
245	*Fimbristylis sunilii* Jabeana & Maya	Cyperaceae
246	*Fimbristylis tuckeri* Viji, Pandur. & Deepu	Cyperaceae
247	*Flacourtia jangomas* (Lour.) Raeusch.	Salicaceae
248	*Flacourtia montana* J.Graham	Salicaceae
249	*Flemingia macrophylla* (Willd.) Kuntze ex Merr.	Fabaceae
250	*Flueggea leucopyrus* Willd.	Phyllanthaceae
251	*Fuirena ciliaris* (L.) Roxb.	Cyperaceae
252	*Galinsoga parviflora* Cav.	Asteraceae
253	*Garcinia talbotii* Raizada	Clusiaceae
254	*Gardenia jasminoides* J.Ellis.	Rubiaceae
255	*Garnotia courtallensis* Thwaites	Poaceae
256	*Garnotia elata* Janowski	Poaceae
257	*Geissaspis cristata* var. *tenella* (Benth.) M.R.Almeida	Fabaceae
258	*Glochidion zeylanicum* (Gaertn.) A.Juss.	Phyllanthaceae
259	*Glycosmis nelliyampathiensis* Jabeena & Maya	Rutaceae

260	*Gnaphalium polycaulon* Pers.	Asteraceae
261	*Grewia gamblei* J.R.Drumm. ex Dunn.	Malvaceae
262	*Grewia polygama* Roxb.	Malvaceae
263	*Grewia serrulata* DC.	Malvaceae
264	*Griffithella hookeriana* (Tul.) Warm., Kongel.	Podostemaceae
265	*Guazuma ulmifolia* Lam.	Malvaceae
266	*Gymnema decaisneanum* Wight	Apocynaceae
267	*Gymnema latifolium* Wall. ex Wight	Apocynaceae
268	*Gymnosporia heyneana* (Roth) M.A.Lawson	Celastraceae
269	*Gynura pseudochina* (L.) DC.	Asteraceae
270	*Habenaria barnesii* Summerh. ex C.E.C.Fisch.	Orchidaceae
271	*Habenaria rariflora* A.Rich.	Orchidaceae
272	*Hedychium coronarium* J.Koenig.	Zingiberaceae
273	*Hedychium spicatum* Sm.	Zingiberaceae
274	*Hedychium venustum* Wight	Zingiberaceae
275	*Helichrysum buddleioides* DC. ex Wight	Asteraceae
276	*Heliconia rostrata* Ruiz & Pav.	Heliconiaceae
277	*Heliotropium rottleri* Lehm.	Boraginaceae
278	*Henckelia humboldtiana* (Gardner) A.Weber & B.L.Burtt.	Gesneriaceae
279	*Heracleum candolleanum* Gamble	Apiaceae
280	*Heracleum rigens* Wall.	Apiaceae
281	*Heteropogon fischerianus* Bor.	Poaceae
282	*Hexasepalum teres* (Walter) J.H.Kirkbr.	Rubiaceae
283	*Hibiscus hispidissimus* Griff.	Malvaceae
284	*Hibiscus rosa-sinensis* L.	Malvaceae
285	*Holigarna beddomei* Hook.f.	Anacardiaceae
286	*Holigarna ferruginea* Marchand	Anacardiaceae
287	*Hoya pauciflora* Wight	Apocynaceae
288	*Hydrocotyle conferta* Wight	Araliaceae
289	*Hypoestes phyllostachya* Baker	Acanthaceae
290	*Hyptis capitata* Jacq.	Lamiaceae
291	*Impatiens balsamina* L.	Balsaminaceae
292	*Impatiens capensis* Meerb.	Balsaminaceae
293	*Impatiens dasysperma* Wight	Balsaminaceae
294	*Impatiens diversifolia* Wall. ex Wight & Arn.	Balsaminaceae
295	*Impatiens flaccida* Arn.	Balsaminaceae
296	*Impatiens minae* Ratheesh, Anil Kumar & Sivad.	Balsaminaceae
297	*Impatiens oppositifolia* L.	Balsaminaceae
298	*Impatiens parasitica* Bedd.	Balsaminaceae
299	*Impatiens sasidharanii* K.M.P.Kumar	Balsaminaceae
300	*Impatiens sasidharanii var. hirsuta* K.M.P.Kumar, Omalsree, Hareesh & V.B.Sreek.	Balsaminaceae
301	*Impatiens trichocarpa* Hook.f.	Balsaminaceae
302	*Indigofera wightii* Graham ex Wight & Arn.	Fabaceae
303	*Indotristicha ramosissima* (Wight) P.Royen.	Podostemaceae

304	*Iphigenia indica* (L.) Kunth.	Colchicaceae
305	*Ipomoea barlerioides* (Choisy) C.B.Clarke	Convolvulaceae
306	*Ipomoea batatas* (L.) Lam.	Convolvulaceae
307	*Ipomoea cairica* (L.) Sweet	Convolvulaceae
308	*Ipomoea carnea subsp. fistulosa* (Mart. ex Choisy) D.F.Austin	Convolvulaceae
309	*Ipomoea indica* (Burm.) Merr.	Convolvulaceae
310	*Ipomoea obscura* (L.) Ker Gawl.	Convolvulaceae
311	*Ipomoea purpurea* (L.) Roth.	Convolvulaceae
312	*Ipomoea sagittifolia* Burm.f.	Convolvulaceae
313	*Ipomoea triloba* L.	Convolvulaceae
314	*Isachne fischeri* Bor.	Poaceae
315	*Isachne setosa* C.E.C.Fisch.	Poaceae
316	*Isachne walkeri* Arn. ex Steud.	Poaceae
317	*Ischaemum commutatum* Hack.	Poaceae
318	*Ischaemum molle* Hook.f.	Poaceae
319	*Ischaemum sunilii* Jabeena, Nithya, K.M.P.Kumar & Maya	Poaceae
320	*Isodon nigrescens* (Benth.) H.Hara	Lamiaceae
321	*Isodon nilgherricus* (Benth.) H.Hara	Lamiaceae
322	*Isodon wightii* (Benth.) H.Hara	Lamiaceae
323	*Ixora pavetta* Andrews	Rubiaceae
324	*Jacaranda mimosifolia* D.Don.	Bignoniaceae
325	*Jasminum angustifolium* Willd.	Oleaceae
326	*Jasminum calophyllum* Wall. & G.Don.	Oleaceae
327	*Jasminum cordifolium* Wall. & G.Don.	Oleaceae
328	*Jasminum malabaricum* Wight	Oleaceae
329	*Justicia gendarussa* Burm.f.	Acanthaceae
330	*Kalanchoe blossfeldiana* Poelln.	Crassulaceae
331	*Kalanchoe olivacea* Dalzell, Dals. & Gibs.	Crassulaceae
332	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae
333	*Kamettia caryophyllata* (Roxb.) Nicolson & Suresh	Apocynaceae
334	*Kigelia africana* (Lam.) Benth.	Bignoniaceae
335	*Knoxia wightiana* Wall. & G.Don.	Rubiaceae
336	*Kunstleria keralensis* C.N.Mohanan & N.C.Nair	Fabaceae
337	*Laggera alata* (DC.) Sch.Bip. ex Oliv.	Asteraceae
338	*Laportea bulbifera* (Siebold & Zucc.) Wedd.	Urticaceae
339	*Lasianthus acuminatus* Wight	Rubiaceae
340	*Lasianthus rostratus* Wight	Rubiaceae
341	*Launaea acaulis* (Roxb.) Babc. ex Kerr.	Asteraceae
342	*Lepidagathis fasciculata* Nees.	Acanthaceae
343	*Lepidagathis incurva* Buch.-Ham. ex D.Don.	Acanthaceae
344	*Lepidium didymum* L.	Brassicaceae
345	*Lepidium sativum* L.	Brassicaceae
346	*Leucas sahyadriensis* Sunojk.	Lamiaceae
347	*Ligustrum robustum* subsp. *perrottetii* (A.DC.) de Juana	Oleaceae

348	*Lindernia tamilnadensis* M.G.Prasad & Sunojk.	Linderniaceae
349	*Linum mysurense* B.Heyne ex Benth.	Linaceae
350	*Liparis wightiana* Thwaites	Orchidaceae
351	*Litsea mysorensis* Gamble	Lauraceae
352	*Lobelia heyniana* Roem. & Schult.	Campanulaceae
353	*Lobelia zeylanica* L.	Campanulaceae
354	*Luisia tenuifolia* Blume	Orchidaceae
355	*Luisia tristis* Hook.f.	Orchidaceae
356	*Lysimachia ovalis* (Ruiz & Pav.) U.Manns & Anderb.	Primulaceae
357	*Machilus glaucescens* (Nees) Wight	Lauraceae
358	*Mallotus atrovirens* Müll.Arg.	Euphorbiaceae
359	*Margaritaria indica* (Dalzell) Airy Shaw	Phyllanthaceae
360	*Mecardonia procumbens* (Mill.) Small	Plantaginaceae
361	*Megathyrsus maximus* (Jacq.) B.K.Simon & S.W.L.Jacobs	Poaceae
362	*Meiogyne pannosa* (Dalzell) J.Sinclair	Annonaceae
363	*Meistera acuminata* (Thwaites) Škorničk. & M.F.Newman	Zingiberaceae
364	*Meistera sahyadrica* (V.P.Thomas & M.Sabu) Škorničk. & M.F.Newman	Zingiberaceae
365	*Melaleuca citrina* (Curtis) Dum.Cours.	Myrtaceae
366	*Melampodium divaricatum* DC.	Asteraceae
367	*Melinis repens* (Willd.) Zizka.	Poaceae
368	*Melochia corchorifolia* L.	Malvaceae
369	*Memecylon angustifolium* Wight	Melastomataceae
370	*Memecylon bremeri* M.B.Viswan	Melastomataceae
371	*Memecylon randerianum* S.M.Almeida & M.R.Almeida	Melastomataceae
372	*Memecylon talbotianum* D.Brandis, in W.A. Talbot	Melastomataceae
373	*Mentha arvensis* L.	Lamiaceae
374	*Mesua ferrea* var. *coromandeliana* (Wight) N.P.Singh	Calophyllaceae
375	*Mesua thwaitesii* Planch. & Triana	Calophyllaceae
376	*Microcos heterotricha* Burret	Malvaceae
377	*Microstegium manparensis* Jabeena, Sunil & Maya	Poaceae
378	*Mikania micrantha* Kunth.	Asteraceae
379	*Mikania scandens* (L.) Willd.	Asteraceae
380	*Miliusa indica* Lesch. ex A.DC.	Annonaceae
381	*Mimusops elengi* L.	Sapotaceae
382	*Murdannia crocea subsp. ochracea* (Dalzell) Faden	Commelinaceae
383	*Murdannia dimorpha* G.Bruckn.	Commelinaceae
384	*Murdannia gigantea* (Vahl) G.Bruckn.	Commelinaceae
385	*Murdannia simplex* (Vahl) Brenan.	Commelinaceae
386	*Murdannia versicolor* G.Bruckn.	Commelinaceae
387	*Murraya koenigii* (L.) Spreng.	Rutaceae
388	*Musa* × *paradisiaca* L.	Musaceae
389	*Neanotis decipiens* (Hook.f.) W.H.Lewis	Rubiaceae
390	*Neanotis indica* (DC.) W.H.Lewis	Rubiaceae
391	*Neanotis monosperma* (Wall. ex Wight & Arn.) W. H. Lewis	Rubiaceae

392	*Neanotis rheedei* (Wall. ex Wight & Arn.) W. H. Lewis	Rubiaceae
393	*Neanotis tubulosa* (G.Don) Mabb.	Rubiaceae
394	*Neolamarckia cadamba* (Roxb.) Bosser	Rubiaceae
395	*Neonotonia wightii* (Arn.) J. A. Lackey	Fabaceae
396	*Nerium oleander* L.	Apocynaceae
397	*Nostolachma crassifolia* (Gamble) Deb & J.Lahiri	Rubiaceae
398	*Oberonia anamalayana* J.Joseph	Orchidaceae
399	*Oberonia bicornis* Lindl.	Orchidaceae
400	*Oberonia chandrasekharanii* V.J.Nair, V.S.Ramach. & R.Ansari	Orchidaceae
401	*Oberonia verticillata* Wight	Orchidaceae
402	*Ochlandra travancorica* Gamble	Poaceae
403	*Olax imbricata* Roxb.	Olacaceae
404	*Oldenlandia vasudevanii* M.Soumya & Maya	Rubiaceae
405	*Ophiorrhiza pectinata* Arn.	Rubiaceae
406	*Ophiorrhiza trichocarpos* Blume	Rubiaceae
407	*Oplismenus burmanni* (Retz.) P.Beauv.	Poaceae
408	*Orophea erythrocarpa* Bedd.	Annonaceae
409	*Oryza meyeriana* Baill.	Poaceae
410	*Osbeckia gracilis* Bedd.	Melastomataceae
411	*Osbeckia muralis* Naudin	Melastomataceae
412	*Osbeckia travancorica* Bedd. ex Gamble	Melastomataceae
413	*Osbeckia virgata* D.Don ex Wight & Arn.	Melastomataceae
414	*Otonephelium stipulaceum* Radlk.	Sapindaceae
415	*Ottochloa nodosa* (Kunth) Dandy.	Poaceae
416	*Oxalis debilis* Kunth.	Oxalidaceae
417	*Oxalis latifolia* Kunth.	Oxalidaceae
418	*Oxyceros rugulosus* (Thwaites) Tirveng	Rubiaceae
419	*Palaquium ravii* Sasidh. & Vink.	Sapotaceae
420	*Pandanus furcatus* Roxb.	Pandanaceae
421	*Panicum brevifolium* L.	Poaceae
422	*Panicum paludosum* Roxb.	Poaceae
423	*Panicum repens* L.	Poaceae
424	*Paramignya monophylla* Wight	Rutaceae
425	*Passiflora vitifolia* Kunth.	Passifloraceae
426	*Pavetta zeylanica* Gamble	Rubiaceae
427	*Pentas lanceolata* (Forssk.) Deflers.	Rubiaceae
428	*Peucedanum pradeepianum* K.M.P.Kumar, Hareesh & Balach.	Apiaceae
429	*Phyllanthus bourdillonii* (Gamble) Chakrab. & N.P.Balakr.	Phyllanthaceae
430	*Phyllanthus velutinus* Müll.Arg.	Phyllanthaceae
431	*Phyllocephalum courtallense* (Wight) Narayana	Asteraceae
432	*Phyllocephalum indicum* (Less.) K.Kirkman	Asteraceae
433	*Pilea kingii* C.E.C.Fisch.	Urticaceae
434	*Pilea microphylla* (L.) Liebm.	Urticaceae
435	*Pimpinella leschenaultii* DC.	Apiaceae

436	*Pinalia mysorensis* Kuntze.	Orchidaceae
437	*Piper retrofractum* Vahl.	Piperaceae
438	*Pittosporum neelgherrense* Wight & Arn.	Pittosporaceae
439	*Pogonatherum crinitum* Kunth.	Poaceae
440	*Polycarpon tetraphyllum* (L.) L.	Caryophyllaceae
441	*Polygala arvensis* Willd.	Polygalaceae
442	*Polygala chinensis* L.	Polygalaceae
443	*Polypleurum wallichii* (R.Br. ex Griff.) Warm.	Podostemaceae
444	*Polytrias indica* (Houtt.) Veldkamp	Poaceae
445	*Portulaca grandiflora* Hook.	Portulacaceae
446	*Pouzolzia cymosa* Wight	Urticaceae
447	*Pouzolzia scabra* Wight	Urticaceae
448	*Pseudoxytenanthera bourdillonii* (Gamble) H.B.Naithani	Poaceae
449	*Psychotria anamallayana* Bedd.	Rubiaceae
450	*Psychotria dalzellii* Hook.f.	Rubiaceae
451	*Psychotria flavida* Talbot	Rubiaceae
452	*Psychotria globicephala* Gamble	Rubiaceae
453	*Psychotria macrocarpa* Hook.f.	Rubiaceae
454	*Psychotria nervosa* Sw.	Rubiaceae
455	*Psychotria nudiflora* Wight & Arn.	Rubiaceae
456	*Pyrostegia venusta* Miers.	Bignoniaceae
457	*Rauvolfia tetraphylla* L.	Apocynaceae
458	*Rauvolfia verticillata* (Lour.) Baill.	Apocynaceae
459	*Richardia scabra* L.	Rubiaceae
460	*Rivina humilis* L.	Petiveriaceae
461	*Rosa damascena* Mill.	Rosaceae
462	*Rosa multiflora* Thunb.	Rosaceae
463	*Rostellularia diffusa* var. *prostrata* (Roxb. ex C.B.Clarke) J.L.Ellis.	Acanthaceae
464	*Rostellularia procumbens* (L.) Nees.	Acanthaceae
465	*Rubus fairholmianus* Gardner	Rosaceae
466	Rubus niveus Thunb.	Rosaceae
467	*Rubus racemosus* Roxb.	Rosaceae
468	*Rungia wightiana* Nees.	Acanthaceae
469	*Sageraea laurina* Dalzell	Annonaceae
470	*Sambucus canadensis* L.	Adoxaceae
471	*Satyrium nepalense* D.Don.	Orchidaceae
472	*Schefflera wallichiana* (Wight & Arn.) Harms.	Araliaceae
473	*Schoenorchis smeeana* (Rchb.f.) Jalal, Jayanthi & Schuit.	Orchidaceae
474	*Scleria oblata* S.T.Blake ex J.Kern.	Cyperaceae
475	*Scleria parvula* Steud.	Cyperaceae
476	*Scleromitrion diffusum* (Willd.) R.J.Wang.	Rubiaceae
478	*Scutellaria violacea* B.Heyne ex Benth.	Lamiaceae
479	*Scutellaria wightiana* Benth.	Lamiaceae
480	*Scutia myrtina* Kurz.	Rhamnaceae

481	*Setaria barbata* (Lam.) Kunth.	Poaceae
482	*Shuteria involucrata* (Wall.) Wight & Arn. ex Walp.	Fabaceae
483	*Sida scabrida* Wight & Arn.	Malvaceae
484	*Sirhookera lanceolata* Kuntze.	Orchidaceae
485	*Smilax aspera* L.	Smilacaceae
486	*Smilax wightii* A.DC.	Smilacaceae
487	*Smithia hirsuta* Dalzell	Fabaceae
488	*Smithia venkobarowii* Gamble	Fabaceae
489	*Smithsonia maculata* (Dalzell) C.J.Saldanha	Orchidaceae
490	*Solanum aculeatissimum* Jacq.	Solanaceae
491	*Solanum elaeagnifolium* Cav.	Solanaceae
492	*Solanum seaforthianum* Andrews	Solanaceae
493	*Solanum trilobatum* L.	Solanaceae
494	*Solidago canadensis* L.	Asteraceae
495	*Sonerila veldkampiana* Ratheesh, Mini & Sivad.	Melastomataceae
496	*Sonerila victoriae* M.Soumya & Maya	Melastomataceae
497	*Sonerila wallichii* Benn.	Melastomataceae
498	*Spathiphyllum wallisii* Regel.	Araceae
499	*Spathodea campanulata* P.Beauv.	Bignoniaceae
500	*Spermacoce alata* Aubl.	Rubiaceae
501	*Spermacoce lasiocarpa* R.Br.	Rubiaceae
502	*Spermacoce verticillata* L.	Rubiaceae
503	*Sphagneticola trilobata* (L.) Pruski.	Asteraceae
504	*Spinacia oleracea* L.	Amaranthaceae
505	*Sporobolus indicus* (L.) R.Br.	Poaceae
506	*Sporobolus tenuissimus* (Mart. ex Schrank) Kuntze.	Poaceae
507	*Sporobolus virginicus* Kunth.	Poaceae
508	*Stellaria media* (L.) Vill.	Caryophyllaceae
509	*Stephania japonica* (Thunb.) Miers.	Menispermaceae
510	*Sterculia foetida* L.	Malvaceae
511	*Striga asiatica* (L.) Kuntze.	Orobanchaceae
512	*Strobilanthes anceps* Nees.	Acanthaceae
513	*Strobilanthes ciliata* Nees.	Acanthaceae
514	*Strobilanthes consanguinea* T.Anderson	Acanthaceae
515	*Strobilanthes crossandra* (Steud.) J.R.I.Wood.	Acanthaceae
516	*Strobilanthes lanata* Nees.	Acanthaceae
517	*Strobilanthes lawsonii* Gamble	Acanthaceae
518	*Strombosia ceylanica* Gardner	Olacaceae
519	*Swertia lawii* Burkill	Gentianaceae
520	*Symplocos obtusa* Wall. ex G.Don.	Symplocaceae
521	*Symplocos racemosa* Roxb.	Symplocaceae
522	*Syzygium cumini* (L.) Skeels.	Myrtaceae
523	*Tabernaemontana divaricata* (L.) R.Br. ex Roem. & Schult.	Apocynaceae
524	*Tagetes erecta* L.	Asteraceae

