

**SYSTEMATIC STUDIES ON HISPINE
CASSIDINAE (COLEOPTERA,
CHRYSOMELIDAE) OF SOUTHERN INDIA**

*Thesis submitted in partial fulfillment of the requirements
for the award of Degree of*

DOCTOR OF PHILOSOPHY IN ZOOLOGY

By

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2023

CERTIFICATE

This is to certify that this thesis entitled “**SYSTEMATIC STUDIES ON HISPINE CASSIDINAE (COLEOPTERA, CHRYSOMELIDAE) OF SOUTHERN INDIA**” is an authentic work carried out by **Mr. MOHAMMED SHAMEEM KOORMATH** under my supervision and guidance in partial fulfilment of the requirements of the Degree of Philosophy in Zoology under the Faculty of Science of the University of Calicut, and that no part thereof has been presented earlier for any other degree or diploma.

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DECLARATION

I do hereby declare that this thesis entitled “**SYSTEMATIC STUDIES ON HISPINE CASSIDINAE (COLEOPTERA, CHRYSOMELIDAE) OF SOUTHERN INDIA**” submitted to the University of Calicut in partial fulfilment of the degree of Doctor of Philosophy in Zoology, is a bonafide research work done by me under the supervision of Dr. M. Nasser, Professor, Department of Zoology, University of Calicut and co-supervision of Dr. K.D. Prathapan, Associate Professor, Department of Entomology, Kerala Agricultural University, College of Agriculture, Vellayani, Thiruvananthapuram, and no part of this thesis presented by me has been thereof used for the award of any other degree or diploma.

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ABSTRACT

The hispine Cassidinae, commonly known as leaf-mining beetles or hispines, constitute a speciose clade in the subfamily Cassidinae of the Chrysomelidae. They make up half of the Cassidinae, with 2980 described species under 170 genera worldwide, and form 8% of the total chrysomelid diversity. Being phytophagous during both larval and adult stages, and having leaf-mining larvae, some of them are noxious pests of economically important plants. Despite their economic importance and diversity, the Indian hispine Cassidinae are poorly studied, with several species still awaiting discovery, and none of the Indian museums have an authentically identified collection of this group. This necessitated a comprehensive study to revise their systematics and prepare illustrated keys for precise identification.

The present study was aimed at collection of hispine Cassidinae from various ecosystems in southern India, with special emphasis on recording host plants, description of new species encountered during the study, and reviewing their systematics. This study has resulted in a comprehensive review of the systematics of 102 species of hispine Cassidinae. Seventy nine species belonging to 22 genera were studied, resulting in 18 putative new species, three of which have already been published in reputed journals. The study recorded the presence of the genus *Bothryonopa* and two species, *Dactylispa anula* and *Downesia insignis*, for the first time in south India. Illustrated keys and diagnoses of all the tribes and genera of south India, as well as keys to the species of all genera, species diagnoses, and distributions of all the studied species are provided. Endophallic sclerites in *Wallacea* and *Oncocephala*, as well as tignum in *Platypria* were used in species delimitation.

The following nomenclatural changes are proposed: *Callispa violaceicornis* Pic, 1937 **n. syn.** = *Amblispa laevigata* (Guérin-Méneville, 1844); *Callispa maindroni* (Pic, 1943) **n. syn.** = *Callispa nigronotata* (Pic, 1943) **n. syn.** = *Callispa octopunctata sexmaculata* Weise, 1905 = *Callispa sexmaculata* Weise, 1905 **n. stat.**; *Agonita nigricornis* Gestro, 1911 **n. syn.** = *Agonita fallax* Gestro, 1911; *Downesia linkei* Uhmman, 1963 **n. syn.** = *Downesia kanarensis* Weise, 1897; and *Gonophora donckieri* Pic, 1930 **n. syn.** = *Gonophora brevicornis* Weise, 1905. The study also proposed the resurrection of the species status of *Dactylispa filiola* Weise, 1897 **status restored**, from the synonymy of *Dactylispa feae* (Gestro, 1888); *Dactylispa krishna* Maulik, 1919 **status restored**, from the synonymy of *Dactylispa spinipes* Weise, 1905, and of *Hispa andrewesi* (Weise, 1897) **status restored** from the synonymy of *Hispa ramosa* Gyllenhal, 1817. A new

combination, *Chaeridiona crassicornis* (Gestro, 1909) **new comb.**, is proposed for *Prionispa crassicornis* Gestro, 1909.

The host plants of 49 species belonging to 16 genera were recorded for the first time, besides additional host plants for 13 species in ten genera. The study resulted in the creation of a well-curated and authentically identified collection of south Indian hispine Cassidinae, which forms the basis of further ecological and taxonomic studies.

പ്രബന്ധസംഗ്രഹം

ഇലതൂരപ്പൻവണ്ടുകൾ അല്ലെങ്കിൽ ഹിസ്സെൻകൾ എന്നറിയപ്പെടുന്ന ഹിസ്സെൻ കാസ്സിഡിനേ, ഇലതീനിവണ്ടുകളുടെ കുടുംബമായ ക്രൈസോമെലിഡേയിലെ ഒരു പ്രധാന വിഭാഗമാണ്. നിലവിൽ ഇവകളെ ഇലതീനിവണ്ടുകളിലുള്ള കാസ്സിഡിനേ എന്ന ഉപകുടുംബത്തിലാണ് ഉൾപ്പെടുത്തിയിട്ടുള്ളത്. ലോകമെമ്പാടുമായി 170 ജനുസ്സുകളിലായി ഏകദേശം 2980 അറിയപ്പെടുന്ന സ്പീഷീസുകൾ ഈ വിഭാഗത്തിലുണ്ട്. ഇത് കാസ്സിഡിനേ ഉപകുടുംബത്തിന്റെ പകുതിയും മൊത്തം ക്രൈസോമെലിഡ് വൈവിധ്യത്തിന്റെ എട്ട് ശതമാനവും വരും. വണ്ടുകളും അവയുടെ ലാർവകളും സസ്യഹാരികളായതിനാലും ലാർവകളുടെ ഇല തൂരപ്പൻ പ്രകൃതവും കാരണം ഇവയിൽ അനവധി വണ്ടുകൾ പ്രധാന കാർഷിക കീടങ്ങളാണ്. ഏറെ വൈവിധ്യവും, സാമ്പത്തിക പ്രാധാന്യവും ഉണ്ടായിരുന്നിട്ടും ഇന്ത്യയിലെ ഈ വിഭാഗത്തെക്കുറിച്ചുള്ള പഠനങ്ങൾ വളരെ വിരളമാണ്. തന്മൂലം നിരവധി ജീവികളെ ഇനിയും ശാസ്ത്രീയമായി കണ്ടെത്തുകയും നാമകരണം ചെയ്യേണ്ടതുമാണ്. കൂടാതെ ഇന്ത്യൻ മ്യൂസിയങ്ങളിൽ ഇവയുടെ ശേഖരണങ്ങളും ലഭ്യമല്ല. ഇതെല്ലാം ഇവയുടെ വർഗ്ഗീകരണത്തിനും കൃത്യമായ തിരിച്ചറിയലിനും പ്രധാന തടസ്സങ്ങളാണ്. ഇക്കാരണങ്ങളാൽ ഇവയെക്കുറിച്ചുള്ള സമഗ്രമായ ഒരു പഠനവും കൃത്യമായി തിരിച്ചറിയുന്നതിന് ചിത്രങ്ങളോട് കൂടിയുള്ള "ടാക്സോണമിക് കീ" തയ്യാറാക്കുന്നതും അത്യാവശ്യമാണ്.

ദക്ഷിണേന്ത്യയിലെ വിവിധ ആവാസവ്യവസ്ഥകളിൽ നിന്ന് ഈ വിഭാഗത്തിൽപ്പെടുന്ന വണ്ടുകളുടെ ശേഖരണം, അവയുടെ ആതിഥേയ സസ്യങ്ങൾ രേഖപ്പെടുത്തൽ, പുതിയ ജീവികളുടെ ശാസ്ത്രീയമായ നാമകരണം, സചിത്ര "ടാക്സോണമിക് കീ" രൂപീകരണം, പ്രസ്തുത വണ്ടുകളുടെ വ്യവസ്ഥാപിതമായ വർഗ്ഗീകരണാവലോകനം എന്നിവയായിരുന്നു ഈ പഠനത്തിന്റെ ലക്ഷ്യം.

ഈ പഠനം 102 ഇനം ഹിസ്സെൻ കാസ്സിഡിനേയുടെ വർഗ്ഗീകരണത്തിന്റെ സമഗ്രമായ അവലോകനം അവതരിപ്പിക്കുന്നു. ദക്ഷിണേന്ത്യയിലെ അഞ്ച് സംസ്ഥാനങ്ങളിലെ വിവിധ പ്രദേശങ്ങളിൽ നിന്നായി 22 ജനുസ്സുകളിൽപ്പെട്ട 79 സ്പീഷീസുകളെ ഈ കാലയളവിൽ ശേഖരിക്കുകയും 18 പുതിയ സ്പീഷീസുകളെ തിരിച്ചറിയുകയും ചെയ്തു, അവയിൽ മൂന്നെണ്ണം ഇതിനകം പ്രശസ്തമായ ജേണലുകളിൽ പ്രസിദ്ധീകരിച്ചിട്ടുണ്ട്. ദക്ഷിണേന്ത്യയിൽ ആദ്യമായി ബോത്രയോനോപ്പ (*Bothryonopa*) എന്ന ജനുസ്സിന്റെയും ഡാക്ടൈലിസ്പ അനുല (*Dactylispa anula*), ഡൗനീസിയ ഇൻസിഗ്നീസ് (*Downesia insignis*) എന്നീ രണ്ട് സ്പീഷീസുകളുടെയും സാന്നിധ്യം കണ്ടെത്തി. ഈ പഠനം ദക്ഷിണേന്ത്യയിലെ ഈ വിഭാഗത്തിലുൾപ്പെടുന്ന വണ്ടുകളുടെ എല്ലാ

വംശങ്ങൾക്കും ജനസ്സുകൾക്കും സചിത്ര തിരിച്ചറിയൽ ഉപാധികളും, തിരിച്ചറിയാൻ സഹായകമാവുന്ന സ്വഭാവ വിവരണങ്ങളും, ഓരോ ജനസ്സിന്റെയും “സ്പീഷിസ് കീ”, സ്പീഷിസ് വിവരണങ്ങൾ, അവയുടെ വിതരണ വിവരങ്ങൾ എന്നിവ അവതരിപ്പിക്കുന്നതിനും, വാലേസിയ (Wallacea), ഓങ്കോസെഫാല (Oncocephala) എന്നീ രണ്ട് ജനസ്സുകളിലെ “എൻഡോഫാലിക് സ്ക്ലൈറൈറ്റുകളുടെയും” പ്ലാറ്റിപ്രിയ (Platypria) ജനസ്സിലെ “ടിഗത്തിന്റെയും” വർഗ്ഗീകരണ ശാസ്ത്രപരമായ പ്രാധാന്യം തിരിച്ചറിയുന്നതിനും സഹായിച്ചു. കൂടാതെ ഏതാനും സ്പീഷിസുകളുടെ പര്യായവൽക്കരണവും രണ്ട് സ്പീഷിസുകളുടെ പുനരുത്തരണവും ഒരു സ്പീഷിസിനെ മറ്റൊരു ജനസിലേക്ക് മാറ്റുന്നതും ഈ പഠനം നിർദ്ദേശിക്കുന്നു. ഇതിനു പുറമെ 16 ജനസ്സുകളിലായി 49 സ്പീഷിസുകളുടെ ആതിഥേയ സസ്യങ്ങൾ ആദ്യമായും പത്ത് ജനസ്സുകളിലായി 13 സ്പീഷിസുകളുടെ അധിക ആതിഥേയ സസ്യങ്ങളും പഠനത്തിൽ രേഖപ്പെടുത്തി. ദക്ഷിണേന്ത്യൻ ഹിസ്സെൻ കാസ്സിഡിനേയുടെ ശാസ്ത്രീയമായി പരിപാലിക്കപ്പെടുന്ന ആധികാരികമായ ഒരു ബൃഹത് ശേഖരം രൂപപ്പെടുത്തുന്നതിനും ഈ പഠനം കാരണമായി.

CONTENTS

Chapter	Section	Title	Page No.
1.		INTRODUCTION	1
2.		REVIEW OF LITERATURE	5
3.		MATERIAL AND METHODS	33
4.		RESULTS	41
	4.1	Key to tribes and genera of hispine Cassidinae of southern India	41
	4.2	Review of systematics of hispine Cassidinae of southern India	44
	4.2.1	Tribe Anisoderini Chapuis, 1875	45
		<i>Anisodera</i> Chevrolat, 1836	45
		<i>Estigmaena</i> Hope, 1840	47
		<i>Lasiochila</i> Weise, 1916	52
	4.2.2	Tribe Bothryonopini Chapuis, 1875	57
		<i>Bothryonopa</i> Guérin-Méneville, 1840	57
		<i>Wallacea</i> Baly, 1858	60
	4.2.3	Tribe Callispini Chapuis, 1875	65
		<i>Amblispa</i> Baly, 1858	65
		<i>Callispa</i> Baly, 1858	66
	4.2.4	Tribe Coelaenomenoderini Weise, 1911	85
		<i>Javeta</i> Baly, 1858	85
	4.2.5	Tribe Eurispini Chapuis, 1875	89
		<i>Squamispa</i> Maulik, 1928	89

Chapter	Section	Title	Page No.
	4.2.6	Tribe Gonophorini Chapuis, 1875	91
		<i>Agonita</i> Strand, 1942	91
		<i>Downesia</i> Baly, 1858	103
		<i>Gonophora</i> Chevrolat, 1836	110
	4.2.7	Tribe Hispini Fairmaire, 1868	115
		<i>Dactylispa</i> Weise, 1897	115
		<i>Dicladispa</i> Gestro, 1897	153
		<i>Hispa</i> Linnaeus, 1767	159
		<i>Hispellinus</i> Weise, 1897	168
		<i>Phidodonta</i> Weise, 1904	170
		<i>Platypria</i> Guérin-Méneville, 1840	172
		<i>Rhodtrispa</i> Chen & Tan, 1964	184
	4.2.8	Tribe Leptispini Fairmaire, 1868	189
		<i>Leptispa</i> Baly, 1858	189
	4.2.9	Tribe Oncocephalini Chapuis, 1875	199
		<i>Chaeridiona</i> Baly, 1869	199
		<i>Oncocephala</i> Agassiz, 1846	207
5.		DISCUSSION	215
6.		SUMMARY	223
7.		REFERENCES	225
		APPENDICES	249

LIST OF FIGURES

Figure No.	Legend	Between Pages
1.	<i>Gonophora brevicornis</i> Weise, dorsal habitus	40–41
2.	<i>Gonophora brevicornis</i> Weise, ventral habitus	40–41
3.	<i>Gonophora brevicornis</i> Weise, head and thorax – dorsal view	40–41
4.	<i>Gonophora brevicornis</i> Weise, head – ventral view	40–41
5.	<i>Gonophora brevicornis</i> Weise, morphometrics	40–41
6.	<i>Agonita andrewesi</i> (Weise), dorsal habitus	44–45
7.	<i>Dactylispa sjoestedti</i> Uhmman, dorsal habitus	44–45
8.	<i>Bothryonopa sahyadrica</i> Shameem & Prathapan, head ventral view	44–45
9.	<i>Agonita suturellamima</i> (Maulik), head – ventral view	44–45
10.	<i>Wallacea dactyliferae</i> Maulik, pronotum	44–45
11.	<i>Callispa vittata</i> Baly, pronotum	44–45
12.	<i>Bothryonopa sahyadrica</i> Shameem & Prathapan, elytra	44–45
13.	<i>Wallacea dactyliferae</i> Maulik, elytra	44–45
14.	<i>Javeta pallida</i> Baly, pronotum	44–45
15.	<i>Javeta pallida</i> , prothorax – ventral view	44–45
16.	<i>Anisodera guerini</i> Baly, pronotum	44–45
17.	<i>Callispa vittata</i> Baly, pronotum	44–45
18.	<i>Anisodera guerini</i> , head – ventral view	44–45
19.	<i>Estigmaena chinensis</i> , head – ventral view	44–45
20.	<i>Estigmaena chinensis</i> Hope, pronotum	44–45
21.	<i>Lasiochila nigra</i> (Maulik), pronotum	44–45

Figure No.	Legend	Between Pages
22.	<i>Amblispa laevigata</i> (Guérin-Méneville), head and pronotum – dorso-lateral view	44–45
23.	<i>Amblispa laevigata</i> (Guérin-Méneville), pronotum	44–45
24.	<i>Callispa septemmaculata</i> Weise, head and prothorax – lateral view	44–45
25.	<i>Callispa septemmaculata</i> , head and pronotum – dorsal view	44–45
26.	<i>Chaeridiona mayuri</i> Shameem & Prathapan, dorsal habitus	44–45
27.	<i>Downesia kanarensis</i> Weise, dorsal habitus	44–45
28.	<i>Callispa mayuri</i> , head and pronotum – dorsal view	44–45
29.	<i>Downesia kanarensis</i> , head and pronotum – dorsal view	44–45
30.	<i>Oncocephala tuberculata</i> (Olivier), head and pronotum – dorsal view	44–45
31.	<i>Oncocephala tuberculata</i> , head and prothorax – lateral view	44–45
32.	<i>Chaeridiona mayuri</i> , head and prothorax – lateral view	44–45
33.	<i>Oncocephala tuberculata</i> , head – ventral view	44–45
34.	<i>Chaeridiona mayuri</i> , head – ventral view	44–45
35.	<i>Leptispa</i> sp. 3, head and pronotum – dorsal view	44–45
36.	<i>Leptispa</i> sp. 3, head – ventral view	44–45
37.	<i>Gonophora brevicornis</i> Weise, head and pronotum – dorsal view	44–45
38.	<i>Gonophora brevicornis</i> Weise head and prothorax – ventral view	44–45
39.	<i>Squamispa fasciata</i> Maulik, dorsal habitus	44–45
40.	<i>Squamispa fasciata</i> Maulik, head, pronotum and scutellum – dorsal view	44–45
41.	<i>Squamispa fasciata</i> Maulik, head and pronotum – lateral view	44–45
42.	<i>Squamispa fasciata</i> Maulik, abdomen – ventral view	44–45

Figure No.	Legend	Between Pages
43.	<i>Gonophora brevicornis</i> Weise, head and prothorax – lateral view	44–45
44.	<i>Gonophora brevicornis</i> Weise, abdomen – ventral view	44–45
45.	<i>Agonita suturellamima</i> (Maulik), head, pronotum and base of elytra – dorsal view	44–45
46.	<i>Downesia kanarensis</i> Weise, head, pronotum and base of elytra – dorsal view	44–45
47.	<i>Agonita andrewesi</i> (Weise), head, pronotum and base of elytra – dorsal view	44–45
48.	<i>Agonita andrewesi</i> (Weise), elytra	44–45
49.	<i>Gonophora brevicornis</i> Weise, elytra	44–45
50.	<i>Platypria echidna</i> Guérin- Méneville, body – dorsal half	44–45
51.	<i>Dactylispa sjoestedti</i> Uhmman, body – dorsal half	44–45
52.	<i>Hispa waiensis</i> Borowiec & Świętojańska, antenna	44–45
53.	<i>Hispellinus callicanthus</i> (Bates), antenna	44–45
54.	<i>Dactylispa krishna</i> Maulik, antenna	44–45
55.	<i>Hispellinus callicanthus</i> (Bates), tarsus	44–45
56.	<i>Phidodonta modesta</i> Weise, tarsus	44–45
57.	<i>Hispellinus callicanthus</i> (Bates), elytra	44–45
58.	<i>Phidodonta modesta</i> Weise, elytra	44–45
59.	<i>Dactylispa sjoestedti</i> Uhmman, head and pronotum	44–45
60.	<i>Dicladispa armigera</i> (Olivier), head and pronotum	44–45
61.	<i>Dactylispa</i> sp. 1, antenna	44–45
62.	<i>Rhodtrispa dilaticornis</i> (Duvivier), antenna	44–45

Figure No.	Legend	Between Pages
63.	<i>Dactylispa pitapada</i> Maulik, head and pronotum – dorsal view	44–45
64.	<i>Rhodtrispa dilaticornis</i> (Duvivier), head and pronotum – dorsal view	44–45
65.	<i>Anisodera guerini</i> Baly, dorsal habitus	56–57
66.	<i>Estigmaena chinensis</i> Hope, dorsal habitus	56–57
67.	<i>Lasiochila nigra</i> Maulik, dorsal habitus	56–57
68.	<i>Bothryonopa sahyadrica</i> Shameem & Prathapan, dorsal habitus	64–65
69.	<i>Wallacea dactyliferae</i> Maulik, dorsal habitus	64–65
70.	<i>Amblispa laevigata</i> (Guérin-Ménéville), dorsal habitus	84–85
71.	<i>Callispa violaceicornis</i> Pic., Holotype, Dorsal habitus	84–85
72.	<i>Callispa violaceicornis</i> Pic., Head, pronotum and base of elytra – dorso-lateral view	84–85
73.	<i>Callispa violaceicornis</i> Pic., Type labels	84–85
74.	<i>Callispa septemmaculata</i> Weise	84–85
75.	<i>Callispa octopunctata</i> Baly, Holotype, dorsal habitus	84–85
76.	<i>Callispa octopunctata</i> Baly, Type labels	84–85
77.	<i>Callispa octopunctata sexmaculata</i> Weise, Syntype, dorsal habitus	84–85
78.	<i>Callispa octopunctata sexmaculata</i> Weise, Type labels	84–85
79.	<i>Callispa maindroni</i> (Pic), Syntype – dorsal habitus	84–85
80.	<i>Callispa maindroni</i> (Pic), Type labels	84–85
81.	<i>Callispa nigronotata</i> (Pic), Syntype, dorsal habitus	84–85
82.	<i>Callispa nigronotata</i> (Pic), Type labels	84–85
83.	<i>Javeta pallida</i> Baly, dorsal habitus	88–89
84.	<i>Squamispa fasciata</i> Maulik, habitus – dorsal view	90–91

Figure No.	Legend	Between Pages
85.	<i>Squamispa fasciata</i> Maulik – ventral view	90–91
86.	<i>Agonita suturellamima</i> (Maulik), dorsal habitus	114–115
87.	<i>Downesia</i> sp. 1, dorsal habitus	114–115
88.	<i>Downesia kanarensis</i> Weise, Cotype – dorsal habitus	114–115
89.	<i>Downesia kanarensis</i> Weise, Cotype labels	114–115
90.	<i>Downesia linkei</i> Uhmman, Holotype – dorsal habitus	114–115
91.	<i>Downesia linkei</i> Uhmman, Holotype labels	114–115
92.	<i>Downesia linkei</i> Uhmman, Paratype – dorsal habitus	114–115
93.	<i>Downesia linkei</i> Uhmman, Paratype labels	114–115
94.	<i>Gonophora brevicornis</i> Weise, dorsal habitus	114–115
95.	<i>Gonophora brevicornis</i> Weise, Holotype– dorsal habitus	114–115
96.	<i>Gonophora brevicornis</i> Weise, Type labels	114–115
97.	<i>Gonophora donckieri</i> Pic. Syntypes – dorsal habitus	114–115
98.	<i>Gonophora donckieri</i> Pic., Type labels	114–115
99.	<i>Gonophora donckieri</i> Pic., dorsal habitus	114–115
100.	<i>Gonophora donckieri</i> Pic., Type labels	114–115
101.	<i>Dactylispa pitapada</i> Maulik, , dorsal habitus	188–189
102.	<i>Dicladispa armigera</i> (Olivier), dorsal habitus	188–189
103.	<i>Hispa waiensis</i> Borowiec & Świętojańska, dorsal habitus	188–189
104.	<i>Hispellinus callicanthus</i> (Bates), dorsal habitus	188–189
105.	<i>Phidodonta modesta</i> Weise, dorsal habitus	188–189
106.	<i>Platypria chiroptera</i> Gestro, dorsal habitus	188–189
107.	<i>Platypria echidna</i> Guérin-Méneville, dorsal habitus	188–189

Figure No.	Legend	Between Pages
108.	<i>Platypria echidna</i> Guérin-Méneville, Aedeagus – lateral view	188–189
109.	<i>Platypria echidna</i> Guérin-Méneville, Aedeagus, apical foramen	188–189
110.	<i>Platypria echidna</i> Guérin-Méneville, Spiculum gastrale	188–189
111.	<i>Platypria echidna</i> Guérin-Méneville, Spermatheca	188–189
112.	<i>Platypria</i> sp. 1., dorsal habitus	188–189
113.	<i>Platypria</i> sp. 1. Aedeagus – lateral view	188–189
114.	<i>Platypria</i> sp. 1. Aedeagus, apical foramen	188–189
115.	<i>Platypria</i> sp. 1. Spiculum gastrale	188–189
116.	<i>Platypria</i> sp. 1. Spermatheca	188–189
117.	<i>Rhodtrispa dilaticornis</i> (Duvivier), dorsal habitus	188–189
118.	<i>Leptispa</i> sp. 3 – Dorsal habitus	198–199
119.	<i>Chaeridiona tuberculata</i> Uhmann, dorsal habitus	214–215
120.	<i>Chaeridiona crassicornis</i> (Gestro) New Comb., dorsal habitus	214–215
121.	<i>Prionispa crassicornis</i> Gestro, Co-type – dorsal habitus	214–215
122.	<i>Prionispa crassicornis</i> Gestro, Type labels	214–215
123.	<i>Oncocephala tuberculata</i> (Olivier), dorsal habitus	214–215