525	*Tamilnadia uliginosa* (Retz.) Tirveng. & Sastre.	Rubiaceae
526	*Taraxacum javanicum* Soest.	Asteraceae
527	*Tarenna canarica* (Bedd.) Bremek.	Rubiaceae
528	*Tarenna monosperma* (Wight & Arn.) D.C.S.Raju, Sci. & Cult.	Rubiaceae
529	*Taxillus recurvus* (Wall. ex DC.) Tiegh.	Loranthaceae
530	*Terminalia catappa* L.	Combretaceae
531	*Terminalia travancorensis* Wight & Arn.	Combretaceae
532	*Themeda cymbaria* Hack.	Poaceae
533	*Themeda sabarimalayana* Sreek. & V.J.Nair	Poaceae
534	*Thottea sivarajanii* E.S.S.Kumar, A.E.S.Khan & Binu	Aristolochiaceae
535	*Thunbergia erecta* T.Anderson	Acanthaceae
536	*Thunbergia tomentosa* Wall. ex Nees.	Acanthaceae
537	*Tithonia diversifolia* (Hemsl.) A.Gray.	Asteraceae
538	*Toona hexandra* M.Roem.	Meliaceae
539	*Trichoglottis tenera* Rchb.	Orchidaceae
540	*Trichosanthes anaimalaiensis* Bedd.	Cucurbitaceae
541	*Trichosanthes villosula* Cogn.	Cucurbitaceae
542	*Tripogon bimucronatus* Thoiba & Sunil	Poaceae
543	*Tripogon capillatus* Jaub. & Spach	Poaceae
544	*Tripogon ravianus* Sunil & Pradeep	Poaceae
545	*Tripogon sugathakumarii* Jabeena, Sunil & Maya	Poaceae
546	*Tripogon wightii* Hook.f.	Poaceae
547	*Triumfetta annua* L.	Malvaceae
548	*Turnera ulmifolia* L.	Passifloraceae
549	*Typhonium flagelliforme* (Roxb. ex G.Lodd.) Blume	Araceae
560	*Urochloa eminii* (Mez) Davidse	Poaceae
561	*Urochloa ramosa (*L.) T.Q.Nguyen	Poaceae
562	*Utricularia caerulea* L.	Lentibulariaceae
563	*Utricularia praeterita* P.Taylor	Lentibulariaceae
564	*Utricularia reticulata* Sm.	Lentibulariaceae
567	*Vanda tessellata* Hook. ex G.Don.	Orchidaceae
568	*Vepris bilocularis* Engl.	Rutaceae
569	*Viburnum punctatum* Buch.-Ham. ex D.Don.	Adoxaceae
570	*Viscum heyneanum* DC.	Santalaceae
571	*Vitex leucoxylon* L.f.	Lamiaceae
572	*Xenostegia tridentata* subsp. *hastata* (Ooststr.) Parmar	Convolvulaceae
573	*Xyris pauciflora* Willd.	Xyridaceae
574	*Zenkeria elegans* Trin.	Poaceae
575	*Zephyranthes candida* (Lindl.) Herb.	Amaryllidaceae
576	*Zephyranthes minuta* D.Dietr.	Amaryllidaceae
578	*Zeylanidium subulatum* (Gardner) C.Cusset	Podostemaceae
579	*Zingiber anamalayanum* Sujanapal & Sasidh.	Zingiberaceae
580	*Zingiber neesanum* (J.Graham) Ramamoorthy	Zingiberaceae
581	*Zingiber nimmonii* Dalzell	Zingiberaceae

582	*Zingiber officinale* Roscoe	Zingiberaceae
583	*Zingiber sabuanum* K.M.P.Kumar & A.Joe	Zingiberaceae
584	*Zingiber wightianum* Thwaites	Zingiberaceae
585	*Zingiber zerumbet* (L.) Sm.	Zingiberaceae
586	*Zinnia elegans* Jacq.	Asteraceae
587	*Ziziphus jujuba* Mill.	Rhamnaceae
588	*Ziziphus nummularia* (Burm.f.) Wight & Arn.	Rhamnaceae

Annexure XIV

Taxa with extended Distribution to Palakkad District

Sl.No.	Binomial Name	Family
1	*Acmella ciliata* (Kunth) Cass.	Asteraceae
2	*Actephila excelsa* (Dalzell) Müll.Arg.	Phyllanthaceae
3	*Actinodaphne bourdillonii* Gamble	Lauraceae
4	*Allophylus serratus* Kurz.	Sapindaceae
5	*Alysicarpus naikianus* Pokle.	Fabaceae
6	*Amaranthus blitum* L.	Amaranthaceae
7	*Andrographis atropurpurea* (Dennst.) Alston	Acanthaceae
8	*Andrographis elongata* (Vahl) T.Anderson	Acanthaceae
10	*Anethum graveolens* L.	Apiaceae
11	*Apocopis cochinchinensis* A.Camus	Poaceae
12	*Aporosa bourdillonii* Stapf.	Phyllanthaceae
13	*Ardisia elliptica* Thunb.	Primulaceae
14	*Argyreia populifolia* Choisy	Convolvulaceae
15	*Arthraxon castratus* Nayaran. ex Bor.	Poaceae
16	*Arundinella setosa* Trin.	Poaceae
17	*Begonia cordifolia* Thwaites	Begoniaceae
18	*Begonia dipetala* Graham	Begoniaceae
19	*Berberis tinctoria* Lesch.	Berberidaceae
20	*Biophytum umbraculum* Welw.	Oxalidaceae
21	*Blumea virens* DC.	Asteraceae
22	*Bothriochloa insculpta* (Hochst. ex A.Rich.) A.Camus	Poaceae
23	*Calliandra tergemina* var. *emarginata* (Humb. & Bonpl. ex Willd.) Barneby	Fabaceae
24	*Calyptocarpus vialis* Less.	Asteraceae
25	*Canscora alata* (Roth) Wall.	Gentianaceae
26	*Cardamine africana* L.	Brassicaceae
27	*Ceropegia maculata* Bedd.	Apocynaceae
28	*Cheirostylis parvifolia* Lindl.	Orchidaceae
29	*Chrysopogon purushothamanii* Ravi, N.Mohanan & Kiran Raj	Poaceae
30	*Cyanotis thwaitesii* Hassk.	Commelinaceae
31	*Cyperus flavescens* L.	Cyperaceae
32	*Cyperus malabaricus* (C.B.Clarke) T.Cooke	Cyperaceae
33	*Cyperus puncticulatus* Vahl.	Cyperaceae
34	*Desmos chinensis* Lour.	Annonaceae
35	*Dichanthium caricosum* (L.) A.Camus	Poaceae
36	*Dichanthium foulkesii* (Hook.f.) S.K.Jain & Deshp.	Poaceae
37	*Digitaria radicosa* (J.Presl) Miq.	Poaceae
38	*Dillenia indica* L.	Dilleniaceae
39	*Dimeria bialata* C.E.C.Fisch.	Poaceae
40	*Dimeria kanjirapallilana* Jacob	Poaceae
41	*Ecbolium ligustrinum* (Vahl) Vollesen	Acanthaceae
42	*Elaeocarpus monocera* Cav.	Elaeocarpaceae
43	*Elatostema cuneatum* Wight	Urticaceae
44	*Elatostema sessile* J.R.Forst. & G.Forst.	Urticaceae
45	*Eleocharis dulcis* (Burm.f.) Trin. ex Hensch.	Cyperaceae
46	*Eragrostis patula* Steud.	Poaceae

47	*Eriocaulon nepalense* var. *luzulifolium* (Mart.) Praj. & J.Parn.	Eriocaulaceae
48	*Eriocaulon pectinatum* Ruhland	Eriocaulaceae
49	*Eriochloa procera* (Retz.) C.E.Hubb.	Poaceae
50	*Erythrina variegata* L.	Fabaceae
51	*Eugenia mabaeoides* Wight	Myrtaceae
52	*Eugenia roxburghii* DC.	Myrtaceae
53	*Fimbristylis microcarya* F.Muell.	Cyperaceae
54	*Fimbristylis salbundia* Kunth.	Cyperaceae
55	*Fuirena ciliaris* (L.) Roxb.	Cyperaceae
56	*Geissaspis cristata* Wight & Arn.	Fabaceae
57	*Grewia polygama* Roxb.	Malvaceae
58	*Griffithella hookeriana* (Tul.) Warm.	Podostemaceae
59	*Gymnema decaisneanum* Wight	Apocynaceae
60	*Gynura pseudochina* (L.) DC.	Asteraceae
61	*Hedychium venustum* Wight	Zingiberaceae
62	*Henckelia humboldtiana* (Gardner) A.Weber & B.L.Burtt.	Gesneriaceae
63	*Heteropogon fischerianus* Bor.	Poaceae
64	*Hexasepalum teres* (Walter) J.H.Kirkbr.	Rubiaceae
65	*Hydrocotyle conferta* Wight	Araliaceae
66	*Hypoestes phyllostachya* Baker	Acanthaceae
67	*Impatiens diversifolia* Wall. ex Wight & Arn.	Balsaminaceae
68	*Impatiens minae* Ratheesh, Anil Kumar & Sivad.	Balsaminaceae
69	*Impatiens trichocarpa* Hook.f.	Balsaminaceae
70	*Ipomoea sagittifolia* Burm.f.	Convolvulaceae
71	*Isachne fischeri* Bor.	Poaceae
72	*Ischaemum molle* Hook.f.	Poaceae
73	*Jasminum calophyllum* Wall. & G.Don.	Oleaceae
74	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae
75	*Lepidagathis fasciculata* Nees.	Acanthaceae
76	*Lepidium didymum* L.	Brassicaceae
77	*Lepidium sativum* L.	Brassicaceae
78	*Lysimachia ovalis* (Ruiz & Pav.) U.Manns & Anderb.	Primulaceae
79	*Megathyrsus maximus* (Jacq.) B.K.Simon & S.W.L.Jacobs	Poaceae
80	*Meistera sahyadrica* (V.P.Thomas & M.Sabu) Škorničk. & M.F.Newman	Zingiberaceae
81	*Memecylon talbotianum* D.Brandis	Melastomataceae
82	*Mesua ferrea* var. *coromandeliana* (Wight) N.P.Singh	Calophyllaceae
83	*Mesua thwaitesii* Planch. & Triana	Calophyllaceae
84	*Mikania scandens* (L.) Willd.	Asteraceae
85	*Murdannia crocea* subsp. *ochracea* (Dalzell) Faden	Commelinaceae
86	*Murdannia dimorpha* G.Bruckn.	Commelinaceae
87	*Murdannia gigantea* (Vahl) G.Brückn.	Commelinaceae
88	*Nothopegia colebrookiana* (Wight) Blume	Anacardiaceae
89	*Ophiorrhiza trichocarpos* Blume	Rubiaceae
90	*Oxalis debilis* Kunth.	Oxalidaceae
91	*Oxalis latifolia* Kunth.	Oxalidaceae
92	*Pandanus furcatus* Roxb.	Pandanaceae
93	*Phyllocephalum courtallense* (Wight) Narayana	Asteraceae
94	*Pimpinella leschenaultii* DC.	Apiaceae
95	*Piper retrofractum* Vahl.	Piperaceae
96	*Polycarpon tetraphyllum* (L.) L.	Caryophyllaceae

97	*Polypleurum wallichii* (R.Br. ex Griff.) Warm.	Podostemaceae
98	*Psychotria dalzellii* Hook.f.	Rubiaceae
99	*Psychotria flavida* Talbot	Rubiaceae
100	*Psychotria nervosa* Sw.	Rubiaceae
101	*Sambucus canadensis* L.	Adoxaceae
102	*Scleria oblata* S.T.Blake ex J.Kern.	Cyperaceae
103	*Scleria parvula* Steud.	Cyperaceae
104	*Setaria barbata* (Lam.) Kunth.	Poaceae
105	*Sonerila veldkampiana* Ratheesh	Melastomataceae
106	*Sphagneticola trilobata* (L.) Pruski.	Asteraceae
107	*Sporobolus virginicus* Kunth.	Poaceae
108	*Stellaria media* (L.) Vill.	Caryophyllaceae
109	*Stereospermum chelonoides* (L.f.) DC.	Bignoniaceae
110	*Strobilanthes consanguinea* T.Anderson	Acanthaceae
111	*Strobilanthes crossandra* (Steud.) J.R.I.Wood	Acanthaceae
112	*Themeda sabarimalayana* Sreek. & V.J.Nair	Poaceae
113	*Thottea sivarajanii* E.S.S.Kumar, A.E.S.Khan & Binu	Aristolochiaceae
114	*Tripogon bimucronatus* Thoiba & Sunil	Poaceae
115	*Tripogon ravianus* Sunil & Pradeep	Poaceae
116	*Typhonium flagelliforme* (Roxb. ex G.Lodd.) Blume	Araceae
117	*Urochloa eminii* (Mez) Davidse.	Poaceae
118	*Vitex leucoxylon* L.f.	Lamiaceae
119	*Xenostegia tridentata subsp. hastata* (Ooststr.) Parmar	Convolvulaceae
120	*Zeylanidium subulatum* (Gardner) C.Cusset	Podostemaceae
121	*Zingiber anamalayanum* Sujanapal & Sasidh.	Zingiberaceae
122	*Zingiber sabuanum* K.M.P.Kumar & A.Joe	Zingiberaceae

Annexure XV

Taxa with ethnobotanical significance at Nelliyampathy hills

Sl. No.	IPNI name	APG Family	Local name	Usage
1	*Abelmoschus esculentus* (L.) Moench.	Malvaceae	Venda	F
2	*Achyranthes aspera* L.	Amaranthaceae	Kadalaadi	A
3	*Acmella calva* (DC.) R.K.Jansen	Asteraceae	Palluvedanachedi	A
4	*Acorus calamus* L.	Acoraceae	Vayambu	A
5	*Adina cordifolia* (Roxb.) Hook.f. & Benth.	Rubiaceae	Manjakadambu	A
6	*Ageratum conyzoides* L.	Asteraceae	Appachappa	A
7	*Alstonia scholaris* (L.) R.Br.	Apocynaceae	Paalamaram	A, R
8	*Alternanthera sessilis* (L.) DC.	Amaranthaceae	Ponamgani	F
9	*Amaranthus spinosus* L.	Amaranthaceae	Mullankeera	F
10	*Amaranthus viridis* L.	Amaranthaceae	Kuppakkeera	F
11	*Amorphophallus paeoniifolius* (Dennst.) Nicolson	Araceae	Kattuchena	F
12	*Anamirta cocculus* (L.) Wight & Arn.	Menispermaceae	Pollakkayi	M
13	*Antiaris toxicaria* (Pers.) Lesch.	Moraceae	Karanjili	M
14	*Antidesma acidum* Retz.	Phyllanthaceae	Kambilipuli	F
15	*Areca catechu* L.	Arecaceae	Adakkamaram	A
16	*Arenga wightii* Griff.	Arecaceae	Kattuthengu	F, M
17	*Aristolochia acuminata* Lam.	Aristolochiaceae	Kandaaravalli	A
18	*Artocarpus heterophyllus* Lam.	Moraceae	Chakka	F
19	*Artocarpus hirsutus* Lam.	Moraceae	Ayani	F
20	*Azadirachta indica* A.Juss.	Meliaceae	Veppamaram	M, R
21	*Baccaurea courtallensis* (Wight) Müll.Arg.	Phyllanthaceae	Moottippazham	F
22	*Bambusa bambos* (L.) Voss.	Poaceae	Mula	F, M
23	*Bridelia retusa* A.Juss.	Phyllanthaceae	Mulluvenga	F
24	*Butea monosperma* Kuntze.	Fabaceae	Plaasu	M
25	*Calamus thwaitesii* Becc.	Arecaceae	Pannichooral	F
26	*Canarium strictum* Roxb.	Burseraceae	Kunkkilliyum	M
27	*Canthium rheedei* DC.	Rubiaceae	Karakkayi	M
28	*Capsicum frutescens* L.	Solanaceae	Kanthari	F
29	*Careya arborea* Roxb.	Lecythidaceae	Pezhumaram	A
30	*Carica papaya* L.	Caricaceae	Papayamaram	F
31	*Caryota urens* L.	Arecaceae	Eerampana	F, M
32	*Cassia fistula* L.	Fabaceae	Konnamaram	A
33	*Celosia argentea* L.	Amaranthaceae	Panna	F
34	*Clematis zeylanica* Poir.	Ranunculaceae	Vathamkodi	A
35	*Cocos nucifera* L.	Arecaceae	Thengu	F, A
36	*Coix lacryma-jobi* L.	Poaceae	Kunthaamani	M

37	*Colocasia esculenta* (L.) Schott.	Araceae	Chembukkizhangu	F
38	*Crotalaria pallida* Aiton.	Fabaceae	Kilukkey	M
39	*Cucumis melo* L.	Cucurbitaceae	Peechinga	M
40	*Cullenia exarillata* A.Robyns	Malvaceae	Karayni	F
41	*Curcuma longa* L.	Zingiberaceae	Manjal	F
42	*Cyclea peltata* (Lam.) Hook.f. & Thomson	Menispermaceae	Paadakkizhangu	A, M
43	*Dalbergia latifolia* Roxb.	Fabaceae	Veettimaram	A, M
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259	***Careya arborea*** Roxb.	430	40:d
260	***Carica papaya*** L.	401	36:e
261	***Carissa spinarum*** L.	470	
262	***Caryota urens*** L.	122	
263	***Cascabela thevetia*** (L.) Lippold	470	
264	***Casearia graveolens*** Dalzell	315	
265	***Cassia fistula*** L.	229	
266	***Catharanthus roseus*** (L.) G.Don.	471	
267	***Catunaregam spinosa*** (Thunb.) Tirveng.	441	82:a
268	***Causonis japonica*** (Thunb.) Raf.	222	
269	***Cayaponia laciniosa*** (L.) C.Jeffrey	293	24:f
270	***Cayratia pedata*** Gagnep.	222	62:e
271	***Ceiba pentandra*** (L.) Gaertn.	385	

272	***Celastrus paniculatus*** Willd.	301	25:h
273	***Celosia argentea*** L.	419	87:e
274	***Cenchrus pedicellatus*** (Trin.) Morrone.	173	
275	***Centella asiatica*** (L.) Urb.	576	75:c
276	***Centotheca lappacea*** Desv.	174	
277	***Centratherum punctatum*** Cass.	561	135:b
278	***Centrosema molle*** Mart. ex Benth.	242	19:c
279	***Ceropegia ensifolia*** Bedd.	471	
280	***Ceropegia fimbriifera*** Bedd.	471	44:c
281	***Ceropegia maculata*** Bedd.	472	
282	***Cestrum aurantiacum*** Lindl.	491	135:c
283	***Chamaecrista leschenaultiana*** (DC.) O.Deg.	229	17:h
284	***Chamaecrista mimosoides*** (L.) Greene	230	18:a
285	***Chassalia curviflora*** var. ***ophioxyloides*** (Wall.) Deb & B.Krishna	442	98:a-d
286	***Cheilocostus speciosus*** (J.Koenig) C.D.Specht	136	11:a
287	***Cheirostylis parvifolia*** Lindl.	97	
288	***Chilocarpus denudatus*** Blume	472	
289	***Chionanthus mala-elengi*** (Dennst.) P.S.Green	496	65:a
290	***Chloris barbata*** Sw.	174	
291	***Chlorophytum heynei*** Baker	118	
292	***Chlorophytum indicum*** (Willd.) Dress.	118	9:c
293	***Chlorophytum malabaricum*** Baker	119	79:c
294	***Chlorophytum nimmonii*** Dalzell	119	
295	***Chonemorpha fragrans*** Alston	472	
296	***Chromolaena odorata*** (L.) R.M.King & H.Rob.	561	87:f
297	***Chrysopogon aciculatus*** Trin.	175	
298	***Chrysopogon asper*** B.Heyne ex Blatt. & McCann.	175	13:f
299	***Chrysopogon hackelii*** (Hook.f.) C.E.C.Fisch.	175	65:b
300	***Chrysopogon nodulibarbis*** (Hochst.) Henrard	176	
301	***Chrysopogon purushothamanii*** Ravi, N.Mohanan & Kiran Raj	176	
302	***Chrysopogon zizanioides*** (L.) Roberty	176	
303	***Chukrasia tabularis*** A.Juss.	378	72:a
304	***Cinnamomum macrocarpum*** Hook.f.	74	
305	***Cinnamomum malabathrum*** (Lam.) J.Presl.	74	5:f
306	***Cinnamomum verum*** J.Presl.	75	
307	***Cipadessa baccifera*** Miq.	378	34:a
308	***Cissampelos pareira*** L.	215	82:b
309	***Cissus discolor*** Blume	223	17:c
310	***Cissus latifolia*** Lam.	223	
311	***Cissus quadrangularis*** L.	223	
312	***Cissus repens*** Lam.	224	17:d
313	***Cissus vitiginea*** L.	224	82:c
314	***Citrus × aurantium*** L.	370	
315	***Citrus aurantiifolia*** (Christm.) Swingle	370	33:e
316	***Citrus maxima*** (Burm.) Merr.	370	

317	***Clausena anisata*** (Willd.) Hook.f.	371	
318	***Clausena austroindica*** B.C.Stone & K.Narayanan	371	
319	***Clausena indica*** Oliv.	371	82:d
320	***Cleidion javanicum*** Blume	319	
321	***Cleisostoma tenuifolium*** (L.) Garay.	97	
322	***Cleistanthus collinus*** Benth. & Hook.f.	319	
323	***Clematis gouriana*** Roxb. ex DC.	218	82:e
324	***Clematis zeylanica*** Poir.	219	16:c
325	***Cleome monophylla*** L.	403	87:g
326	***Cleome rutidosperma*** var. ***burmanni*** (Wight & Arn.) M.O.Siddiqui & S.N.Dixit	404	36:h
327	***Cleome speciosa*** Raf.	404	
328	***Cleome spinosa*** Jacq.	404	
329	***Cleome viscosa*** L.	404	87:h
330	***Clerodendrum chinense*** (Osbeck) Mabb.	536	135:d
331	***Clerodendrum infortunatum*** L.	536	50:a
332	***Clerodendrum thomsoniae*** Balf.	536	
333	***Clitoria ternatea*** L.	243	82:f
334	***Coccinia grandis*** (L.) Voigt.	294	82:g
335	***Cochlospermum religiosum*** (L.) Alston	399	
336	***Cocos nucifera*** L.	122	
337	***Codariocalyx motorius*** H.Ohashi	243	
338	***Coelogyne breviscapa*** Lindl.	97	
339	***Coelogyne nervosa*** A.Rich.	98	
340	***Coffea arabica*** L.	442	41:f; 61:h
341	***Coffea liberica*** W.Bull ex Hiern.	442	
342	***Coix lacryma-jobi*** L.	177	
343	***Coldenia procumbens*** L.	480	
344	***Colebrookea oppositifolia*** Sm.	536	82:h
345	***Coleus barbatus*** (Andrews) Benth. ex G. Don	537	83:a
346	***Colocasia esculenta*** (L.) Schott.	85	
347	***Combretum latifolium*** Blume	341	30:g
348	***Commelina benghalensis*** L.	123	9:f
349	***Commelina clavata*** C.B.Clarke	124	120:g
350	***Commelina erecta*** L.	124	
351	***Commelina longifolia*** Lam.	124	
352	***Commelina paludosa*** Blume	125	9:g
353	***Commelina wightii*** Raizada	125	65:c
354	***Connarus monocarpos*** L.	303	26:b
355	***Connarus sclerocarpus*** G.Schellenb.	303	
356	***Corchorus aestuans*** L.	385	34:g
357	***Cosmos caudatus*** Kunth.	562	79:d
358	***Cosmos sulphureus*** Cav.	562	
359	***Cottonia peduncularis*** Rchb.f. ex Schiller	98	
360	***Couroupita guianensis*** Aubl.	430	
361	***Crassocephalum crepidioides*** S.Moore.	562	88:a
362	***Craterostigma nummularifolium*** (D.Don) Eb.Fisch.,	504	46:h

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363	***Crateva adansonii*** subsp. ***odora*** (Buch.-Ham.) Jacobs	403	7:f
364	***Crepidium purpureum*** (Lindl.) Szlach.	98	7:g
365	***Crepidium resupinatum*** (G.Forst.) Szlach	99	
366	***Crinum asiaticum*** L.	115	
367	***Crinum latifolium*** L.	116	
368	***Crossandra infundibuliformis*** (L.) Nees	512	
369	***Crotalaria calycina*** Schrank.	244	91:e
370	***Crotalaria clarkei*** Gamble	244	
371	***Crotalaria evolvuloides*** Wight	245	19:d
372	***Crotalaria fysonii*** Dunn.	245	91:f
373	***Crotalaria grahamiana*** Wight & Arn.	245	91:g
374	***Crotalaria heyneana*** Graham ex Wight & Arn.	245	91:h
375	***Crotalaria laevigata*** Lam.	246	
376	***Crotalaria longipes*** Wight & Arn.	246	92:a; 95:a-m
377	***Crotalaria micans*** Link.	247	
378	***Crotalaria multiflora*** Benth.	247	19:e
379	***Crotalaria nana*** Burm.f.	247	92:b
380	***Crotalaria notonii*** Wight & Arn.	247	120:h
381	***Crotalaria obtecta*** Graham ex Wight & Arn.	248	92:c
382	***Crotalaria pallida*** Aiton	248	88:b
383	***Crotalaria priestleyoides*** Benth.	248	126:e; 118:a-n
384	***Crotalaria prostrata*** Rottler	249	
385	***Crotalaria retusa*** L.	249	92:d
386	***Crotalaria salicifolia*** B.Heyne ex Wight & Arn.	250	19:f
387	***Crotalaria scabrella*** Wight & Arn.	250	19:g
388	***Crotalaria spectabilis*** Roth.	250	79:e
389	***Crotalaria umbellata*** Wight	251	121:a
390	***Crotalaria walkeri*** Arn.	251	19:h
391	***Croton bonplandianus*** Baill.	320	88:c
392	***Croton hirtus*** L'Hér.	320	28:g
393	***Croton laccifer*** L.	320	28:h
394	***Croton malabaricus*** Bedd.	321	
395	***Croton zeylanicus*** Müll.Arg.	321	
396	***Cryptocarya anamalayana*** Gamble	75	
397	***Cryptocarya wightiana*** Thwaites	75	
398	***Cryptolepis dubia*** (Burm.f.) M.R.Almeida	472	44:d; 72:b
399	***Cucumis maderaspatanus*** L.	294	74:f
400	***Cucumis melo*** L.	295	
401	***Cucumis sativus*** L.	295	121:b
402	***Cucumis silentvalleyi*** (Manilal, T. Sabu & P.Mathew) Ghebret. & Thulin	295	75:d
403	***Cullenia exarillata*** A.Robyns.	385	65:d
404	***Cuphea hyssopifolia*** Kunth.	344	
405	***Curculigo orchioides*** Gaertn.	114	99:d-h
406	***Curculigo trichocarpa*** (Wight) Bennet & Raizada	114	8:g
407	***Curcuma aromatica*** Salisb.	139	

408	***Curcuma aurantiaca*** Zijp	139	65:e; 102:e-h
409	***Curcuma decipiens*** Dalzell	139	11:c
410	***Curcuma longa*** L.	140	130:a
411	***Curcuma montana*** Roxb.	140	
412	***Curcuma neilgherrensis*** Wight	140	121:c
413	***Curcuma pseudomontana*** J.Graham	140	75:e
414	***Curcuma vamana*** M.Sabu & Mangaly	141	61:c
415	***Cuscuta chinensis*** Lam.	483	72:f
416	***Cyanotis arachnoidea*** C.B.Clarke	125	
417	***Cyanotis burmannia*** Wight	126	75:f; 100:a-b
418	***Cyanotis cristata*** (L.) D.Don.	126	9:h; 97:a-d
419	***Cyanotis fasciculata*** (B.Heyne ex Roth) Schult.f.	126	
420	***Cyanotis pilosa*** Schult.f.	127	
421	***Cyanotis thwaitesii*** Hassk.	127	126:f
422	***Cyanotis tuberosa*** (Roxb.) Schult.f.	127	
423	***Cyanotis villosa*** (Spreng.) Schult.f.	128	10:a
424	***Cyanotis vivipara*** Dalzell	128	73:h
425	***Cyanthillium cinereum*** (L.) H.Rob.	562	83:b
426	***Cyathocalyx zeylanicus*** Champ. ex Hook.f. & Thomson	67	
427	***Cyathula prostrata*** Blume	419	38:g
428	***Cyclea peltata*** (Lam.) Hook.f. & Thomson	216	130:b
429	***Cymbidium aloifolium*** (L.) Sw.	99	
430	***Cymbopogon citratus*** Stapf.	177	13:g
431	***Cymbopogon flexuosus*** (Nees ex Steud.) Will.Watson.	177	
432	***Cymbopogon martini*** (Roxb.) Will.Watson	178	
433	***Cynanchum annularium*** (Roxb.) Liede & Khanum	473	
434	***Cynodon dactylon*** (L.) Pers.	178	
435	***Cynoglossum zeylanicum*** (Sw. ex Lehm.) Thunb. ex Brand.	480	44:h
436	***Cyperus albescens*** (Steud.) Larridon & Govaerts	153	
437	***Cyperus brevifolius*** (Rottb.) Endl. ex Hassk.	153	
438	***Cyperus compressus*** L.	153	91:a
439	***Cyperus cyperinus*** (Retz.) Valck.Sur.	153	
440	***Cyperus difformis*** L.	154	91:b
441	***Cyperus diffusus*** Vahl.	154	
442	***Cyperus distans*** L.f.	154	
443	***Cyperus dubius*** Rottb.	155	12:d
444	***Cyperus flavescens*** L.	155	12:e
445	***Cyperus flavidus*** Retz.	155	
446	***Cyperus haspan*** L.	156	
447	***Cyperus iria*** L.	156	
448	***Cyperus maderaspatanus*** Willd.	156	
449	***Cyperus malabaricus*** (C.B.Clarke) T.Cooke.	157	12:f
450	***Cyperus mindorensis*** (Steud.) Huygh.	157	12:g
451	***Cyperus neochinensis*** (Tang & F.T.Wang) Bauters.	157	
452	***Cyperus polystachyos*** Rottb.	157	91:c
453	***Cyperus pumilus*** L.	158	

454	***Cyperus puncticulatus*** Vahl.	158	
455	***Cyperus richardii*** Steud.	158	12:h
456	***Cyperus substramineus*** Kük.	159	91:d
457	***Cyperus tenuiculmis*** Boeckeler	159	
458	***Cyperus tenuispica*** Steud.	159	13:a
459	***Cyperus zollingeri*** Steud.	160	
460	***Cyrtococcum longipes*** A.Camus.	179	
461	***Cyrtococcum oxyphyllum*** Stapf.	179	
462	***Cyrtococcum patens*** (L.) A.Camus.	179	
463	***Cyrtococcum trigonum*** A.Camus.	180	
464	***Dactyloctenium aegyptium*** (L.) Willd.	180	13:h
465	***Dalbergia lanceolaria*** L.f.	251	20:a
466	***Dalbergia latifolia*** Roxb.	252	
467	***Dalbergia sissoides*** Graham ex Wight & Arn.	252	
468	***Dalechampia velutina*** Wight	321	
469	***Debregeasia longifolia*** (Burm.f.) Wedd.	286	23:g
470	***Debregeasia wallichiana*** Wedd.	286	121:d
471	***Decalepis salicifolia*** (Bedd. ex Hook.f.) Bruyns	473	61:d
472	***Delonix regia*** (Bojer) Raf.	252	
473	***Dendrobium aphyllum*** C.E.C.Fisch.	100	
474	***Dendrobium aqueum*** Lindl.	100	
475	***Dendrobium barbatulum*** Lindl.	100	
476	***Dendrobium herbaceum*** Lindl.	100	7:h
477	***Dendrobium jerdonianum*** Wight	101	
478	***Dendrobium ovatum*** Kraenzl.	101	65:f
479	***Dendrocalamus strictus*** Nees.	180	
480	***Dendrocnide sinuata*** (Blume) Chew.	287	
481	***Dendrolobium triangulare*** Schindl.	253	
482	***Dendrophthoe falcata*** (L.f.) Ettingsh.	409	37:e
483	***Derris brevipes*** Baker	253	65:g
484	***Derris scandens*** Benth.	253	20:b
485	***Desmos chinensis*** Lour.	67	
486	***Dichanthium annulatum*** Stapf.	181	
487	***Dichanthium caricosum*** (L.) A.Camus	181	
488	***Dichanthium foulkesii*** (Hook.f.) S.K.Jain & Deshp.	181	
489	***Dichrocephala integrifolia*** (L.f.) Kuntze.	563	53:b
490	***Dicliptera cuneata*** Nees	513	48:a
491	***Dicliptera foetida*** Blatt.	513	48:b
492	***Dicliptera paniculata*** (Forssk.) I.Darbysh.	513	88:d
493	***Dictyospermum montanum*** Wight	128	65:h
494	***Digitaria bicornis*** (Lam.) Roem. & Schult.	182	
495	***Digitaria ciliaris*** (Retz.) Koeler.	182	
496	***Digitaria longiflora*** (Retz.) Pers.	183	
497	***Digitaria radicosa*** (J.Presl) Miq.	183	
498	***Digitaria setigera*** Roth.	183	
499	***Dillenia indica*** L.	220	

500	***Dillenia pentagyna*** Roxb.	220	16:f
501	***Dimeria bialata*** C.E.C.Fisch.	184	
502	***Dimeria deccanensis*** Bor.	184	
503	***Dimeria kanjirapallilana*** Jacob.	184	
504	***Dimeria ornithopoda*** Trin.	185	
505	***Dimocarpus longan*** Lour.	185	63:e
506	***Dimorphocalyx glabellus*** var. ***lawianus*** (Hook.f.) Chakrab. & N.P.Balakr.	322	
507	***Dioscorea alata*** L.	88	
508	***Dioscorea bulbifera*** L.	88	6:f
509	***Dioscorea oppositifolia*** L.	88	6:g; 130:c
510	***Dioscorea pentaphylla*** L.	89	
511	***Dioscorea spicata*** Roth.	89	6:h
512	***Diospyros buxifolia*** (Blume) Hiern.	433	
513	***Diospyros candolleana*** Wight	433	
514	***Diospyros ebenum*** J.Koenig	434	40:f
515	***Diospyros montana*** Roxb.	434	
516	***Diplocentrum congestum*** Wight	101	
517	***Diplocentrum recurvum*** Lindl.	102	
518	***Diploclisia glaucescens*** (Blume) Diels.	216	15:g
519	***Diplocyclos palmatus*** (L.) C.Jeffrey	296	24:g; 83:c
520	***Dipterocarpus bourdillonii*** Brandis.	399	66:a
521	***Dipterocarpus indicus*** Bedd.	399	36:b
522	***Dolichos trilobus*** L.	254	20:c
523	***Donella lanceolata*** (Blume) Aubrév.	431	
524	***Dracaena roxburghiana*** (Schult.f.) Byng & Christenh.	119	
525	***Drimia indica*** (Roxb.) Jessop.	120	
526	***Drosera burmanni*** Vahl.	413	
527	***Drosera indica*** L.	413	38:b
528	***Drosera peltata*** Thunb.	413	73:f
529	***Drymaria cordata*** (L.) Willd. ex Schult.	414	38:d
530	***Drymaria villosa*** Cham. & Schltdl.	414	
531	***Drypetes oblongifolia*** (Bedd.) Airy Shaw	312	27:e
532	***Drypetes venusta*** Pax & K.Hoffm.	312	
533	***Drypetes wightii*** Pax & K.Hoffm.	312	
534	***Dumasia villosa*** DC.	254	
535	***Duranta erecta*** L.	532	135:e
536	***Dysoxylum malabaricum*** Bedd. ex C.DC.	379	
537	***Dysphania ambrosioides*** (L.) Mosyakin & Clemants	419	
538	***Ecbolium ligustrinum*** (Vahl) Vollesen	514	
539	***Echinochloa colona*** (L.) Link.	185	
540	***Elaeagnus indica*** Serv.	275	22:d
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542	***Elaeocarpus munroii*** Mast.	307	
543	***Elaeocarpus serratus*** L.	307	26:g
544	***Elaeocarpus tuberculatus*** Roxb.	307	
545	***Elaeocarpus variabilis*** Zmarzty.	308	26:h

546	***Elaeodendron glaucum*** Pers.	301	
547	***Elaeodendron paniculatum*** Wight & Arn.	301	
548	***Elatostema acuminatum*** (Poir.) Brongn.	287	23:h
549	***Elatostema cuneatum*** Wight	287	126:g
550	***Elatostema sessile*** J.R.Forst. & G.Forst.	288	
551	***Eleocharis dulcis*** (Burm.f.) Trin. ex Hensch.	160	
552	***Elephantopus scaber*** L.	563	
553	***Elettaria cardamomum*** (L.) Maton	141	11:d
554	***Eleusine indica*** (L.) Gaertn.	185	
555	***Eleutheranthera ruderalis*** (Sw.) Sch.Bip.	563	
556	***Embelia ribes*** Burm.f.	435	
557	***Emilia ramulosa*** Gamble	564	75:g
558	***Emilia scabra*** DC. ex Wight	564	66:b
559	***Emilia sonchifolia*** (L.) DC.	564	
560	***Ensete superbum*** (Roxb.) Cheesman	134	10:f
561	***Entada rheedei*** Spreng.	254	
562	***Enteropogon dolichostachyus*** (Lag.) Keng.	155	
563	***Epipogium roseum*** Lindl.	103	73:e
564	***Epipremnum pinnatum*** (L.) Engl.	85	
565	***Epiprinus mallotiformis*** (Müll.Arg.) Croizat	322	
566	***Epithema ceylanicum*** Wight	500	46:b
567	***Eragrostiella bifaria*** (Vahl) Bor.	186	
568	***Eragrostis atrovirens*** (Desf.) Trin. ex Steud.	186	
569	***Eragrostis gangetica*** Steud.	187	
570	***Eragrostis japonica*** Trin.	187	
571	***Eragrostis nigra*** Nees ex Steud.	187	14:a
572	***Eragrostis patula*** Steud.	188	
573	***Eragrostis riparia*** Nees.	188	14:b
574	***Eragrostis tenella*** (L.) P.Beauv. ex Roem. & Schult.	188	
575	***Eragrostis unioloides*** Nees ex Steud.	189	14:c
576	***Eragrostis viscosa*** Trin.	189	
577	***Eranthemum capense*** L.	514	101:f-h
578	***Erigeron bonariensis*** L.	565	53:c
579	***Erigeron canadensis*** L.	565	
580	***Erigeron karvinskianus*** DC.	565	135:f
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583	***Eriocaulon nepalense*** var. ***luzulifolium*** (Mart.) Praj. & J.Parn.	149	
584	***Eriocaulon palghatense*** R.Ansari & N.P.Balakr.	149	
585	***Eriocaulon pectinatum*** Ruhland.	149	
586	***Eriocaulon thwaitesii*** Körn.	150	
587	***Eriocaulon truncatum*** Buch.-Ham. ex Mart.	150	
588	***Eriocaulon xeranthemum*** Mart.	150	12:b
589	***Eriochloa procera*** (Retz.) C.E.Hubb.	189	
590	***Eryngium foetidum*** L.	577	54:f
591	***Erythrina stricta*** Roxb.	255	

592	***Erythrina suberosa*** Roxb.	255	
593	***Erythrina variegata*** L.	255	
594	***Erythropalum scandens*** Blume	407	37:c
595	***Eucalyptus globulus*** Labill.	346	
596	***Eucalyptus tereticornis*** Sm.	347	
597	***Euclasta oligantha*** (Hochst. ex Steud.) M.R.Almeida	190	
598	***Eugenia agasthiyamalayana*** Gopalan & Murugan	347	31:d
599	***Eugenia indica*** (Wight) Chithra	347	
600	***Eugenia mabaeoides*** Wight	348	66:c
601	***Eugenia mooniana*** Wight	348	
602	***Eugenia roxburghii*** DC.	348	
603	***Eugenia sp.nov.***	348	110:a-o; 111:a-l
604	***Eugenia uniflora*** L.	349	
605	***Eugenia wynadensis*** Bedd.	349	61:e
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610	***Euphorbia hirta*** L.	323	103:c-d
611	***Euphorbia prostrata*** Aiton	323	
612	***Euphorbia pulcherrima*** Willd. ex Klotzsch.	323	
613	***Euphorbia rothiana*** Spreng.	324	121:e
614	***Euphorbia santapaui*** A.N.Henry	324	
615	***Euphorbia thymifolia*** L.	324	83:d
616	***Euphorbia vajravelui*** Binojk. & N.P.Balakr.	324	62:f
617	***Evolvulus nummularius*** (L.) L.	483	75:h
618	***Exacum lawii*** C.B.Clarke	464	43:e
619	***Exacum sessile*** L.	464	43:f
620	***Exacum tetragonum*** Roxb.	465	
621	***Exallage auricularia*** (L.) Bremek.	443	
622	***Excoecaria oppositifolia*** var. ***crenulata*** (Wight) Chakrab. & M.Gangop.	325	29:a
623	***Fagraea ceilanica*** Thunb.	465	
624	***Falconeria insignis*** Royle	325	29:b
625	***Fibraurea darshanii*** Udayan & K.Ravik.	216	66:d
626	***Ficus amplissima*** Sm.	281	
627	***Ficus arnottiana*** (Miq.) Miq.	281	121:f
628	***Ficus beddomei*** King.	281	
629	***Ficus benghalensis*** L.	282	
630	***Ficus dalhousieae*** Miq.	282	23:b
631	***Ficus elastica*** Roxb. ex Hornem.	282	
632	***Ficus exasperata*** Vahl.	282	23:c
633	***Ficus hispida*** L.f.	383	23:d
634	***Ficus laevis*** Blume	283	
635	***Ficus microcarpa*** L.f.	283	
636	***Ficus nervosa*** Roth.	284	
637	***Ficus racemosa*** L.	284	83:e

638	***Ficus religiosa*** L.	284	
639	***Ficus tsjakela*** Burm.f.	285	23:e
640	***Filicium decipiens*** (Wight & Arn.) Thwaites	366	
641	***Fimbristylis argentea*** Vahl.	160	
642	***Fimbristylis cinnamometorum*** (Vahl) Kunth.	161	
643	***Fimbristylis dichotoma*** (L.) Vahl.	161	
644	***Fimbristylis microcarya*** F.Muell.	161	13:b
645	***Fimbristylis narayanii*** C.E.C.Fisch.	162	13:c
646	***Fimbristylis salbundia*** Kunth.	162	
647	***Fimbristylis sp.nov.***	162	114:a-g; 115:a-g
648	***Fimbristylis tuckeri*** Viji, Pandur. & Deepu.	163	
649	***Flacourtia indica*** (Burm.f.) Merr.	315	
650	***Flacourtia jangomas*** (Lour.) Raeusch.	316	28:c
651	***Flacourtia montana*** J.Graham	316	
652	***Flemingia macrophylla*** (Willd.) Kuntze ex Merr.	256	20:d
653	***Flemingia strobilifera*** (L.) W.T.Aiton	256	20:e
654	***Flemingia wallichii*** Wight & Arn.	256	
655	***Floscopa scandens*** Lour.	129	
656	***Flueggea leucopyrus*** Willd.	336	
657	***Flueggea virosa*** (Roxb. ex Willd.) Royle	336	
658	***Fuirena ciliaris*** (L.) Roxb.	163	
659	***Galinsoga parviflora*** Cav.	566	88:e
660	***Garcinia morella*** (Gaertn.) Desr.	308	27:a
661	***Garcinia talbotii*** Raizada	308	
662	***Gardenia jasminoides*** J.Ellis.	443	
663	***Garnotia arundinacea*** Hook.f.	190	
664	***Garnotia courtallensis*** Thwaites	190	
665	***Garnotia elata*** Janowski	191	
666	***Garnotia tenella*** Janowski	191	
667	***Garuga pinnata*** Roxb.	360	
668	***Geissaspis cristata*** var. ***tenella*** (Benth.) M.R.Almeida	257	66:e
669	***Geissaspis cristata*** Wight & Arn.	257	76:a
670	***Geophila repens*** (L.) I.M.Johnst.	443	83:f
671	***Getonia floribunda*** Roxb.	341	30:h
672	***Girardinia diversifolia*** (Link) Friis.	288	24:a
673	***Givotia moluccana*** (L.) Sreem.	325	
674	***Glinus lotoides*** L.	423	
675	***Glinus oppositifolius*** Aug.DC.	423	39:d
676	***Gliricidia sepium*** (Jacq.) Kunth.	257	
677	***Globba marantina*** L.	141	11:e
678	***Globba sessiliflora*** Sims.	142	66:f
679	***Glochidion zeylanicum*** (Gaertn.) A.Juss.	337	30:d
680	***Gloriosa superba*** L.	90	7:b
681	***Glycosmis nelliyampathiensis*** Jabeena & Maya	371	104:a-l; 105:a-i
682	***Glycosmis pentaphylla*** (Retz.) DC.	372	130:d
683	***Glyphochloa forficulata*** (C.E.C.Fisch.) Clayton	191	76:b