LIST OF MAPS

Map No.	Legend	Between Pages
1.	Localities of specimens studied Maps 2—25: Genus-wise collection sites of hispine Cassidinae in south India	40–41
2.	<i>Anisodera</i> Chevrolat	56–57
3.	<i>Estigmene</i> Hope	56–57
4.	<i>Lasiochila</i> Weise	56–57
5.	<i>Bothryonopa</i> Guérin-Méneville	64–65
6.	<i>Wallacea</i> Baly	64–65
7.	<i>Amblispa</i> Baly	84–85
8.	<i>Calispa</i> Baly	84–85
9.	<i>Javeta</i> Baly	88–89
10.	<i>Squamispa</i> Maulik	90–91
11.	<i>Agonita</i> Strand	114–115
12.	<i>Downesia</i> Baly	114–115
13.	<i>Gonophora</i> Chevrolat	114–115
14–16.	<i>Dactylispa</i> Weise	188–189
17.	<i>Dicladispa</i> Gestro	188–189
18.	<i>Hispa</i> Linnaeus	188–189
19.	<i>Hispellinus</i> Weise	188–189
20.	<i>Phidodonta</i> Weise	188–189
21.	<i>Platypria</i> Guérin-Méneville	188–189
22.	<i>Rhodtrispa</i> Chen & T'an	188–189
23.	<i>Leptispa</i> Baly	198–199
24.	<i>Chaeridiona</i> Baly	214–215
25.	<i>Oncocephala</i> Agassiz	214–215

LIST OF APPENDICES

Sl. No.	Title	Appendix No.
1	Table 1. Host plants of hispine Cassidinae of south India	I
2	Shameem K.M., Prathapan K.D., Nasser M. and Chaboo C.S. (2016). Natural History of <i>Javeta pallida</i> Baly, 1858 on <i>Phoenix</i> palms in India (Chrysomelidae, Cassidinae, Coelaenomenoderini). In: Jolivet P, Santiago-Blay J, Schmitt M (Eds) <i>Research on Chrysomelidae 6. ZooKeys</i> 597: 39–56.	II
3	Shameem K.M., Prathapan K.D., Nasser M. (2017). First report of the Indian date palm leaf miner, <i>Javeta pallida</i> Baly (Chrysomelidae, Cassidinae, Coelaenomenoderini) on the pygmy date palm, <i>Phoenix roebelenii</i> O'Brien (Arecaceae). <i>The Coleopterists Bulletin</i> 71(3): 528–529.	III
4	Shameem K.M. and Prathapan K.D. (2013). A new species of <i>Callispa</i> Baly (Coleoptera: Chrysomelidae: Cassidinae: Callispini) infesting coconut palm (<i>Cocos nucifera</i> L.) in India. <i>ZooKeys</i> 269: 1–10.	IV
5	Shameem K.M., and Prathapan K.D. (2014) A new species of <i>Chaeridiona</i> Baly (Coleoptera: Chrysomelidae: Cassidinae: Oncocephalini) infesting ginger (<i>Zingiber officinale</i> Roscoe) and turmeric (<i>Curcuma longa</i> L.) in India and redescription of <i>Chaeridiona pseudometallica</i> Basu. <i>Zootaxa</i> 3815 (4): 575–582.	V
6	Prathapan K.D. & Shameem K.M. (2015). <i>Wallacea</i> sp. (Coleoptera: Chrysomelidae) – a new spindle infesting leaf beetle on coconut palm in the Andaman and Nicobar Islands. <i>Journal of Plantation Crops</i> 43 (2): 162–164	VI
7	Prathapan K.D. and Shameem K.M. (2017). A new species of <i>Wallacea</i> Baly (Coleoptera: Chrysomelidae: Cassidinae: Hispini) infesting coconut palm in the Indian Ocean Islands of Andaman & Nicobar. <i>Zootaxa</i> 4347(2): 381–391.	VII
8	Shameem, K.M. and Prathapan, K.D. (2019). An atypical new species of <i>Bothryonopa</i> (Coleoptera, Chrysomelidae, Cassidinae, Bothryonopini) from south India. <i>Zootaxa</i> , 4545(2): 293–300.	VIII

1. INTRODUCTION

Insects are the most abundant and successful life forms on Earth and they form about 80% of the total described species (Hammond 1992). Among insects, beetles are the most diverse group as they contribute nearly 40% of all insects, and 30% of all animals are beetles. The sheer number of beetles surpasses that of vascular plants and fungi combined and is six times greater than the number of vertebrates (Lawrence & Britton 1991). Beetles are classified under 211 families (Bouchard *et al.* 2011).

Chrysomelidae Latreille, the leaf beetles, is one of the largest animal families, comprising about 39,821 described species classified under 2,333 genera and 12 extant subfamilies (Leschen & Beutel 2014). As the common name indicates, the adult beetles mostly feed on leaves (exception in Bruchinae), however their larvae feed on various plant parts such as roots, leaves and fruits. Species of Chrysomelidae are generally restricted to a few closely related plant species or genera and sometimes to a single plant family or closely related families. Since they are phytophagous, a large number of them are serious pests of agriculture and forestry, necessitating control measures. Several leaf beetles are also known to act as vectors of viral (Fulton *et al.* 1980), bacterial (Harrison *et al.* 1980) and fungal (Barbosa *et al.* 1999) plant pathogens.

Cassidinae *sensu lato* form the second largest subfamily in Chrysomelidae after Galerucinae with 6,319 described species classified in 35 tribes and 341 genera, forming about 16% of the total leaf beetle diversity (Chaboo 2007; Borowiec & Świątojańska 2014). The subfamily is characterized by: i. ventrally positioned mouth on the head (in contrast to anterior or anteroventral as in other chrysomelids); ii. antennal insertions are close together and are positioned anteroventrally on the head (widely spaced and positioned anterolaterally or anteromedially in other chrysomelids); and iii. true tetramerous tarsi due to the loss of tarsomere IV (pseudotetramerous with reduced tarsomere IV in other chrysomelids). Size of the adults ranges from nearly 3 to 30 mm in length while that of the larvae ranges from 1 to 40 mm, with *Alurnus* Fabricius larvae reaching >40 mm. Eggs are laid either singly or in groups on the surface of leaves or stems, or within the leaves or stems, by preparing small excavation prior to oviposition. They may be naked or with oothecal coverings (Hilker 1994; Shameem & Prathapan 2013) or chewed up plant material (Taylor 1937). Generally larvae are open folivores or miners, with two to nine instars in different taxa and pupation may occur externally, with pupae attached to the stem or leaf, or within larval/pupal mines

and adults emerge through exit holes. The whole life cycle lasts for few weeks to over one year (Chaboo 2007).

The subfamily Cassidinae *sensu lato* was until recently regarded as two separate subfamilies namely Cassidinae *sensu stricto* and Hispinae *sensu stricto*. As some taxa show intermediate or transitional characters of larvae and adults of both Hispinae *s. str.* and Cassidinae *s. str.*, the boundary between them is ambiguous. Generally, the larvae of Hispinae *s. str.* are cryptic feeders without caudal furcae and fecal shield retention (Gressitt 1950), while the larvae of Cassidinae *s. str.* are open leaf feeders with last abdominal tergum modified into caudal furcae (Sanderson 1902) and have a characteristic habit of carrying excrementitious matter on these prolongation (Maulik 1919a). Among Cassidinae *s. str.*, an exception to these habits is found in the tribe Notosacanthini where the larvae are true leaf miners as in some of the tribes in the hispine clade. Among Hispinae *s. str.*, the exophagous larvae of *Callispa* Baly closely resemble those of the Cassidinae *s. str.* (Gressitt & Kimoto 1963). Adult hispines are usually elongated with head not concealed under the pronotum while cassidine beetles generally are rotundate or ovate with an explanated margin of elytra and pronotum which makes head and legs concealed when viewed dorsally (Maulik 1919a).

Both the clades, Hispinae *s. str.* and Cassidinae *s. str.* are similarly diverse at the species level (3,371 in hispines and 2,948 in cassidines). The fauna of the Old World and that of the New World are distinct and equally diverse at the tribal level. Of the 35 tribes, 18 are restricted to the New World, 16 are restricted to the Old World, and only a single tribe, Cassidini Gyllenhal, 1813, the nomino-typical tribe, is distributed in both Old and New Worlds. However, in terms of species diversity, the hispine group is relatively more diverse in the Old World (1,800 versus 1,572 species), while the cassidine group is more diverse in the New World (1,639 versus 1,309 species) (Borowiec & Świętojańska 2014).

The present study is focused on the hispine Cassidinae, the classical Hispinae *s. str.*, of south India. This clade is commonly called the ‘leaf-mining beetles’ and they form half of the subfamily of Cassidinae *s. l.* (Staines 2002). However, the term ‘leaf-mining’ is used as an umbrella term to include at least six different ecological guilds, *viz.* leaf shelter scrapers, leaf tube scrapers, flower scrapers, stem miners, leaf miners and open leaf miners (Chaboo 2007). These six guilds can be broadly divided into three categories: open leaf feeders, true leaf, stem or pseudo-stem miners and cryptic feeders living within the

unopened leaf fronds or crowns. However, their adults can be either open leaf feeders or cryptic feeders (Kalshoven 1957; Leschen & Beutel 2014).

Though both larvae and adults are phytophagous, it is mainly the ‘leaf mining habits’ of their larvae that make them major pests of several economically important plants. Some of the destructive hispine pests include *Dicladispa armigera* (Olivier, 1808), *Leptispa pygmaea* Baly, 1859 and *Hispellinus callicanthus* (Bates, 1866) on rice; *Dicladispa striaticollis* (Gestro, 1906) on maize; *Phidodonta modesta* Weise, 1906 and *Asamangulia wakkeri* (Zehntner, 1896) on sugarcane; *Estigmene chinensis* Hope, 1840 on bamboo; *Brontispa castaneipennis* Chûjô, 1937, *Brontispa chalybeipennis* (Zacher, 1913), *Brontispa gleadowi* Weise, 1905 (Weise 1905a), and *Brontispa longissima* (Gestro, 1885) on coconut palm; *Wallacea dactyliferae* (Maulik, 1919) on date-palm, *Oncocephala tuberculata* (Olivier, 1792) on *Ipomoea* sp., *Platypria* spp. on *Erythrina* sp., *Ziziphus* sp. and Indian Agathi (Maulik 1919), and species of *Callispa* Baly, 1859 on *Calamus* spp. (Schöller 2007, 2008). The invasive *Brontispa longissima* (Gestro, 1885), is the most destructive pest of coconut palm in Asia (Mariau 2004; Ayri & Ramamurthy 2012).

On the positive side of phytophagy, like a few other members of the Chrysomelidae, some of the cassidine defoliators are also used as biocontrol agents against weedy plants (Broughton, 2001). Species of *Octotoma* Chevrolat and *Uroplata* Uhmman were introduced into Australia and several other Asian and African countries, including India, for the control of *Lantana* L., a worldwide scourge (Swarbrick *et al.* 1995; Julien & Griffiths 1998; Broughton 2001).

Despite their diversity and economic importance, the taxonomy of this speciose group remains poorly studied with many still awaiting discovery. Several species are known only from the inadequately described type specimens, often in languages other than English and many of the previous works are outdated. Available revisions, especially by Wurmli (1975) at the tribal and generic levels were published in German. The only comprehensive work on the Cassidinae of the Indian subcontinent is the monograph under the *Fauna of British India* series by Maulik (1919a) published a century ago. At present, there is no comprehensive key for the identification of Indian hispines and none of the Indian museums have authentically identified collection of the group.

The present study deals with the systematics of hispine Cassidinae of southern India. Southern India comprises at least six states Andhra Pradesh, Goa, Karnataka, Kerala, Tamil

Nadu and Telangana with ecologically diverse and biologically rich habitats those remain underexplored. Intensive collections in these habitats, especially the Western Ghats, one of the biodiversity hotspots in the World, would considerably enhance our knowledge of chrysomelid diversity.

The present study is aimed to bridge these gaps and to prepare a comprehensive work on south Indian hispines with the following objectives:

1. Collection of hispine beetles from various ecosystems in south India.
2. Describe new species encountered during the study.
3. Review of the systematics of south Indian hispine Cassidinae.
4. Record the host plants of hispines in southern India.
5. Prepare illustrated keys for the identification of genera of hispid beetles of south India.

2. REVIEW OF LITERATURE

The leaf beetle family, Chrysomelidae is not only one of the largest families in the animal kingdom with approximately 40,000 described species but also the second most speciose phytophagous family next to Curculionidae (Riley *et al.* 2002). In concordance with their name, chrysomelids are generally brightly colored with or without striking patterns. An adult chrysomelid is differentiated from its related clades of the hosting superfamily Chrysomeloidea and other Phytophaga by a combination of contrasting morphological characters such as broadly fused anterior apodemes of male genitalia (resulting in a cap like structure at the base of the median lobe, also seen in Curculionoidea), short (never extending beyond the body), filiform, very rarely clubbed antennae, never inserted on prominences; rostrate headed individuals (members of subfamily Bruchinae) with wide rostrum (wider than long); pseudotetramerous tarsi in all legs (exception of true tetramery in cassidine Chrysomelidae and some lamiine Cerambycidae), reduced tibial spurs (except in Alticini of Chrysomelidae) (Lawrence & Britton 1991, Riley *et al.* 2002, Lawrence & Ślipiński 2013). Larvae of chrysomelids are mostly identified by the habitats they thrive in.

Members of Chrysomelidae are exclusively phytophagous. Adults feed externally on living plant tissues, usually consuming leaves, a few on flowers or even pollens. The chrysomelid larvae are external or internal feeders on various plant parts, usually on foliage, several being subterranean attacking roots or underground stems, and some others even adapted to feed on pollen, seeds, and herbaceous stems. With this general ground plan of habits, exceptions are recorded in some groups. Both adults and larvae of the subfamily Bruchinae are adapted to consume seeds, even attaining a serious pest status on various pulses. Larvae of most Cryptocephalinae feed on dead plant parts including fallen leaves and barks of living or dead twigs, and the larvae of *Sagra* Fabricius (Sagrinae) are recorded as gall formers. Interestingly, larvae of some species are associated with ants, feeding on their eggs, feces and possibly dead ones (Riley *et al.* 2002).

Most chrysomelids are confined to Angiosperms, both on dicots and monocots, while a few feed on mosses, ferns, cycads and conifers. They are highly specific in their food preferences, either monophagous or more commonly oligophagous relying on specific plant genera or related families (Riley *et al.* 2002, Lawrence & Ślipiński 2013).

Being phytophagous, several chrysomelids do considerable damage to economically and ecologically important plants either consuming directly or as vectors of plant pathogens. On the positive side, phytophagy is also extrapolated in successful biocontrol programmes against noxious weeds (Julien & Griffiths 1998; Broughton 2001; Williams 2004).

2.1 A brief history of classification of Chrysomelidae

Latreille (1802), in the third volume of the “*Histoire Naturelle*”, made the earliest attempt to classify leaf beetles, recognizing the group as a single family and proposed the name “Chrysomelines (Chrysomelinae)”. He divided the group into 16 indiscrete genera and arranged them in three divisions namely *Chrysomèles*, *Megalopides* and *Galerucaae*. Later, the group was split into two separate families namely Chrysomelines and Criocerides (Latreille 1810). Dumeril (1806) proposed the family name Phytophages for Linnaeus’ Chrysomeles, and included 13 indiscrete genera including *Helodes* Pykull (= *Elodes* Latreille) and *Erotylus* Olivier, which are presently classified under families Scirtidae and Erotylidae respectively.

Félicien Chapuis is considered as the father of modern chrysomelid classification. He followed Latreille’s (1802) classification by treating the group as a single family and recognized principal divisions of the group. However, he adopted the name Phytophages proposed by Dumeril (1806) and classified the family into four divisions and 15 tribes (Chapuis 1875). Later, Jacoby (1908) revised the Chapuis’ system of classification and reverted to the original name Chrysomelidae, dividing the family into five divisions and upgraded the tribes proposed by Chapuis into 16 subfamilies.

Pierce (1916), however, considered Phytophaga as a series within the Order Coleoptera to accommodate all known herbivorous beetle groups. He divided Phytophaga into 11 superfamilies of Aglycyderoidea, Attelaboidea, Brachyceroidea, Brentoidea, Cerambycoidea, Chrysomeloidea, Curculionoidea, Doydirhynchoidea, Mylabroidea, Platystomoidea and Scolytoidea by upgrading the previously known families.

Boving & Craighead (1930) classified Coleoptera based on their larval morphology and elevated Chrysomelidae into superfamily status, also upgrading 12 of the 16 subfamilies of Jacoby (1908) into familial levels. The remaining four subfamilies (Chlamidinae, Clytrinae, Cryptocephalinae and Lamprosominae) were placed in the newly constituted Camptosomatidae.

Chen (1940) adopted a still newer system of classification by considering the hind wing venation and male genitalia along with the larval and adult morphologies. He split the group into six families and 15 subfamilies (given in parenthesis), *viz.* Donaciidae (Sagrinae, Donaciinae, Orsodacninae, Megascalinae, Megalopodinae), Crioceridae (Criocerinae), Chrysomelidae (Chrysomelinae, Galerucinae, Halticinae), Cryptocephalidae (Clytrinae, Cryptocephalinae, Chlamydinae), Eumolpidae (Eumolpinae) and Cassididae (Hispiniae, Cassidinae).

Crowson (1955) considered both larval and adult characters in classification and reclassified Coleoptera accordingly. He recognized the close relationship of Bruchidae with Sagrinae, raising the former to family rank.

Chen (1964), while discussing the evolution and phylogenetics of leaf beetles, proposed four alternative systems of classifications for superfamily Chrysomeloidea (Cerambycid lineage + Chrysomelid lineage). He considered the Cerambycid lineage as a single homogenous family, while splitting the chrysomelid lineage into two to five families and 18 subfamilies. In all the four systems, he treated Hispidae as a separate family with three subfamilies namely Hispiniae, Cassidinae and Anisoderinae. He treated Bruchidae as a separate family (Crowson's classification) within Chrysomelid lineage only in the third and fourth systems. He proposed four new subfamilies: Anisoderinae, Lamprosomatinae, Synetinae and Zeugophorinae. The two American subfamilies Aulacoscelinae and Megascalinae, were not included in Chen's classification due to unavailability of specimens, however, suggested placement of Megascalinae within Eumolpidae [18 subfamilies: Sagrinae, Donaciinae, Criocerinae, Megalopodinae, Zeugophorinae, Orsodacninae, Synetinae, Eumolpinae, Lamprosomatinae, Chlamisinae, Clytrinae, Cryptocephalinae, Chrysomelinae, Galerucinae, Alticinae, Anisoderinae, Hispiniae, and Cassidinae). Chen (1973) separated the Cryptostomes (Hispidae and Cassididae) from Chrysomeloidea and assigned them separate superfamily status based on their adult morphologies, thereby including only five families *viz.* Cerambycidae, Bruchidae, Crioceridae, Eumolpidae and Chrysomelidae. Within the newly proposed superfamily Cassidoidea, he included four families *viz.* Anisoderidae, Callispidae, Cassididae and Hispidae. However, his ranking of Bruchidae, Crioceridae and Eumolpidae as separate families as well as the upgradation of Cassidinae to superfamily failed to gain acceptance among taxonomists.

Subsequent workers such as Gressitt (1942), Jolivet (1959), Gressitt & Kimoto (1961, 1963), Jolivet & Petitpierre (1981) and Crowson (1981) proposed different systems of Chrysomelidae classifications with varying number of subfamilies by changing the statuses of previously designated subfamilies into tribes or vice versa, also proposing new subfamilies or placing some groups in or out of the family.

Kuschel & May (1990) separated Orsodacninae and Megalopodinae from Chrysomelidae and placed them under Megalopodidae as subfamilies along with a third subfamily Palophaginae. Lawrence & Britton (1991) listed six families in Chrysomeloidea: Vesperidae, Anoplodermatidae, Oxypeltidae, Disteniidae, Cerambycidae and Chrysomelidae rearranging the placement of both Orsodacninae, Megalopodinae and the genus *Palophagus* Kuschel & May, 1990 (Palophaginae) within Chrysomelidae. Švácha *et al.* (1997) downgraded Anoplodermatidae as a subfamily and placed under Vesperidae. Recently Leschen & Beutel (2014) in the third volume of “*Handbook book of zoology, Coleoptera, Beetles*” dealt with seven families: Cerambycidae, Chrysomelidae Disteniidae, Megalopodidae Oxypeltidae, Orsodacninae Vesperidae within Chrysomeloidea. Reid (2014) treated 12 subfamilies *viz.* Bruchinae, Cassidinae, Eumolpinae, Lamprosomatinae, Cryptocephalinae, Criocerinae, Chrysomelinae, Galerucinae, Donaciinae, Sagrinae, Spyllophorinae and Synetinae within Chrysomelidae.

2.2 Subfamily Cassidinae Gyllenhal, 1813

Cassidinae Gyllenhal, 1813 *s. l.* forms the second largest chrysomelid subfamily with 6,319 described species worldwide classified under 35 tribes and 341 genera (Borowiec & Świętojańska 2014). The subfamily was until recently treated as two separate subfamilies, namely Cassidinae Gyllenhal, 1813 and Hispinae Gyllenhal, 1813 (Borowiec 1995; Staines 2002; Chaboo 2007).

Cassidine fauna of New and Old World are strikingly distinct and equally diverse at the tribal levels (Majka & Lesage 2008). Of the 35 tribes, 18 are restricted to the New World, while 17 are restricted to the Old World, and only the nominotypical tribe, Cassidini Gyllenhal is distributed worldwide. The hispine group is relatively more diverse in the Old World (1800 versus 1572 species), whereas the cassidine group is more diverse in the New World (1639 versus 1309 species).

It was Gyllenhal (1813) who originally proposed the two clades, Cassidinae *s. str.* and Hispinae *s. str.* present within the subfamily and treated them as two separate subdivisions within the family ‘Chrysomelinae’ namely Cassideae (to accommodate ten species of *Cassida* L.) and Hispoidea (for a single species of *Hispa* L., *H. atra* L.).

Chen (1940) was the first to integrate both clades Hispinae *s. str.* and Cassidinae *s. str.*, and treat them as a separate family, Cassididae, differing from other chrysomelids in the number of tarsomeres. He further (1964) presented a new classification of Phytophaga, by clubbing both the subfamilies and proposing Hispidae as a family name within Chrysomeloidea. He accommodated three subfamilies namely Anisoderinae, Hispinae and Cassidinae. However, later, (1973), he proposed the group to be a superfamily with the name Cassidoidea, comprising four families: Anisoderidae, Callispidae, Hispidae and Cassididae. Further, Chen *et al.* (1986) downgraded the four groups as subfamilies within the Hispidae.

Staines (2002) reviewed the priority of group names of the two clades and formally fixed the subfamily name as Cassidinae, since it appears first on page 434 before the name Hispinae later on page 448 in the same publication (Gyllenhal 1813). Borowiec & Świętojańska (2005) and Chaboo (2007) also reviewed their name priority and concluded that Chen (1940) was the first reviser of the group as he proposed the family name Cassididae to include both clades as subfamilies. Chaboo (2007) was the first to integrate morphology and biology of both hispine and cassidine clades, who studied the phylogeny of the subfamily and found that classical Cassidinae are monophyletic while the classical Hispinae being paraphyletic.

2.2.1 Taxonomy of hispine Cassidinae

Studies on hispine Cassidinae began with Linnaeus (1767) in the 12th edition of *Systema Naturae*, describing the genus *Hispa* to accommodate four species, viz. *H. atra*, *H. testacea* and *H. bihamata* and *H. muticus*. While the first three species were newly described to designate the genus, *H. muticus* had originally been described and named as *Dermestes clavicornis* (Linnaeus, 1758). Since then, Chapuis (1875) designated *H. atra* as type species of the genus, *H. testacea* and *H. bihamata* were transferred to *Diclidispa* Gestro and *Acanthispa* Chapuis (= *Acanthodes* Baly) respectively (Uhmann 1952a, 1959a). *Hispa muticus*, the other representative is presently treated as *Orthocerus*

clavicornis (L.) in the family Zopheridae (Coleoptera: Tenebrionoidea) [GBIF.org, <https://www.gbif.org/species/6097296> (accessed 14th November 2022)].

Fabricius (1775) described the genus *Alurnus*, a New World genus, recognizing its relationships with the genus *Hispa*, described by Linnaeus, and thus laid the foundation for the clade hispine Cassidinae. In 1801, he added a few more species to the genus including, *Alurnus ferrugineus* from Sumatra (Fabricius 1801). Later Chevrolat (1836) transferred this species to a new genus *Anisodera* Chevrolat.

Since Fabricius, the following genera were continuously added from all over the world by various authors: *Chalepus* Thunberg, 1805, *Cryptonychus* Gyllenhal, 1817, *Oxycephala* Guérin-Méneville, 1830, *Arescus* Perty, 1832, *Platypria* Guérin-Méneville, 1840a, *Estigmena* Hope, 1840, *Oncocephala* Agassiz, 1846, *Cephalolia* Chevrolat, 1843, *Coelaenomenodera* Blanchard, 1845, *Bothryonopa* Guérin-Méneville, 1840, *Anisodera* Chevrolat, 1836, *Promecothea* Blanchard, 1853, and *Octocladiscus* Thomson, 1856.

Baly (1859) treated the two subfamilies as discrete families, Hispidae and Cassididae and made the first attempt to integrate the information on Hispidae by publishing a detailed work on the hispid collections of the British museum, adding 25 new genera and thereby listing 34 genera from the world. Baly (1864, 1869) further enhanced the knowledge of leaf beetles by adding several new species and new genera in both Hispidae and Cassididae.

Motschulsky (1861) described 20 species of hispines in the genus *Hispa* L. from different parts of the Old World including India, Myanmar and Nepal. These species are presently accommodated in seven genera, viz. *Acmenychus* Weise, 1905, *Asamangulia* Maulik, 1915, *Dactylispa* Weise, 1897, *Di cladispa* Gestro, 1897, *Hispa* Linnaeus 1767, *Hispellinus* Weise, 1897 and *Rhadinosa* Weise, 1905.