684	***Gmelina arborea*** Roxb. ex Sm.	537	
685	***Gnaphalium polycaulon*** Pers.	566	53:d
686	***Gomphandra tetrandra*** (Wall.) Sleumer	550	51:h
687	***Gomphostemma heyneanum*** Wall.	537	66:g
688	***Gomphrena globosa*** L.	420	
689	***Gonostegia pentandra*** (Roxb.) Miq.	288	
690	***Gouania microcarpa*** DC.	276	22:e
691	***Grevillea robusta*** A.Cunn. ex R.Br.	219	16:e
692	***Grewia abutilifolia*** Vent. ex Juss.	386	
693	***Grewia flavescens*** Juss.	386	121:g
694	***Grewia gamblei*** J.R.Drumm. ex Dunn.	386	121:h
695	***Grewia polygama*** Roxb.	387	127:a
696	***Grewia serrulata*** DC.	387	
697	***Grewia tiliifolia*** Vahl.	387	
698	***Grewia umbellifera*** Bedd.	388	
699	***Griffithella hookeriana*** (Tul.) Warm.	310	27:c
700	***Grona triflora*** (L.) H.Ohashi & K.Ohashi	258	76:c; 100:g-h
701	***Guazuma ulmifolia*** Lam.	388	
702	***Gymnema decaisneanum*** Wight	474	
703	***Gymnema latifolium*** Wall. ex Wight	474	
704	***Gymnema sylvestre*** (Retz.) R.Br. ex Sm.	474	
705	***Gymnosporia heyneana*** (Roth) M.A.Lawson	302	66:h
706	***Gynura pseudochina*** (L.) DC.	566	53:e
707	***Habenaria barnesii*** Summerh.	103	
708	***Habenaria crinifera*** Lindl.	103	8:a
709	***Habenaria digitata*** Lindl.	103	8:b
710	***Habenaria heyneana*** Lindl.	104	
711	***Habenaria longicorniculata*** J.Graham	104	8:c
712	***Habenaria plantaginea*** Lindl.	104	
713	***Habenaria rariflora*** A.Rich.	105	67:a
714	***Hackelochloa granularis*** Kuntze.	192	
715	***Harpullia arborea*** (Blanco) Radlk.	366	33:b
716	***Hedychium coronarium*** J.Koenig	142	79:f
717	***Hedychium spicatum*** Sm.	143	11:f
718	***Hedychium venustum*** Wight	143	67:b
719	***Helichrysum buddlejoides*** DC. ex Wight	567	
720	***Heliconia psittacorum*** L.f.	133	10:e
721	***Heliconia rostrata*** Ruiz & Pav.	134	
722	***Helicteres isora*** L.	134	83:g
723	***Heliotropium indicum*** L.	480	76:d
724	***Heliotropium marifolium*** J.Koenig ex Retz.	481	
725	***Heliotropium rottleri*** Lehm.	481	
726	***Helixanthera intermedia*** Danser	409	73:a
727	***Helixanthera wallichiana*** Danser	410	
728	***Hemidesmus indicus*** (L.) R.Br.	474	44:e
729	***Henckelia fischeri*** (Gamble) A.Weber & B.L.Burtt.	500	46:c

730	***Henckelia humboldtiana*** (Gardner) A.Weber & B.L.Burtt.	501	126:h
731	***Henckelia incana*** Spreng.	501	76:e
732	***Henckelia wightii*** (C.B.Clarke) A.Weber & B.L.Burtt.	501	
733	***Heracleum candolleanum*** Gamble	577	54:g
734	***Heracleum rigens*** Wall.	577	
735	***Heritiera papilio*** Bedd.	388	
736	***Heteropogon contortus*** (L.) P.Beauv. ex Roem. & Schult.	192	14:d
737	***Heteropogon fischerianus*** Bor.	192	
738	***Heterotis rotundifolia*** (Sm.) Jacq.-Fél.	353	
739	***Hevea brasiliensis*** (Willd. ex A.Juss.) Müll.Arg.	326	
740	***Hewittia malabarica*** (L.) Suresh	484	
741	***Hexasepalum teres*** (Walter) J.H.Kirkbr.	444	127:b
742	***Heynea trijuga*** Roxb.	379	34:b
743	***Hibiscus hispidissimus*** Griff.	389	34:h
744	***Hibiscus lobatus*** (Murray) Kuntze	389	98:e-h
745	***Hibiscus lunariifolius*** Willd.	390	35:a
746	***Hibiscus micranthus*** L.f.	390	
747	***Hibiscus rosa-sinensis*** L.	390	
748	***Hibiscus surattensis*** L.	390	83:h
749	***Hiptage benghalensis*** (L.) Kurz.	313	27:g
750	***Holarrhena pubescens*** Wall. & G.Don.	475	84:a
751	***Holigarna arnottiana*** Hook.f.	361	
752	***Holigarna beddomei*** Hook.f.	362	
753	***Holigarna ferruginea*** Marchand	362	
754	***Holigarna grahamii*** Kurz.	362	
755	***Holigarna nigra*** Bourd.	362	
756	***Holmskioldia sanguinea*** Retz.	538	
757	***Holoptelea integrifolia*** (Roxb.) Planch.	278	22:h
758	***Homonoia riparia*** Lour.	326	29:c
759	***Hopea parviflora*** Bedd.	400	
760	***Hopea ponga*** (Dennst.) Mabb.	400	36:c
761	***Hoppea fastigiata*** (Griseb.) C.B.Clarke	465	43:g
762	***Hoya pauciflora*** Wight	475	
763	***Huberantha cerasoides*** (Roxb.) Chaowasku	67	
764	***Hultholia mimosoides*** (Lam.) Gagnon & G.P.Lewis	230	18:b
765	***Hunteria zeylanica*** Gardner ex Thwaites	475	44:f
766	***Hydnocarpus alpinus*** Wight	313	27:h
767	***Hydnocarpus pentandrus*** (Buch.-Ham.) Oken.	314	62:g
768	***Hydrocotyle conferta*** Wight	575	122:a
769	***Hydrocotyle javanica*** Thunb.	575	54:d
770	***Hygrophila auriculata*** (Schumach.) Heine	514	
771	***Hygrophila ringens*** (L.) R.Br. ex Steud.	515	48:c
772	***Hymenodictyon obovatum*** Wall.	444	67:c
773	***Hypericum mysurense*** B.Heyne ex Wight & Arn.	311	27:d; 79:g
774	***Hypoestes phyllostachya*** Baker	515	
775	***Hypoxis aurea*** Lour.	115	8:h

776	***Hyptis capitata*** Jacq.	538	
777	***Ichnocarpus frutescens*** (L.) W.T.Aiton	476	
778	***Impatiens balsamina*** L.	425	93:a
779	***Impatiens dasysperma*** Wight	426	40:a
780	***Impatiens diversifolia*** Wall. ex Wight & Arn.	426	67:d
781	***Impatiens flaccida*** Arn.	426	93:b
782	***Impatiens gardneriana*** Wight	427	
783	***Impatiens maculata*** Wight	427	40:b
784	***Impatiens minae*** Ratheesh, Anil Kumar & Sivad.	427	93:c
785	***Impatiens minor*** (DC.) Bennet	427	93:d
786	***Impatiens oppositifolia*** L.	428	
787	***Impatiens parasitica*** Bedd.	428	74:a
788	***Impatiens sasidharanii*** K.M.P.Kumar, Omalsree, Hareesh & V.B.Sreek.	428	101:a-e
789	***Impatiens sasidharanii*** var. ***hirsuta*** K.M. P.Kumar, Omalsree, Hareesh & V.B.Sreek.	429	
790	***Impatiens scapiflora*** Wight & Arn.	429	76:f
791	***Impatiens trichocarpa*** Hook.f.	429	
792	***Impatiens viscosa*** Bedd.	430	40:c; 76:g
793	***Indianthus virgatus*** (Roxb.) Suksathan & Borchs.	135	
794	***Indigofera astragalina*** DC.	258	
795	***Indigofera hendecaphylla*** Jacq.	259	20:f
796	***Indigofera pedicellata*** Wight & Arn.	259	
797	***Indigofera prostrata*** Willd.	259	76:h
798	***Indigofera trita*** var. ***marginulata*** (Grah. ex Wight & Arn.) Sanjappa	260	122:b
799	***Indigofera wightii*** Graham ex Wight & Arn.	260	
800	***Indobanalia thyrsiflora*** (Moq.) A.N.Henry & B.Roy	420	67:e
801	***Indotristicha ramosissima*** (Wight) P.Royen.	310	
802	***Iphigenia indica*** (L.) Kunth.	90	7:c
803	***Ipomoea alba*** L.	484	45:c
804	***Ipomoea aquatica*** Forssk.	485	
805	***Ipomoea barlerioides*** (Choisy) C.B.Clarke	485	67:f
806	***Ipomoea batatas*** (L.) Lam.	485	
807	***Ipomoea cairica*** (L.) Sweet	485	
808	***Ipomoea capitellata*** Choisy	486	45:d
809	***Ipomoea carnea*** subsp. ***fistulosa*** (Mart. ex Choisy) D.F.Austin	486	122:c
810	***Ipomoea eriocarpa*** R.Br.	486	
811	***Ipomoea hederifolia*** L.	486	88:f
812	***Ipomoea indica*** (Burm.) Merr.	487	
813	***Ipomoea obscura*** (L.) Ker Gawl.	487	92:e
814	***Ipomoea pes-tigridis*** L.	487	92:f
815	***Ipomoea purpurea*** (L.) Roth.	488	92:g
816	***Ipomoea sagittifolia*** Burm.f.	488	92:h
817	***Ipomoea staphylina*** Roem. & Schult.	488	
818	***Ipomoea triloba*** L.	488	
819	***Ipomoea wightii*** Choisy	489	

820	***Isachne fischeri*** Bor.	193	
821	***Isachne globosa*** (Thunb.) Kuntze.	193	
822	***Isachne gracilis*** C.E.Hubb.	194	
823	***Isachne setosa*** C.E.C.Fisch.	194	14:e
824	***Isachne walkeri*** Arn. ex Steud.	194	
825	***Ischaemum commutatum*** Hack.	195	14:f
826	***Ischaemum molle*** Hook.f.	195	
827	***Ischaemum rangacharianum*** C.E.C.Fisch.	195	
828	***Ischaemum sp.nov.***	195	108:a-h; 109:a-t
829	***Ischaemum timorense*** Kunth.	196	
830	***Ischaemum zeylanicola*** Bor.	197	
831	***Isodon lophanthoides*** (Buch.-Ham. ex D.Don) H.Hara.	538	67:g
832	***Isodon nigrescens*** (Benth.) H.Hara.	539	
833	***Isodon nilgherricus*** (Benth.) H.Hara.	539	122:d
834	***Isodon wightii*** (Benth.) H.Hara.	539	
835	***Isonandra lanceolata*** Wight	431	40:e
836	***Ixora brachiata*** Roxb.	444	79:h
837	***Ixora coccinea*** L.	445	
838	***Ixora cuneifolia*** Roxb.	445	41:g
839	***Ixora elongata*** B.Heyne & G.Don.	445	41:h
840	***Ixora nigricans*** R.Br. ex Wall.	445	80:a
841	***Ixora pavetta*** Andrews	446	
842	***Ixora ravikumarii*** Kottaim.	446	67:h
843	***Jacaranda mimosifolia*** D.Don.	527	62:h
844	***Jansenella griffithiana*** (Müll.Hal.) Bor.	197	14:g
845	***Jasminum angustifolium*** Willd.	496	
846	***Jasminum calophyllum*** Wall. & G.Don.	496	127:c
847	***Jasminum coarctatum*** Roxb.	497	45:h
848	***Jasminum cordifolium*** Wall. & G.Don.	497	
849	***Jasminum flexile*** Vahl.	497	80:b
850	***Jasminum malabaricum*** Wight	498	
851	***Jasminum multiflorum*** Andrews	498	
852	***Jatropha curcas*** L.	326	
853	***Jatropha gossypiifolia*** L.	326	29:d
854	***Justicia adhatoda*** L.	516	
855	***Justicia gendarussa*** Burm.f.	516	
856	***Justicia santapaui*** Bennet	516	68:a
857	***Justicia simplex*** D.Don.	516	48:d
858	***Justicia wynaadensis*** B.Heyne	517	
859	***Kalanchoe blossfeldiana*** Poelln.	220	135:g
860	***Kalanchoe olivacea*** Dalzell	221	16:g
861	***Kalanchoe pinnata*** (Lam.) Pers.	221	16:h
862	***Kamettia caryophyllata*** (Roxb.) Nicolson & Suresh	476	
863	***Kigelia africana*** (Lam.) Benth.	527	49:c
864	***Knema attenuata*** (Wall. ex Hook.f. & Thomson) Warb.	63	4:h; 68:b
865	***Knoxia sumatrensis*** (Retz.) DC.	446	42:a

866	***Knoxia wightiana*** Wall. & G.Don.	447	
867	***Kunstleria keralensis*** C.N.Mohanan & N.C.Nair	260	
868	***Lablab purpureus*** (L.) Sweet.	260	
869	***Lagerstroemia microcarpa*** Wight	344	
870	***Laggera alata*** (DC.) Sch.Bip. ex Oliv.	567	122:e
871	***Lannea coromandelica*** (Houtt.) Merr.	361	32:g
872	***Lantana camara*** L.	533	88:g
873	***Lantana indica*** Roxb.	533	49:f
874	***Laportea bulbifera*** (Siebold & Zucc.) Wedd.	289	
875	***Laportea interrupta*** (L.) Chew.	289	24:b
876	***Lasianthus acuminatus*** Wight	447	
877	***Lasianthus jackianus*** Wight	447	
878	***Lasianthus rostratus*** Wight	448	
879	***Launaea acaulis*** (Roxb.) Babc. ex Kerr.	567	
880	***Lawsonia inermis*** L.	344	31:b
881	***Lecanthus peduncularis*** (Royle) Wedd.	289	77:a
882	***Leea indica*** (Burm.f.) Merr.	224	17:e
883	***Leonotis nepetifolia*** (L.) R.Br.	540	88:h
884	***Lepidagathis fasciculata*** Nees	517	
885	***Lepidagathis incurva*** Buch.-Ham. ex D.Don.	517	48:e
886	***Lepidium didymum*** L.	406	37:b
887	***Lepidium sativum*** L.	406	
888	***Lepisanthes erecta*** (Thwaites) Leenh.	366	
889	***Lepisanthes tetraphylla*** Radlk.	367	
890	***Leptochloa chinensis*** Nees.	197	
891	***Leptonychia caudata*** Burret	391	
892	***Leucaena leucocephala*** (Lam.) de Wit.	230	
893	***Leucas aspera*** Link.	540	84:b
894	***Leucas chinensis*** (Retz.) Sm.	540	50:b
895	***Leucas ciliata*** Benth.	541	50:c
896	***Leucas lavandulifolia*** Sm.	541	84:c
897	***Leucas sahyadriensis*** Sunojk.	541	
898	***Leucas vestita*** Benth.	541	68:c
899	***Ligustrum robustum*** subsp. ***walkeri*** (Decne.) P.S.Green	498	46:a
900	***Ligustrum robustum*** subsp. ***perrottetii*** (A.DC.) de Juana	499	
901	***Lindernia hyssopioides*** Haines	505	47:a
902	***Lindernia procumbens*** (Krock.) Philcox	505	
903	***Lindernia rotundifolia*** (L.) Alston	505	122:f
904	***Lindernia tamilnadensis*** M.G.Prasad & Sunojk.	506	
905	***Linum mysurense*** B.Heyne ex Benth.	331	29:f
906	***Liparis wightiana*** Thwaites.	105	
907	***Litsea bourdillonii*** Gamble	76	63:f
908	***Litsea coriacea*** (B.Heyne ex Nees) Hook.f.	76	
909	***Litsea floribunda*** Gamble	76	63:g
910	***Litsea glabrata*** (Wall.) Hook.f.	77	
911	***Litsea laevigata*** Gamble	77	63:h

912	***Litsea mysorensis*** Gamble	77	
913	***Litsea oleoides*** Hook.f.	78	
914	***Litsea stocksii*** (Meisn.) Hook.f.	78	
915	***Litsea wightiana*** (Nees) Wall. ex Hook.f.	78	5:g
916	***Lobelia alsinoides*** Lam.	551	52:a
917	***Lobelia heyniana*** Roem. & Schult.	551	122:g
918	***Lobelia nicotianifolia*** Roth.	552	84:d
919	***Lobelia zeylanica*** L.	552	52:b
920	***Loeseneriella bourdillonii*** (Gamble) D.C.S.Raju	302	
921	***Ludwigia hyssopifolia*** (G.Don) Exell.	345	
922	***Ludwigia perennis*** L.	345	89:a
923	***Ludwigia peruviana*** (L.) H.Hara	346	31:c
924	***Luisia tenuifolia*** Blume	105	
925	***Luisia tristis*** Hook.f.	105	
926	***Lysimachia ovalis*** (Ruiz & Pav.) U.Manns & Anderb.	435	40:g
927	***Macaranga peltata*** Müll.Arg.	327	84:e
928	***Machilus glaucescens*** (Nees) Wight	79	5:h
929	***Madhuca longifolia*** J.F.Macbr.	431	
930	***Maesa indica*** (Roxb.) Sweet	436	40:h
931	***Magnolia champaca*** (L.) Baill. ex Pierre.	65	5:a
932	***Magnolia nilagirica*** (Zenker) Figlar.	65	63:a
933	***Mallotus atrovirens*** Müll.Arg.	327	68:d
934	***Mallotus beddomei*** Hook.f.	328	
935	***Mallotus nudiflorus*** (L.) Kulju & Welzen	328	
936	***Mallotus philippensis*** (Lam.) Müll.Arg.	328	84:f
937	***Mallotus resinosus*** Merr.	329	
938	***Mallotus tetracoccus*** Kurz.	329	29:e
939	***Malvaviscus penduliflorus*** DC.	391	135:h
940	***Mangifera indica*** L.	363	32:h
941	***Manihot carthagenensis*** (Jacq.) Müll.Arg.	329	
942	***Mappia nimmoniana*** (J.Graham) Byng & Stull.	438	41:c
943	***Maranta arundinacea*** L.	136	10:h
944	***Margaritaria indica*** (Dalzell) Airy Shaw	337	
945	***Mastixia arborea*** C.B.Clarke	424	39:g
946	***Mecardonia procumbens*** (Mill.) Small.	503	89:b
947	***Medinilla beddomei*** C.B.Clarke	353	74:b
948	***Megathyrsus maximus*** (Jacq.) B.K.Simon & S.W.L.Jacobs	198	
949	***Meiogyne pannosa*** (Dalzell) J.Sinclair	68	
950	***Meistera acuminata*** (Thwaites) Škorničk. & M.F.Newman	143	
951	***Meistera cannicarpa*** (Wight) Škorničk. & M.F.Newman	144	68:e
952	***Meistera masticatorium*** (Thwaites) Škorničk. & M.F.Newman	144	
953	***Meistera sahyadrica*** (V.P.Thomas & M.Sabu) Škorničk. & M.F.Newman	144	
954	***Melaleuca citrina*** (Curtis) Dum.Cours.	349	
955	***Melampodium divaricatum*** DC.	568	
956	***Melastoma malabathricum*** L.	354	31:h

957	***Melicope lunu-ankenda*** (Gaertn.) T.G.Hartley	372	
958	***Melinis repens*** (Willd.) Zizka.	198	90:a
959	***Meliosma simplicifolia*** Walp.	219	16:d
960	***Melochia corchorifolia*** L.	391	122:h
961	***Memecylon angustifolium*** Wight	354	
962	***Memecylon bremeri*** M.B.Viswan.	354	
963	***Memecylon heyneanum*** Benth. ex Wight & Arn.	355	68:f
964	***Memecylon randerianum*** S.M.Almeida & M.R.Almeida	355	32:a
965	***Memecylon talbotianum*** D.Brandis	355	127:d
966	***Memecylon umbellatum*** Burm.f.	355	32:b
967	***Memecylon wallichii*** Ridl.	356	63:b
968	***Mentha arvensis*** L.	542	
969	***Mesosphaerum suaveolens*** (L.) Kuntze.	542	89:c
970	***Mesua ferrea*** L.	309	27:b
971	***Mesua ferrea*** var. ***coromandeliana*** (Wight) N.P.Singh	309	
972	***Mesua thwaitesii*** Planch. & Triana	310	
973	***Mezoneuron cucullatum*** (Roxb.) Wight & Arn.	231	
974	***Microcos heterotricha*** Burret	392	
975	***Microcos paniculata*** L.	392	
976	***Microstachys chamaelea*** (L.) Müll.Arg.	391	
977	***Microstegium sp.nov.***	198	116:a-k; 117:a-j
978	***Mikania micrantha*** Kunth.	568	89:d
979	***Mikania scandens*** (L.) Willd.	568	
980	***Miliusa indica*** Lesch. ex A.DC.	68	5:c
981	***Miliusa tomentosa*** (Roxb.) Finet & Gagnep.	68	5:d
983	***Millettia rubiginosa*** Wight & Arn.	261	
984	***Mimosa diplotricha*** C.Wright	231	18:c
985	***Mimosa pudica*** L.	231	89:e
986	***Mimusops elengi*** L.	432	
987	***Miquelia dentata*** Bedd.	438	
988	***Mirabilis jalapa*** L.	423	
989	***Mitracarpus hirtus*** DC.	448	
990	***Mitragyna parvifolia*** Korth.	448	42:b
991	***Momordica charantia*** L.	296	24:h
992	***Momordica dioica*** Roxb. ex Willd.	296	130:e
993	***Monoon coffeoides*** (Thwaites ex Hook.f. & Thomson) B.Xue & R.M.K.Saunders	69	
994	***Monoon fragrans*** (Dalzell) B.Xue & R.M.K.Saunders	69	68:g
995	***Morinda coreia*** Buch.-Ham.	449	84:g
996	***Moringa pterygosperma*** Gaertn.	401	36:d
997	***Mucuna bracteata*** DC. ex Kurz.	261	
998	***Munronia pinnata*** (Wall.) W.Theob.	379	34:c
999	***Muntingia calabura*** L.	381	34:d
1000	***Murdannia crocea*** subsp. ***ochracea*** (Dalzell) Faden	129	94:e; 127:e
1001	***Murdannia dimorpha*** G.Brückn.	130	10:b
1002	***Murdannia esculenta*** (Wall. ex C.B.Clarke) Abeyw.	130	
1003	***Murdannia gigantea*** (Vahl) G.Brückn.	130	

1004	***Murdannia japonica*** (Thunb.) Faden.	131	94:f
1005	***Murdannia pauciflora*** G.Brückn.	131	10:c
1006	***Murdannia semiteres*** (Dalzell) Santapau	131	77:b; 94:g
1007	***Murdannia simplex*** (Vahl) Brenan	132	
1008	***Murdannia spirata*** G.Brückn.	132	
1009	***Murdannia versicolor*** G.Brückn.	132	94:h
1010	***Murdannia zeylanica*** G.Brückn.	133	
1011	***Murraya koenigii*** (L.) Spreng.	373	
1012	***Murraya paniculata*** (L.) Jack.	373	
1013	***Musa × paradisiaca*** L.	134	
1014	***Mussaenda frondosa*** L.	449	42:c
1015	***Mycetia acuminata*** Kuntze	449	68:h
1016	***Myriophyllum oliganthum*** (Wight & Arn.) F.Muell.	221	17:a
1017	***Myristica beddomei*** King.	64	
1018	***Myristica fragrans*** Houtt.	64	
1019	***Myristica malabarica*** Lam.	65	
1020	***Myxopyrum smilacifolium*** Blume	499	
1021	***Naregamia alata*** Wight & Arn.	380	69:a
1022	***Naringi crenulata*** (Roxb.) Nicolson	373	
1023	***Neanotis decipiens*** (Hook.f.) W.H.Lewis	450	77:c
1024	***Neanotis indica*** (DC.) W.H.Lewis	450	123:a
1025	***Neanotis monosperma*** (Wall. ex Wight & Arn.) W.H.Lewis	450	42:d
1026	***Neanotis rheedei*** (Wall. ex Wight & Arn.) W.H.Lewis	451	77:d
1027	***Neanotis tubulosa*** (G.Don) Mabb.	451	42:e
1028	***Neolamarckia cadamba*** (Roxb.) Bosser	451	
1029	***Neolitsea cassia*** (L.) Kosterm.	79	
1030	***Neolitsea scrobiculata*** Gamble	79	69:b
1031	***Neonotonia wightii*** (Arn.) J.A.Lackey.	261	20:g
1032	***Nerium oleander*** L.	476	
1033	***Neurocalyx calycinus*** B.L.Rob.	452	
1034	***Nicandra physalodes*** (L.) Gaertn.	491	
1035	***Nicoteba betonica*** Lindau	518	
1036	***Nostolachma crassifolia*** (Gamble) Deb & J.Lahiri	452	
1037	***Nothopegia colebrookiana*** (Wight) Blume	363	
1038	***Nymphaea nouchali*** Burm.f.	87	
1039	***Nymphaea rubra*** Roxb. ex Salisb.	87	4:a
1040	***Oberonia anamalayana*** J.Joseph	106	
1041	***Oberonia bicornis*** Lindl.	106	
1042	***Oberonia brachyphylla*** Blatt. & McCann	106	
1043	***Oberonia brunoniana*** Wight	107	69:c
1044	***Oberonia chandrasekharanii*** V.J.Nair, V.S.Ramach. & R.Ansari	107	74:c
1045	***Oberonia mucronata*** (D.Don) Ormerod & Seidenf.	107	
1046	***Oberonia verticillata*** Wight	108	8:d
1047	***Ochlandra travancorica*** Gamble	199	
1048	***Ocimum gratissimum*** L.	542	

1049	***Ocimum tenuiflorum*** L.	543	50:d
1050	***Olax imbricata*** Roxb.	407	
1051	***Oldenlandia corymbosa*** L.	452	42:f
1052	***Oldenlandia herbacea*** (L.) Roxb.	453	42:g
1053	***Oldenlandia vasudevanii*** M.Soumya & Maya	453	
1054	***Olea dioica*** Roxb.	499	69:d
1055	***Ophiopogon intermedius*** D.Don.	120	9:d
1056	***Ophiorrhiza mungos*** L.	453	84:h
1057	***Ophiorrhiza pectinata*** Arn.	453	
1058	***Ophiorrhiza rugosa*** var. ***prostrata*** (D.Don) Deb & Mondal	454	42:h
1059	***Ophiorrhiza trichocarpos*** Blume	454	
1060	***Oplismenus burmanni*** (Retz.) P.Beauv.	199	14:h
1061	***Oplismenus compositus*** P.Beauv.	200	15:a
1062	***Oreocnide integrifolia*** (Gaudich.) Miq.	290	24:c
1063	***Ormosia travancorica*** Bedd.	262	69:e
1064	***Orophea erythrocarpa*** Bedd.	70	
1065	***Orophea uniflora*** Hook.f. & Thomson	70	
1066	***Oroxylum indicum*** (L.) Benth. ex Kurz.	527	
1067	***Orthosiphon thymiflorus*** (Roth) Sleesen	543	50:e
1068	***Oryza meyeriana*** Baill.	200	
1069	***Oryza rufipogon*** Griff.	200	
1070	***Osbeckia aspera*** Blume	356	32:c
1071	***Osbeckia brachystemon*** Naudin.	357	
1072	***Osbeckia gracilis*** Bedd.	357	69:f
1073	***Osbeckia muralis*** Naudin.	357	123:b
1074	***Osbeckia travancorica*** Bedd. ex Gamble	358	69:g
1075	***Osbeckia virgata*** D.Don ex Wight & Arn.	358	32:d
1076	***Osbeckia wightiana*** Benth.	358	80:c
1077	***Otonephelium stipulaceum*** Radlk.	367	
1078	***Ottochloa nodosa*** (Kunth) Dandy.	200	
1079	***Ouret lanata*** (L.) Kuntze.	420	85:a
1080	***Oxalis corniculata*** L.	306	89:f
1081	***Oxalis debilis*** Kunth.	306	26:e
1082	***Oxalis latifolia*** Kunth.	306	26:f
1083	***Oxyceros rugulosus*** (Thwaites) Tirveng.	454	
1084	***Pachystoma pubescens*** Blume	108	103:e-f
1085	***Pajanelia longifolia*** (Willd.) K.Schum.	528	
1086	***Palaquium ellipticum*** (Dalzell) Baill.	432	
1087	***Palaquium ravii*** Sasidh. & Vink.	432	
1088	***Pancratium triflorum*** Roxb.	116	9:a
1089	***Pandanus furcatus*** Roxb.	89	7:a
1090	***Panicum brevifolium*** L.	201	
1091	***Panicum curviflorum*** Hornem.	201	
1092	***Panicum gardneri*** Thwaites	202	
1093	***Panicum notatum*** Retz.	202	15:b
1094	***Panicum paludosum*** Roxb.	202	

1095	***Panicum repens*** L.	202	
1096	***Papilionanthe subulata*** (J.Koenig) Garay	108	
1097	***Paracroton integrifolius*** (Airy Shaw) N.P.Balakr. & Chakrab.	330	
1098	***Paracroton pendulus*** subsp. ***zeylanicus*** (Thwaites) N.P.Balakr. & Chakrab.	330	
1099	***Paramignya monophylla*** Wight	374	
1100	***Parasopubia delphiniifolia*** (L.) H.-P.Hofm. & Eb.Fisch.	549	72:g; 103:a-b
1101	***Parthenium hysterophorus*** L.	568	89:g
1102	***Paspalum canarae*** (Steud.) Veldkamp.	203	
1103	***Paspalum conjugatum*** P.J.Bergius.	203	
1104	***Passiflora foetida*** L.	314	28:a
1105	***Passiflora vitifolia*** Kunth.	314	
1106	***Pavetta indica*** L.	455	
1107	***Pavetta zeylanica*** Gamble	455	43:a
1108	***Pecteilis susannae*** (L.) Raf.	109	80:d
1109	***Pedalium murex*** L.	508	47:e
1110	***Pellionia heyneana*** Wedd.	290	
1111	***Pentas lanceolata*** (Forssk.) Deflers	455	
1112	***Peperomia blanda*** (Jacq.) Kunth.	58	69:h
1113	***Peperomia heyneana*** Miq.	58	
1114	***Peperomia pellucida*** (L.) Kunth.	59	
1115	***Peperomia portulacoides*** (Lam.) A.Dietr.	59	4:b
1116	***Peperomia tetraphylla*** Hook. & Arn.	59	
1117	***Pergularia daemia*** (Forssk.) Chiov.	477	
1118	***Perotis indica*** (L.) Kuntze.	204	
1119	***Persicaria barbata*** (L.) H.Hara.	412	
1120	***Persicaria chinensis*** (L.) H.Gross.	412	37:h
1121	***Persicaria glabra*** (Willd.) M.Gómez.	412	38:a
1122	***Peucedanum pradeepianum*** K.M.P.Kumar, Hareesh & Balach.	578	77:e
1123	***Peucedanum sp.nov.***	578	54:h; 112:a-m; 113:a-l
1124	***Phaulopsis imbricata*** Sweet	518	48:f
1125	***Phoebe lanceolata*** (Nees) Nees.	80	6:a
1126	***Phoebe wightii*** Meisn.	80	
1127	***Phoenix loureiroi*** Kunth.	123	9:e
1128	***Pholidota imbricata*** Hook.	109	
1129	***Phyllanthus amarus*** Schumach. & Thonn.	338	
1130	***Phyllanthus assamicus*** Müll.Arg.	338	
1131	***Phyllanthus bourdillonii*** (Gamble) Chakrab. & N.P.Balakr.	338	63:c
1132	***Phyllanthus candolleanus*** (Wight & Arn.) Chakrab. & N.P.Balakr.	338	30:e
1133	***Phyllanthus emblica*** L.	339	
1134	***Phyllanthus gardnerianus*** Baill. ex Müll.Arg.	339	
1135	***Phyllanthus hohenackeri*** Müll.Arg.	339	123:c
1136	***Phyllanthus reticulatus*** Poir.	340	

1137	***Phyllanthus rheedei*** Wight	340	30:f
1138	***Phyllanthus velutinus*** Müll.Arg.	340	
1139	***Phyllanthus virgatus*** G.Forst.	341	85:b
1140	***Phyllocephalum courtallense*** (Wight) Narayana.	569	70:a
1141	***Phyllocephalum indicum*** (Less.) K.Kirkman	569	
1142	***Phyllocephalum scabridum*** (DC.) K.Kirkman	569	77:f
1143	***Physalis peruviana*** L.	491	
1144	***Pilea kingii*** C.E.C.Fisch.	290	70:b
1145	***Pilea melastomoides*** (Poir.) Wedd.	291	24:d
1146	***Pilea microphylla*** (L.) Liebm.	291	89:h
1147	***Piliostigma malabaricum*** Benth.	226	17:g
1148	***Pimpinella heyneana*** (DC.) Benth.	578	
1149	***Pimpinella leschenaultii*** DC.	579	
1150	***Pinalia mysorensis*** Kuntze.	109	
1151	***Piper argyrophyllum*** Miq.	60	4:c
1152	***Piper longum*** L.	60	130:f
1153	***Piper nigrum*** L.	61	
1154	***Piper retrofractum*** Vahl.	61	4:d
1155	***Piper umbellatum*** L.	61	4:e
1156	***Piper wightii*** Miq.	62	
1157	***Pithecellobium dulce*** (Roxb.) Benth.	232	
1158	***Pittosporum neelgherrense*** Wight & Arn.	574	54:b
1159	***Pittosporum tetraspermum*** Wight & Arn.	574	54:c
1160	***Platostoma hispidum*** (L.) A.J.Paton	543	50:f
1161	***Plumbago zeylanica*** L.	411	37:g
1162	***Plumeria rubra*** L.	477	
1163	***Pogonatherum crinitum*** Kunth.	204	
1164	***Pogostemon benghalensis*** Kuntze.	544	50:g
1165	***Pogostemon mollis*** Benth.	544	70:c
1166	***Pogostemon paniculatus*** Benth.	544	
1167	***Pogostemon pubescens*** Benth.	545	50:h
1168	***Pogostemon purpurascens*** Dalzell	545	51:a
1169	***Polhillides velutina*** (Willd.) H.Ohashi & K.Ohashi	262	
1170	***Polyalthia longifolia*** (Sonn.) Thwaites	70	
1171	***Polycarpon tetraphyllum*** (L.) L.	415	
1172	***Polygala arvensis*** Willd.	272	
1173	***Polygala chinensis*** L.	272	123:d
1174	***Polygala persicariifolia*** DC.	272	22:a
1175	***Polygala rosmarinifolia*** Wight & Arn.	273	77:g
1176	***Polypleurum wallichii*** (R.Br. ex Griff.) Warm.	311	
1177	***Polystachya concreta*** (Jacq.) Garay & H.R.Sweet	110	
1178	***Polytrias indica*** (Houtt.) Veldkamp.	204	
1179	***Porpax braccata*** (Lindl.) Schuit.	110	74:d
1180	***Porpax filiformis*** (Wight) Schuit.	110	
1181	***Portulaca grandiflora*** Hook.	424	39:f
1182	***Pothos scandens*** L.	85	

1183	***Pouzolzia auriculata*** Wight	291	24:e
1184	***Pouzolzia caudata*** Benn.	292	70:d
1185	***Pouzolzia cymosa*** Wight	292	
1186	***Pouzolzia scabra*** Wight	292	
1187	***Pouzolzia wightii*** Benn.	293	77:h
1188	***Pouzolzia zeylanica*** (L.) Benn.	293	85:c
1189	***Premna paucinervis*** Gamble	545	51:b
1190	***Premna tomentosa*** Willd.	546	
1191	***Pristimera arnottiana*** (Wight) R.H.Archer	303	
1192	***Prunus ceylanica*** Miq.	273	62:a
1193	***Pseudarthria viscida*** (L.) Wight & Arn.	263	20:h
1194	***Pseudechinolaena polystachya*** (Kunth) Stapf.	205	15:c
1195	***Pseudopogonatherum trispicatum*** (Schult.) Ohwi.	205	
1196	***Pseudoxytenanthera bourdillonii*** (Gamble) H.B.Naithani.	205	
1197	***Psidium guajava*** L.	350	
1198	***Psychotria anamallayana*** Bedd.	456	
1199	***Psychotria dalzellii*** Hook.f.	456	
1200	***Psychotria flavida*** Talbot	456	127:f
1201	***Psychotria globicephala*** Gamble	456	
1202	***Psychotria macrocarpa*** Hook.f.	457	
1203	***Psychotria nervosa*** Sw.	457	
1204	***Psychotria nilgiriensis*** Deb & M.Gangop.	457	
1205	***Psychotria nudiflora*** Wight & Arn.	458	
1206	***Psydrax umbellatus*** (Wight) Bridson	458	
1207	***Pterocarpus marsupium*** Roxb.	263	
1208	***Pterospermum diversifolium*** Blume	392	
1209	***Pterospermum rubiginosum*** B.Heyne ex G.Don.	392	
1210	***Pterygota thwaitesii*** (Mast.) Alston	393	
1211	***Pupalia lappacea*** (L.) Juss.	420	38:h
1212	***Pycnospora lutescens*** Schindl.	263	78:a
1213	***Pyrostegia venusta*** Miers.	528	136:a
1214	***Radermachera xylocarpa*** K.Schum.	528	
1215	***Rauvolfia serpentina*** Benth. ex Kurz.	477	130:g
1216	***Rauvolfia tetraphylla*** L.	478	85:d
1217	***Rauvolfia verticillata*** (Lour.) Baill.	478	123:e
1218	***Reinwardtiodendron anamalaiense*** (Bedd.) Mabb.	380	85:e
1219	***Remusatia vivipara*** (Roxb.) Schott.	86	78:b
1220	***Rhinacanthus nasutus*** (L.) Kurz.	518	85:f
1221	***Rhopalephora scaberrima*** (Blume) Faden	133	10:d
1222	***Rhynchoglossum notonianum*** (Wall.) B.L.Burtt.	502	46:d; 103:g-h
1223	***Rhynchosia hirta*** (Andrews) Meikle & Verdc.	264	21:a
1224	***Rhynchosia rufescens*** (Willd.) DC.	264	
1225	***Rhynchostylis retusa*** (L.) Blume	111	
1226	***Richardia scabra*** L.	458	96:a-d
1227	***Ricinus communis*** L.	331	
1228	***Rivina humilis*** L.	421	39:b

1229	***Rorippa indica*** (L.) Hiern.	406	
1230	***Rosa damascena*** Mill.	274	
1231	***Rosa multiflora*** Thunb.	274	
1232	***Rostellularia diffusa*** (Nees) Nees.	519	48:g
1233	***Rostellularia diffusa*** var. ***prostrata*** (Roxb. ex C.B.Clarke) J.L.Ellis	519	
1234	***Rostellularia neesii*** (Ramamoorthy) A.K.Mukh.	519	
1235	***Rostellularia procumbens*** (L.) Nees.	520	123:f
1236	***Rotala malampuzhensis*** R.V.Nair ex C.D.K.Cook.	345	78:c
1237	***Rotala mexicana*** Cham. & Schltdl.	345	
1238	***Rotheca serrata*** (L.) Steane & Mabb.	546	51:c; 80:e
1239	***Rottboellia cochinchinensis*** (Lour.) Clayton	206	
1240	***Rourea minor*** (Gaertn.) Alston	304	
1241	***Rubia cordifolia*** L.	458	
1242	***Rubus fairholmianus*** Gardner	274	22:b
1243	***Rubus niveus*** Thunb.	275	22:c
1244	***Rubus racemosus*** Roxb.	275	
1245	***Ruellia prostrata*** Poir.	520	70:e
1246	***Rungia pectinata*** Nees.	520	100:c-d
1247	***Rungia wightiana*** Nees.	521	
1248	***Saccharum spontaneum*** L.	206	85:g
1249	***Sacciolepis indica*** (L.) Chase.	206	
1250	***Sageraea laurina*** Dalzell	71	
1251	***Salvia splendens*** Sellow ex Nees.	546	136:b
1252	***Samanea saman*** (Jacq.) Merr.	232	
1253	***Sambucus canadensis*** L.	573	123:g
1254	***Santalum album*** L.	408	
1255	***Sapindus trifoliatus*** L.	367	33:c
1256	***Saprosma glomerata*** Bedd.	459	43:b
1257	***Saraca asoca*** (Roxb.) W.J.de Wilde.	226	85:h
1258	***Sarcandra glabra*** subsp. ***brachystachys*** (Blume) Verdc.	81	6:b
1259	***Sarcostigma kleinii*** Wight & Arn.	439	
1260	***Satyrium nepalense*** D.Don.	111	8:e
1261	***Schefflera venulosa*** (Wight & Arn.) Harms	575	
1262	***Schefflera wallichiana*** (Wight & Arn.) Harms	576	54:e
1263	***Schleichera oleosa*** (Lour.) Oken.	367	
1264	***Schoenoplectiella mucronata*** (L.) J.Jung & H.K.Choi.	163	13:d
1265	***Schoenorchis smeeana*** (Rchb.f.) Jalal, Jayanthi & Schuit.	111	
1266	***Scleria lithosperma*** (L.) Sw.	164	
1267	***Scleria oblata*** S.T.Blake ex J.Kern.	164	
1268	***Scleria parvula*** Steud.	164	
1269	***Scleromitrion diffusum*** (Willd.) R.J.Wang	459	
1270	***Scolopia crenata*** Clos.	316	28:d
1271	***Scoparia dulcis*** L.	503	
1272	***Scurrula parasitica*** L.	410	73:b
1273	***Scutellaria violacea*** B.Heyne ex Benth.	546	51:d
1274	***Scutellaria wightiana*** Benth.	547	

1275	***Scutia myrtina*** Kurz.	276	
1276	***Senegalia caesia*** (L.) Maslin, Seigler & Ebinger	232	
1277	***Senegalia pennata*** (L.) Maslin	233	
1278	***Senegalia rugata*** Britton & Rose.	233	18:d
1279	***Senegalia torta*** (Roxb.) Maslin, Seigler & Ebinger	233	
1280	***Senna didymobotrya*** (Fresen.) H.S.Irwin & Barneby	234	
1281	***Senna hirsuta*** (L.) H.S.Irwin & Barneby	234	90:b
1282	***Senna occidentalis*** (L.) Link.	234	90:c
1283	***Senna sophera*** (L.) Roxb.	235	18:e
1284	***Senna tora*** Roxb.	235	90:d
1285	***Sesamum indicum*** L.	508	
1286	***Sesbania grandiflora*** (L.) Poir.	264	
1287	***Setaria barbata*** (Lam.) Kunth.	207	
1288	***Setaria intermedia*** Roem. & Schult.	207	
1289	***Setaria parviflora*** (Poir.) Kerguélen	208	15:d
1290	***Setaria pumila*** Roem. & Schult.	208	
1291	***Shuteria involucrata*** (Wall.) Wight & Arn. ex Walp.	265	
1292	***Sida acuta*** Burm.f.	393	90:e
1293	***Sida cordata*** (Burm.f.) Borss.Waalk.	394	35:b
1294	***Sida cordifolia*** L.	394	86:a
1295	***Sida mysorensis*** Herb.Madr. ex Wight & Arn.	394	
1296	***Sida rhombifolia*** L.	394	130:h
1297	***Sida rhombifolia*** subsp. ***alnifolia*** (L.) Ugbor.	395	35:c
1298	***Sida scabrida*** Wight & Arn.	395	
1299	***Sigesbeckia orientalis*** L.	570	
1300	***Sirhookera lanceolata*** Kuntze.	112	
1301	***Smilax aspera*** L.	91	
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Phytotaxa 496 (3): 269–274
https://www.mapress.com/j/pt/
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Article

ISSN 1179-3155 (print edition)
PHYTOTAXA
ISSN 1179-3163 (online edition)

https://doi.org/10.11646/phytotaxa.496.3.5

Glycosmis nelliyampathiensis (Rutaceae), a new species from southern Western Ghats, Kerala, India

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Abstract

A new species, *Glycosmis nelliyampathiensis* from Nelliyampathy hill ranges of southern Western Ghats, Palakkad, Kerala, India is described and illustrated here. The plant differs from its allied species *G. angustifolia* in terms of its unifoliolate leaves, elliptic leaflets, 1–4 flowered monochasial cymose inflorescence, hairiness of the corolla apex, sub-capitate stigma and ellipsoid-oblong fruit.