Chapuis (1875) treated Gyllenhal's groups as two separate tribes, Hispides and Cassidides under the section "Cryptostomes" in the family "Phytophages", with respect to the position of the mouth on ventral side of the head, not visible in dorsal view. He also established 20 groups (now treated as tribes) in Hispides and 17 in Cassidides. Subsequent authors including Jacoby (1908) and Maulik (1916, 1919a, 1928) followed Chapuis' (1875) classification treating "Cryptostomes" as one of the five subdivisions in the family Chrysomelidae, with two subfamilies, Hispinae and Cassidinae.

Gestro (1884–1823) published a series of works during his four decades of studies on hispines. Following Chapuis' (1875) system of classification, he recognized the clade as Hispidae instead of “Hispidés” and renamed the ‘groups’ into Callispinae, Cryptonychinae, Gonophorinae, Oncocephalinae, Cephalodontinae and Hispinae. He also divided Hispinae into Hispini and Monochirini (Gestro 1905, 1909a). He has described currently valid four genera and three subgenera within the clade with over 30 species from the Indian subcontinent alone.

Weise (1897–1922) made significant contributions to the knowledge of World Cassidinae. He worked extensively on both the New World and the Old World fauna and has described 32 valid genera and a subgenus within the hispine clade. In his earlier works he treated both clades as two separate tribes namely Hispini and Cassidini, while in later works treated them as subfamilies within Chrysomelidae. Weise (1911) in his World catalogue of Hispinae *s. str.*, latinized the group names proposed by Chapuis (1875) and formulated the modern tribal classification within the group, while listing all the described species which had been described to that date under 93 genera (49 in Old world and 44 in New World) and 23 tribes (14 tribes in hispine clade). While Latinizing, he missed to attribute the names of Chapuis which led the subsequent authors to incorrectly attribute the names to Weise. Wiese (1913a) published a comprehensive work on World Hispinae *s. str.*, provided keys and descriptions to all the tribes and genera, covering 25 tribes (New World–9, Old world–14) and 99 genera (New World–49, Old World–50) along with the checklists of all the described species in the respective genera.

Maulik (1913–1936) extensively worked on both New World and Old World Cassidinae and contributed much towards the taxonomy of hispine Cassidinae by describing nine genera and numerous species within the clade.

Uhmann (1928–1964) described numerous species in currently valid 31 genera from the New World and 11 from Old World. He (1957a, 1958a) further provided the catalogues of Old World and New World hispines, and a corrigendum with further additions of species in 1964 (Uhmann 1964a).

Crowson (1955) included Cassidinae as part of the Hispinae while Monrós (1960) grouped the two clades in the single group Cassidiformes.

Gressitt (1957a, 1957b, 1960a, 1960b) provided monographs on hispine beetles of Celebes, Papuan subregions, Western Polynesia and New Caledonia. He provided key

to tribes, genera and species in addition to the illustrations of immatures and adults of several species.

Gressitt & Kimoto (1963), in their monograph on Chrysomelidae of China and Korea reviewed both the groups as separate subfamilies and studied nine currently valid tribes besides treating Chaeridionini as a separate tribe.

Würmli (1975a) provided the most comprehensive work on the tribes and genera of Old World Hispinae *s. str.*, with illustrated keys to all the 14 tribes, 84 genera and nine subgenera along with descriptions and distribution data. He further (1976a) revised the oriental tribe, Bothryonopini, adding five new species and thereby listing 33 species and 13 subspecies and also synonymising the genus *Macrispa* Baly with *Bothryonopa* Guérin-Méneville.

Staines (2002) revised the 11 tribes and 98 genera of hispine Cassidinae of the New World. He also described the genus *Serratispa* within Sceloenoplini Uhmman and synonymised the tribe Imatidiini Hope (formerly included in the cassidine clade) with Cephaloleiini Chapuis (tribe within hispine clade) and Delocrariini Hincks with Haemisphaerotini Hincks (both under cassidine clade). In 2006, he prepared the world catalogs of hispine tribes and made available on the website of the National Museum of Natural History, and compiled the details of all the published works of nearly 3000 species of hispine Cassidinae, belonging to 170 genera and 24 tribes. He continuously updated the work in 2010, 2012 and 2015 (Borowiec & Świętojańska 2014; Staines 2015a–i). He reviewed *Chaeridiona* Baly, an Oriental genus containing nine species at that time and could examine all the types except *C. pseudometallica* Basu, 1999 (Staines 2007).

Mohamedsaid (2004) in his catalogue of the Malaysian Chrysomelidae, treated the two clades as separate subfamilies and arranged the species in nine tribes, 21 genera and four subgenera. Borowiec & Sekerka (2010) published a catalogue of the Cassidinae from the Palaearctic region.

2.2.2 National status

Gestro (1888–1923) contributed much towards the knowledge of Indian hispine Cassidinae, describing 20 currently valid species in 12 genera from India.

Weise (1897, 1905b) gave detailed accounts of Indian Cassidinae received from Mr. H. E. Andrews. He treated the two clades as separate tribes namely Cassidini and Hispini. He (1897) included a total of 70 species (36 in Cassidines and 34 in Hispines) under 26 genera (12 in Cassidines and 14 in Hispines). He also treated *Monohispa* Weise and *Triplispa* Weise as subgenera within *Dactylispa* Weise, of which *Monohispa* is now treated as a separate genus, while *Triplispa* was synonymised with *Dactylispa* (Staines 2015). He (1905b) listed 42 species (22 in Cassidines and 20 in Hispini) under 20 genera (9 in Cassidines and 11 in Hispines) from the Indian subcontinent, mostly from the Nilgiris, Kanara and Anamalai. He also enriched our faunistic list through the descriptions of several species and three genera in scattered publications (1904, 1905c, 1905d, 1908, 1913b, 1916, 1922).

Maulik (1913–1937) made significant contributions to Indian Cassidinae by describing more than 25% of the total known species within the hispine clade alone. Maulik (1913, 1915) published notes on cryptostomes of the Indian Museum. Maulik's (1913) work comprises nine species of Hispinae *s. str.* and 38 species of Cassidinae *s. str.* including a single new species of *Epistictitina* Boheman. However, Maulik (1915) dealt only with Hispinae *s. str.* describing *Asamangulia* Maulik, 1915, a unique genus characterized by unequal claws for a single species, *A. cuspidata* Maulik, a species that infests sugarcane in India. He also described five other species and thereby listing 22 species in nine genera from India.

Maulik's (1919a) work under *The Fauna of the British India* series remains the only comprehensive work available on Indian Cassidinae. In this work, he treated both Hispinae *s. str.* and Cassidinae *s. str.* as separate subfamilies within the Cryptostomes of Chrysomelidae with numerous newly described species. Out of these, 39 species in nine genera are still treated as valid within hispine clade. In 1928, he described *Squamispa* Maulik, the lone representative of the tribe *Eurispini* from the Oriental region, for two species, *S. fasciata* and *S. ballapurana* from Chikkaballapura, Karnataka in addition to a single species of *Agonita*, *A. chlorina* from Nilgiri Hills. He also described *Callispa almora* and *Downesia sasthi* from Western Himalayas (Maulik 1923) and a single species of *Leptispa*, *L. arundina* from Bihar (Maulik 1937).

After Maulik's contribution, only very little has been added to the knowledge of Indian hispines and it is represented mainly by the scattered publications of new species.

Uhmann described seven species of hispines in six genera (Uhmann 1927a, 1928a, 1951a, 1954a 1961a and 1963a). Pic (1930, 1934, 1937 and 1943) described five species in three genera and Medvedev (1992a, 1993, 2009) added four more species in three genera from various parts of India.

Basu & Saha (1977) and Basu (1999) worked on the specimens deposited in the Museum of Zoological survey of India, Kolkata. Basu & Saha (1977) described seven species of *Dactylispa* Weise from Darjeeling, West Bengal. Basu (1999) described 14 species in five genera, of which 13 are from the north-eastern states and a single species of *Leptispa* Baly from south India (Tamil Nadu).

Borowiec & Świętojańska (2007) described *Hispa waiensis* from Maharashtra while giving an account of 28 species of cassidines, with color photographs of all 19 hispines (in seven genera) they collected during their expedition to Maharashtra.

2.2.3 Hispine Cassidinae of south India

Although Weise (1913b), Maulik (1919a, 1923), Uhmann (1927a), Pic (1937, 1943), Medvedev (1993) and Basu (1999) described several species from southern India, there is no comprehensive work on south Indian hispine Cassidinae. Currently 86 species belonging to 22 genera under nine tribes are known from south India (estimated from Staines 2015).

Shameem & Prathapan (2013, 2014, 2019) added three species of hispines viz. *Callispa keram*, *Chaeridiona mayuri* and *Bothryonopa sahyadrica* to the faunal list.

2.3 Systematics of south Indian tribes and genera of hispine Cassidinae

2.3.1 Tribe Anisoderini Chapuis, 1875

The Oriental tribe Anisoderini was initially proposed as ‘Groupe Anisoderites’ by Chapuis (1875) to include four genera, *Anisodera* Chevrolat, *Estigmena* Hope, *Hispopria* Baly and *Macrispa* Baly. Later Weise (1911) latinized name of the tribe, retaining two genera (*Anisodera* with two subgenera *Anisodera* and *Lissochila*, and genus *Estigmena*) and transferring both *Macrispa* and *Hispopria* to Bothryonopini. He also synonymised the *Hispopria* with *Bothryonopa*. Würmli (1975a) provided detailed descriptions to the tribe, an illustrated key and descriptions to genera. Chen (1964) treated the group as a

separate beetle family Anisoderidae while Chen *et al.* (1986) proposed it as a subfamily of Chrysomelidae, but these changes did not get much acceptance among peers.

The tribe presently comprises 62 described species in three genera and available host plant information indicates that the tribe is confined to monocots (Staines 2015).

***Anisodera* Chevrolat, 1836**

The genus was established by Chevrolat (1836) for a single species, *Alurnus ferrugineus* (= *Anisodera ferrugineus*) described by Fabricius (1801). The genus since has been continuously supplemented with species over the past one and half centuries and presently is represented by 62 valid species (Staines 2015). According to Kalshoven (1957), this is one amongst the most difficult genera to segregate at the species level within the clade due to minimal interspecific variations.

Maulik (1919a) included seven species within *Anisodera*. Of these, *Anisodera barbicornis* was synonymised with *A. propinqua* by Gestro (1920) while *A. macilentata* was transferred to *Lasiochila* by Uhmman (1930a). *Anisodera fraterna* Baly, *A. guerini* Baly and *A. propinqua* Gestro remain the only known species from India (Staines 2015).

Out of the 33 described species of *Anisodera*, information on host plants is known only for seven, including two from India. Adults of *Anisodera* make holes on leaves, while the larvae are pseudostem borers on members of *Costus*, *Musa* and some Zingiberaceae (Kalshoven 1957). He also recorded that *A. guerini* pupates inside the 8–10 cm long larval tunnels, which are indicated by small oval holes externally on *Costus*.

***Estigmena* Hope, 1840**

The genus *Estigmena* was described by Hope (1840) for *E. chinensis*, and currently comprises five valid species distributed in the Oriental region (Staines 2015a; Sekerka 2015).

Maulik (1919a) reviewed two species from the Indian subcontinent viz. *Estigmena chinensis* Hope and *E. cribricollis* Waterhouse. *Estigmena chinensis* has wider distribution and is represented from most countries of the Oriental region, whereas *E. cribricollis* is endemic to south India (Staines 2015a). Bhasin (1950) described *E. bicolor* from Assam, India, while Uhmman (1951a) described *E. dohertyi* from Myanmar.

Information on host plants, immature stages and biology are available only for *E. chinensis* (Staines 2015a) indicating that the host range of the genus is probably limited

to Poaceae. Maulik (1932) provided descriptions and detailed illustrations of the larvae of *E. chinensis*. The larvae of *E. chinensis* bore into the shoots and feed from inside and are reported as important culm destructors of bamboos in India, Indonesia and Myanmar (Stebbing 1914; Beeson 1941; Mathur 1944; Kalshoven 1957; Haojie *et al.* 1998). Roonwal (1977), Varma & Sajeev (2015) and Singh & Singh (2018) worked out the biology of *Estigmene* species in detail. Singh & Singh (2018) provided color photographs of its different life stages, damages and discussed the control measures using chemical pesticides.

***Lasiochila* Weise, 1916**

Weise (1911) initially divided the genus *Anisodera* into two subgenera, *viz.* *Anisodera* comprising nine species and *Lissochila* Weise with 23 species. In 1916, he replaced the subgeneric name '*Anisodera*' with *Lasiochila* and raised the same to generic rank, while the other subgenus, *Lissochila* Weise was synonymised with the proper *Anisodera* Chevrolat (Weise 1916). In the same year, unaware of Weise's work, Maulik sank the subgenus *Lissochila* Weise within the genus *Anisodera* Chevrolat and proposed a new generic name, *Anisoderopsis* for Weise's 'subgenus *Anisodera*', by assigning *Anisodera excavata* Baly (original combination) as the type species (Maulik 1916). Later, Achard (1921) synonymised *Anisoderopsis* with *Lasiochila* as the works of Weise (April 1916) had precedence over Maulik (December 1916).

Maulik (1919a) described *Anisoderopsis nigra* (= *Lasiochila nigra*) from Bengal and thereby included five species within the genus. Later, Uhmman (1951a) described *L. imitans* from Patkai Hills and it remains the only *Lasiochila* described from India since Maulik (1919a).

The host plants are known only for seven species including two from India and the available data indicate that the genus is confined to members of Poaceae (Staines 2015a). Kalshoven (1951, 1957) discussed the resemblance of *L. goryi* (Guérin-Méneville) and *L. rufa* (Guérin-Méneville) in both habit and habitat, with *E. chinensis*. Macdonald (1962) recorded the life cycle and damage of *L. goryi* on bamboos in Malaya. Descriptions and illustrations are known only for the pupa of *L. rufa* (Guérin-Méneville) (Uhmman 1955a) and larva of *Lasiochila goryi* (Guérin-Méneville) (Uhmman 1959b).

2.3.2 Tribe Bothryonopini Chapuis, 1875

The Old World hispine tribe Bothryonopini includes 70 described species in five genera: *Bothryonopa* Guérin-Méneville, 1840, *Wallacea* Baly, 1859, *Pistosia* Weise, 1905, *Neodownesia* Gressitt, 1953, and *Macrispa* Baly, 1859 (Sekerka 2015; Staines 2015b, c). Chapuis (1875) proposed ‘Groupe Botryonopites’ for the single genus ‘*Botryonopa*’ while Weise (1911) latinized the group name and added *Macrispa*. Würmli (1976a) synonymised *Macrispa* with *Bothryonopa*, and the tribe remained monotypic until Sekerka (2015) transferred *Wallacea* from Gonophorini to Bothryonopini and resurrected *Pistosia* and *Neodownesia* from synonymy with *Wallacea* as well as *Macrispa* from *Bothryonopa*. He also provided a valid key to the genera of Bothryonopini.

Confirmed host plants of Bothryonopini are palms (Arecaceae) and a few of them are economically important crop pests (Prathapan & Shameem 2017).

***Bothryonopa* Guérin-Méneville, 1840**

Bothryonopa, the largest genus of the tribe, comprising 33 species, is mostly distributed in the Indo-Malayan subregion. The genus was originally established for four species, *B. sanguinea*, *B. gracilis*, *B. goryi* and *B. rufa*, however, all except *B. sanguinea* were later transferred to the tribe Anisoderini (Weise 1911).

Host plants are known for five species: *B. grandis* (Baly, 1859), *B. sahyadrica* (Shameem & Prathapan, 2019), *B. sanguinea* Guérin-Méneville, 1840 and *B. spectabilis* Baly, 1859 (Staines 2015b), of which immatures are known for only *B. sanguinea* (Maulik 1949). The genus in India is represented by three species, *B. sahyadrica*, *B. sanguinea* and *B. sheppardi* Baly (Shameem & Prathapan 2019).

***Wallacea* Baly, 1859**

The genus was described by Baly (1859) for three species, two of which were collected by Alfred Russel Wallace in the Malay Archipelago in 1869. Presently *Wallacea* comprises 35 named species, all native to the Oriental region (Staines 2015c; Prathapan & Shameem 2015, Lee & Sekerka 2018a).

The Indian fauna of *Wallacea* is represented by *W. dactyliferae* Maulik, *W. jarawa* Prathapan & Shameem, and *W. limbata* Gestro (Prathapan & Shameem 2015). Host plants

are known for only six named species, all confined to Areaceae (Staines 2015c; Prathapan & Shameem 2015). Biology of the members is poorly known with partial life history information available for three species (Sekerka 2015; Staines 2015c). Immature stages of *W. dactyliferae* are the best known amongst the members of the genus (Maulik 1919a; Zaitsev 2006; Lepesme 1947; Zaitsev 2006; Panchaud & Dusoulrier 2014; Lee & Cheng 2010). Kalshoven (1951, 1981) illustrated the larva and pupa of *W. apicalis* Gestro. Prathapan & Shameem (2015) provided photographs of larvae and adults of *W. jarawa* Prathapan & Shameem as well as their damages on coconut palm. Available information on the biology of the genus (Maulik 1919a; Kalshoven 1957; Drescher & Martinez 2005; Chapin & Germain 2005; Haddad 2007; Besse *et al.* 2013; Panchaud & Dusoulrier 2013, 2014; Prathapan & Shameem 2015) indicates that all life stages are adapted to a uniform mode of life within the unopened spindle leaves of palms.

2.3.3 Tribe Callispini Chapuis, 1875

Callispini Chapuis is one of the moderately speciose tribes among hispine Cassidinae, mostly distributed in the Oriental and Afrotropical regions and extending up to New Guinea of the Australian Regions (Staines 2015d). The tribe was established by Chapuis (1875) as “Groupe Callispites” to accommodate eight genera, *viz.* *Amblispa* Baly, *Callispa* Baly, *Cladispa* Baly, *Demotispa* Baly, *Leptispa* Baly, *Octocladiscus* Thomson, *Stenispa* Baly and *Oediopalpa* Baly (presently in four tribes). In the same work he treated *Hispodonta* Baly, a third valid genus in the tribe along with *Spilispa* Chapuis separately in “Groupe Hispodontites”. Weise (1911) latinized the name proposed by Chapuis without formally synonymising “Hispodontites” with Callispini (Bouchard *et al.* 2011). He listed *Hispodonta* Baly and *Spilispa* Chapuis in the tribe along with *Amblispa*, *Callispa* and *Melispa* described by him in 1897. Würmli (1975a) synonymised *Melispa* with *Callispa* and also added *Pseudocallispa* Uhmman (1930-1932) to the tribe. Gressitt & Samuelson (1988) synonymised *Spilispa* with *Hispodonta*.

Amblispa Baly, 1859

The genus was described by Baly to accommodate two species, *A. dohrnii* and *A. laevigata* from Sri Lanka and Pondicherry (south India) respectively (Baly 1859). Of these two species, *A. dohrnii* (type species of the genus) is endemic to Sri Lanka while the latter has a wider range of distribution with records from Bangladesh, Nepal and Sri Lanka.

The host plants of this genus are known only for *A. laevigata*, recorded on grasses (Poaceae) (Maxwell-Lefroy 1909), while the biology remains unknown.

***Callispa* Baly, 1859**

Baly (1859) described *Callispa* to accommodate 12 species, including 11 newly described (three from India). Presently the genus comprises 165 species distributed in the Oriental and Afrotropical Regions (Staines 2015d) and is the second most diverse Indian genus (next to *Dactylispa* Weise) with 33 known species within the subfamily (Shameem & Prathapan 2013; Staines 2015d).

Trophic selections of *Callispa* are confined to the monocot families Araceae, Arecaceae, Cyperaceae, Musaceae, Poaceae, Orchidaceae and Zingiberaceae (Uhmann 1969; Jolivet & Hawkeswood 1995; Reid 1998; Schöller 2007, 2008; Lee *et al.* 2012; Staines 2015d). Information on the immature stages of the genus is fragmentary and is limited to nine species (Lee *et al.* 2012). Studies on life history include Chen (1929), Nair & Oommen (1965), Zaitsev (2001) and Lee *et al.* (2012). Eggs are deposited singly (Nair & Oommen 1965, Lee *et al.* 2012) or in small groups (Chen 1929, Lee *et al.* 2012), and are enclosed in a membranous ootheca. Both larvae and adults are open feeders on leaves and pupation occurs on the leaf itself.

2.3.4 Tribe Coelaenomenoderini Weise, 1911

The Old World tribe Coelaenomenoderini comprises nine genera and 88 species (Gressitt & Kimoto 1963; Gressitt & Samuelson 1990; Würmli 1975a; Staines 2015e). The limited data indicates Arecaceae, Cyperaceae, Pandanales and Zingiberales as host plants (Staines 2004, 2015e) for members of the tribe. Juvenile stages (larva or pupa) are described for only three species: *Coelaenomenodera* (*Coelaenomenodera*) *elaeidis* Maulik (Maulik 1920; Cox 1988, 1994), *Cyperispa hyloytri* Gressitt (Cox 1996) and *Javeta pallida* Baly (Shameem *et al.* 2016).

***Javeta* Baly, 1859**

Javeta Baly, 1859 comprises 19 species found in Asia (Staines 2012, Staines 2015e) and *J. pallida* Baly, 1859, the type species of the genus, is the only species of tribe Coelaenomenoderini and of the genus from India (Maulik 1919a). The biology of *Javeta* is poorly known but records indicate host associations of four species with Arecaceae (Jolivet 1989; Jolivet & Hawkeswood 1995; Santiago-Blay 2004): *Javeta arecae*

Uhmman, 1943 on *Areca catechu* (Uhmman 1943a) and *Areca* sp. (Pinang; Kalshoven 1981); *Javeta corporaali* Weise, 1924 on *Pinanga kuhlii* Blume (Uhmman 1955a, 1957a); *Javeta pallida* Baly on *Phoenix dactylifera* L., *P. sylvestris* (L.) Roxb. and *P. roebelenii* O'Brien (Shameem *et al.* 2016, 2017); *Javeta thoracica* Uhmman, 1955 on *Areca* sp. (Uhmman 1955a) and *Metroxylon* sp. (Kalshoven 1957). Steiner (2001) listed undetermined species of *Javeta* amongst the insects associated with the rattan palms, *Daemonorops hirsuta* Blume and *Calamus manan* Miq. (Arecaceae: Calameae). Information on *Javeta* juvenile stages is limited to the described pupa of *J. corporaali* by Uhmman (1955a) and the mining larva of *J. arecae* (Kalshoven 1981). Kalshoven (1951: 759; 1981: 456) gave a short remark about the life history of *J. arecae* while Shameem *et al.* (2016) elucidated the detailed natural history of *J. pallida* on two species of *Phoenix* L. palms.

2.3.5 Tribe Eurispini Chapuis, 1875

Eurispini Chapuis is one of the less speciose tribe among hispine Cassidinae with only 14 described species in three genera, restricted to Australia, New Guinea and south India (Staines 2015f). The tribe was established by Chapuis (1875) for three genera namely, *Eurispa* Baly, *Leucispa* Chapuis and *Aproida* Pascoe, and termed as 'Groupe Eurispites'. Weise (1911) latinized the name into *Eurispini* and restricted the group only to encompass *Eurispa* while treating *Aproida* in a separate tribe Aproidini and *Leucispa* along with other members of the tribe Cryptonychini. Maulik (1928) described the genus *Squamispa* for two species from south India and also discussed their affinities with *Eurispa*. Würmli (1975a) added *Leucispa* and *Squamispa* along with *Eurispa* in the tribe and provided an illustrated key to the genera of the tribe.

Out of the 14 described species, host plants are reported only for the *E. vittata* Baly from Australia and are confined to Cyperaceae (Staines 2015f). Hawkeswood & Takizawa (1997) provided illustrations of different life stages, except eggs, and elucidated its biology. Both the adults and younger larvae feed on the base of unfolded leaves of *Gahnia sieberiana* Kunth (Cyperaceae). The larvae are mostly recorded on tender leaves and later crawl into the more tightly clustered leaves at the base of the plant.

Squamispa Maulik, 1928

The genus *Squamispa* was established by Maulik (1928) for two species namely *S. fasciata* and *S. ballapurana* from Chikkaballapura, Karnataka, India, in south India.

Since, the two species are sexual dimorphs, Würmli (1975a) synonymised *S. ballapurana* with *S. fasciata*. Staines (2015f) overlooked the synonymy and treated them as separate species in the Online World Catalog. Apart from the descriptions and morphology of the adults, all the information regarding host plants, biology and immatures remains presently unknown for this genus.

2.3.6 Tribe Gonophorini Chapuis, 1875

Gonophorini Chapuis, 1875 is one of the most speciose tribes with ten genera, distributed mostly in the Oriental region with numerous species also known from the Afro-tropical region and New Guinea, and only one species each from Australia and the Palearctic regions (Staines 2015c). Chapuis (1875) originally proposed the tribe to include five genera, viz. *Acentroptera* Guérin-Méneville (now in Sceloenoplini), *Aspidispa* Baly, *Coelaenomenodera* Blanchard (now in Coelaenomenoderini), *Distolaca* Baly and *Gonophora* Chevrolat. Weise (1911) however retained only two genera, *Aspidispa* Baly and *Gonophora* Chevrolat proposed by Chapuis within the group and further added four others: *Pistosia*, *Wallacea*, *Downesia* and *Agonia* and six subgenera: *Downesia* (*Downesia*), *Downesia* (*Paradownesia*), *Agonia* (*Agonia*), *Agonia* (*Agoniella*), *Gonophora* (*Gonophora*), *Gonophora* (*Lachnispia*) and *Gonophora* (*Micrispa*). Würmli (1975a) expanded the group with three more genera, *Wallacispa* Uhmman, 1940; *Monagonia* Uhmman, 1931; and *Klitispa* Uhmman, 1940. He also recognized *Agoniella* as a distinct genus, listing ten genera and four subgenera. Subsequent authors, such as Chaboo (2007) and Staines (2015c), followed Weise's (1911) and Würmli's (1975a) classification by treating *Wallacea* (= *Pistosia*) as part of the tribe. Recently, Sekerka (2015) redefined the tribe based on the presence of setaceous pores at the angles of the pronotum and transferred *Wallacea* to Bothryonoplini.