Keywords: Aurantioideae, *Glycosmis angustifolia*, Nelliyampathy, Palakkad

Introduction

The genus *Glycosmis* Correa (1805:384) belongs to the tribe Clauseneae Engler (1931:187) of the sub-family Aurantioideae Engler (1896:95). The sub-family Aurantioideae is a strongly supported monophyletic group that is defined by a number of morphological, cytological and chemical synapomorphies (Chase *et al.* 1999, Groppo *et al*. 2008, Kubitzki *et al.* 2011, Morton & Telmer 2014). *Glycosmis* is a very well-characterized genus and can be distinguished from its nearest allies, *Clausena* Burm.f. (1768:87) and *Murraya* J. Koenig (1771:554) by its persistent style, ferruginous puberulent bracts, bracteoles and sepals (Gamble 1919, Stone 1985, Nair 1992). The genus consists of about 51 species with a distribution range from tropical and subtropical Asia to northern Australia (POWO 2021). In India, 16 taxa (8 species and 8 varieties) were recognized so far (Nair & Nayar 1997, Murugan & Manickam 2004).

While exploring the floristic diversity of the hill ranges of Nelliyampathy forest region of Kerala, the authors came across an unknown population of *Glycosmis* in Kurissumala area, which was morphologically distinct from known species. Detailed morphological studies revealed that the collected specimens show close resemblance with *G. angustifolia* Lindl. (1832: 6378) ex Wight & Arn. (1834: 93) in terms of having a distinct gynophore which is broader than the glabrous 3-celled ovary but differs in many attributes (Table 1). Based on these observations, it is apparent that, the collected species is so far unknown to science and which is described and illustrated here as *Glycosmis nelliyampathiensis sp. nov.*

Materials and methods

Explorations for documenting the floristic diversity of hill ranges of Nelliyampathy forest of Palakkad district, Kerala were conducted between 2017 and 2020. The specimens of the new taxon were collected in June 2019 and herbarium was made using standard procedures (Bridson & Forman 1998, De Vogel 1987). In order to assess the population size of the taxon, the area was divided into small grids of 2×2 km area and the number of mature individuals in each

Accepted by Prabhukumar K.M.: 25 Mar. 2021; published: 14 Apr. 2021

grid were counted (Cox 1990). Morphological traits of the specimens were characterized, measured, illustrated and photographed using Leica S8 APO Stereo Zoom microscope. The protologues of the allied taxa along with other literature were compared (Hooker 1875, Stone 1985, Nair 1992, Nair & Nayar 1997). The identity of the taxon has been further confirmed through the examination of type sheets and other voucher specimens housed at various herbaria (K, BM, CAL, CALI, MH).

Taxonomy

Glycosmis nelliyampathiensis Jabeena & Maya *sp. nov.* (Figs 1 & 2)

Type:—INDIA: Kerala: Palakkad district, Kurissumala, Nelliyampathy hills, 10°31'28.9"N, 76°40'04.6"E, 950 m, 22 June 2019, *Jabeena M.K. & Maya C. Nair* 2062 (Holotype: MH; Isotype: CALI, LWG)

Diagnosis:—*Glycosmis nelliyampathiensis* Jabeena & Maya *sp. nov.* morphologically shows similarities with its allied species *G. angustifolia* but differs from the latter by its unifoliolate leaves (vs. pinnate leaves), elliptic leaflets (vs. lanceolate), 1–4 flowered monochasial cymose inflorescence (vs. compound racemose), hairiness at apex of corolla lobes (vs. glabrous), sub-capitate stigma (vs. obtuse) and ellipsoid-oblong fruit (vs. globose or sub-globose).

Description:—Small tree up to 4 m high. Stem terete, younger parts minutely hairy. Leaves born on an articulated petiole, unifoliolate (rarely 2-3 foliolate), up to 5-leaflets in juvenile shoots; leaflets alternate; petiolule 0.3–0.5 cm, grooved above; lamina 7–9 × 3–4 cm, elliptic, acute at base, entire at margin, obtuse at apex, minutely hairy beneath, glabrous above, pellucid gland dotted, midrib prominent, lateral veins obscure. Flowers in axillary 1–4 flowered monochasial cyme, actinomorphic, 0.7–0.8 × 0.4–0.5 cm, bisexual, pentamerous, fragrant. Sepals 5, green, gamosepalous, ca. 0.1 cm long, ovate, acute at apex, outer surface with rusty puberulent hairs, imbricate. Petals 5, 0.5 × 0.2 cm, ovate, obtuse at apex with hyaline hairs, white, imbricate. Stamens 10, all fertile, outer longer 0.3–0.4 × 0.08–0.12 cm, inner shorter 0.15–0.23 × 0.08–0.12 cm; anthers oblong, yellow, adnate, with an apical gland; filaments broad, white, glabrous. Ovary 3-loculed, seated on a swollen gynophore broader than the ovary, ca. 2×1.5 mm, ovoid, gland-dotted, glabrous; style thick, small; stigma sub-capitate; ovule 1 in each locule, pendulous. Fruit a berry with a remnant persistent style, 1-seeded, ca. 1 × 0.7 cm, ellipsoid-oblong, gland dotted, creamy turning pink, glabrous. Seed ca. 0.8 × 0.5 cm, glabrous.

Phenology:—Flowering and fruiting during June–September.

Etymology:—The specific epithet is named after the type locality, Nelliyampathy hill ranges in Palakkad District, Kerala, India.

Distribution and ecology:—Specimens of the new species were collected from four different locations of Nelliyampathy hills of Kerala *viz*., Keshavanpara, Kurissumala, Mattumala and Chakkaliyampara at an elevation of 950–1100 m. The new species is found growing in semi-evergreen forests along with *Clausena indica* (Dalzell 1851: 33) Oliver (1861: 36) and *Aglaia edulis* (Roxburgh 1824: 430) Wallich (1840: 26), and each population consists of 5–8 mature individuals. Currently, the taxon is known only from the hill ranges of Nelliyampathy and exhaustive explorations in Western Ghats are inevitable to confirm the distribution and status assignment.

Additional specimens examined:—INDIA. Kerala: Palakkad District, Nelliyampathy hills, Mattumala, 10˚32′31.8″ N, 76˚42′05.2″ E, 951 m, 15 May 2019, *Jabeena M.K. & Maya C. Nair* 1794 (CALI); Chakkaliyampara, 10˚31′38.5″ N, 76˚40′19.4″ E, 1033 m, 06 July 2019, *Jabeena M.K. & Maya C. Nair* 2125 (CALI); 26 August 2019, *Jabeena M.K. & Maya C. Nair* 2339 (MH); Keshavanpara, 10˚31′31″ N, 76˚39′47″ E, 960 m, 20 August 2020, *Jabeena M.K. & Maya C. Nair* 4160 (LWG)

Taxonomic key to the Indian species of *Glycosmis*

1. Ovary seated on a distinct gynophore 2
- Ovary seated on a minute fleshy disc 11
2. Gynophore broader than ovary; ovary glabrous 3
- Gynophore narrow; ovary rusty-puberulent or pilose 7
3. Ovary 1-loculed ..... *G. tirunelveliensis*
- Ovary 3–5 loculed 4
4. Ovary 3-loculed 5
- Ovary 4–5 loculed 6

5. Inflorescence condensed paniculate cyme; petals glabrous; stigma oblong; fruit globose or sub-globose ..... *G. angustifolia*
- Inflorescence a monochasial cyme; petals hairy at apex; stigma sub-capitate; fruit ellipsoid-oblong ..... *G. nelliyampathiensis*
6. Sepals deltoid; style continuous with ovary, not clearly distinct, glabrous ..... *G. macrocarpa*
- Sepals ovate; style distinct, deciduous tomentose ..... *G. borana*
7. Ovary ellipsoid; style distinct; stigma sub-capitate ..... *G. pilosa*
- Ovary ovoid-cylindric, rarely sub-globose; style scarcely distinct from ovary; stigma truncate 8
8. Leaflets linear-lanceolate, acute at both ends ..... *G. mauritiana* var. *linearifolia*
- Leaflets ovate or elliptic, apex acute or acuminate 9
9. Secondary nerves of leaflets upto 8 pairs ..... *G. mauritiana* var. *mauritiana*
- Secondary nerves of leaflets upto 16 pairs 10
10. Leaflets long acuminate at apex, lustrous ..... *G. mauritiana* var. *insularis*
- Leaflets short acuminate at apex, not lustrous ..... *G. mauritiana* var. *andamanensis*
11. Berries sub-globose, creamy white or salmon-reddish when ripe, mamillate 12
- Berries obovoid or oblong, purplish-black when ripe, smoothly or pitted glandular 13
12. Ovary conical or ovoid-cylindric; base cuneate or obtuse; apex acute, obtuse, rounded or acuminate; flowers perfect ..... *G. pentaphylla* var. *pentaphylla*
- Ovary columnar; base and apex tapering; flowers abortive ..... *G. pentaphylla* var. *linearifolia*
13. Sepals ovate, ferruginous pubescent; berries solitary axillary ..... *G. singuliflora*
- Sepals sub-orbicular, puberulent or glabrous; berries few to many in axillary or terminal paniculate infructescence 14
14. Leaves simple ..... *G. cyanocarpa* var. *simplicifolia*
- Leaves compound (1 or 3 or 5 foliolate) 15
15. Panicles short, condensed, up to 3 cm long ..... *G. cyanocarpa* var. *linearifolia*
- Panicles spreading, up to 10 cm long 16
16. Apex caudate acuminate; leaflets greenish or yellow on drying ..... *G. cyanocarpa* var. *cymosa*
- Apex abruptly acuminate; leaflets brown on drying ..... *G. cyanocarpa* var. *fuscescens*

Acknowledgements

First author acknowledges financial support provided by Council of Scientific and Industrial Research (CSIR) and Aswani V.J. is grateful to Kerala State Council for Science Technology and Environment (KSCSTE), Govt. of Kerala for financial assistance. Authors like to extend sincere thanks to Director of Collegiate Education, Govt. of Kerala, and Principal, Govt. Victoria College, Palakkad for infrastructural support and encouragement. Authors are grateful to Dr. K. Narayanan Nair, Senior Principal Scientist, Plant Diversity, Systematics and Herbarium Division, CSIR-National Botanical Research Institute for his valuable suggestions in confirming the novelty of the taxa and Dr. Mathew Dan, Senior Scientist, JNTBGRI, Thiruvananthapuram for assistance in procuring germplasm of *G. angustifolia*. The authors sincerely acknowledge the support from Department of Forests, Govt. of Kerala for necessary permissions and assistance in exploring the forests of Palakkad District.

TABLE 1. Taxonomic delineation of *Glycosmis nelliyampathiensis sp. nov.* from *G. angustifolia.*

Characters	*Glycosmis nelliyampathiensis sp. nov.*	*G. angustifolia*
Habit	small tree up to 4 m tall	shrub, 2–3 m tall
Leaves	unifoliolate (rarely 2–3 foliolate). In juvenile stage, leaflets upto 5, alternate	leaves pinnate, leaflets 2–5, alternate or opposite.
Leaf Lamina	elliptic, obtuse at apex	narrowly lanceolate, obtusely acuminate at apex
Inflorescence	1–4 flowered monochasial cyme	15-20 flowered short compound raceme
Petal	obtuse with hairy apex	obtusely acuminate with glabrous apex
Stigma	sub-capitate	obtuse
Fruit	ellipsoid-oblong	globose or sub-globose

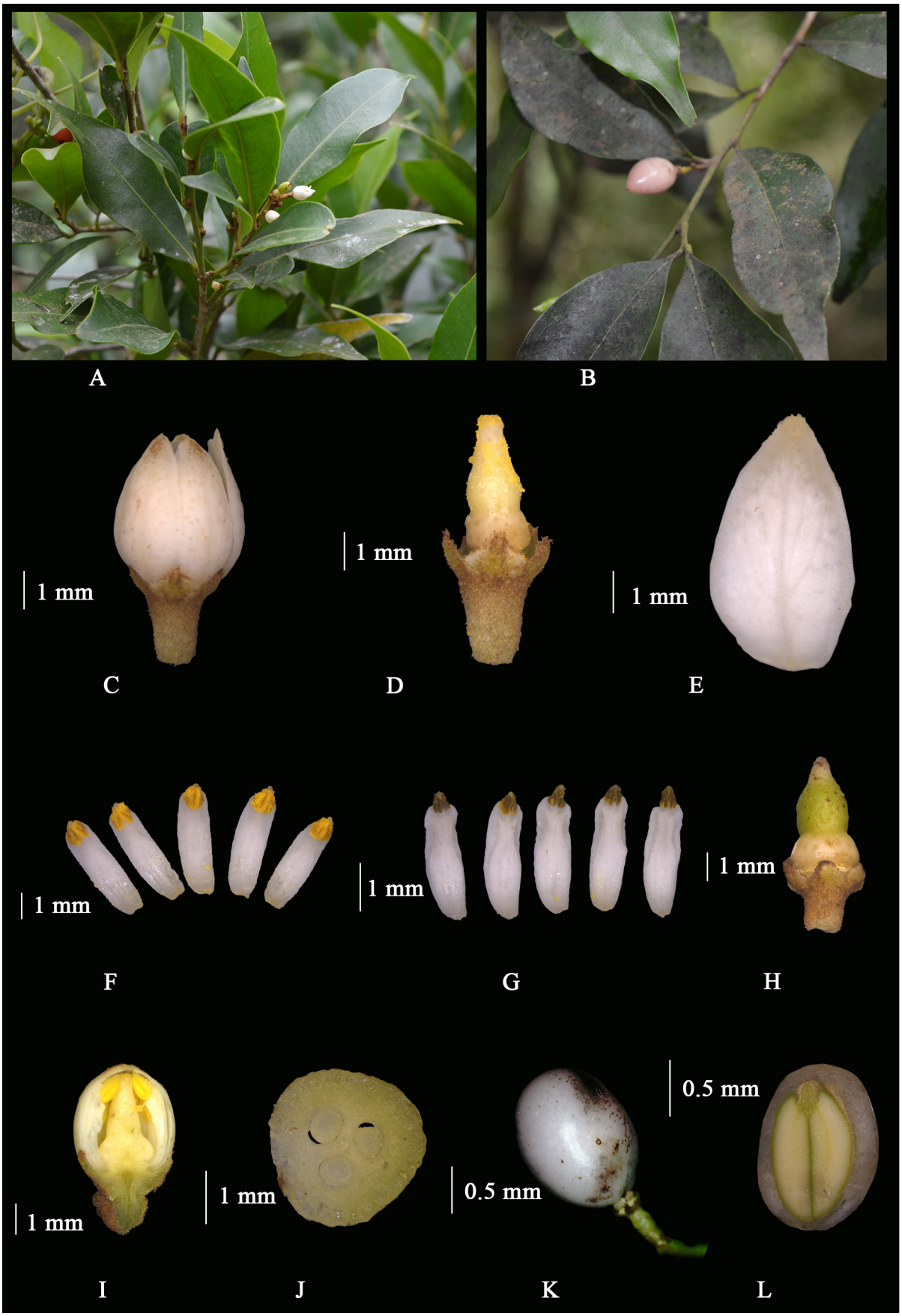


FIGURE 1. *Glycosmis nelliyampathiensis* A. Habit. B. Fruiting twig C. Single flower. D. Calyx with gynoecium. E. Petal. F. Inner stamens. G. Outer stamens. H. Gynoecium. I. L.S. of flower. J. C.S. of ovary. K. Fruit. L. L.S. of Fruit. (Photos: Jabeena M. K. and Aswani V. J)

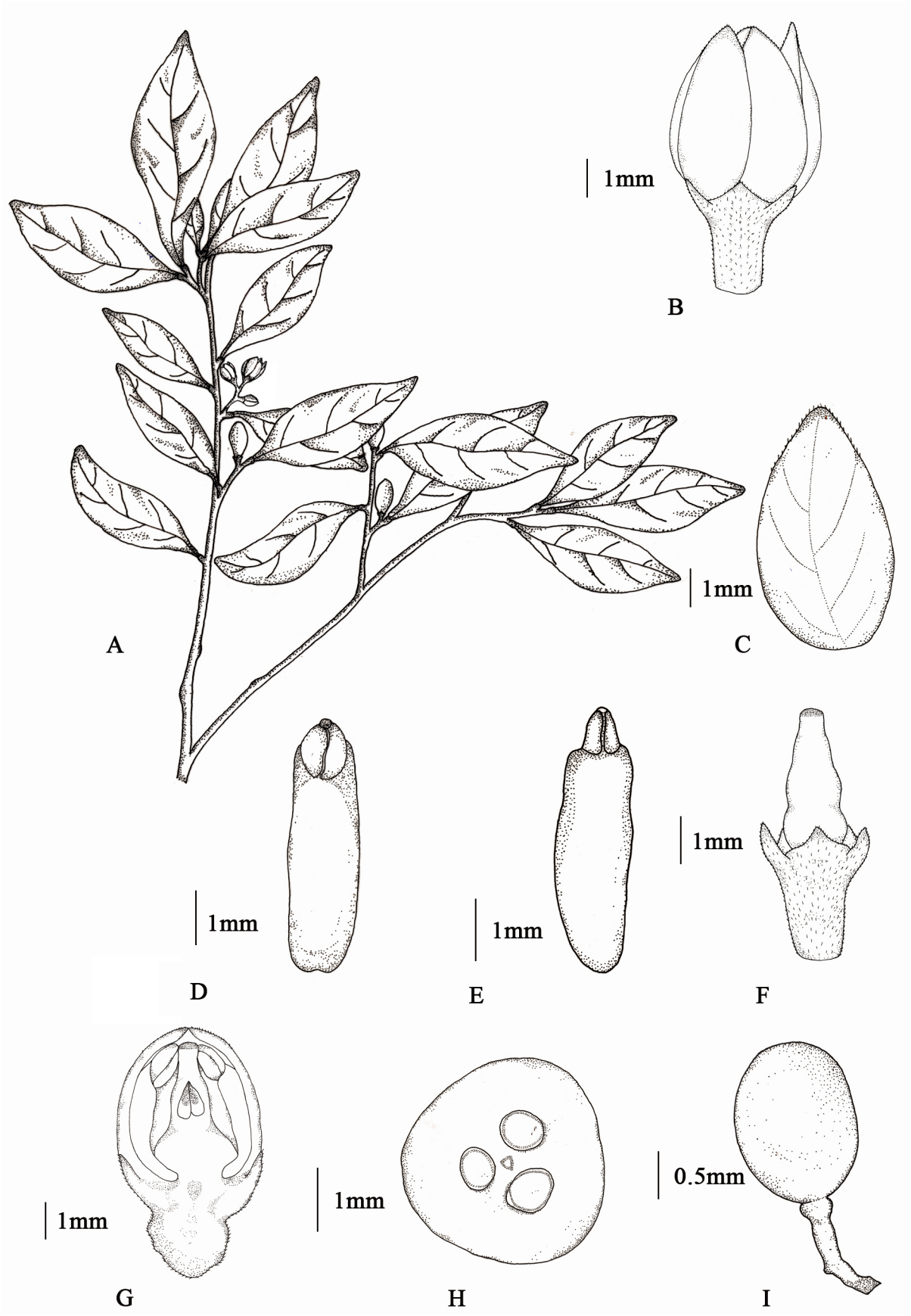


FIGURE 2. *Glycosmis nelliyampathiensis* A. Habit. B. Single flower. C. Petal. D. Inner stamen. E. Outer stamen. F. Calyx with gynoecium. G. L.S. of flower. H. C.S. of ovary I. Fruit (Illustration by Jabeena M. K. from Jabeena M.K. & Maya C. Nair 2062)

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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)



Note

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Vadakkeveedu Jagadesh Aswani, Manjakulam Khadhersha Jabeena & Maya Chandrashekaran Nair

26 April 2021 | Vol. 13 | No. 5 | Pages: 18406–18410
DOI: 10.11609/jott.6578.13.5.18406-18410

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Journal of Threatened Taxa | www.threatenedtaxa.org | 26 April 2021 | 13(5): 18406–18410
ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)
https://doi.org/10.11609/jott.6578.13.5.18406-18410
#6578 | Received 17 August 2020 | Final received 12 March 2021 | Finally accepted 30 March 2021
OPEN ACCESS
NOTE

The Malay Cardamom *Meistera aculeata* (Roxb.) Škorničk. & M.F. Newman (Zingiberaceae: Alpinioideae) from the Palghat gap: a new record to Kerala, India

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Zingiberaceae, the ginger family, comprises 53 genera and more than 1,375 species widely distributed throughout tropical Africa, Asia, and America (Kress et al. 2002; Kong et al. 2010). *Amomum* Roxb s.l. is the second largest genus in the family Zingiberaceae with about 150–180 species (Xia et al. 2004). The distribution of the genus in India is concentrated in northeastern India, peninsular India, and the Andaman & Nicobar Islands with 22 species (Thomas & Sabu 2012). *Amomum* is reported to have 48 species in the Flora of British India (Hooker 1894), while five species were reported by Fischer (1928) in the Flora of Presidency of Madras. Recent taxonomic studies have resulted in the discovery of 12 taxa under the genus *Amomum* (Thomas et al. 2010, 2012a,b, 2014, 2015, 2016; Thomas & Sabu 2012; Hareesh & Sabu 2018).