The available information on the biology of the tribe indicates that larvae are true leaf miners on several monocot families, namely Araceae, Arecaceae, Costaceae, Marantaceae, Musaceae, Orchidaceae, Pandanaceae, Poaceae, and Zingiberaceae (Kalshoven 1951; Gressitt 1963; Jolivet & Hawkeswood 1995). The report of *Agonita fossulata* (Guérin-Méneville) and *A. kuntzeni* (Uhmman) by Uhmman (1961b) on the members of various dicot families such as Balsaminaceae, Bignoniaceae, Combretaceae, Euphorbiaceae, Fabaceae, Malvaceae, Marantaceae and Vitaceae, is questionable. Later authors like Chaboo (2007) did not consider these plant families as hosts of the tribe.

***Agonita* Strand, 1942**

Weise (1905b) first recognized the genus and named it *Agonia*. Weise (1913a) further divided the genus into two subgenera namely *Agonia s. str.* and *Agoniella* Weise. Strand (1942) renamed the genus as *Agonita* as the original name, *Agonia* was a preoccupied name for a braconid genus (Hymenoptera: Braconidae). Würmli (1975) raised subgenus *Agoniella* Weise into a distinct genus within the tribe and listed *Lachnispia* Gestro, a subgenus originally described within *Gonophora* by Gestro (1897a), as subgenus in *Agonita*. Presently the genus comprises over 110 described species in two subgenera distributed in Afro-tropical and Oriental regions with 19 species represented from India (Staines 2015c).

Maulik (1919a) reviewed 20 species including seven described from the Indian subcontinent. Later Maulik (1928), Basu (1999) and Medvedev (2009) made further additions (total 5) to the list of Indian fauna.

Information on host plants is known only for 17 species, of which 15 are confined to various monocot families. Uhamann (1961b) recorded several species of dicotyledons for the two species of *Agonita* besides their more plausible hosts belonging to Poaceae (Uhamann 1954b, 1961b). Vecht (1930) recorded the pupal period of *A. spathoglottis*, a pest of ornamental orchids in Java, Indonesia, while Nair (1957) gave a detailed account of the natural history of *A. fuscipes* Baly, infesting screw pine (Pandanaceae) in Kerala, India.

***Downesia* Baly, 1859**

The genus *Downesia* was established by Baly (1859) to describe a single species, *D. insignis* from northern India. Chapuis (1875) redescribed the genus and placed it in the tribe 'Cephalodontites' (= Cephalodontini) along with the New World genera, *Acanthispa*, *Anoplitis*, *Charistena*, *Cephalodonta*, *Microrhopala*, *Odontota* and *Uroplata*. Weise (1897) separated the genus from Cephalodontini and recognized the relationships with *Gonophora* Chevrolat. Weise (1911) formally placed the genus within Gonophorini and listed 24 species in two subgenera, 16 in *Downesia* (*Downesia*) and eight in *Downesia* (*Paradownesia*). Maulik (1917) synonymised the latter subgenus with *Leptispa* Baly. Presently the genus comprises 41 described species restricted to the Oriental region with ten species in India.

Maulik (1919a) provided descriptions of 13 species including the two newly described from the Indian subcontinent. Later, he described *Downesia sasthi* that feeds on *Thysanolaena agrostis* Nees (Poaceae) from Western Himalaya (Maulik 1923). Weise (1897), Pic (1934) and Uhmman (1963a) also contributed with the descriptions of singular species.

Available information on the trophic selections of 11 species indicates that the genus is confined to Poaceae (Staines 2015c). Of the 41 species, information on the biology or immatures is available only for the larva and pupa of *D. tarsata* (Medvedev & Zaitsev 1979; Cox 1996).

***Gonophora* Chevrolat, 1836**

The genus *Gonophora* was established by Chevrolat (1836) to accommodate three species, *G. haemorrhoidalis*, *G. apiata* and *G. orientalis*. Baly (1859) redescribed the genus, adding ten species in *Gonophora*, thereby including 12 species within the genus and two in a newly described genus, *Distolaca*. Weise (1897) synonymised *Distolaca* with *Gonophora* and presently the genus comprises of 53 known species, restricted to Oriental region with six species represented from India (Staines 2015c).

Maulik (1919a) reviewed *Gonophora* of the Indian subcontinent and provided descriptions of six species including one from Sri Lanka. Since Maulik (1919a), only three species have been added to the faunal list with Pic (1930) describing *G. donckieri* from Kerala, and Basu (1999) describing *G. pitambara* and *G. raktava* both from West Bengal.

Host plants are known only for seven species, all belonging to Zingiberales (Cannaceae, Musaceae or Zingiberaceae) (Spaeth 1933, Taylor 1937, Uhmman 1955a, Kalshoven 1957, Bhumannavar 1991, Hua 2002). The record of *G. xanthomela* (syn. *G. orientalis*) also on Orchids (Orchidaceae) in Java (Gestro 1919, Franssen & Tiggelovend, 1935) could be the result of misidentification of *Agonita spathoglottis* (Vecht 1930, Uhmman 1953a) and hence Kalshoven (1957) omitted the species of orchids from its host list. Descriptions of immature stages are known only for the pupae of *G. integra* Baly and *G. xanthomela* (Wiedemann) (Uhmman 1955a).

2.3.7 Tribe Hispini Gyllenhal, 1813

This is the second most diverse tribe in the subfamily with 10% of total described cassidines (Chaboo 2007) classified under 25 genera, distributed mainly in tropical and

subtropical regions of Old World (Basu & Saha 1977; Staines 2015g; Zhang *et al.* 2021). The tribe was established by Gyllenhal (1813) to accommodate the genus, *Hispa* L. with a single species *viz.* *H. atra* L. and was originally named as ‘Hispoideae’, the second subdivision after ‘Cassideae’ in ‘Familia Chrysomelina’ (=Chrysomelina Family). Hispinine larvae are true leaf miners and the adults are characterized by the presence of distinct spines on both pronotum and elytra (Gressitt 1950; Kalshoven 1957; Würmli 1975a). Within Cassidinae, the highest number of host plants in 34 families of monocots and dicots (Chaboo 2007) are recorded for this tribe. Of the nine genera known from India, six occur in south India (Maulik 1919a; Staines 2015g).

***Dactylispa* Weise, 1897**

One of the largest genera among Chrysomelidae with more than 370 described species globally. Weise (1897) established this genus and divided it into three subgenera namely, *Monohispa*, *Dactylispa* and *Triplispa* based on the number of spines on the anterior margin of the pronotum. Chen *et al.* (1961) treated *Monohispa* as a separate genus under Hispini. Later Chen & T'an (1964) described a third subgenus, *Platypriella* characterized by the explanate lateral margin of elytra (Chen *et al.* 1986; Zhang *et al.* 2021) with weak lobe near its base, resembling *Platypria* Guérin-Méneville.

Maulik (1919a) included 78 species of *Dactylispa*, excluding a single synonymy of *Monohispa singularis* and three synonymies of *Rhodtrispa dilaticornis*. He also designated *Hispa andrewesi* Weise (= *Hispa severini* Gestro 1897a) as the type species of the genus. Later Basu & Saha (1977) described seven new species from West Bengal. Gestro (1923), Uhmman (1928a, 1961), Würmli (1976b), Vazirani (1972) and Medvedev (1993, 2009) also contributed to faunal list of India.

Despite being the most diverse genus, information on biology, trophic selections and descriptions of immature stages of *Dactylispa* remains scanty (Staines 2015g). Zaitsev (2012) provided descriptions and workable key to immature stages of five species from Vietnam. Among the Indian species, information on host plants is available for 11 species prior to this study and some of them are reported as pests of economically important plants like apple, rice, sugarcane, sorghum, and maize (Gupta *et al.* 2012; Staines 2015g). The only available information on biology of Indian *Dactylispa* includes a note on *D. albopilosa* by Zaka-Ur-Rab (1991) and the detailed bionomics of *D. dohertyi* on *Malus domestica* Borkh. in Jammu and Kashmir by Gupta *et al.* (2012). Illustrations

of immatures are available only for *D. perroteti* (larva and pupa) (Uhmman 1955b, 1956a), *D. higoniae* (larva) (Yano 1965) and *D. sjoestedti* (pupa) (Cox 1996).

***Dicladispa* Gestro, 1897**

Dicladispa Gestro, 1897a is one of the moderately speciose genera of the tribe with 125 described species, mostly from the tropical and subtropical regions of the Old World (Świętojańska *et al.* 2014; Staines 2015g). The genus was originally described as a subgenus under *Hispa* L. (Gestro, 1897a) with *H. testacea* Linnaeus, 1767 (= *Dicladispa testacea* (L.)) as the type species of the genus designated by Chapuis in 1875. Although he proposed this clade as a subgenus, several succeeding taxonomists like Maulik (1919a) used the name ‘*Hispa*’ alone until Uhmman (1952a) treated it as a separate genus.

Maulik (1919a) reviewed the species from India and Myanmar, provided a key to species and illustrations for all species except ‘*Hispa cyanipennis* Motschulsky’. Of the six Indian species, information on trophic selections is available only for three, namely *D. armigera* (Olivier, 1808), *D. cyanipennis* (Motschulsky, 1861) and *D. pallescens* (Guérin-Méneville, 1841). The first two species feed exclusively on Poaceae, while the third feeds on some species of Tiliaceae and Malvaceae (Staines 2015g). The report of *D. armigera* on *Carex* sp. and *Cyperus rotundus* L. (Cyperaceae) by Choudhary *et al.* (2002) may not be accurate.

Maulik (1919a) provided descriptions and illustrations of larva of *D. armigera* and also added a brief note on its biology and pest status on rice plants in India. Świętojańska *et al.* (2014) studied the immature morphology and bionomics of *D. testacea* (L.) and compared them with *D. armigera*. Hazarika *et al.* (2005) observed oviposition behavior in *D. armigera* and recorded stereotyped patterns such as searching for suitable location, slit making, egg laying and protecting. Deka & Hazarika (1996) studied courtship and mating behaviour in *D. armigera*, whilst Sharma *et al.* (2014) studied its biological attributes.

***Hispa* Linnaeus, 1767**

The genus was described by Linnaeus in 1767 for four species, viz. *Hispa atra*, *H. testacea* and *H. bihamata* and *H. muticus*. Chapuis (1875) divided the genus into four subgenera: *Hispa*, *Hispella*, *Podispa* and *Thoracispa*. Of these, *Hispa* and *Thoracispa* are

now treated as distinct genera and the species described in *Hispella* and *Podispa* were synonymised within the various genera of the tribe (Staines 2015g).

The genus is represented by only seven described species, distributed in Asia, Africa and Europe. Maulik (1919a) treated this genus as *Hispella* Chapuis and reviewed six species including *Hispa atra* L., the only species known outside the Indian subcontinent at that time. He also opined the possibility of *H. ceylonica* Motschulsky to be identical with *H. andrewesi* (Weise). Chen *et al.* (1964) described *Hispa echinata* Chen & Sun from China. Later, Würmli (1976c) revised the genus and synonymised *H. ceylonica*, *H. andrewesi* (Weise) and *H. echinata* with *H. ramosa* Gyllenhal. Borowiec & Świątojańska (2007) studied spine arrangement of both *H. andrewesi* and *H. ramosa* in detail and concluded that both species are distinct. In the same work they also described *H. waiensis* as a new species from India. Medvedev (1992a) and Świątojańska (2001) described *H. fulvispinosa* from Rajasthan, India and *H. tarsata* from Iran respectively.

Of the seven described species, trophic selections are known only for four species and all of them are restricted to Poaceae (Staines 2015g). Details of biology or immature stages are known only for three species, viz. *H. stygia* (Thobbi 1959; Grist & Lever 1969), *H. ramosa* (Fletcher 1914) and *H. atra* (Henriksen 1927; Grandi 1935; Uhmman 1954c; Steinhausen 1994).

***Hispellinus* Weise, 1897**

Hispellinus Weise, 1897 is represented by 15 described species (Staines 2015g), distributed in African, Australian and Oriental regions. Chapuis (1875) initially classified all of them in the genus *Monochirus* in the group 'Monochirites'. Weise (1897) later transferred *Hispa peroteti* Motschulsky (now a synonymy of *Hispellinus callicanthus* (Bates)) into a separate new genus called *Hispellinus* and in the same work he also treated both *Monochirus* Chapuis and *Hispellinus* Weise as distinct genera by overlooking their characters. But, in 1905 he synonymised *Hispellinus* Weise with *Monochirus* Chapuis and designated *Hispa multispinosus* Germar (original combination) as the type species (Weise 1905c). Strand (1935) replaced the name *Monochirus* Chapuis with *Hispellinus* Weise, as the former was a junior homonym of a teleost fish genus described by Rafinesque in 1814 (Bouchard *et al.* 2011).

Maulik (1919a) reviewed three species from the Indian subcontinent. The known trophic selections of the seven species indicates that the genus is limited to Poaceae

including crop plants (Staines 2015g). Immature stages are known only from the pupa of *H. callicanthus* (Bates) (Cox 1996) while the biology of the genus is still unknown.

***Phidodonta* Weise, 1906**

Phidodonta Weise, 1906 is one of the less speciose genera in the tribe Hispini with only three described species distributed across Asia and Africa (Staines 2015g). Weise (1906) established the genus for *Phidodonta modesta* from India. Later, Maulik (1919b) described a species, *P. chirinda* from Zimbabwe, while Pic (1924) described *P. tuberculata* (originally in *Pleurispa* Weise) from Ivory Coast.

Maulik (1919a) provided dorsal habitus of *P. modesta* and mentioned it as a pest of sugarcane. Kalshoven (1957) and Staines (2015g) listed the host plants of *P. modesta* while Zaka-Ur-Rab (1991) provided limited information on its biology.

***Platypria* Guérin-Méneville, 1840**

Kirby (1837) proposed the name *Lobacantha* as one of the three subdivisions under the genus *Hispa* L. to accommodate *Hispa erinacea* F. (= *Platypria erinaceus* (F.)). This name was completely overlooked in all publications after the original work (Uhmann 1952a). Guérin-Méneville (1840a) described a separate genus, *Platypria* for three new species viz. *P. hystrix*, *P. centetes* and *P. echidna* and he also transferred two species, *P. coronata* (Guérin-Méneville) and *P. erinaceus* (F.) from *Hispa*. Maulik (1919a) designated *P. echidna* Guérin-Méneville as the type species of the genus. As this name has been widely used in economic entomology, the International Commission on Zoological Nomenclature has suppressed the name *Lobacantha*, the senior synonym of *Platypria* (ICZN Opinion 376, 1955) after the petition filed by Uhmann (1952a).

The genus comprises 34 described species placed in two subgenera (*Platypria* and *Dichirispa*) (Staines 2015g), separated based on the degree of development of translucent fenestrae on the elytral lateral margins and the length of the single spine in between the two lobes (Staines 2012). Maulik (1919a) reviewed the seven species of *Platypria* from the Indian subcontinent. He also provided illustrations and descriptions of the larvae of *P. andrewesi* Weise, a minor pest of ber tree. Maxwell-Lefroy (1909) gave a biological note of *P. andrewesi*. Ranade *et al.* (2021) provided natural history of *P. hystrix* and a brief biological note on *P. erinaceus*, besides a key to all four Indian species of *Platypria*. Host plants of *Platypria* are known for eight species and the genus is one amongst the

few hispine genera atypically associated with eudicotyledons (Kalshoven 1957; Staines 2015g; Ranade *et al.* 2021).

***Rhodtrispa* Chen & T'an, 1964**

Rhodtrispa Chen & T'an is a monotypic genus, distributed in Oriental and Afro-tropical Regions. Chen & T'an (1964) originally described *Rhodtrispa* as a subgenus in *Dactylispa* Weise (while describing *D. (Rhodtrispa) clavicornis* as a new species and designated *Dactylispa luhi* Uhmann as the type species of the subgenus. Würmli (1976c) recognized *D. (R.) clavicornis* and *D. (R.) luhi*, the two species recognized by Chen & T'an as identical to *D. dilaticornis*, originally described by Duvivier (1891) in the genus *Hispa* L. He also synonymised *D. assamensis* Weise, 1904, *D. pusilla* Weise, 1905d and *D. arisana* Chûjô, 1933 with *D. dilaticornis*. Chen *et al.* (1986) upgraded *Rhodtrispa* into a distinct genus within the tribe Hispini.

Staines (2015g) listed the host plants of *Rhodtrispa dilaticornis*. Khan & Kadapa (1957) recorded seasonal food preferences of *R. dilaticornis* on *Cynodon dactylon* (L.) Pers. and rice plants, and elucidated its natural history. The larvae are blood-red coloured, and make transparent, glassy, linear-blotch mines which are free from fecal matter compared to that of *Di cladispa armigera* with scattered frass. The larvae keep the mines clean by pushing the frass towards the base of the mines. Pupation takes place outside the mine and pupae attach themselves to the stem of the rice plant above the water level. They also observed that those pupae that accidentally fell into water could float on the water until it again adhered to nearby plant.

2.3.8 Tribe *Leptispini* Fairmaire, 1868

The tribe comprises two genera, *Leptispa* Baly and *Ovotispa* L. Medvedev— a monotypic genus described from China and Vietnam. The single known species *O. atricolor* (Pic), was originally described under *Leptispa* by Pic (1928). Although Medvedev (1992b) shifted the species into a new genus, *Ovotispa* L. Medvedev, 1992, they distinctly differed from other species of *Leptispa* by their elongate-ovate body and relatively longer mid tibiae (Staines 2012) rather than parallel-sided and flattened body with shorter mid tibiae. Subsequent workers like Kimoto (1999), Hua (2002), Chaboo (2007) and Borowiec & Sekerka (2010) treated *O. atricolor* within *Leptispa*.

***Leptispa* Baly, 1859**

This is a moderately speciose genus with more than 70 described species, mainly distributed in Asia, Africa and Europe (Baly 1859; Staines 2015h). The genus was first recognized by Chevrolat (1836) (*nomen nudum*), later Germar (1842) described the first species as *Leptomorpha filiformis*. Since the name *Leptomorpha* was previously occupied for a tenebrionid genus, *Leptomorpha* Faldermann, Baly (1859) renamed the genus as *Leptispa*. In the same work he also designated *L. filiformis* (Germar, 1842) as the type species and described additional species, *L. pygmaea*, *L. natalensis* and *L. abdominalis*. Gestro (1899a) described *Paradownesia* as a subgenus of *Downesia* to accommodate three species of hispines viz. *P. longipennis*, *P. parallela* and *P. oberthuri*. He further added five more species within the subgenus (Gestro 1906b, 1908, 1909b) and it was treated as a subgenus until Maulik (1917) synonymised *Downesia* (*Paradownesia*) with *Leptispa*.

Maulik (1919a) treated seven species of *Leptispa* with three already described species and a single new *L. rufithorax* Maulik, 1919 from mainland India. Later Maulik (1937), Takizawa (1989) and Basu (1999) added a new species to our faunal list. The known host plant information of the 18 species indicates that the members of the genus exclusively feed on Poaceae (Staines 2015h). The well-known *L. pygmaea* Baly, a minor pest of paddy, is also recorded on several other plants within the family (Dale 1994) including sugarcane (Fletcher 1913). The report by Anand (1989) on *Solanum tuberosum* L. (Solanaceae) could be erroneous. Voronova & Zaitsev (1982) described four new species of *Leptispa* as pests of bamboo in Vietnam.

Biology of the genus is very poorly known, with limited reports available for eight species. Prathapan *et al.* (2009) reviewed the biology of the genus. Eggs of *L. pygmaea* are naked and laid as loose clusters (Prathapan *et al.* 2009), larvae are cryptic feeders and all the life stages are found inside the scraped rolled leaves (Voronova & Zaitsev 1982; Prathapan *et al.* 2009; Borowiec & Świętojańska 2014; Lee & Sekerka 2018b). Lee & Sekerka (2018b) observed a similar behaviour of leaf roll shelter construction in *L. abdominalis* Baly on *Bambusa pachinensis* Hayata from Kinmen Island, near southeastern China. Cox (1996) provided information on the pupa of *L. pici* Uhmman. Prathapan *et al.* (2009) and Lee & Sekerka (2018b) gave the colour photographs of different life stages of *L. pygmaea* Baly and *L. abdominalis* Baly respectively.

2.3.9 Tribe Oncocephalini Chapuis, 1875

Chapuis (1875) established the group Oncocephalites with two genera namely, *Oncocephala* and *Chaeridiona*. In the same work, he placed the third valid genus, *Prionispa* under the tribe Hispini. Weise (1911, 1913a) treated both *Chaeridiona* and *Prionispa* in a separate tribe 'Choeridionini' (= *Chaeridionini*) circumscribing the two genera based on the presence or absence of labial palps. He retained the genus *Oncocephala* in Oncocephalini. Gestro (1923), Maulik (1915), Kalshovan (1957), Gressit (1950), Gressit & Kimoto (1963) and Chen *et al.* (1986) followed Weise's classification. It was Maulik (1919a) who first grouped all the three genera together based on their wedge shaped body, and provided a generic key based on the presence or absence of dorsal cephalic protuberances and labial palpi. Würmli (1975a) formally synonymised *Chaeridionini* Weise with Oncocephalini Chapuis.

Larvae of the tribe are true leaf miners (Santiago-Blay 2004) and some of them are reported as pests of economically important plants (Kalshovan 1957; Santiago-Blay 2004; Świętojańska & Kovac 2007; Shameem & Prathapan 2014). Kalshovan (1957), Santiago-Blay (2004) and Chaboo (2007, Chaboo *et al.* 2010) reviewed host plant association and distribution of this tribe.

***Chaeridiona* Baly, 1869**

Chaeridiona Baly, 1869, an Oriental genus of Cassidinae, was originally described by Baly (1869) for two species namely, *C. metallica* and *C. picea*. Maulik (1919a) designated *C. metallica* as the type species of the genus and included *C. fea* Gestro, 1890 from Myanmar in his revisionary work. Uhmann (1961b) described *C. tuberculata* from Anaimalai Hills, Tamil Nadu. Würmli (1976d) revised the genus including the five species. Later, Staines (2007) reviewed all the nine described species of that time and he could examine all the species except *C. pseudometallica* described by Basu (1999) from northeast India. Shameem & Prathapan (2014) added *C. mayuri* as the tenth species within the genus from south India and redescribed *C. pseudometallica*.

Świętojańska *et al.* (2006) and Świętojańska & Kovac (2007) studied the morphology of both larvae and pupae of *C. picea* Baly and *C. thailandica* Kimoto respectively. The presence of spiracular gills in both larvae and pupae of *C. thailandica* is an adaptation against temporary submergence during heavy rain (Świętojańska & Kovac 2007). The larval mines of *C. mayuri* and *C. thailandica* are free from faecal matter

as they deposit thread like faeces outside the mine (Świętojańska & Kovac 2007; Shameem & Prathapan 2014).

Out of the ten described species, host plants are known only for six species and the genus is restricted to three plant families namely Commelinaceae, Costaceae and Zingiberaceae (Jolivet 1989; Jolivet & Hawkeswood 1995; Staines 2007; Świętojańska *et al.* 2006; Shameem & Prathapan 2014).

***Oncocephala* Agassiz, 1846**

Oncocephala Agassiz, 1846 is the most speciose genus of the tribe with more than 40 described species ranging from the Oriental to the Afrotropical Regions (Staines 2015i; Calcetas *et al.* 2020). Gestro (1899a) provided detailed illustrations of the key characters, cephalic protuberances and elytra of 11 species including four from India. Maulik (1919a) described *Oncocephala depressa* from the Nilgiris Hills based on a single specimen deposited in the British Museum. He also provided illustrations of cephalic protuberances of all Indian species. A workable key to the species of the genus of any geographical region was not available until Calcetas *et al.* (2021a, 2021b) provided keys to species from Madagascar and Philippines. Calcetas *et al.* (2021c) reviewed all the *Oncocephala* of Africa excluding Madagascar with the descriptions of six new species and proposed seven species groups based on their elytral morphology.

Only little is known about the biology or immatures of the genus (Chaboo 2007; Staines 2015i). Available host records indicate that they are restricted to several families of both monocots and dicots (Kalshovan 1957; Chaboo *et al.* 2010), mainly Convolvulaceae (Staines 2015i). Mo (1956) provided notes on eggs of *Oncocephala tuberculata* on sweet potato. Chaboo *et al.* (2010) gave a detailed account of feeding behaviour and pupation of *Oncocephala promontorii* Péringuey, an African species infesting several species of *Ipomoea*, including *I. batatas* (L.) Lam. Their larvae make multiple mines on a single leaf and frequently abandon the older mines. On drying of the leaves, they exit the mines and enter into a new leaf to start fresh one, while the pupation occurred in separate pupal mines. Morphology of immature stages of the genus is known only for the larva and pupa of *O. quadrilobata* (Guérin-Méneville) (Świętojańska *et al.* 2006).

2.4 Biology of hispine Cassidinae

Gressitt (1950) recognized two categories of larvae among hispines. According to him, the larvae of spiny hispids are leaf miners while most of the larvae of elongate, spineless species are external feeders, often protected by calyces, blossoms, petiole bases and leaf-buds of their hosts.

Kalshoven (1957) identified three distinct types or modes of larval habits within hispine Cassidinae. "Larvae feeding between the folded top leaves (particularly the "heart" of grasses and the "spear" of palms) and boring the stalks of herbaceous or semi-ligneous plants" were the two categories in addition to the third category of true leaf miners.