Presently *Amomum* is circumscribed to a monophyletic genus based on multi-marker phylogenetic framework using matK and nrITS as markers. The targeted sampling combined with the molecular data, phylogenetic analysis and morphological characters allowed the re-circumscription of 10 clades of the genus *Amomum* as separate genera (De Boer et al. 2018). Accordingly, certain species in the genus *Amomum* are either resurrected or transferred to the genus *Meistera* Giseke.

Meistera is characterized by semi-lunar anther crest, echinate fruit and solitary flower in each fertile bract (Thomas & Sabu 2018). The genus comprises 42 species and three varieties, and is distributed from Sri Lanka and India, throughout the Indo-Chinese region to Sundaland (De Boer et al. 2018).

During the exploratory studies on the floristic diversity in the Walayar forest range of the southern Western Ghats, the authors collected specimens belonging to the genus *Meistera* growing on the foothills of Jamanthimala coming under Pudussery North Section (10.863°N & 76.789°E) near the Palakkad Gap region in June 2019. The specimens were preserved as herbarium using standard herbarium procedures. The specimen was identified as *Meistera aculeata* (Roxb.) Skornick. & M.F. Newman after consulting relevant taxonomic

Editor: V. Sampath Kumar, Botanical Survey of India, Coimbatore, India. **Date of publication:** 26 April 2021 (online & print)

Citation: Aswani, V.J., M.K. Jabeena & M.C. Nair (2021). The Malay Cardamom *Meistera aculeata* (Roxb.) Škorničk. & M.F.Newman (Zingiberaceae: Alpinioideae) from the Palghat gap: a new record to Kerala, India. *Journal of Threatened Taxa* 13(5): 18406–18410. https://doi.org/10.11609/jott.6578.13.5.18406-18410

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Funding: 1.Kerala State Council for Science, Technology and Environment (KSCSTE), Govt. of Kerala [No. KSCSTE/769/2018 - FSHP LS]; 2. The Council of Scientific and Industrial Research (CSIR) [08/675(0001)/2017-EMR-1]

Competing interests: The authors declare no competing interests.

Acknowledgements: First author sincerely acknowledges the financial support received under the research fellowship programme by Kerala State Council for Science Technology and Environment (KSCSTE), Govt. of Kerala. Jabeena, M.K. thank the Council for Scientific and Industrial Research (CSIR) for the financial assistance. Authors like to extend sincere thanks to Director of Collegiate Education, Govt. of Kerala, and Principal, Govt. Victoria College, Palakkad for the facilities provided for carrying out research. First author wish to thank Dr. M. Sabu and Dr. Thomas V.P. for their valuable comments in confirming the identity of the taxa. The authors sincerely acknowledge the support from Department of Forests, Govt. of Kerala for necessary permissions and assistance in exploring the forests of Palakkad District.

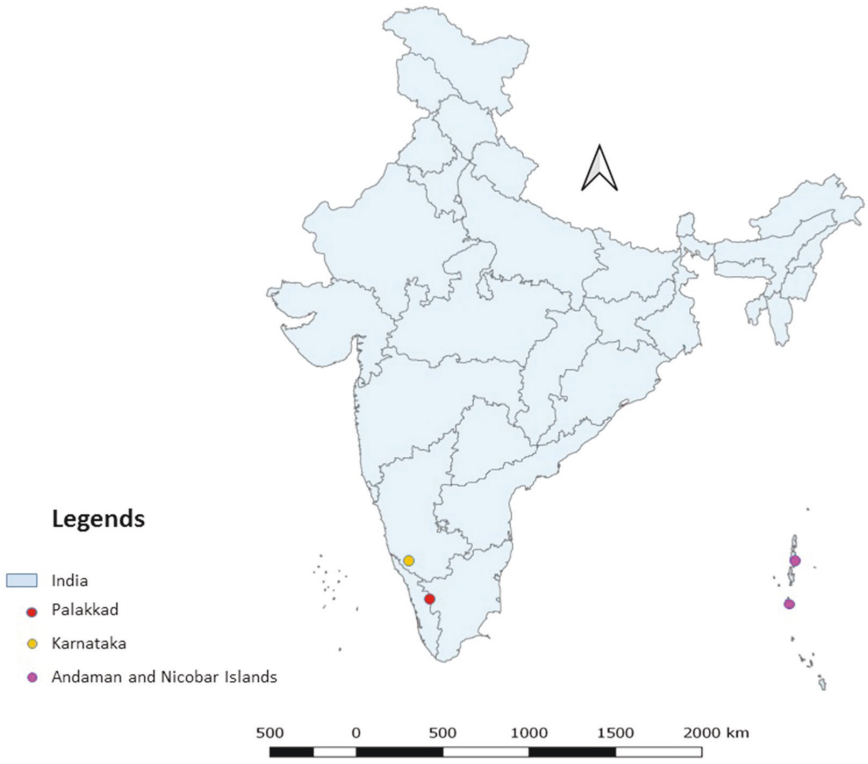


Figure 1. Known locations of the Malay Cardamom *Meistera aculeata* (Roxb.) Škorničk. & M.F. Newman in India. Map by V.J. Aswani.

literature and the type specimen housed at the Natural History Museum (BM).

Balakrishnan & Nair (1979) reported this species from the Andaman & Nicobar islands and recently, this was reported from Kodagu in Karnataka (Patil & Lakshminarasimhan 2018) as a new addition to its distribution in mainland India. Our collection from the foothills of Jamanthimala forms a new record to the flora of Kerala as this taxon has not been included in any of the literature pertaining to the flowering plants of Kerala (Vajravelu 1990; Sasidharan 2002, 2011; Nayar et al. 2006, 2014) as well as the revisionary studies on *Amomum* s.l. (Sabu 2006; Thomas 2011). A detailed description of the taxon along with photographs and distribution map is provided. The specimens are deposited at Madras Herbarium (MH), Calicut University Herbarium (CALI), and Government Victoria College Herbarium (GVCH).

Meistera aculeata (Roxb.) Škorničk. & M.F.Newman in Taxon 67(1): 25. 2018. *Amomum aculeatum* Roxb. in Asiat. Res. 11: 344, t. 6. 1810 & Fl. Ind., Carey and Wall. ed. 1: 40. 1820; Baker in Hook. f. Fl. Brit. Ind. 6: 242. 1894; N.P. Balakr. & N.G. Nair in J. Bombay Nat. Hist. Soc. 76: 196. 1979; Vasudeva Rao in J. Econ. Taxon Bot. 8: 151. 1986; Karthik. et al. Fl. Ind. Enumerat. -Monocot.: 290. 1989; Sameer Patil & Lakshmin. in J. Threat. Taxa 10(13): 12850. 2018. *Amomum hatuanum* Náves in Fernandez-Villar & Naves, Nov. App.: 224. 1880 (Image 1).

Type: Ind. Orient., India, *William Roxburgh* s.n. (BM000958151, Image!)

Perennial herb, 2–3.5 m tall with distichous leaves. Root stock rhizomatous, branched and creamy brown within. Leafy shoots elongated, 2–3 cm thick, reddish brown towards base. Leaves sessile or shortly petiolate; lamina 30–60 cm long and 5–9 cm broad, oblong-lanceolate, acuminate at apex, cuneate at base, margins entire, glabrous on both surfaces, midrib yellowish-green, glabrous; petioles 0–3 mm long. Ligules bifid or subentire, longer than petiole, 1–1.5 cm long. Spikes many flowered borne directly from root stock, peduncles 10–15 cm long, 1–1.25 cm thick, glabrous. Bracts many, imbricate, very closely sheathing and spirally arranged, ovate, reddish-brown, cuspidate at apex, 4–6 cm long, 2.5–3.5 cm broad, glabrous inside and puberulous outside. Fertile bracts pinkish-red, ovate, cuspidate at apex, 4–5 cm long and 2–2.5 cm wide, puberulous towards base inside, glabrous towards apex on both surfaces. Each floral bract subtends a single flower. Bracteole tubular, abruptly 3 lobed, 1.4–1.6 cm long, membranous towards apex, glabrous on both surfaces. Flowers 1–4, open simultaneously in a head pattern with older flowers beneath which appears brown and slimy, 4–4.5 cm long. Calyx tubular, 2–2.5 cm long, 1.2–1.6 cm wide, 3 lobed from middle,

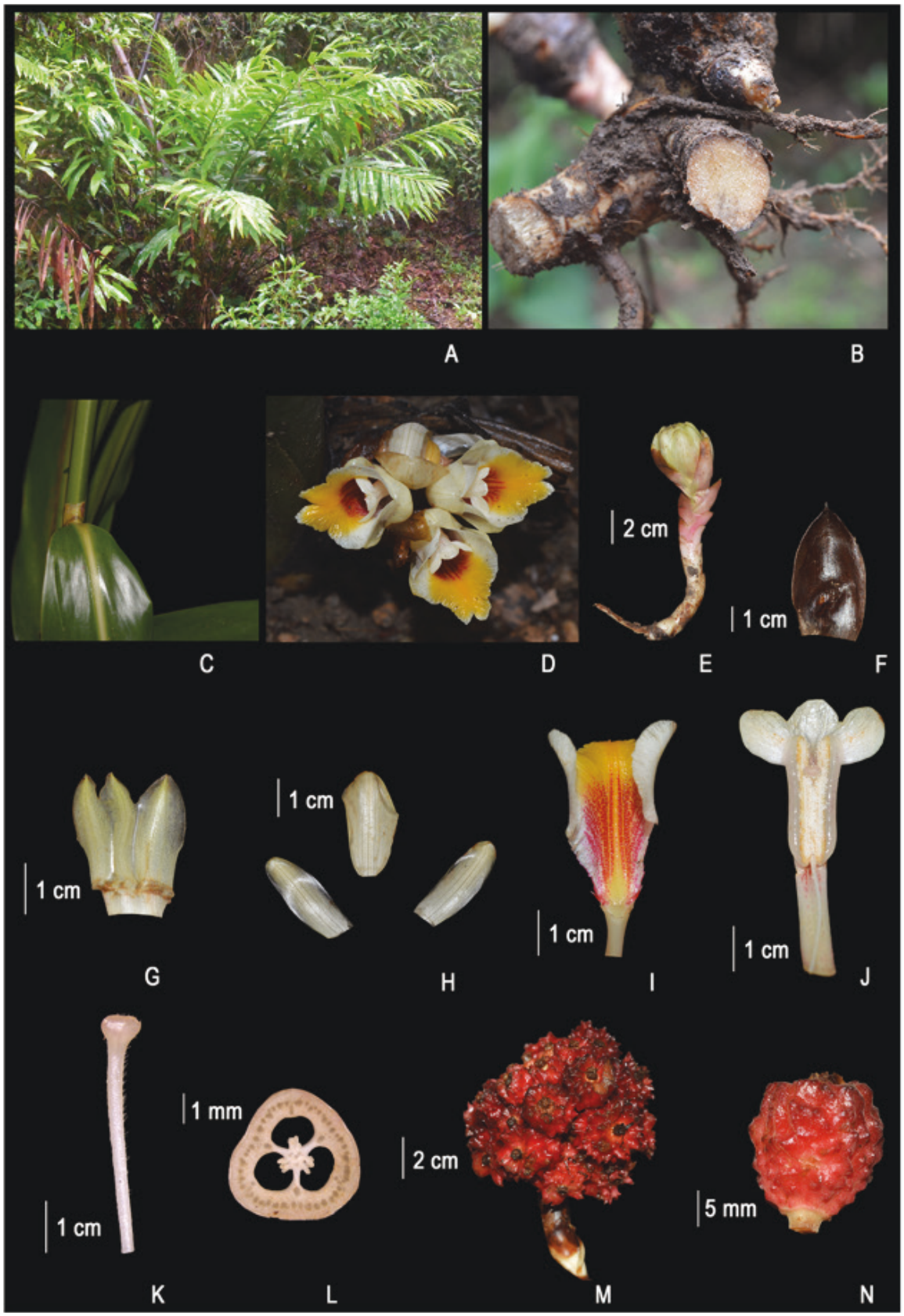


Image 1. *Meistera aculeata* (Roxb.) Škorničk. & M.F.Newman. A—Habit | B—Rhizome | C—Ligule | D—Flowers | E—Inflorescence at bud stage | F—Floral bract | G—Calyx | H—Petals | I—Labellum | J—Stamen with petaloid anther crest | K—A portion of style with stigma | L—C.S of Ovary | M—Fruit cluster | N—Single fruit. © Aswani, V.J. & Jabeena M.K.

apex mucronate, margins ciliate. Corolla tube 1.8–2.8 cm long, white, glabrous. Dorsal corolla lobe obovate, broader than lateral lobes, 2–2.8 cm long, rounded at apex, margins ciliate and slightly wavy. Lateral corolla lobes oblong, 1.2–1.5 x 1–1.5 cm long, rounded at apex, margins ciliate. Labellum obovate, trilobed, 3.5–3.6 cm wide, margins slightly undulate, glabrous. Median lobe truncate, clefted, white with yellow along with red streaks towards base and lateral lobes orbicular, lateral staminodes 2, subulate at base, red, 0.2–0.3 cm long, glabrous; anther one, oblong, 1.2–1.5 cm long, 0.3–0.4 cm broad furnished with a white petaloid anther crest; anther crest tri–lobed, middle lobe truncate or rounded and lateral lobes orbicular; thecae oblong, 1.2–1.5 cm long, white with irregular pink spots, apex rounded, base slightly acute, glabrous dehiscing throughout length. Gynoecium 4.8–5 cm, ovary 0.3–0.5 cm long, minutely pubescent, three celled with many ovules in each cell; style 3.8–4 cm long, glabrous except for ciliate hairs on one side half way long; stigma cup shaped, 0.1cm long and 0.15cm wide, creamy yellow with ciliate hairs in mouth region. Fruits 1.5–1.8 x 1.3 cm, echinate in clusters, glabrous, deep red when mature, many seeded.

Specimen examined: 177854 (MH) 23.vi.2019, INDIA: Kerala: Palakkad District, Walayar forest range, Pudussery North Section, Jamanthimala, 10.863°N & 76.789°E, 559.2m, coll. Aswani & Maya; 7005 (CALI) 23.vi.2019, Palakkad District, Walayar forest range, Pudussery North Section, Jamanthimala, 10.863°N & 76.789°E, 559.2m, coll. Aswani & Maya; 4078 (GVCH), 23.vi.2019, Palakkad District, Walayar forest range, Pudussery North Section, Jamanthimala, 10.863°N & 76.789°E, 559.2m, coll. Aswani & Maya; 4153 (GVCH) 01.vii.2019, Palakkad District, Walayar range, Pudussery North Section, Jamanthimala, 10.864°N & 76.788°E, 561.8m coll. Aswani; 4385 (GVCH) 19.vii.2019, Palakkad District, Walayar range, Akamalavaram section, Malampuzha (Moochikadavu), 10.880°N & 76.703°E, 500.5m, coll. Aswani & Maya.

Flowering: May–July; Fruiting: July–August.

Distribution: India (Karnataka: Kodagu – Pushpagiri Wildlife Sanctuary; Kerala: Palakkad, Walayar, Pudussery North, Jamanthimala; Andaman Islands: Figure 1), Myanmar, Thailand, Vietnam, Indonesia, Malay Archipelago, Malaysia, also extending across Wallace's Line to Sulawesi, New Guinea, and Australia.

Ecology: This plant grows at an elevation of 500–600m in humus-covered semi-evergreen forest floor. Small populations at an average of 20–30 mature plants were observed within a distance of 100m. The taxon was found growing in some restricted localities of Walayar forest range along with *Ancistrocladus heyneanus* Wall. ex J. Graham, *Atalantia monophylla* D.C., *Dioscorea oppositifolia* L., *Cyclea peltata* (Lam.) Hook.f. & Thomson and *Anamirta cocculus* (L.) Wight & Arn.

Discussion

In the Palghat Gap region, exhaustive surveys covering the nearby forest ranges could not locate this species. Recently, this species was reported from Pushpagiri Wildlife sanctuary, Kodagu, Karnataka (Patil & Lakshminarasimhan 2018) and earlier from Andaman & Nicobar Islands (Balakrishnan & Nair 1979). Further, the threat status of the taxon is designated as Least Concern on the IUCN Red List (Olander 2020). As the population is discrete and discontinuous, the most appropriate causes for these disjunctions need to be studied and exhaustive explorations are required to fix the threat status of this taxon.

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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

April 2021 | Vol. 13 | No. 5 | Pages: 18099–18410
Date of Publication: 26 April 2021 (Online & Print)
DOI: 10.11609/jott.2021.13.5.18099-18410

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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)



Note

Record of *Oldenlandia hygrophila* Bremek. (Spermacoceae: Rubiaceae), a lesser known herb from Palghat Gap of Western Ghats, Kerala, India

Vadakkeveedu Jagadesh Aswani, Vasudevan Ambat Rekha, Pathiyil Arabhi, Manjakulam Khadhersha Jabeena, Kunnamkumarath Jisha & Maya Chandrashekaran Nair

26 February 2020 | Vol. 12 | No. 3 | Pages: 15400–15404
DOI: 10.11609/jott.5673.12.3.15400-15404

Journal of Threatened Taxa

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Journal of Threatened Taxa | www.threatenedtaxa.org | 26 February 2020 | 12(3): 15400–15404
ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)
DOI: https://doi.org/10.11609/jott.5673.12.3.15400-15404
#5673 | Received 01 January 2020 | Final received 07 February 2020 | Finally accepted 11 February 2020
PLATINUM OPEN ACCESS

NOTE

Record of *Oldenlandia hygrophila Bremek.* (Spermacoceae: Rubiaceae), a lesser known herb from Palghat Gap of Western Ghats, Kerala, India

Vadakkeveedu Jagadesh Aswani [1], Vasudevan Ambat Rekha [2], Pathiyil Arabhi [3], Manjakulam Khadhersha Jabeena [4], Kunnamkumarath Jisha [5] & Maya Chandrashekaran Nair [6]

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The genus *Oldenlandia* L. (1753) belonging to the tribe Spermacoceae Chamisso & Schlechtendal ex de Candolle (1830) of the family Rubiaceae is well distributed in the tropical and subtropical regions of the world (Govaerts et al. 2013). In India, the occurrence of the genus *Oldenlandia* is often debated with variable number of citations as 27 species (Hooker 1880) in the Flora of British India and 45 species (Gamble & Fischer 1923) in the Madras Presidency region alone. Estimates reveal the documentation of 14 species and one variety from the state of Kerala (Sasidharan 2011; Jose et al. 2015; Soumya et al. 2017).

Materials and Methods

During the exploratory studies on the floristic diversity of granitic hillocks in Walayar forest range of southern Western Ghats, the authors came across this taxon growing on the rocky outcrops near the dam site of Malampuzha in Palakkad District in July 2017. The specimens of the taxon were procured and herbarium was prepared using standard herbarium procedures. The plant specimens were characterised, measured and illustrated.