Chaboo (2007) used the term "leaf mining" as an umbrella term comprising at least six ecological guilds within hispine Cassidinae. She attempted to group them as leaf-shelter scrapers, leaf-tube scrapers, flower scrapers, stem miners, leaf miners and open-leaf feeders, while treating all the classical Cassidinae s.str. or "tortoise beetles" as exophagous and shield-retaining larvae with the exception of Notosacanthini Hincks. Since Notosacanthini are true leaf miners Medvedev & Eroshkina (1988) placed them under Hispinae s. str.

More recently, Borowiec & Świętojańska (2014) grouped both larvae and adults of the entire subfamily into three distinct groups. The first group (cassidines) has exophagous larvae, with both larvae and adults active on upper and/or lower leaf surfaces. The second group (many hispine tribes and Notosacanthini) has leaf-mining larvae, whereas adults are active on leaf surfaces. The third group has cryptic larvae and adults, as in most of the hispine tribes, living within the unopened leaf fronds or crowns. Variations to these strategies are also reported in some genera, as in the case of *Leptispa* Baly, where both the larvae and adults are leaf shelter builders residing and feeding inside the scraped rolled young leaves of rice plants (Voronova & Zaitsev 1982; Prathapan *et al.* 2009).

3. MATERIAL AND METHODS

The present study is an attempt to review the systematics of hispine beetles of southern India. The techniques employed for collection, processing of specimens, dissection, identification, descriptions, illustrations, distribution mapping and record of the host plants are described here.

3.1 Study area

India is politically divisible into six zones *viz.* East India, West India, North India, South India, Northeast India and Central India, which is arbitrary. Presently, south India is considered as the southern most states of peninsular India covering five states — Andhra Pradesh, Telangana, Karnataka, Tamil Nadu, Kerala as well as the union territories of Lakshadweep and Puducherry. However, some biologists consider the entire region south of the Tapti River, thereby including the parts of Gujarat, Maharashtra, Madhya Pradesh and the state of Goa as well. The south India is rich with ecologically diverse areas, consisting of at least four biogeographical regions of India and several biotic provinces including the Western Ghats, one of the eight biodiversity hotspots in the World.

In the present study, intensive random collections in various ecosystems of five states in Peninsular India — Goa, Karnataka, Kerala, Tamil Nadu and Telangana covering different seasons were carried out during the study period (2012–2017).

3.2 Collection and preservation of hispine Cassidinae

3.2.1 Collection of specimens

Hispine beetles, being phytophagous, invariably occur on leaves, spindles or shoots and are not attracted to light or other kinds of traps. Search was carried out for the presence of characteristic feeding marks on the leaves such as holes, scrapings and stripes by the adults and the leaf mines or larval feeding troughs by the larvae. Once the plants with feeding marks were located, thorough searching was carried out to collect various life stages of the associated hispine species. As most of the hispine beetles are reluctant to fly, they were collected by simple handpicking or using an aspirator. Active fliers like the members of the tribe Hispini as well as the specimens beyond the reach of the hand were collected using a sweep net.

The collected beetles were killed by transferring them in to a vial charged with alcohol or ethyl acetate and brought to the laboratory for further processing. During long collection trips, whenever immediate mounting of freshly collected specimens was not possible, they were preserved in absolute alcohol in small air tight vials. The vials were properly labeled with the details of locality, date of collection and host plants.

3.2.2 Mounting and labeling

The specimens brought to the laboratory were cleaned by dipping in ethyl alcohol and then glued singly on triangular paper points mounted on stainless nylon headed insect pins (Bohemia-Insect Pins®, No. 3) using Fevicol® MR, an adhesive paper glue. Prior to the mounting of more or less cylindrical and stout bodied specimens, the tip of the paper point was slightly bent downwards using a forceps to facilitate gluing the point onto the right side of the thorax. Some of the larger specimens were also mounted by pinning through the right elytra. They were then dried in a hot air oven for at least three to four days at a temperature of 55–60° C.

All the specimens were labeled giving details of locality, date of collection and name of collector. Associated plant's name was also given on the same locality label, or on a separate label placed below the locality label. The gender of the specimen was indicated by symbols printed on a separate label placed below locality and host labels and then transferred to wooden insect boxes for further study.

3.3 Recording of host plants

The host plants of the collected hispine beetles were recorded only after confirming their feeding on the plant. Twigs with flowers or fruits were collected for the identification and preparation of herbaria. The collected samples were directly transferred from the field to air tight polythene bags or plastic jars charged with ethyl alcohol and they were pressed using herbarium presses and dehydrated with blotting papers. After proper drying, the herbaria were prepared and were labeled giving details of locality, GPS data, date of collection, scientific and vernacular names of the plant species, associated beetle's name and nature of its attack and name of the collector etc. The recorded plant species were identified with the help of plant taxonomists.

3.4 Systematics

3.4.1 Identification and descriptions of hispine Cassidinae

The collected specimens were identified up to species primarily based on available literature. The identity of a few species with inadequate descriptions or keys were confirmed by comparing with the original type specimens or their photographs obtained from the depositories such as Natural History Museum, London, United Kingdom (BMNH), National Museum of Natural History, Paris, France (MNHN), Natural History Museum of Genova - Giacomo Doria, Genoa, Italy (MCSN) and Senckenberg German Entomological Institute, Müncheberg, Germany (SDEI) as well as from the experts who work on this group. The species which were distinctly different from all the known species were considered as putative new species and were assigned numbers instead of naming them. All the collected new species (excluding the already described ones during the study period) will be formally named and published in subsequent works in the near future.

3.4.2 Preparation of male and female genitalia

Techniques described by Smith (1979) were followed with suitable modifications for the preparation of male and female genitalia. Only perfectly dried preserved specimens were used for the study of genitalia. In order to relax the specimens, they were kept in soap solution for 30 minutes. This greatly reduced the chances of damage while handling and enhanced the maneuverability. The relaxed specimen was gently supported on acrylic foam on its back. The acrylic foam was prepared by sticking double sided adhesive acrylic foam tape on a microscopic glass slide. A fine needle was inserted between the metacoxae and the first ventrite, severing the connecting membrane and the abdomen was gently separated. After removing the abdomen, specimen was mounted on a rectangular card.

The abdomen was then transferred to a small vial containing a few milliliters of 10% KOH solution and kept in a hot air oven at 45–55° C for six to nine hours. Digestion could be hastened by boiling the abdomen in a test tube till it is properly digested. After digestion, the abdomen was repeatedly washed with tap water. Before the final washings, it was left in dilute acetic acid for a minute to neutralize the traces of alkali. Then the abdomen was placed in a drop of glycerin on a glass slide for dissection. Insect pins and minuten pins fixed on a plastic handle were used for dissection. After the dissection, the beetle was mounted on rectangular paper cards and kept in hot air over for a couple of days.

In the case of male, aedeagus and associated structures were pulled out of the abdominal cavity through the basal opened part or through the slit made by separating the

tergites and sternites. The endophallic sclerites were dissected following Tishechkin *et al.* (2011) with suitable modification. Endophallic sclerites were pulled out using a hooked minuten pin, inserted through the apical foramen while supporting the aedeagus with another pin through the basal opening. In the case of female, the abdomen was opened by making a slit on the lateral side and the tergites were moved to one side. The spermatheca could be located inside the abdominal cavity and the spiculum gastrale, vaginal palpi and tergum IX were separated with extreme care. All the dissections were carried out under a stereozoom microscope and detailed examinations was done using a compound microscope at 10X and 20X magnifications. After examination, the genitalia and associated structures were kept back in the abdominal cavity and then transferred into an arthropod microvial® containing a drop of glycerin. The vial was stoppered with a neoprene stopper, the latter pinned through the stopper by the same pin holding the rest of the specimens and positioned below the data labels. In the case of larger specimens, the genitalia and associated structures were kept in the microvial, while the abdomen was glued on the same rectangular card adjacent to the specimen.

3.4.3 Measurements of specimens

All the measurements used in this work were taken using calibrated ocular micrometer placed in one of the eye pieces of stereozoom microscope (Leica MZ 95). All the measurements provided in the descriptions are in millimeters. The morphometric characters measured are indicated in Fig. 5.

3.4.4 Study of museum specimens

Specimens procured on loan from Natural History Museum, London (BMNH), including both types and non-types of *Wallacea dactyliferae* Maulik, were studied. The specimens from the personal collections of Dr. K.D. Prathapan as well as the specimens gifted by friends and lab mates were also included in this study.

3.5 Illustrations of hispine Cassidinae

All the habitus photographs of smaller specimens were taken using Leica MZ 95 or Leica S6E Stereozoom Microscope and Canon PowerShot S70 digital camera connected to the eyepiece using camera adapter (Leica). Multiple images taken at different focal planes were stacked into a single image using Combine ZM or Zerene Stacker Software Version 1.04.

The habitus of larger specimens were photographed using Nikon D3000 camera with AF Micro Nikkor 60 mm 1: 2.8 D macro lens. The camera was mounted on autofocussing macro-rail (Wemacro) attached to the vertical stand, a set up programmed to

take several images at different focal planes. The sequence of photographs of various focal planes taken were then stacked using Helicon Focus stacking software or Zerene Stacker Software Version 1.04.

The parts of genitalia and associated structures were photographed using Leica DM 1000 compound microscope and Canon PowerShot S70 digital camera connected to the eyepiece using camera adapter. Temporary slides were prepared on cavity slides mounted in glycerine-transparent hair styling gel (GATSBY) mixture in order to hold the structures in the desired position. The hardness of the mixture was adjusted with further additions of glycerine into the mixture.

All the plates given in this work were prepared using Adobe Photoshop Version 21.0.2.

3.6 Preparation of distribution maps

Geographical co-ordinates and altitude of the collection sites were recorded using the Global Positioning System (GPS) Garmin GPS 72H. The maps showing collection sites of all hispine Cassidinae (Map 1) as well as genus wise collection sites (Map 2 to 25) were prepared by pointing these co-ordinates in Diva-Gis 7.5.0.

3.7 Deposition of voucher specimens

All the collected insect specimens were temporarily kept in my personal collection (Department of Zoology, University of Calicut) as well as in the collections of Dr. K.D. Prathapan (Kerala Agricultural University, College of Agriculture, Vellayani). The types of the three newly described species and all the voucher specimens of published works are deposited in various depositories such as National Bureau of Agriculturally Important Insects, Bengaluru, India (NBAlI); National Pusa Collection, Indian Agricultural Research Institute, New Delhi, India (NPC), University of Agricultural Sciences, Bengaluru, India (UASB), National Museum of Natural History, Smithsonian Institution, Washington, DC, USA (USNM), Natural History Museum, London (BMNH); Natural History Museum of Genova – Giacomo Doria Genoa, Italy (MCSN).

The plant vouchers of the published works are deposited in the Calicut University Herbarium, Kerala, India.

3.8 Terminology

Terms used in the description of taxa and keys are derived from Gordh & Headrick (2001), Staines (2002) and Chaboo (2007). The endophallic sclerites (in *Wallacea* Baly and *Oncocephala* Agassiz) are described after Tishechkin *et al.* (2011) with suitable

modification. The morphological terms of the adult beetle used in the descriptions are illustrated in Figs. 1–5. A glossary of the various structures and characters used in this work is presented here:

Abdomen: the third or posterior division of the insect body; consists of five visible ventrites externally.

Aedeagus: Male intromittent organ, typically a sclerotized tube, enclosing the ejaculatory duct and endophallic sclerites.

Antebasal transverse impression: A transverse depression on the prothorax anterior to the posterior margin.

Antenna: Paired, segmented, flexible, sensory appendages located on the head of most arthropods.

Antennomere: Individual segment of antenna.

Anterofrontal ridge: The transverse ridge-like anterior portion of frons just before clypeus.

Apical foramen: see distal opening.

Basal opening: Ventrally directed opening on the basal piece at the anterior end of aedeagus.

Basal piece: Anterior region of the aedeagus bearing basal opening, generally demarcated by a constriction.

Clypeus: Anterior sclerite of the insect head below frons and above the labrum.

Coxa: The proximal segment of the insect leg.

Distal opening: Dorsally directed opening at the posterior end of the aedeagus.

Dorsum: The upper surface of body.

Elytron: *Plu. Elytra*, The forewings of Coleoptera, Elytra are not membranous, instead modified into leathery or chitinous covers that protect the hindwings.

Elytral costae: The raised longitudinal interstices in between the elytral rows of punctures.

Elytral disc: The upper part of elytra, usually flat or convex in leaf beetles.

Elytral suture: The mid dorsal line formed between closed elytra.

Epimera: The posterior division of a thoracic pleuron adjacent to coxa and posterior of the pleural suture.

Epipleuron: The deflexed or inflexed portion of the elytron.

Episterna: The anterior sclerite of thoracic pleuron.

Eyes: The compound eyes, an organ of vision, composed of numerous ommatidia arranged in well-defined groups on each side of the head.

Femur: The third segment of the insect leg, articulated with the body through trochanter and coxa bearing tibia at its distal end.

Frons: Unpaired head sclerite positioned between epicranium and clypeus.

Fronto-clypeus: The composite sclerite formed by the fusion of frons and clypeus.

Frontal ridge: The upper anterior portion of head capsule that forms a ridge between the eyes and extends from vertex to clypeus.

Humerus: The basolateral angle of the elytra.

Humeral calli: Prominently developed outer anterior angles of elytra.

Hypomeron: The inflexed edge of the pronotum.

Labial palpus: Pl. *Labial palpi*. The paired segmented, sensory appendage of the labium.

Labium: A compound bilaterally symmetrical sclerite that forms the 'lower lip' or floor of the mouth in mandibulate insects.

Labrum: The 'upper lip' of the insect head which covers the base of the mandible and forms the roof of the mouth.

Mouth cavity: The cavity that encloses the mouth appendages.

Oral cavity: see Mouth cavity.

Pronotum: Dorsal surface of the first thoracic segment.

Pump: Muscular distal portion of the spermatheca. In most of the species it is narrower than receptacle and is curved. Usually demarcated from receptacle by a rim or constriction.

Pronotal disc: The upper part of pronotum.

Puncture: A small impression on outer surface of the insect body.

Scutellum: The shield-like exposed portion of mesothorax situated between the elytra, immediately behind the pronotum.

Scutellar row: The short row of elytral punctures adjacent to the scutellum.

Seta: Pl. *Setae*. Hollow, slender, tactile, hair-like cuticular projections produced by epidermal cells of the integument.

Spermatheca: The sclerotized receptaculum seminis; the sac in the female that receives sperm during mating.

Spermathecal duct: The tubular process leading from spermatheca to the genital tract.

Spermathecal gland valve: The spermathecal gland disintegrates in the preserved specimens. So only the chitinised part of the gland duct and the valve are shown in the routine drawings.

Spermathecal receptacle: The enlarged middle portion of spermatheca where the sperm is received.

Spiculum gastrale: see Tignum.

Spiculum venstrale: Internal apodeme of sternite IX in males. Usually Y-shaped, made up of a median apodeme or arm and a pair of lateral arms.

Tarsus: The ‘foot’ of the insect leg; the jointed appendages attached at the apex of the tibia, bearing the claws and other structures.

Tarsomere: Any of the subsegments of the tarsus.

Tegmen: The ring-or-Y-shaped apodeme around the base of aedeagus; the phallobase.

Tibia: The fourth division of the leg, articulated proximally with the femur and distally with basitarsus.

Tignum: Modified eighth abdominal sternite in female lying above the seventh sternite with a slender, chitinised, elongate apodeme.

Trichobothrium: Pl. *Trichobothria*. Long slender bristles located in centre of depressed ring in cuticle.

Trochanter: The second and smallest segment of insect leg, positioned between coxa and femur.

Vaginal palps: Elongate, partially sclerotized paired structures with several apical setae. They are attached to the dorsal surface of inner wall of the female genital tract.

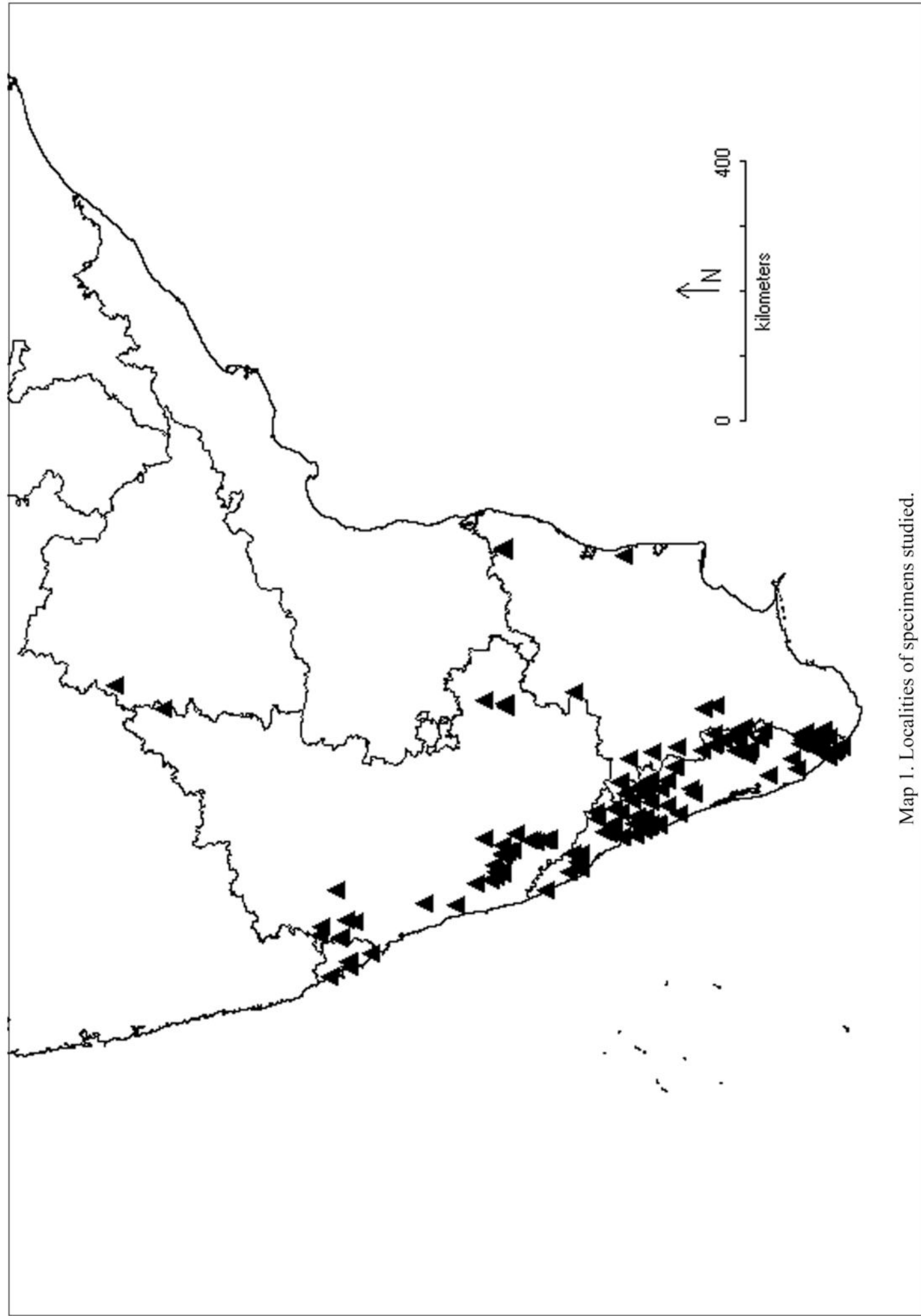
Venter: The ventral surface of abdomen.

Ventrites: The externally visible sternites of abdomen which morphologically belong to abdominal segments three to seven.

Vertex: Top of the head which is continuous with the occiput and extended between the eyes and continues anteriorly as the frons.

3.9 Disclaimer

None of the nomenclatural acts proposed in this work, such as new synonymy, new combinations, or resurrection of species status, are considered available as per the International Code of Zoological Nomenclature, until they are validly published elsewhere.



Map 1. Localities of specimens studied.

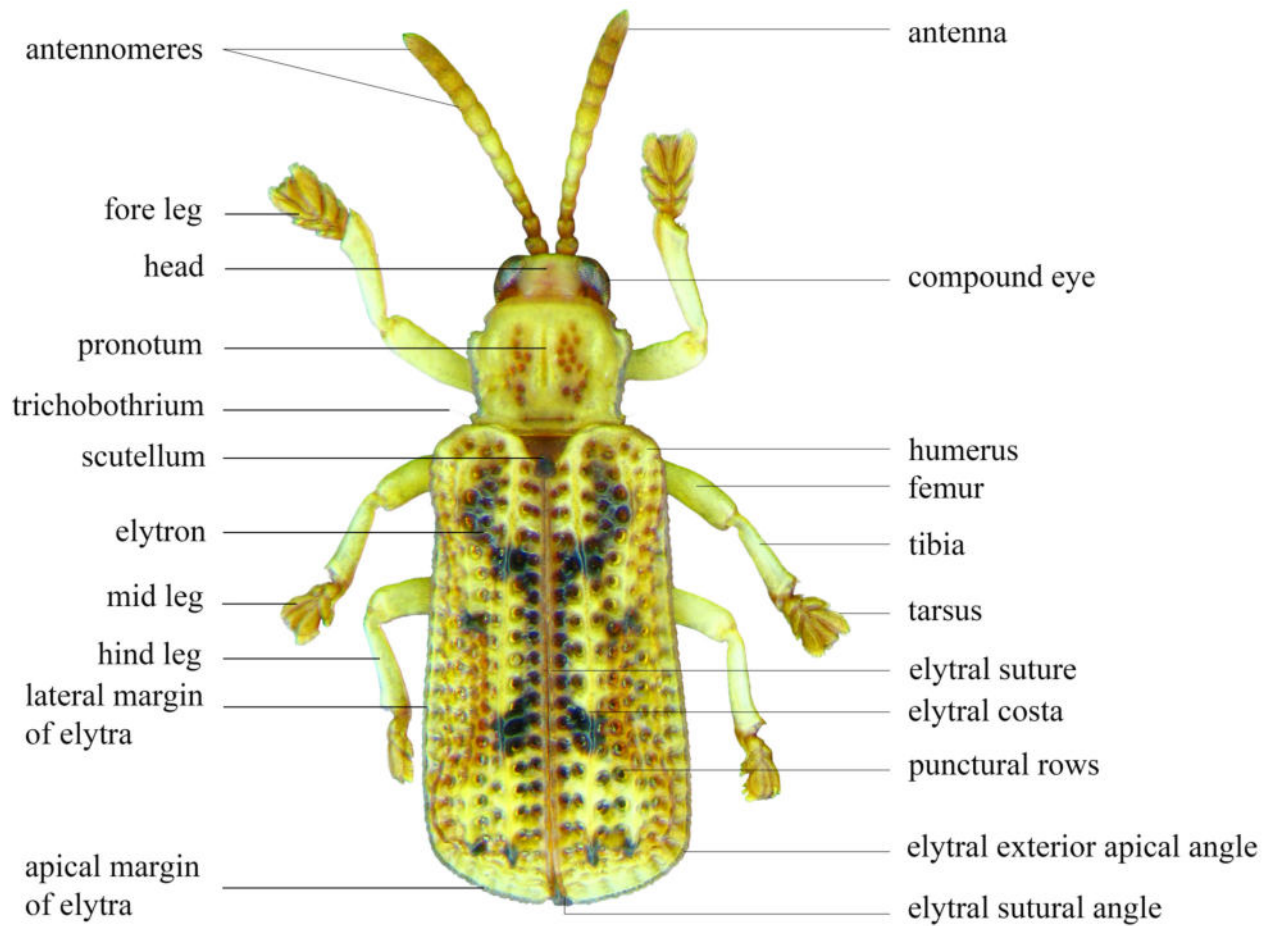


Fig. 1. *Gonophora brevicornis* Weise, dorsal habitus.

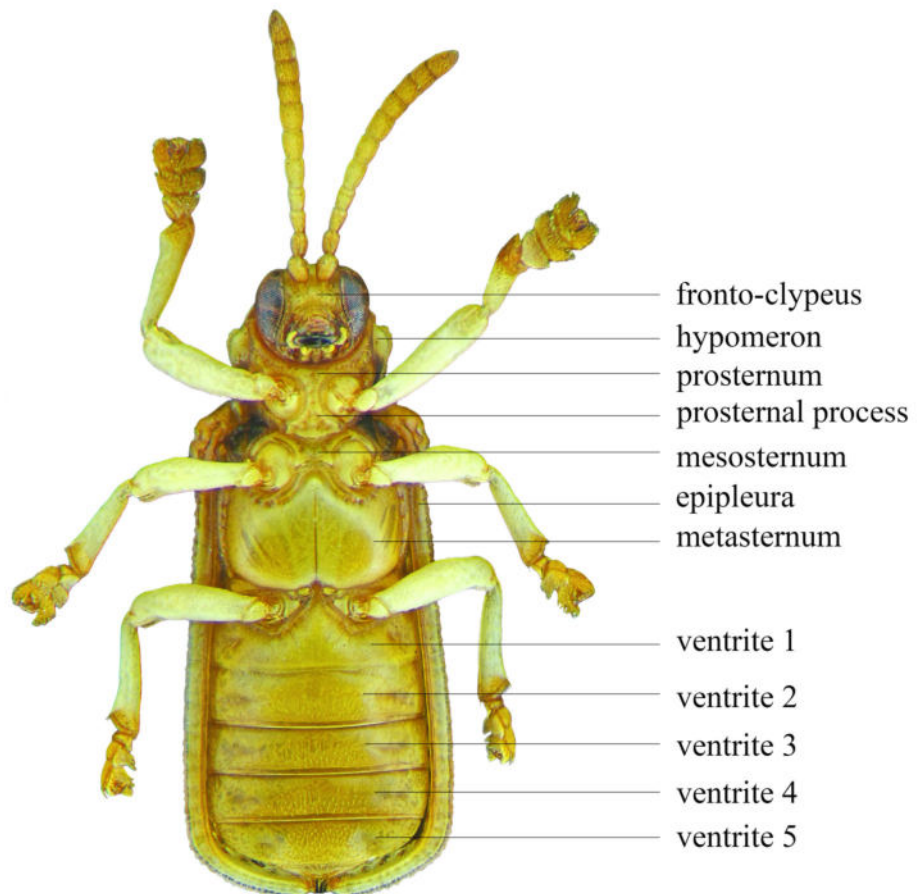


Fig. 2. *Gonophora brevicornis* Weise, ventral habitus.

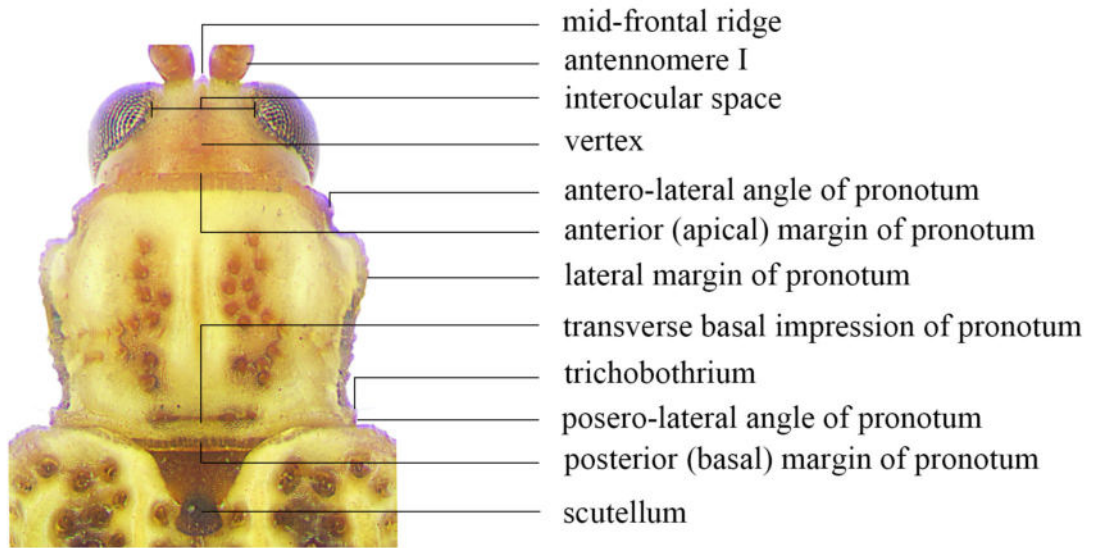


Fig. 3. *Gonophora brevicornis* Weise, head and thorax – dorsal view.

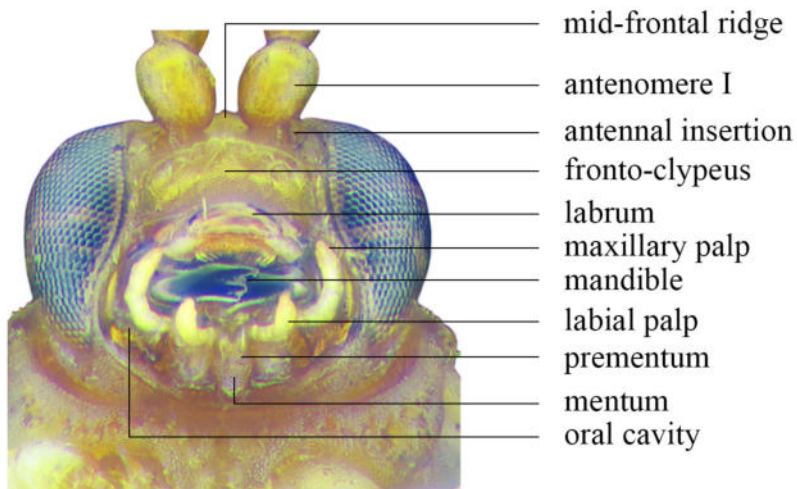


Fig. 4. *Gonophora brevicornis* Weise, head – ventral view.

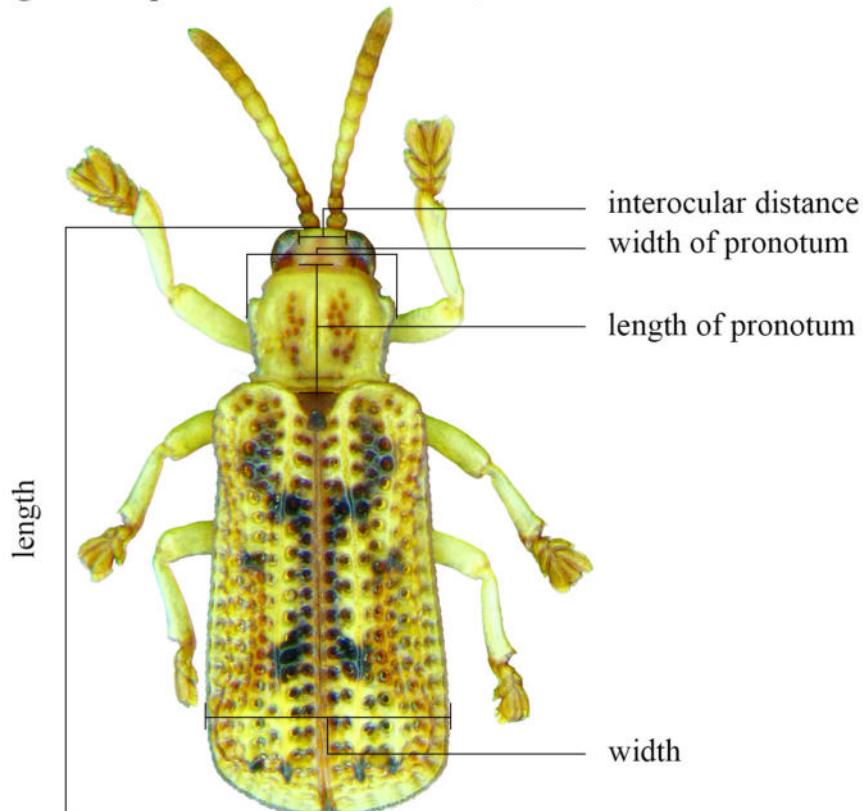


Fig. 5. *Gonophora brevicornis* Weise, morphometrics.

4. RESULTS

In the present study, 3,161 specimens from different localities in south India (Goa, Karnataka, Kerala, Tamil Nadu and Telangana) were studied. This includes 79 species of hispine Cassidinae in 22 genera and nine tribes from south India. An illustrated key to all the south Indian tribes and genera is provided.

4.1 Key to tribes and genera of hispine Cassidinae of southern India

1. Lateral margins of pronotum and elytra without spines (Fig. 6) 2
 - Lateral margins of pronotum and elytra with spines (Fig. 7) (**Hispiini Gyllenhal**)16
2. Anterior border of mouth cavity in close proximity to base of antenna; clypeus extremely narrow or absent (Fig. 8)..... 3
 - Anterior border of mouth cavity separated from base of antenna by a triangular, quadrate or straight clypeus (Fig. 9) 10
3. Both anterolateral and posterolateral angles of pronotum without trichobothria (Fig. 10) (**Bothryonopini Chapuis**) 4
 - Anterolateral and/or posterolateral angles of pronotum with trichobothria (Fig. 11)..... 5
4. Scutellar row present (Fig. 12); size larger (9.08–13.15).....
 - **Bothryonopa Guérin-Méneville**
 - Scutellar row absent (Fig. 13); size smaller (4.50–6.69 mm) **Wallacea Baly**
5. Both anterolateral and posterolateral angles of pronotum with trichobothria (Fig. 14); pronotum with several depressions near anterior margin (Fig. 14); anterior margin of prosternum produced into a small tooth in middle (Fig. 15) (**Coelaenomenoderini Weise**) **Javeta Baly**
 - Either the anterolateral or posterolateral angles of pronotum without trichobothria (Figs. 16, 17); pronotum without strong depressions near anterior margin (Figs. 16, 17); anterior margin of prosternum not acutely produced in middle (Figs. 18, 19) 6
6. Each anterolateral angle of pronotum with a trichobothrium (Fig. 16) (**Anisoderini Chapuis**).....7
 - Each posterolateral angle of pronotum with a trichobothrium (Fig. 17) (**Callispini Chapuis**)..... 8

7. Mandibles toothed (Fig. 18); labrum sparsely clothed with setae (Fig. 18)..... *Anisodera* Chevrolat
- Mandibles not toothed (cutting edge of mandible straight) (Fig. 19); labrum densely clothed with long stiff setae (Fig. 19) 8
8. Anterior margin of pronotum emarginated in middle (Fig. 20)...*Estigmene* Hope
- Anterior margin of pronotum not emarginated in middle (Fig. 21).....
..... *Lasiochila* Weise
9. Eyes small and almost flat (Fig. 22); pronotum without longitudinal depressions (Fig. 23)..... *Amblispa* Baly
- Eyes larger and prominent (Fig. 24); pronotum with longitudinal depressions (Fig. 25)..... *Callispa* Baly
10. Body wedge shaped, posteriorly widened (Fig. 26); prothorax more or less cylindrical, distinctly narrower than base of elytra (Figs. 26, 28, 30); apex of vertex acutely produced between antennae or with a dorsal cephalic crown (Fig. 28) (**Oncocephalini Chapuis**)..... 11
- Body elongate, parallel or subparallel sided or fusiform (Figs. 27, 39); shape of prothorax variable, subequal or slightly narrower than base of elytra (Figs. 27, 29, 40); vertex not acutely produced between antennae, without a cephalic crown (Figs. 29, 40)..... 12
11. Head with a cephalic crown dorsally (Figs. 30, 31); labial palps present (Fig. 33) *Oncocephala* Agassiz
- Head without any protuberance dorsally (Figs. 28, 32); labial palps absent (Fig. 34) *Chaeridiona* Baly
12. Pronotum without trichobothrium at any angle (Fig. 35); clypeus narrower, porrect, ventral surface of clypeus flattened, triangular or more or less inverted V-shaped (Fig. 36) (**Leptispini Fairmaire**)..... *Leptispa* Baly
- Either anterolateral angles or both anterolateral and postero-lateral angles of pronotum with trichobothria (Figs. 37, 41); clypeus larger, quadrate or trapezoidal (Fig. 38)..... 13
13. Body more or less boat shaped (widest in middle, tapering anteriorly and posteriorly) (Fig. 39); fully covered with scale like setae (Figs. 39, 42); only anterolateral angles of pronotum bear trichobothria (Fig. 41); scutellum minute, triangular, apex pointed, sides not extending over elytra (Fig. 40); margins of

- elytral epipleura extending well below the level of abdomen (Fig. 42) (**Eurispini Chapuis**)..... **Squamispa Maulik**
- Body elongate parallel sided or slightly widened towards apex (Fig. 27); both anterior and posterior angles of pronotum with trichobothria (Figs. 43, 45); margins of elytral epipleura and abdomen more or less at the same level (Fig. 44) (**Gonophorini Chapuis**) 14
14. Pronotum parallel-sided (Fig. 46); three principal costae on elytra flattened and lowered at base (Fig. 46) **Downesia Baly**
- Pronotum not parallel-sided (Figs. 45, 47); costae on elytra much higher, well developed throughout, never flattened and lowered at base (Figs. 45, 47)..... 15
15. Prothorax cylindrical; pronotum generally smooth and shining, never rugose, lateral margin smooth and even (Figs. 45, 47); lateral margin of elytra even, apical margin generally serrate (Fig. 48)..... **Agonita Strand**
- Prothorax not cylindrical; pronotum rugose, neither smooth nor shining, lateral margin rough and toothed (Figs. 37, 43); lateral and apical margins of elytra unevenly toothed (Fig. 49)..... **Gonophora Chevrolat**
16. Antenna 9 segmented (Fig. 50); prothorax and elytra with lateral lobes bearing spines (Fig. 50)..... **Platypria Guérin-Ménéville**
- Antenna 11 segmented (Fig. 51); prothorax and elytra without lateral lobes (Fig. 51)..... 17
17. Proximal one or more antennomeres with dorsal spines (Figs. 52, 53)..... 18
- Antennomeres without dorsal spines (Figs. 54, 61, 62) 20
18. Antennomeres I–VI with dorsal spines (Fig. 52) **Hispa Linnaeus**
- Only antennomere I with a single dorsal spine (Fig. 53)..... 19
19. Claws single, only one claw present (Fig. 55); spines on apical margins of elytra not longer than those on lateral margins (Fig. 57)..... **Hispellinus Weise**
- Claws double, both claws present (Fig. 56); spines on apical margins of elytra distinctly longer than those on lateral margins (Fig. 58)..... **Phidodonta Weise**
20. Anterior margin of pronotum with spines (Fig. 59) 21
- Anterior margin of pronotum without spines (Fig. 60)..... **Di cladispa Gestro**
21. Size generally large (2.80–7.00 mm); interocular space narrow, equal or slightly broader than width of eye (Fig. 59, 63); occipital region distinctly constricted

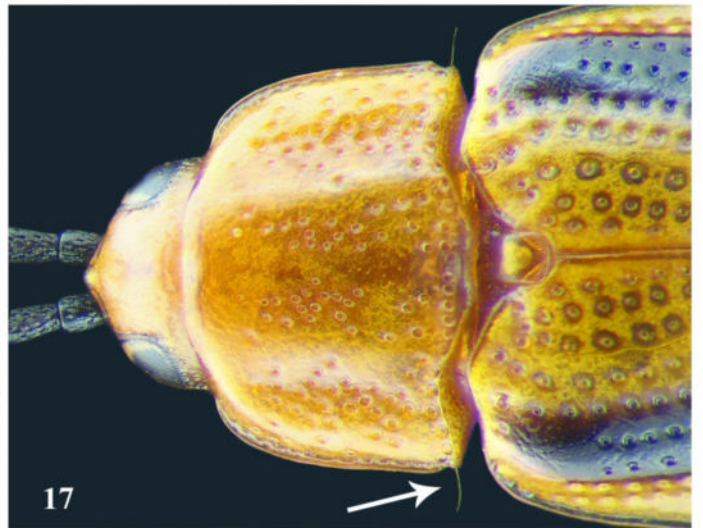
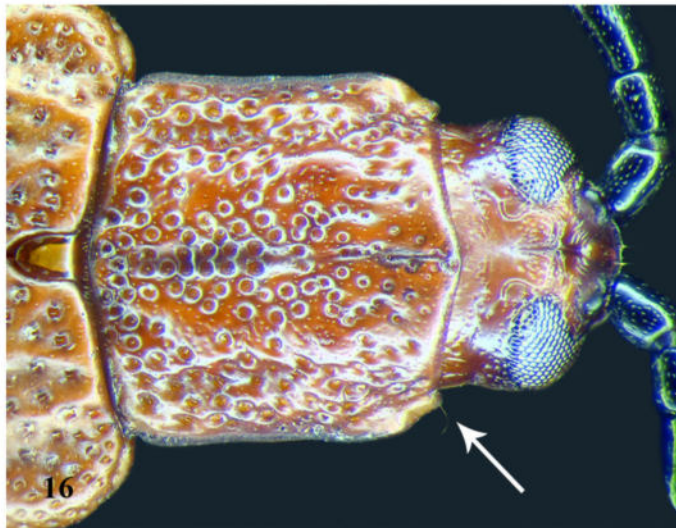
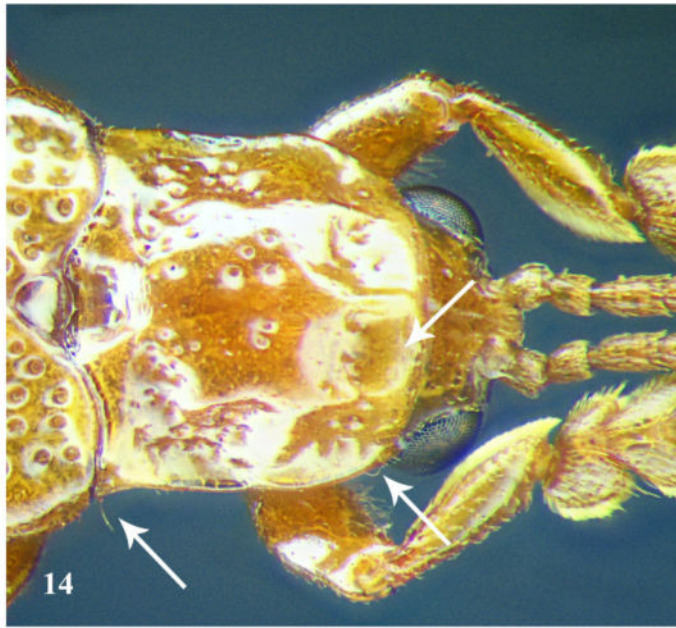
- (Fig. 59, 63); antennae long, reaching beyond humerus, uniformly thickened or with slightly thickened apical antennomeres, antennomere I usually not truncate (Fig. 61); inner side of mid tibiae only weakly concave..... *Dactylispa* **Weise**
- Size smaller (2.85–3.40 mm); interocular space broader, about 1.5 times as wide as eye (Fig. 64); occipital region scarcely constricted (Fig. 64); antennae short, hardly reaching humerus, apical antennomeres strongly clubbed, antennomere I truncate (Fig. 62); inner side of mid tibiae strongly concave.....
..... *Rhodtrispa* **Chen & T'an**

4.2 Review of systematics of hispine Cassidinae of southern India

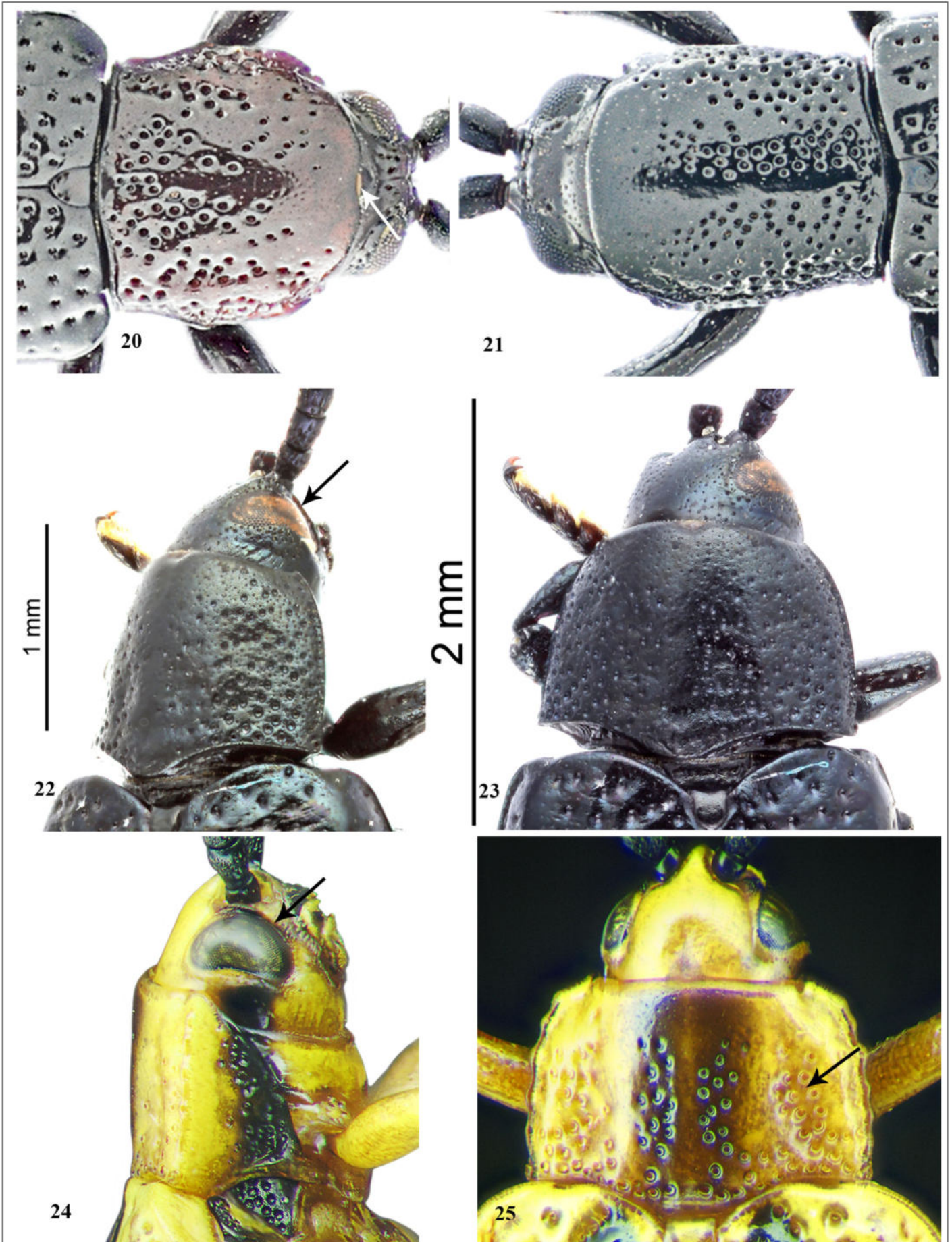
The present study reviews the systematics of all the south Indian species, including those which were not examined during the present study. Thus, a total of 102 species are included in this work. Identification keys to species are provided for each genus containing more than one species. All the relevant information such as distribution, list of recorded host plants and details of material examined are given after the species diagnosis. All the taxa are studied in detail and are presented here in alphabetical order of the tribes. The habitus photograph (dorsal aspect of adult) of a single representative species of each genus is provided.



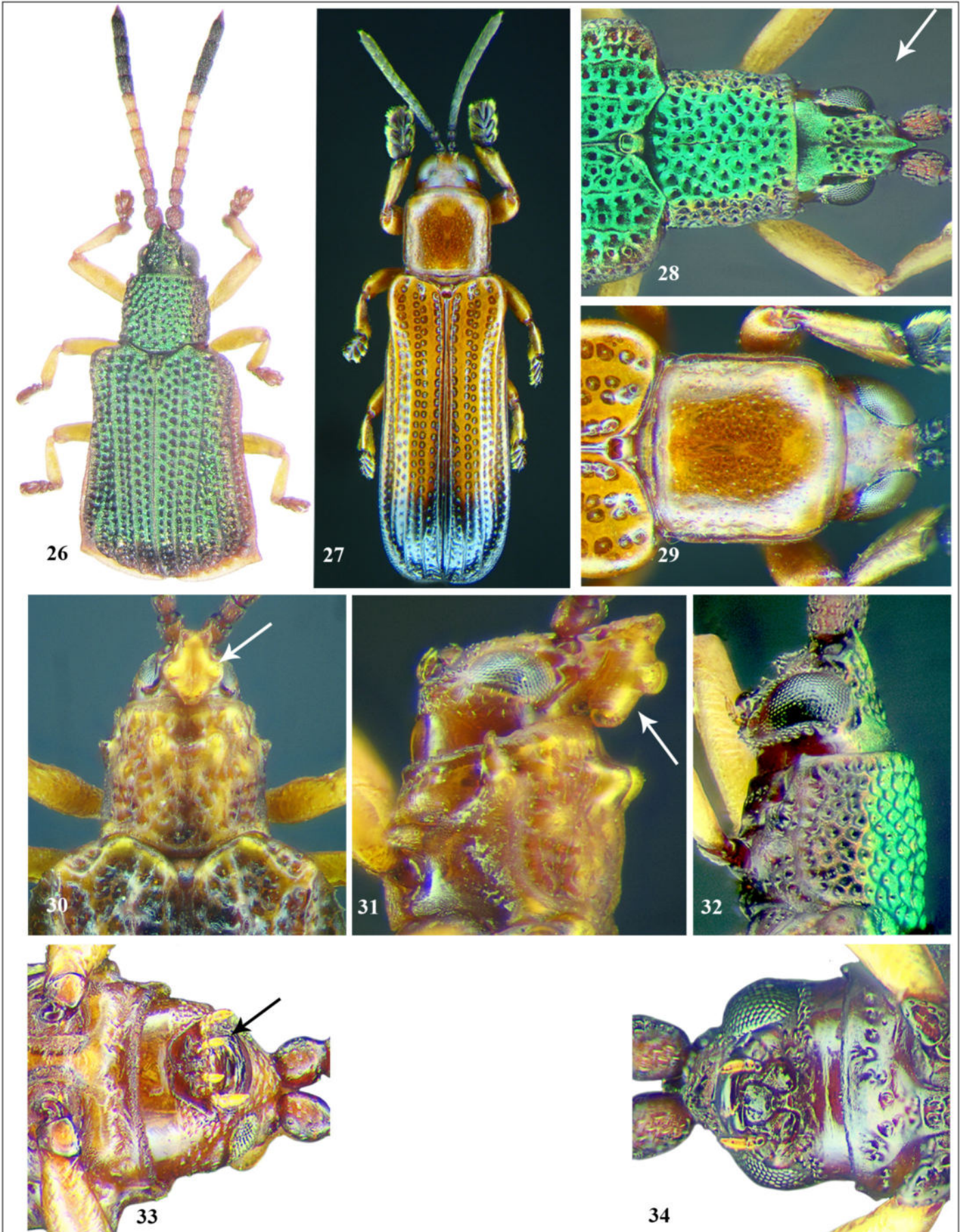
Figs. 6–13. 6. *Agonita andrewesi* (Weise), dorsal habitus; 7. *Dactylispa sjoestedti* Uhmann, dorsal habitus; 8. *Bothryonopa sahyadrica* Shameem & Prathapan, head ventral view; 9. *A. suturellamima* (Maulik), head ventral view; 10. *Wallacea dactyliferae* Maulik, pronotum; 11. *Callispa vittata* Baly, pronotum; 12. *B. sahyadrica*, elytra; 13. *W. dactyliferae*, elytra.