The specimen was identified to be *Oldenlandia hygrophila* Bremek. collected by Prof. Vasudevan Nair in 1972 cited from Malampuzha dam vicinity of Palakkad District (Bremekamp 1974) and confirmed the taxa from the type specimens deposited at Kew Herbarium (*O. hygrophila*: bar code no: K000031277). Regional herbaria (MH, KFRI and CALI) were consulted to check the presence of earlier collections of the taxon and found that N. Sasidharan had collected the taxa from Thrissur District in 1987 (Acc. No. KFRI 6945, collection No: N.S. 4635). Later, the taxa was reported from Muthanga region of Wayanad District in Kerala by Ratheesh Narayanan (RNMK 2228) in 2009. The taxon

Editor: K.P. Rajesh, Zamorin's Guruvayurappan College, Calicut, India. **Date of publication:** 26 February 2020 (online & print)

Citation: Aswani, V.J., V.A. Rekha, P. Arabhi, M.K. Jabeena, K. Jisha & M.C. Nair (2020). Record of *Oldenlandia hygrophila* Bremek. (Spermacoceae: Rubiaceae), a lesser known herb from Palghat Gap of Western Ghats, Kerala, India. *Journal of Threatened Taxa* 12(3): 15400–15404. https://doi.org/10.11609/jott.5673.12.3.15400-15404

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Funding: Kerala State Council for Science Technology and Environment (KSCSTE), Govt. of Kerala, The Council of Scientific and Industrial Research (CSIR).

Competing interests: The authors declare no competing interests.

Acknowledgements: First author and Jisha K. sincerely acknowledge financial support provided under the research fellowship programme and back-to-lab scheme by Kerala State Council for Science Technology and Environment (KSCSTE), Govt. of Kerala. Jabeena, M.K. acknowledges The Council of Scientific and Research Institute (CSIR) for the financial assistance. Authors like to extend sincere thanks to Director of Collegiate Education, Govt. of Kerala, and Principal, Govt. Victoria College, Palakkad for infrastructural support and encouragement. Authors are grateful to Prof. R. Vasudevan Nair, Rtd. Professor of Botany, Govt. Victoria College, Palakkad and Dr. K. M. Prabhukumar, CMPR, Kottakkal for their valuable comments in confirming the identity of the taxa. Rekha Vasudevan A., acknowledges University Grants Commission for granting FDP and authorities of Mercy College, Palakkad for necessary permissions in pursuing research. The authors sincerely acknowledge the support from Department of Forests, Govt. of Kerala for necessary permissions and assistance in exploring the forests of Palakkad District.

was not able to relocate from its type locality after its first collection by Prof. R. Vasudevan Nair in 1972. The acronyms for the herbaria follow the Index Herbariorum (Thiers 2018). The protologues of the allied taxa *Oldenlandia pumila* (L.f.) DC. and *Oldenlandia dineshii* Sojan & V. Suresh were also compared.

Oldenlandia hygrophila Bremek., Kew Bull. 29: 359. 1974; Narayanan, Fl. Stud. Wayanad Dist. 435. 2009. *Hedyotis hygrophila* (Bremek.) Bennet, Journ. Econ. Tax. Bot. 4: 592. 1983; Sasidharan et al., Bot. Stud. Med. Pl. Kerala 18. 1996; Sasidh. & Sivar., Fl. Pl. Thrissur For. 221. 1996; Dutta & Deb, Taxonomic Revision Hedyotis 140. 2004 (Figure 1 and Images 1,2).

Annual, erect, branched or unbranched herbs, 25–130 mm tall. Entire plant with sparsely distributed setiform cuticular protuberances. Stem quadrangular, minutely winged when old. Stipules connate, interpetiolar, 1.5–2

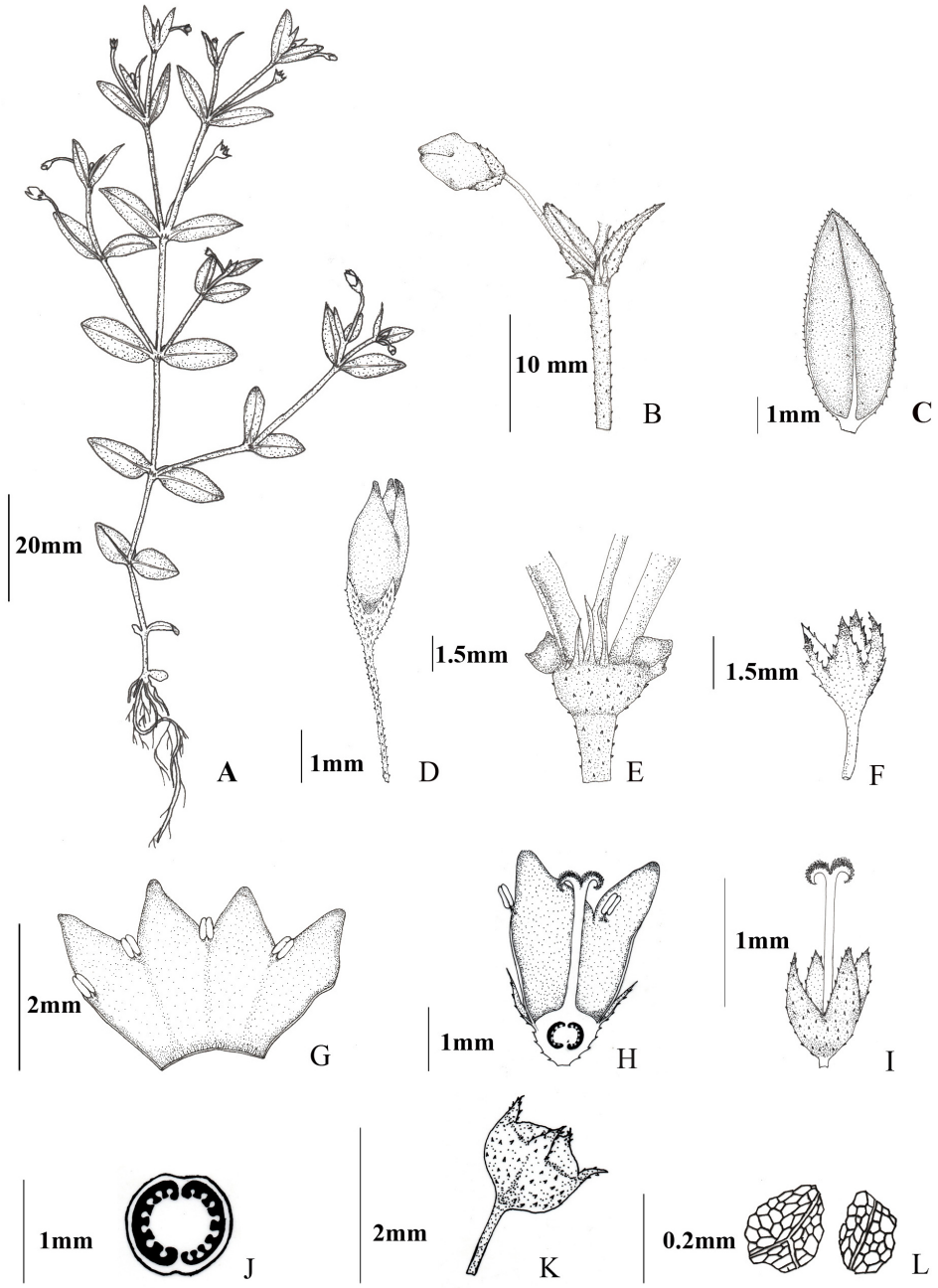


Figure 1. ***Oldenlandia hygrophila*** **Bremek.: A—habit | B—portion of a flowering twig | C—single leaf | D—single flower | E—part of node showing stipules | F—calyx | G—corolla tube opened showing stamens | H—L.S. of flower | I—gynoecium | J—C.S. of ovary | K—capsule | L—seeds. © V.J. Aswani & A. Rekha Vaudevan.**

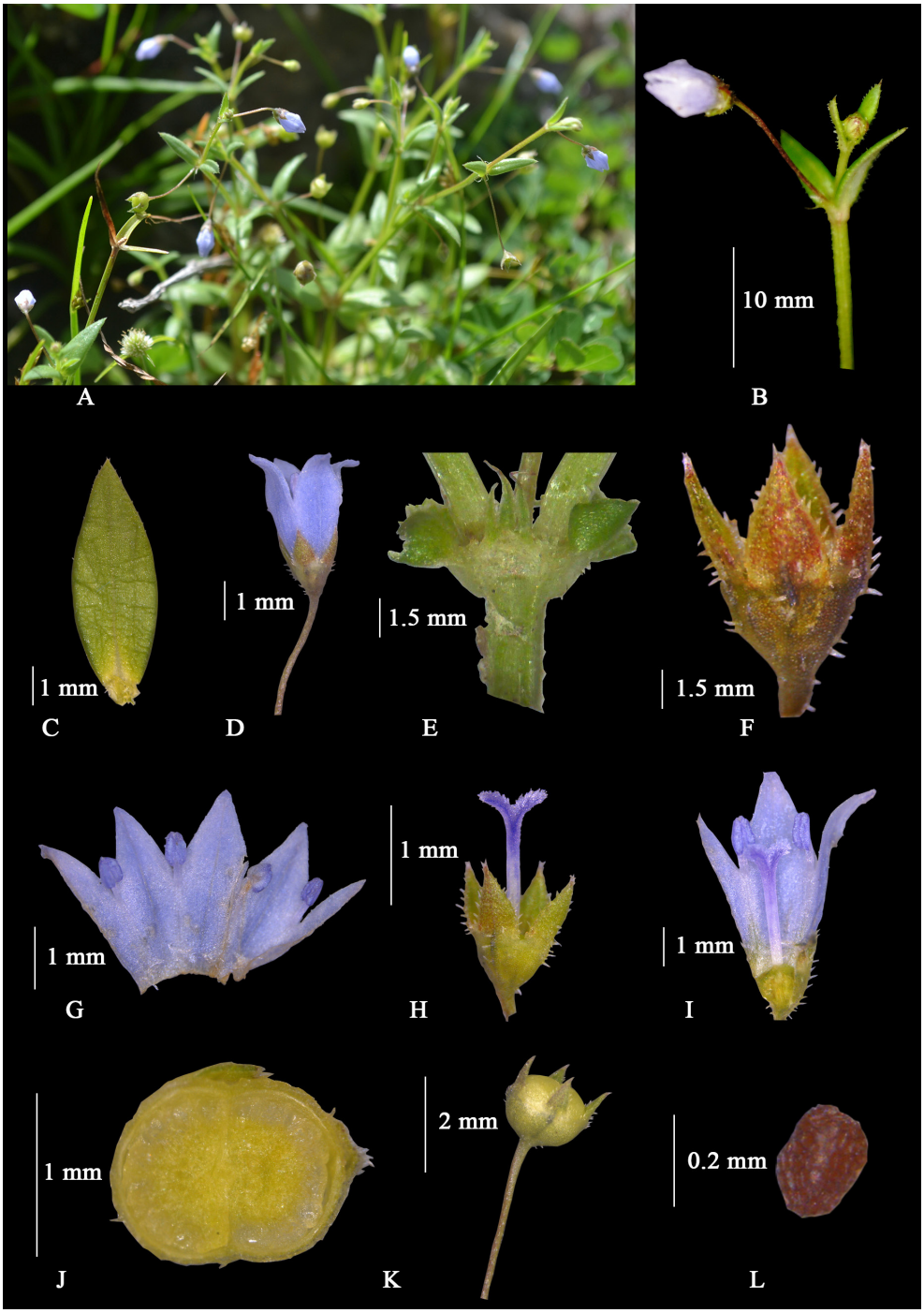


Image 1. ***Oldenlandia hygrophila*** **Bremek.: A—habit | B—portion of a flowering twig | C—single leaf | D—single flower | E—part of node showing stipules | F—calyx | G—corolla tube opened showing stamens | H—gynoecium | I—L.S. of flower | J—C.S. of ovary | K—capsule | L—seeds. © V.J. Aswani & M.K. Jabeena.**

mm long, 1–1.2 mm wide, with three bristles, middle one longer than the other two. Leaves sessile, 5–12 mm × 2–5 mm, linear lanceolate, 1–nerved, lamina base attenuate, margins recurved. Flowers axillary solitary, 3–3.5 mm long, corolla lobes not spreading when open. Pedicel slender, 6–10 mm, hypanthium ovoid and both laden with setiform cuticular protuberances. Calyx lobes 4, 1.5–2 mm × 0.8–1 mm, reaching one fourth of the corolla tube, margins entire, apex acute. Corolla blue, tube 2–2.2 mm long, lobe 1mm long, oblong, apex acute, glabrous outside and with small hyaline hairs inside at the base. Stamens 4, inserted, adnate to sinus of corolla

Table 1. Taxonomic delineation of *Oldenlandia hygrophila* from *O. dineshii* and *O. pumila*

Taxonomic Trait	*Oldenlandia hygrophila*	*O. dineshii*	*O. pumila*
Habit	Erect herb, branched and unbranched, 25–130 mm tall	Erect herb, dichotomously branched 50–200 mm tall	Branched prostrate or diffuse herbs
Stem	4–angled, minutely winged with setiform cuticular protuberances	4–angled, minutely winged, glabrous	Acutely angular, minutely dentate on ribs
Leaf	Linear-lanceolate, setiform cuticular protuberances present, 5–12 × 2–5 mm	Linear-lanceolate, sparsely scabrid, 10–20 × 5–8 mm	Elliptic-lanceolate, 7–18 x 1–6 mm
Leaf margin and leaf apex	Entire with regular setiform cuticular protuberances, recurved, apex acute, base attenuate	Apex acute, base attenuate	Scabrid above along margin and midrib below
Stipules	Bristles 3, 1.5–2 mm long, base broad up to 1–1.2 mm, middle one longer than other two	Bristles 2–3, 2–4 mm long, base broad up to 5mm.	Bristles 2–5, 2–3 mm long
Inflorescence	Axillary, solitary flowers alternating at nodes	Axillary, solitary or terminal 2–4 flowered cyme	Solitary or 2–flowered cyme
Flowers	3–3.5 mm long, blue	5–7 mm long, blue, campanulate	3–4 mm long, white
Pedicel	6–10 mm	4–6 mm long	10–15 mm long
Hypanthium	Ovoid with setiform cuticular protuberances	Ovoid, puberulous	Ovoid
Level of calyx lobes	One fourth of corolla tube	Much below the corolla tube	Below the level of corolla
Calyx	Margin entire with setiform cuticular protuberances, apex acute 1.5–2 × 0.8–1 mm long	Margin setulose, apex acute, 0.7–1 × 0.5–0.7 mm long	Margin dentate, lobes 4, rarely 5, ovate–lanceolate or triangular, apex acute, 0.5–0.6 mm long
Corolla	Lobes not spreading, tube 2–2.2 mm long, lobes 1mm long, oblong, acute at tip, glabrous outside and minute hyaline hairs at the base of corolla tube inside, apex slightly reflexed	Broadly campanulate, tube 2.5–4 mm long, lobes 2.5–3.5 mm long, minutely pubescent outside glabrous inside, apex reflexed	2mm long, tube 1.2–1.3 mm long, pubescent at throat; lobes 0.5–0.8 x 0.5–0.6 mm, ovate, acute, incurved at apex.
Stamens	Inserted, filaments 0.25mm long, glabrous	Inserted, filaments 0.7–1 mm long, hairy	Included, filaments 0.2–0.3 mm long
Anther	0.75mm	1–1.2 mm	3–4 mm long
Stigma	Bilobed, papilose	Bifid, hispid	Bilobed, papillose fleshy, tufted hairy
Capsule	Sub–globose 2×2 mm	Ovoid, 2.5–3 × 1.5–2.5 mm	Ellipsoid or oblong-ovoid
Seed	Many, angular, with minor grooves 0.2–0.3 x 0.2–0.3 mm	Many, angular 0.3–0.5 x 0.3–0.5 mm	Many, 0.7 x 0.1 mm, angular

lobes, introrse. Filaments 0.25mm long, glabrous. Anthers linear 0.75mm. Style 1.5mm long, glabrous. Stigma bilobed, 1mm, densely papillose. Ovary 1×1mm, 2–celled, many ovuled in axile placentation. Capsule sub-globose, 2×2 mm, loculicidally dehiscent from apex, with slightly raised crown above. Seeds numerous, trigonal, reticulate 0.3×0.2 mm.

Specimens examined: 361 (GVCH), 24 vii 2017, INDIA: Kerala: Palakkad District, Walayar range, Akathethara section, Koomachimala, 10.829°N, 76.676°E, 14m, coll. Aswani & Maya; 177855 (MH) 24.vii.2017, INDIA: Kerala: Palakkad District, Walayar range, Akathethara section, Koomachimala, 10.829°N, 76.676°E, 14m, coll. Aswani & Maya; 7004 (CALI) 24.vii.2017, INDIA: Kerala: Palakkad District, Walayar range, Akathethara section, Koomachimala, 10.829°N, 76.676°E, 14m, coll. Aswani & Maya.; 399 (GVCH) 12.viii.2017, INDIA: Kerala: Palakkad District, Walayar range, Akathethara section, Malampuzha (Koomachimala), 10.834°N, 76.680°E, 48m, coll. Aswani & Arabhi; 543 (GVCH) 15.ix.2017, INDIA: Kerala: Palakkad District, Walayar range, Akathethara section, Dhoni Hills, Neelippara, 10.8647°N, 76.6282°E, 282m, coll. Aswani & Rekha; 4173 (GVCH) 08.vii.2019, INDIA: Kerala: Palakkad District, Walayar range, Akathethara section, Malampuzha (Koomachimala), 10.829°N, 76.676°E, 15m, coll. Aswani & Jabeena (GVCH– Government Victoria College Herbarium).

Phenology: Flowering: June–August; Fruiting: July–September.

Distribution: India, Kerala: Palakkad, Wayanad, Thrissur districts.

Additional specimens examined: K000031277 (K), s.n. 1972, India, Kerala, Malampuzha near Palghat hardly 100m below, coll. R. Vasudevan Nair; 6945(KFRI), Collection no: N.S. 4635, 22.ix.1987, Peechi, Thrissur, coll. N. Sasidharan.

Ecology: This plant grows at an elevation of 14–252m in hydro geomorphic exposed rock surfaces along with *Drosera indica* L., *Utricularia lazulina* P.Taylor, *U. graminifolia* Vahl, *Indigofera uniflora* Buch. - Ham.

ex Roxb., *Desmodium triflorum* (L.) DC. and *Polygala persicariifolia* DC.

Threat status: This taxon could not be recollected from its earlier reported locations of forest areas in Thrissur and Wayanad districts of Kerala except from its type locality near Malampuzha Village very near to Malampuzha Dam region of Palakkad District, Kerala after its first collection in 1972. Exhaustive surveys across Palghat gap region covering the nearby forest ranges also could not locate the taxon. This gives us evidence of its narrow distributional range and that it can considered endemic to southern Western Ghats (restricted to Kerala). Till date, the taxon's existence was doubted due to lack of collection or further reports. This may be the reason that the taxon has not yet been evaluated as per the IUCN Red List 2019. Since the population size is very small, distributed in a narrow stretch of hydro-geomorphic habitats of less than 10km^2, the taxon can be assigned the status of Critically Endangered (CR) as per IUCN version 2019-3 (IUCN 2019).

Taxonomic delineation of *Oldenlandia hygrophila* from *O. dineshii* and *O. pumila*

Oldenlandia hygrophila is similar to *O. dineshii* in quadrangular stem and possession of blue flowers, but differs in the presence of setiform cuticular protuberance all over the plant, solitary axillary flowers smaller in size (2.5–3.0 x 1.5–2.0 mm), corolla lobes not spreading when open, sepals reaching one fourth the length of corolla tube, corolla tube glabrous outside, but with hyaline hairs at the base inside and glabrous staminal filaments. *O. hygrophila* differs from *O. pumila* in having erect nature of plant, linear-lanceolate leaves, solitary axillary blue flowers, shorter pedicels, calyx lobes reaching one-fourth the level of corolla lobes, corolla with minute hyaline hairs at the base of corolla tube inside and with sub–globose capsule. Comparison of taxonomic characters of *O. hygrophila* with *O. dineshii* and *O. pumila* is given in Table 1.

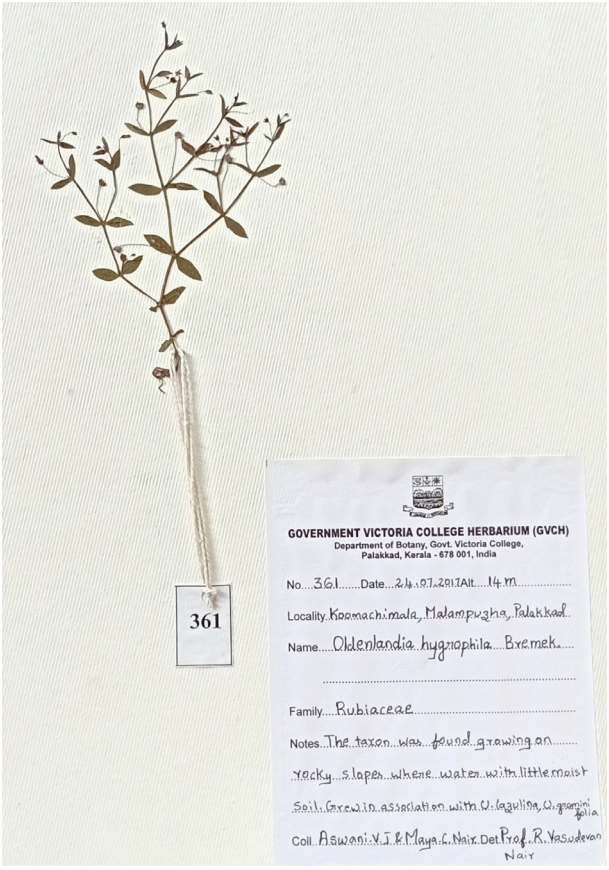


Image 2. Herbarium of *Oldenlandia hygrophila* Bremek.

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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

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Date of Publication: 26 February 2020 (Online & Print)
DOI: 10.11609/jott.2020.12.3.15279-15406

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