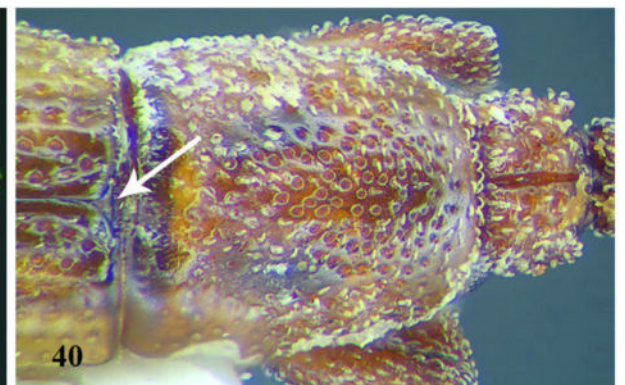
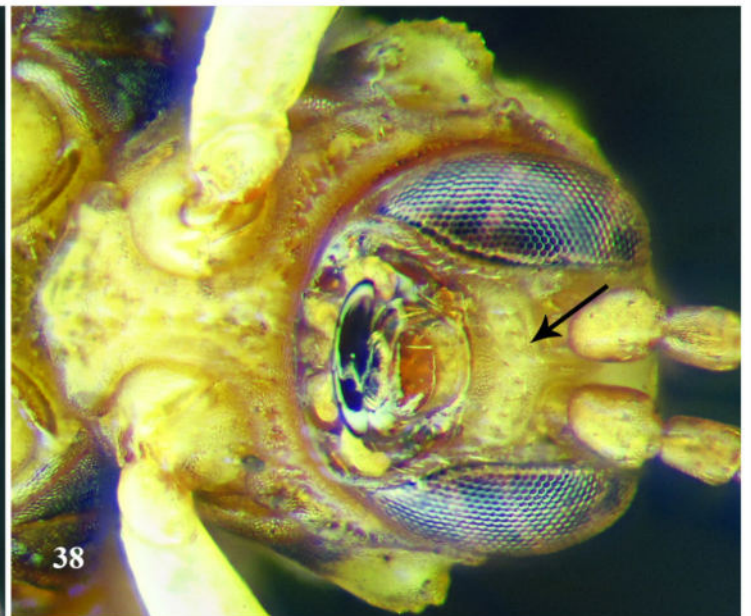
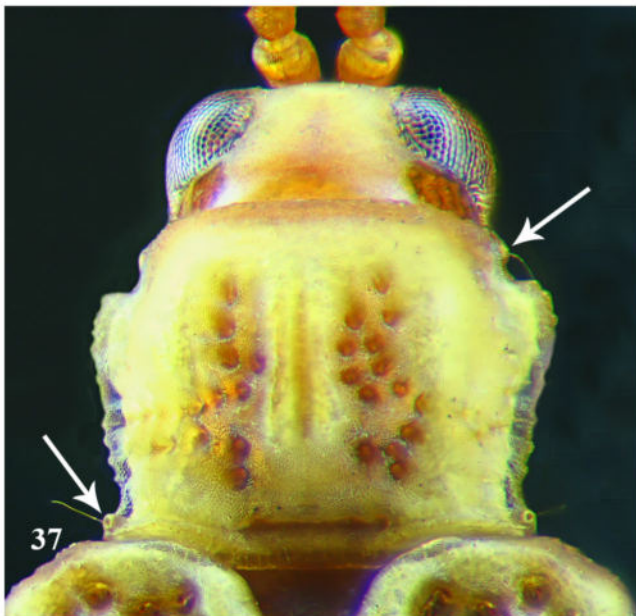
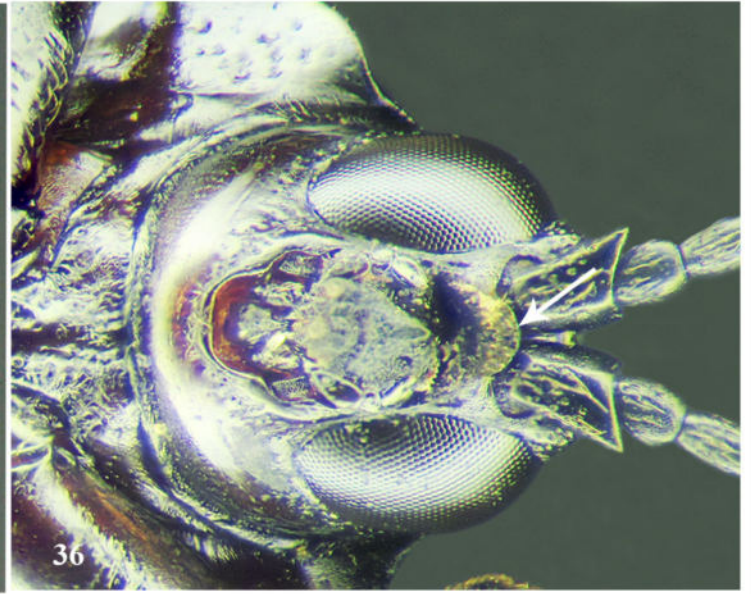
Figs. 14–19. 14. *Javeta pallida* Baly, pronotum; 15. *J. pallida*, prothorax ventral view; 16. *Anisodera guerini* Baly, pronotum; 17. *Callispa vittata* Baly, pronotum; 18. *A. guerini*, head – ventral view; 19. *Estigmene chinensis*, head – ventral view.



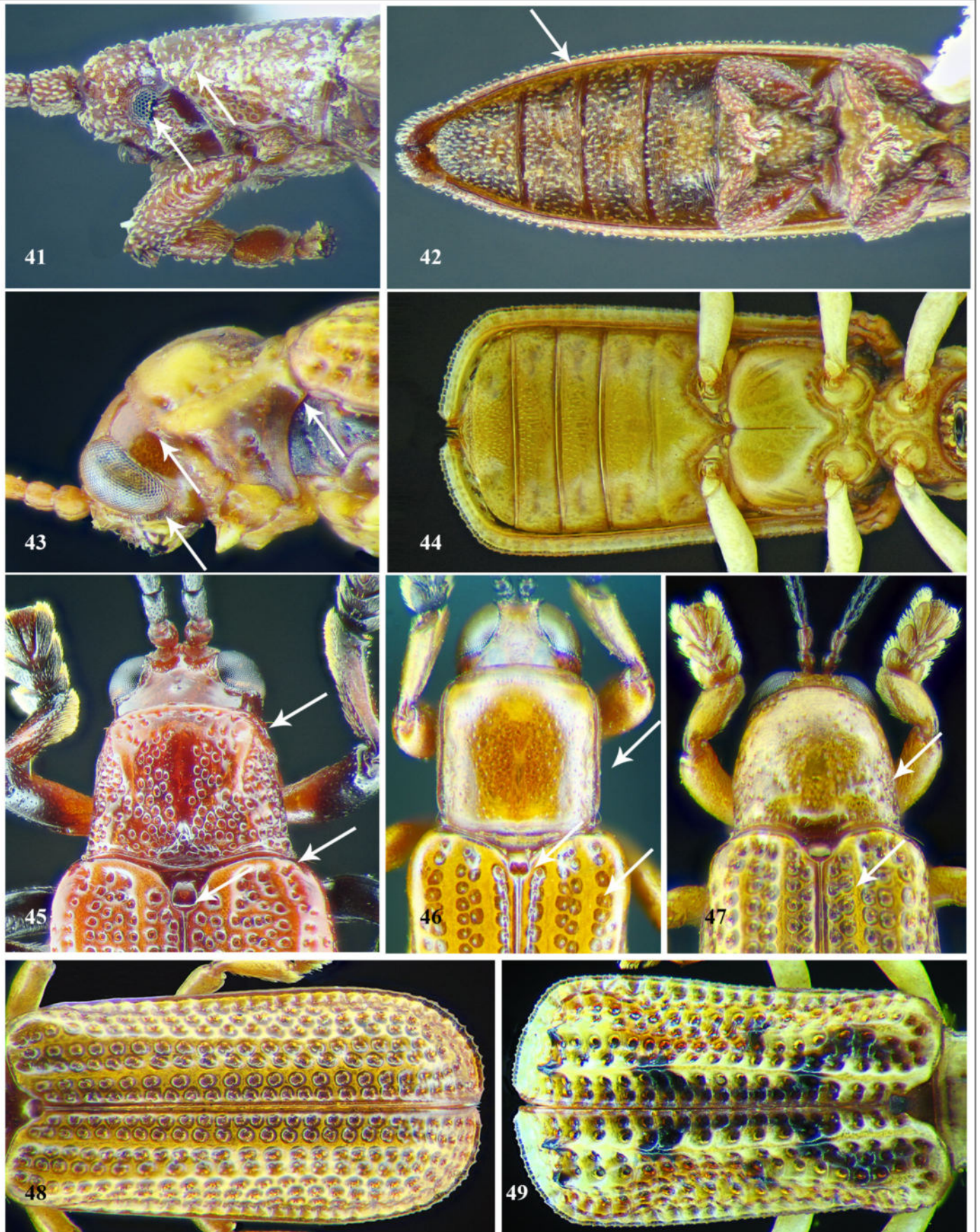
Figs. 20–25. 20. *Estigmene chinensis* Hope, pronotum; 21. *Lasiochila nigra* (Maulik), pronotum; 22. *Amblispa laevigata* (Guérin-Ménéville), head and pronotum – dorso-lateral view; 23. *A. laevigata*, pronotum; 24. *Callispa septemmaculata* Weise, head and prothorax – lateral view; 25. *C. septemmaculata*, head and pronotum – dorsal view.



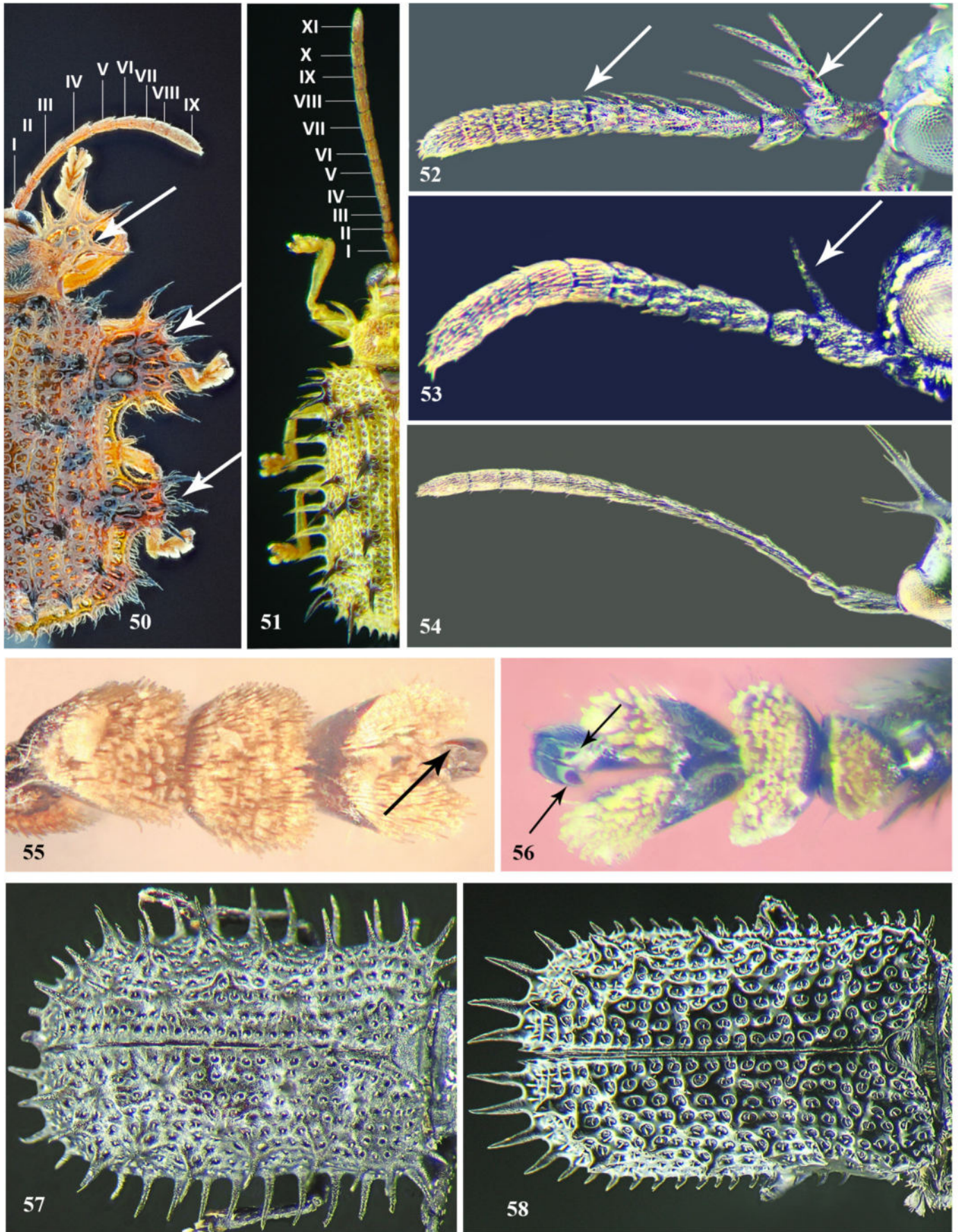
Figs. 26–34. 26. *Chaeridiona mayuri* Shameem & Prathapan, dorsal habitus; 27. *Downesia kanarensis* Weise, dorsal habitus; 28. *C. mayuri*, head and pronotum – dorsal view; 29. *D. kanarensis*, head and pronotum – dorsal view; 30. *Oncocephala tuberculata* (Olivier), head and pronotum – dorsal view; 31. *O. tuberculata*, head and prothorax – lateral view; 32. *C. mayuri*, head and prothorax – lateral view; 33. *O. tuberculata*, head – ventral view; 34. *C. mayuri*, head – ventral view.



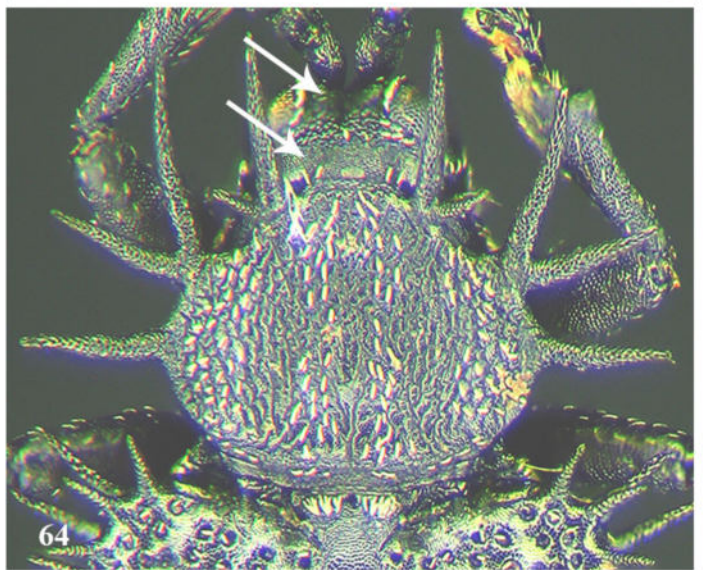
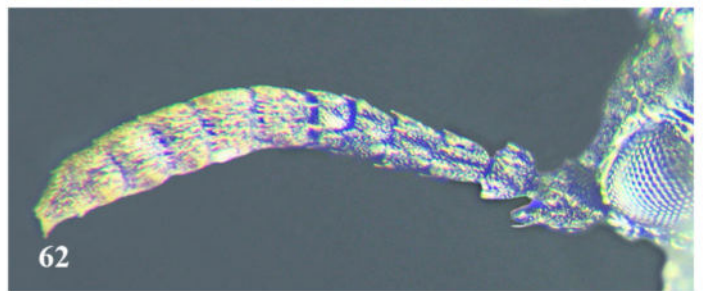
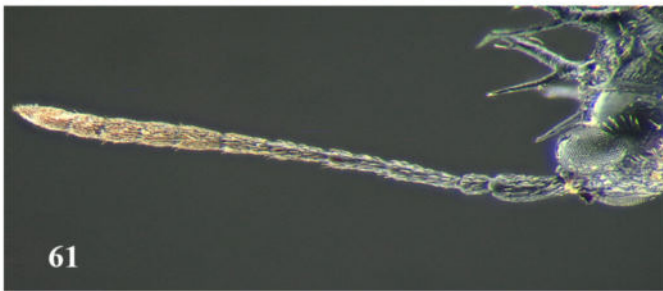
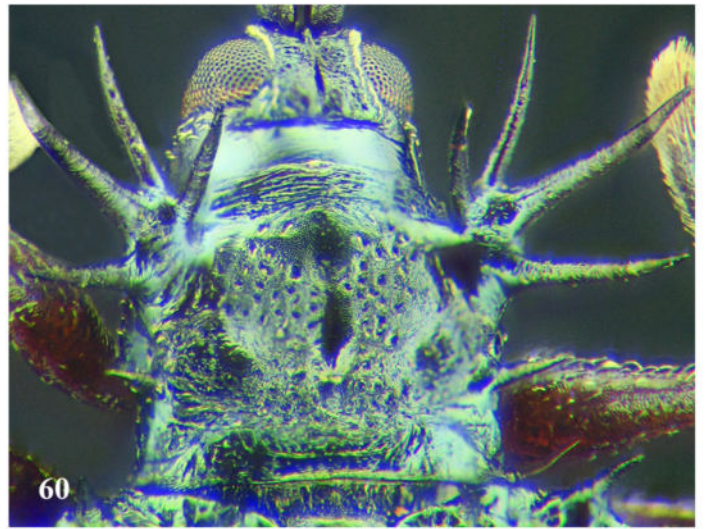
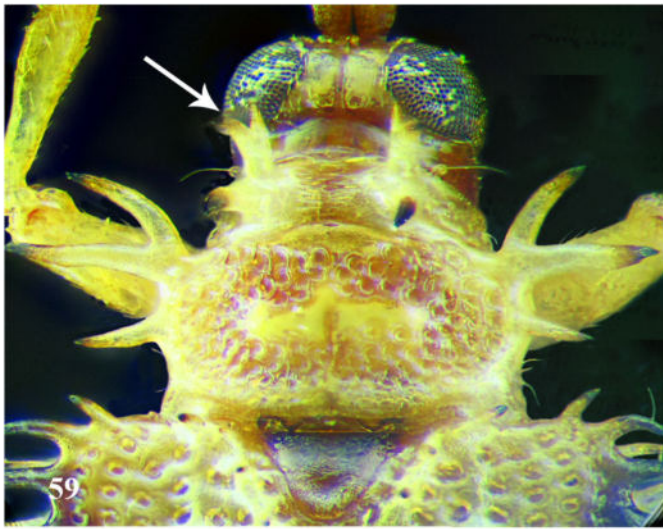
Figs. 35–40. 35. *Leptispa distincta* (Gestro), head and pronotum – dorsal view 36. *L. distincta*, head – ventral view; 37. *Gonophora brevicornis* Weise, head and pronotum – dorsal view; 38. *G. brevicornis*, head and prothorax – ventral view; 39. *Squamispa fasciata* Maulik, dorsal habitus; 40. *S. fasciata*, head, pronotum and scutellum – dorsal view.



Figs. 41–49. 41. *Squamispa fasciata* Maulik, head and pronotum – lateral view; 42. *S. fasciata*, abdomen – ventral view; 43. *Gonophora brevicornis* Weise, head and prothorax – lateral view; 44. *G. brevicornis*, abdomen – ventral view; 45. *Agonita suturellamima* (Maulik), head, pronotum and base of elytra – dorsal view; 46. *Downesia kanarensis* Weise, head, pronotum and base of elytra – dorsal view; 47. *A. andrewesi* (Weise), head, pronotum and base of elytra – dorsal view; 48. *A. andrewesi*, elytra; 49. *G. brevicornis*, elytra.



Figs. 50–58. 50. *Dactylispa sjoestedti* Uhmann, body – dorsal half; 51. *Platypria echidna* Guérin-Méneville, body – dorsal half; 52. *Hispa waiensis* Borowiec & Świętojańska, antenna; 53. *Hispellinus callicanthus* (Bates), antenna; 54. *Dactylispa krishna* Maulik, antenna; 55. *H. callicanthus*, tarsus; 56. *Phidodonta modesta* Weise, tarsus; 57. *H. callicanthus*, elytra; 58. *Phidodonta modesta*, elytra.



Figs. 59–64. 59. *Dactylispa sjoestedti* Uhmann, head and pronotum; 60. *Dicladispa armigera* (Olivier), head and pronotum; 61. *Dactylispa* sp. 1, antenna; 62. *Rhodtrispia dilaticornis* (Duvivier), antenna; 63. *D. pitapada* Maulik, head and pronotum – dorsal view; 64. *R. dilaticornis*, head and pronotum – dorsal view.

4.2.1 Tribe Anisoderini Chapuis, 1875

Large, elongate, cylindrical, slender to broad insects (Figs. 65–67); head not sharply produced between antennae (Figs. 16, 18–21); vertex posteriorly with stridulatory file; supraorbital puncture with a single long seta; anterior border of mouth cavity close to base of antennal sockets; frontoclypeus reduced (Figs. 18–19). Antennae longer, nearly reaching half of body; 11 segmented, antennomeres I–VI shining dorsally, with sparse and minute setae; ventral sides of I–VI and distal VII–XI dull and densely setose. Anterolateral angles of pronotum with trichobothria (Fig. 16). Elytra punctate striate; scutellar row present; sutural angle not toothed (Figs. 65–67). Femora without any ventral tooth, claw tarsomeres project beyond bilobed 3rd tarsomeres.

This tribe is represented by three genera and all of them are present in India and south India.

Anisodera Chevrolat, 1836

(Figs. 16, 18, 65; Map 2)

Anisodera Chevrolat, 1836: 387. Type species: *Alurnus ferrugineus* Fabricius 1801b, by monotypy.

Anisodera Duponchel. Uhmman 1943c: 169.

Anisodera Baly. Baly 1879: 465.

Anisodera (*Lissochila*) Weise 1911: 40.

Diagnosis: Length 9–21 mm. Elongate, cylindrical; chestnut brown to black; dorsum subnitid or opaque; ventral sides and legs shining. Mouth parts (labrum and mandibles) projecting out of mouth cavity in lateral view; labrum large, sparsely setose, distal margin straight; mandibles conical, bidentate and distinctly overlapping (Fig. 18). Pronotum quadrate to subquadrate; anterior margin not emarginated; surface deeply punctate (Fig. 16). Each elytron with 10 rows of punctures in middle, rows on elytra confused laterally; alternate interstices costate at least apically (Fig. 65).

Sexual dimorphism: In females, posterior margin of the pygidium laminate in ventral view.

Remarks: The genus differs from other members of Anisoderini in the following characters: labrum large, sparsely setose, without tuft of long setae; mandibles conical, bidentate and overlapping; labrum and mandibles projecting out of the mouth cavity in

lateral view. Anterior margin of the pronotum not emarginated, often depressed longitudinally in the middle. Alternate interstices of elytra always costate.

Diversity: 33 described species, three in India, one from south India.

Number of species studied: One.

Distribution: China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand (Asia).

Host plants: Costaceae (Maulik 1919a), Musaceae (Hua 2002; Kalshoven 1951, 1957) and Zingiberaceae (Kalshoven 1957; Reid 1998).

Anisodera guerini Baly, 1859

(Figs. 16, 18, 65; Map 2)

Anisodera ferruginea Guérin-Ménéville, 1840b: 333 (not Fabricius) (type: Indonesia, Java, BMNH).

Anisodera guerini Baly, 1859: 168 (replacement name).

Anisodera (Lissochila) guerini Baly. Weise 1911: 41.

Anisodera guerinii Baly. Kalshoven 1957: 7.

Anisodera gulrrini Baly [sic]. Hung *et al.* 2002: 17.

Anisodera foveolata Pic, 1924: 29 (type: Laos, Vientiane, MNHN).

Anisodera sinuaticollis Pic, 1926: 10 (type: Vietnam, Tonkin, Hoa-Binh, MNHN).

Diagnosis: Size: 13.22–17.38 mm, width: 4.59–6.04 mm (Length 15–19 mm in Maulik 1919). Dorsum cocoa brown to red brown; head and hypomeron concolorous to dorsum; mouth parts except palps darker; palps yellowish brown; pro and mesosterna darker than dorsum; episternum, epimeron, metasternum, ventrites and legs generally black, dark brown in paler specimens; tarsi tinted brown. Vertex convex, depressed in middle, medially grooved between eyes; surface irregularly and shallowly punctate, indistinctly setose; supraorbital setigerous pore coarsely granulate and slightly produced inside. Frontoclypeus granulate with weak medial carina. Antennomeres I–III entirely and dorsal side of IV–VI shiny, sparsely setose, rest of antennomeres opaque and pubescent, clothed with minute setae. Pronotum subquadrate, 0.97–1.03X longer than wide; lateral margin weakly sinuate, rounded before anterior angles; disc convex, strongly depressed medially and laterally on either side in basal half; surface rugose, raised behind anterior 1/3rd, coarsely punctate; elevated areas impunctate and smooth; punctures irregular, circular, deep, bearing short setae, unevenly distributed, often fused and generally 2–3X larger than

punctures on head; besides large punctures, surface sparsely and minutely punctate and clothed with indistinct short minute setae. Elytra narrower at base, slightly widened in middle, sides distinctly margined. Interstice VI costate only at apical 1/4th. Hypomeron as punctate as disc of pronotum. Anterior margin of prosternum rugulose; rest sparsely and finely punctate, weakly depressed medially except in middle of intercoxal process. Mesosterna shallowly depressed in middle and punctate laterally; mesepisternum and mesepimeron punctate. Metasternum punctate along anterior and lateral margins; rest of surface very sparsely and minutely punctate and setose. Metepisternum punctate, punctures sparse anteriorly, denser and fused posteriorly. Ventrites I–VI sparsely clothed with fine punctures bearing minute setae; III–VI posterolaterally clothed with few long setae; ventrite V with long erect setae. All coxae distinctly punctate; all trochanters, femora and tibiae sparsely and finely punctate and indistinctly clothed with very minute setae.

Distribution: India (Arunachal Pradesh, Assam, Kerala, Meghalaya, Sikkim). *Elsewhere:* Bangladesh, China, Indonesia, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam (Asia).

Host plants: Costaceae: *Hellenia speciosa* (J.Koenig) S.R.Dutta. (Maulik 1919a); Zingiberaceae: *Zingiber zerumbet* (L.) Roscoe ex Sm. (**New record**).

Material examined (n=22): 4 ♂, 11 ♀. India: Kerala / Tirurangadi / 14.vii.2013 / Shameem K. Coll. / Ex *Costus speciosus*; 1 ♀. Same data except date 4.viii.2013; 1 ♀. India: Kerala / Tirurangadi / 31.vii.2014 / Shameem K. Coll. / Ex Zingiberaceae; 1 ♂. India: Kerala / Tirurangadi / 16.ix.2014 / Shameem K.M. Coll. / Ex *Costus*; 1 unsexed. India: Kerala / Kallar-Ponmudi / 14.xi.2014 / Shameem KM Coll. / Ex *Costus*; 1 ♂, 2 ♀. India: Kerala / Calicut University Botanical Garden / 23.v.2015 / Shameem KM Coll. / Ex *Cheilocostus*.

***Estigmene* Hope, 1840**

(Figs. 18, 20, 66; Map 3)

Estigmene Hope, 1840: 174. Type species: *Estigmene chinensis* Hope, 1840.

Estigmene Hope (misspelling) in Anand 1984: 11.

Diagnosis: Length 10.00–16.66 mm. Large, cylindrical, elongated, more or less parallel sided, slender to broad. Colour varies from chestnut brown, reddish brown to black, or

combination of these colours. Vertex strongly raised between eyes, deeply grooved medially; eyes large and oval with ventral margin meeting lateral border of mouth cavity; labrum and mandibles lower than plane of mouth cavity (Figs. 18) and not projecting in lateral view; mentum hexagonal; labrum small, narrower and crescentic with tuft of long stiff setae; mandibles larger, not distinctly overlapping each other, cutting edges straight and never toothed (Figs. 18). Pronotum subquadrate; narrower at base; surface more convex apically than basally; strongly and deeply punctate; anterior margin distinctly emarginate in middle (Figs. 20). Elytra punctate striate; rows confusing in some species (*E. cribricollis* Waterhouse); interstices flat, costate apically in some.

Sexual dimorphism: In males, last ventrite gently convex, sparsely and more or less uniformly setose, pygidium normal and not projecting beyond abdomen. In females, last ventrite with a semicircular flattened area surrounded by dense, long, erect setae around a minutely setose area in the middle of apical half; pygidium flap like and curved downwards.

Remarks: *Estigmena* is very closely related to *Lasiochila* in having similar densely pubescent labrum, untoothed mandibles and mouthparts not projecting out of mouth cavity in lateral view. *Estigmena* differs from *Lasiochila* by the presence of an emargination at the middle of the anterior margin of the pronotum (in *Lasiochila* anterior margin of pronotum is straight) and differs from *Anisodera* by the mouth parts and pronotum. In *Anisodera*, labral setae are sparser, mouthparts project out of the mouth cavity in lateral view, apex of the mandibles overlaps each other and its cutting edges conical and bidentate, and anterior margin of pronotum not emarginate in middle.

Diversity: Five described species, three in India, two from south India.

Number of species studied: Two.

Distribution: Bangladesh, Cambodia, China, India, Indonesia, Laos, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam (Asia).

Host plants: Poaceae (Stebbing 1914; Gestro 1919; Maulik 1919a, 1932; Beeson 1941; Mathur 1944; Haojie *et al.* 1998).

Key to south Indian species of *Estigmena* Hope, 1840

1. Dorsum without scale like setae; head and pronotum dark red, elytra shining, entirely piceous, often tinted red..... *E. chinensis* Hope, 1840

- Dorsum clothed with scale like setae; colour entirely dark reddish brown, pronotum piceous in some individuals.....*E. cribricollis* Waterhouse, 1881

***Estigmaena chinensis* Hope, 1840**

(Figs. 18, 20, 66; Map 3)

Estigmaena chinensis Hope, 1840: 175 (type: China, OXUM).

Estigmene chinensis Hope (sic). Anand 1984: 10 (*lapsus calami*).

Estigmaena chinensis atricollis Pic, 1924: 29 (type: India, Assam, Khasi Hills, MNHN).

Estigmaena chinensis latior Pic, 1924: 30 (type: Patria? MNHN).

Estigmaena chinensis nigripennis Pic, 1924: 39 (type: Laos, Cochinchine, MNHN).

Estigmaena chinensis ruficolor Pic, 1924: 30 (type: Indonesia, Sumatra, MNHN).

Diagnosis: Length 10.89–14.71 mm, width 3.67–5.06 mm (length 10–16 mm in Maulik 1919). Elongate, broad; elytra shining, entirely piceous or tinted red, basal and apical margins sometimes reddish; pronotum and head dark red; antennae, labrum, mandibles black; antennomeres I–IV and dorsal sides of V and VI shining; rest of antennomeres dull; palpi light brown; frons, gena, gula, hypomeron, pro- and mesosterna, mesepisternum and mesepimeron concolorous to pronotum; metasternum and ventrites darker; suture between ventrites I and II red; all coxae concolorous to their respective sternites; rest of legs black often with reddish tinge. Interocular space strongly raised, with a deep medial groove anteriorly; posterior half depressed. Surface punctate and setose; punctures smaller and indistinct, and setae shorter in anterior raised area; punctures large, deep and denser, and setae longer in posterior depressed area; deeply sulcated posteriorly around eyes; sulcus 1.5–2X wider than adjacent ommatidia. Frons coarsely punctate and setose laterally on either side. Mandibles with semi-erect long stiff setae basally; mentum punctate with few indistinct setae; submentum with tuft of long setae near the base of labial palps. Antennomeres I–IV and dorsal sides of V and VI smooth and shining, sparsely punctate and setose; ventral sides of V–VI and apical five antennomere entirely dull and thickly pubescent. Pronotum subquadrate, 0.82–0.92X longer than wide, sides margined, bisinuate and narrowed basally. Surface more convex anteriorly coarsely and irregularly punctate laterally and on medially towards basal half; punctures deep, circular, subequal or slightly larger than those on vertex and bears a single short seta, punctures often fused; narrow region anteriorly in middle and longitudinal areas medially and laterally on either side without coarse deep punctures. Scutellum small, triangular, apex rounded. Surface

smooth, impunctate and shining. Elytra subparallel sided, narrowed basally, slightly widened towards apex; sides margined; surface sparsely and indistinctly clothed with minute setae; punctate-striate with 10 rows of punctures in middle. Punctures circular, deep, larger, setose and subequal to those on pronotum; interspaces shorter than diameter of individual punctures; interstices flat, smooth and never costate. Hypomeron deeply and densely punctate in middle, margins impunctate; punctures slightly smaller than those on pronotal disc; interspaces narrower than diameter of a puncture. Prosternum uniformly punctate and setose; punctures smaller and shallower than those of hypomeron; setae longer and semi erect; intercoxal process strongly depressed medially. Mesosternum punctate laterally; mesepisternum and mesepimeron strongly punctate. Metasternum indistinctly punctate within the anterior, lateral and posterior marginal grooves; rest of surface impunctate; metepisternum densely punctate except anteriorly. Ventrites sparsely and finely punctate with short setae; ventrites III and IV with a few long setae laterally in distal half. Ventricle V densely clothed with long setae. Legs with all coxae distinctly punctate and setose. All trochanters, femora and tibiae finely punctate and minutely setose.

Distribution: India (Assam, Andhra Pradesh, Arunachal Pradesh, Kerala, Tamil Nadu, Sikkim, Tripura, West Bengal). *Elsewhere:* Bangladesh, Cambodia, China, Indonesia, Laos, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam (Asia).

Host plants: Poaceae: Bamboos (Maulik 1919a); *Bambusa bambos* (L.) Voss (Beeson 1941; Mathur 1944; Haojie *et al.* 1998); *Bambusa burmanica* Gamble (Beeson 1941; Mathur 1944); *Bambusa multiplex* (Lour.) Raeusch. ex Schult (Gestro 1919); *Bambusa nutans* Wall. ex Munro (Haojie *et al.* 1998); *Cephalostachyum* sp. (Maulik 1932); *Dendrocalamus strictus* (Roxb.) Nees (Stebbing 1914; Maulik 1919a); *Dendrocalamus* sp. (Maulik 1919a); *Gigantochloa scortechinii* Gamble (Haojie *et al.* 1998); *Ochlandra* sp. (**New record**); *Schizostachyum pergracile* (Munro) R.B.Majumdar (Maulik 1919a, Beeson 1941; Mathur 1944).

Remarks: This species can be easily distinguished from *Estigmene cribricollis* Waterhouse, 1881, by the absence of scale like setae on the body; other characters include: vertex coarsely and deeply punctate in the posterior half and deeply sulcated between supra orbital setae and eyes; mandibles more setose basally; pro and mesosterna more punctate; lateral margins of metasterna punctate. In *E. cribricollis*, pronotum more

punctate with a lateral narrow raised area following the longitudinal excavation on either side; scutellum medially depressed; elytral rows of punctures confusing laterally and alternate interstices apically costate.

Material examined (n=20); 1 ♂, 1 ♀. India: Kerala / JNTBGRI Campus / N 08° 45' 10.1" E 77° 01' 30.8" / 20.iv.2013 / Prathapan KD Coll. / Ex *Ochlandra*. 2 ♂, 3 ♀. India: Kerala / JNTBGRI Campus / N 08° 45' 10.1" E 77° 01' 30.8" / 20.v.2013 / Prathapan & Shameem Coll. / Ex *Ochlandra*. 3 ♂, 2 ♀. India: Kerala / Mananthavady / 20.v.2015 / Shameem KM Coll. / Ex Bamboo. 4 ♂, 4 ♀. India: Kerala / Calicut Univ. Botanical garden / 20.vi.2016 / Shameem KM Coll. / Ex Bamboo.

Estigmaena cribricollis Waterhouse, 1881

(Map 3)

Estigmaena cribricollis Waterhouse, 1881: 461 (type: India, Travancore, BMNH).

Diagnosis: Length 14.78–18.55 mm, width 5.70–7.35 mm. Elongate, large, robust beetles; colour varies from entirely dark reddish brown to dark reddish brown with darker or piceous pronotum, antennae and mandibles black, palps pale brown; all tarsi and sometimes distal parts of femora darker. Head constricted behind eyes; vertex deeply clefted anteriorly; interocular space strongly raised with a distinct deep sulcus medially; punctate and scaly anteriorly; punctures finer interspaces shining, scales longer anteriorly; punctures coarse, interspaces granular, scales shorter posteriorly; a narrow region along midline impunctate and asetose; vertex not deeply sulcated between supra orbital tubercle and eyes (deeply sulcated in *E. chinensis*). Frons strongly ridged medially; coarsely punctate and setose laterally. Mandibles setose basally (fewer than in *E. chinensis*). Antennomeres I–III entirely and dorsal sides of IV–VI smooth and shining with sparse punctures bearing scale like setae, ventral sides of IV–VI, rest of apical antennomeres opaque and pubescent. Pronotum subquadrate; 0.86–0.93X longer than wide; lateral sides sinuate, slightly narrowed at base; sides margined; posterior margin straight; more convex anteriorly, depressed transversely towards base; longitudinally impressed on either side; uniformly minutely punctate throughout, surface coarsely and densely punctate except medially in anterior part; a narrow region along midline and lateral elongated raised area shining without large punctures; punctures deep and circular with a small single scale at center. Scutellum small, narrowed posteriorly, apex rounded; surface smooth, shining and weakly depressed on top. Elytra subparallel, narrower at base, slightly widened towards

apex; punctate-striate with 11 rows at base in addition to a short scutellar row; rows confusing laterally with more than 11 in middle; elytral punctures smaller and shallower than pronotal punctures, with a single scale at center; interspaces equal to diameter of one puncture in middle, shorter towards lateral sides. Interstices 1–5 broad and flat; 5–8 narrower; indistinguishable beyond 8th row because of confusing rows; alternate interstices weakly costate apically. Interspaces densely clothed with scales towards lateral and apical margins and sparsely clothed with very minute setae towards middle. Hypomeron scaly and strongly punctate as pronotal disc; ventral and posterior margin impunctate. Prosternum rugulose and scaly anteriorly, rest of prosternum smooth and shining; intercoxal process depressed medially at posterior end and minutely punctate with short indistinct setae on either side. Mesosternum medially depressed, apically bulged, punctate laterally. Mesepimera and mesepisterna densely punctate; punctures smaller than those of hypomeron. Metasterna sparsely and minutely setose, impunctate except a few indistinct punctures within groove along anterior margin. Metepisterna with small shallow dense punctures except anteriorly. All ventrites with long semi erect setae. All coxae distinctly punctate, sparsely setose; all trochanters, femora and tibiae finely punctate with minute short setae; setae relatively longer on tibiae.

Distribution: India (Karnataka, Kerala).

Host plant: Poaceae: *Ochlandra* sp. (New record).

Remarks: This species can be easily distinguished from all other described species of *Estigmena* by the presence of scale like setae on the body.

Material examined (n=4): 1 ♂, 1 ♀. India: Kerala / Trivandrum, Kallar / N 08° 42' 30.9" / E 77° 07' 59.7" 160 m / 14.xi.2014 / Shameem KM Coll. / Ex *Ochlandra*. 2 unsexed. India: Kerala / Kallar, 25.iii.2018 / N 08° 41' 48.9" / E 77° 7' 55.6" / S. R. Hiremath Coll. / Bamboo.

***Lasiochila* Weise, 1916**

(Figs. 21, 67; Map 4)

Lasiochila Weise, 1916: 38. Type species: *Anisodera excavata* Baly, 1858.

Anisoderopsis Maulik, 1916: 570. Type species: *Anisodera excavata* Baly, by original designation.

Diagnosis: Length 8–18 mm. Large, elongate, cylindrical to subcylindrical, slender to broader beetles. Colour entirely brown or black or combination of brown or reddish brown and black. Head anteriorly clefted between antennae in dorsal view; vertex strongly convex with distinct medial sulcus often represented by deep groove between eyes; labrum short, sparsely setose; mentum more or less hexagonal. Pronotum subquadrate, distinctly longer in slender species; anterior margin straight or convex without emargination in middle; surface convex, depressed in some, strongly punctate (Fig. 21). Elytra punctate-striate.

The genus is very similar to *Estigmene* except in the absence of emargination at the anterior margin of pronotum. Lateral margin of pronotum evenly curved (wider anteriorly as posteriorly) to sinuate; surface punctate and deeply excavated in some species.

Sexual dimorphism. Males are comparatively smaller than females. In males, middle of the last ventrite distinctly convex towards the distal end, shining and scarcely punctate. In females, middle of the last ventrite with a semicircular depressed or flattened area, surrounded by long, erect setae; setae generally denser laterally.

Remarks: See the “Remarks” section under *Estigmene* Hope.

Diversity: 24 described species, six in India, two from south India.

Number of species studied: Two.

Distribution: Bangladesh, Bhutan, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Taiwan, Thailand, Vietnam (Asia).

Host plants: Poaceae (Kalshoven 1951, 1957; Macdonald 1962; Würmli 1975b; Takizawa 1978; Hua 2002).

Key to south Indian species of *Lasiochila* Weise, 1916

1. Dorsum shining black; elytra flattened and gradually depressed beyond middle towards apex in dorsal and lateral view; interstices broader, smooth and shiny, never costate; antennomere II slightly longer or subequal to IV; hind wings absent; body comparatively broader (L/W=3.41–3.6 *L. macilenta* (Gestro, 1906)

- Dorsum opaque black, rarely slightly brownish marginally; elytra strongly convex, abruptly depressed near apex; alternate interstices costate, giving the appearance of paired rows; antennomere II shortest and shorter than IV; hind wings present; body comparatively slender (L/W=4.05–4.48)..... *L. nigra* (Maulik, 1919)

***Lasiochila macilenta* (Gestro, 1906)**

(Map 4)

Anisodera macilenta Gestro, 1906b: 178 (type: India, Travancore, MCSN, MNHN).

Anisodera (Lasiochila) macilenta Gestro. Weise 1913: 59.

Lasiochila macilenta (Gestro). Uhmann 1930a: 93.

Diagnosis: Length 9.47–14.25, width 3.08–4.47 mm. Elongate, entirely black, palps paler. Vertex strongly convex between eyes; medial sulcus distinct, never grooved; profusely punctate. Frontoclypeus weakly ridged between antennae, strongly punctate with long setae on either side. Mandibles punctate and setose basally. Antennomere II only slightly shorter than I; I–V shiny, sparsely and finely punctate and setose; ventral sides of IV and V and distal end of III ventrally and distal VI–XI entirely opaque and pubescent. Pronotum subquadrate; 0.97–1.06X longer than wide, sides weakly sinuate, slightly narrowed at base, basal margin straight; besides sparse fine punctures with short curved setae, surface strongly punctate except at anterior 1/3rd and a narrow stripe medially. Punctures larger, deep, circular with broad and branched setae in middle; punctures sparser towards middle and denser laterally. Scutellum small, parallel sided, slightly widened basally, apex rounded, surface smooth and shining; weakly depressed medially, granulate in basal half with 3–4 minute punctures bearing short setae laterally. Elytra narrower at base, hardly broader than base of pronotum, slightly widened towards apex; surface convex, gently curved down after middle in lateral view, giving more or less flattened appearance in dorsal view; punctures subequal to those on pronotum bearing similar setae. Interspaces shorter than diameter of punctures laterally; all interstices flat; 4, 6 and 8 weakly costate apically; surface finely reticulate, sparsely clothed with short fine curved setae.

Distribution: India (Kerala).

Host plant: Poaceae: *Ochlandra* sp. (New record).

Remarks: This species can be easily differentiated from all other known species of *Lasiochila* by the absence of hind wings.

Material examined (n=6): 1 Female. India: Kerala / Bonaccord-Pandipat / N 08°41'01.6" E 77°11'24.0" / 25.v.2013 1276 m / Prathapan & Shameem Coll. / Ex *Ochlandra*; 2 Male, 1 Female (1 unsexed in wet collection). India: Kerala / Bonacaud-Pandipat / N 08° 41' 01.6" E 77° 11' 24.0" 1276 m / 9.iv.2017 / Shameem KM Coll. / Ex *Ochlandra*; 1 Female. India: Kerala / Bonacaud-Pandipat / N 08° 41.352' E 77° 11.200' 1083 m / 9.iv.2017 / Shameem KM Coll. / Ex *Ochlandra* (same data except GPS data N 08° 41.352' E 77° 11.200' 1083 m).

***Lasiochila nigra* (Maulik, 1919)**

(Figs. 21, 67; Map 4)

Anisoderopsis nigra Maulik, 1919a: 40 (type: India, Bengal, Mamide; South India, Pirmaad, BMNH, ZUIC).

Lasiochila nigra (Maulik). Uhmman 1930a: 93 (transfer).

Diagnosis: Length 10.60–14.19 mm, width 2.47–3.50 mm. Elongated, slender, parallel sided and cylindrical. Colour generally black, apex of elytra brownish in some, rarely dark brown entirely; mandibles black, palps paler. Vertex with distinct slightly impressed medial sulcus, irregular, sparse and strong punctures except anteriorly in middle. Frons smooth and weakly ridged medially; punctate and setose laterally below antennal insertion. Mandible with a few short sparse setae basally; maxillae punctate and clothed with long setae. Antennomere II distinctly shorter than I, nearly 2X longer than II; I–II entirely, dorsal sides of III and IV, ventral sides of III proximally shiny, sparsely and minutely punctate with short setae; rest of antennomeres dull, pubescent. Pronotum subquadrate; 1.09–1.185X longer than wide; strongly constricted at basal 1/3rd, lateral sides sinuate, posterior margin weakly sinuate; surface strongly punctate; middle of anterior 1/4th and a narrow area along midline impunctate; punctures circular, deeper and larger than those on vertex, with short setae. Scutellum elongated, parallel sided, slightly narrowed at base in some, apex rounded; surface smooth, shining and impunctate. Elytra parallel sided, strongly convex, abruptly curved downwards near apex in lateral view; punctures circular, shallower and subequal to those on pronotum and bears short seta; punctures closer interspaces shorter than diameter of individual punctures; interstices 2, 4,

6 and 8 gradually costate towards apex; interstices and interspaces finely reticulate and sparsely and minutely setose.

Distribution: India (Kerala, West Bengal). *Elsewhere:* Bangladesh (Asia).

Host plant: Poaceae: *Ochlandra* sp. (**New record**).

Remarks: This species can be easily separated from *L. macilenta* by its slender and subnitid body, strongly convex elytra with costate interstices, disc of the elytra abruptly depressed near the apex in both lateral and dorsal views and by the presence of hind wings. In *L. macilenta*, body is comparatively broader and shining, elytra convex but flattened on top in lateral and dorsal views, interstices flat and never costate, disc of the elytra gradually depressed towards the apex in both lateral and dorsal views.

Material examined (n=29): 5 ♂, 4 ♀. India: Kerala / JNTBGRI Campus / N 08° 45' 10.1" E 77° 01' 30.8" / 20.iv.2013 / Prathapan KD Coll. / Ex *Ochlandra*. 7 ♂, 9 ♀. India: Kerala / JNTBGRI Campus / N 08° 45' 10.1" E 77° 01' 30.8" / 20.v.2013 / Prathapan & Shameem Coll. / Ex *Ochlandra*. 3 ♂. India: Kerala / Trivandrum, Kallar / N 08° 42' 30.9" E 77° 07' 59.7" 160 m / 24.v.2013 160 m / Prathapan & Shameem Coll. / Ex *Ochlandra*. 1 ♀. India: Kerala / Chozhiyakodu / N 08° 51' 17.06" / E 77° 01' 58.12" 169 m / 15.xi.2014 / Shameem KM Coll. / Ex *Ochlandra*.

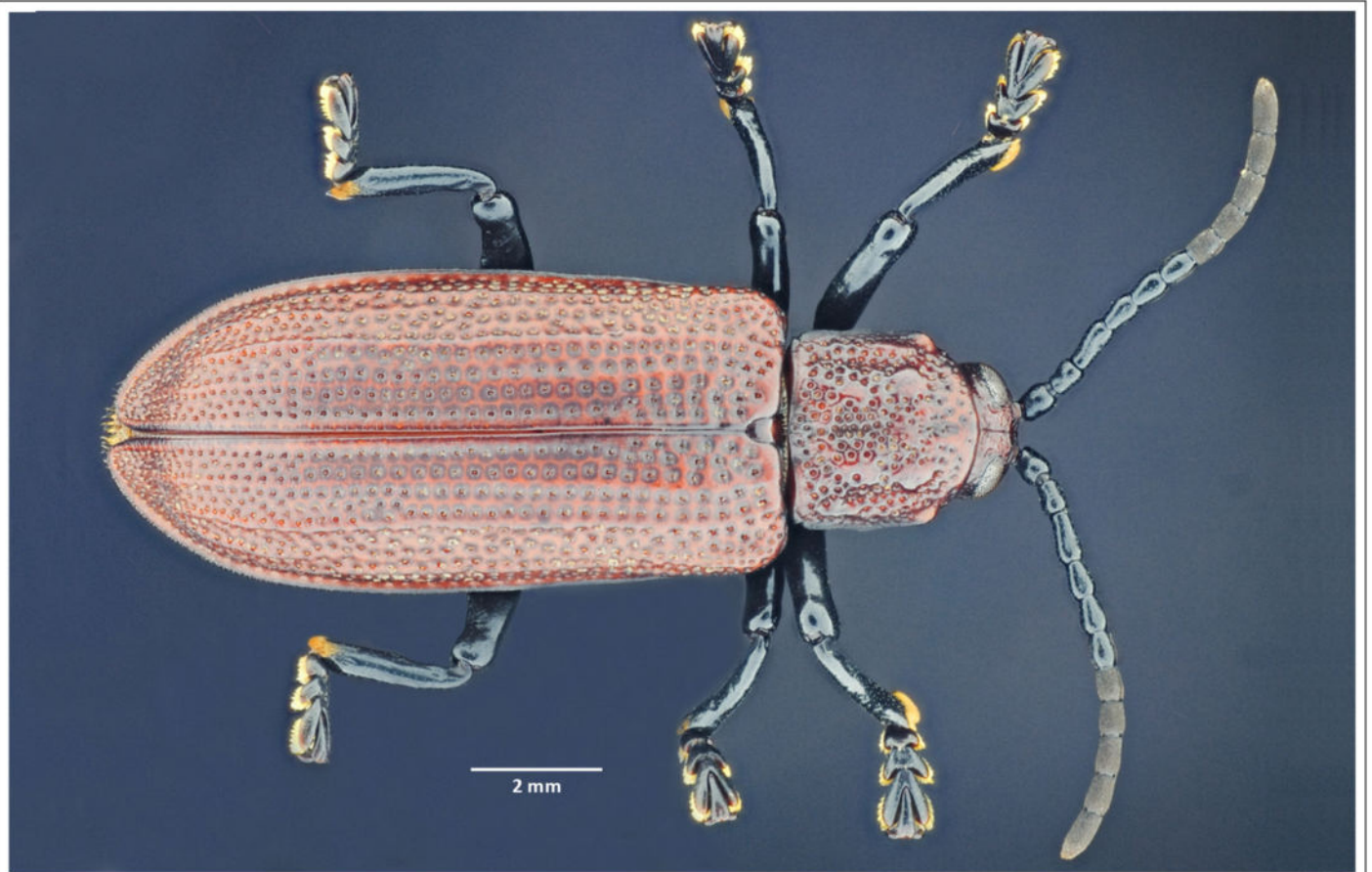
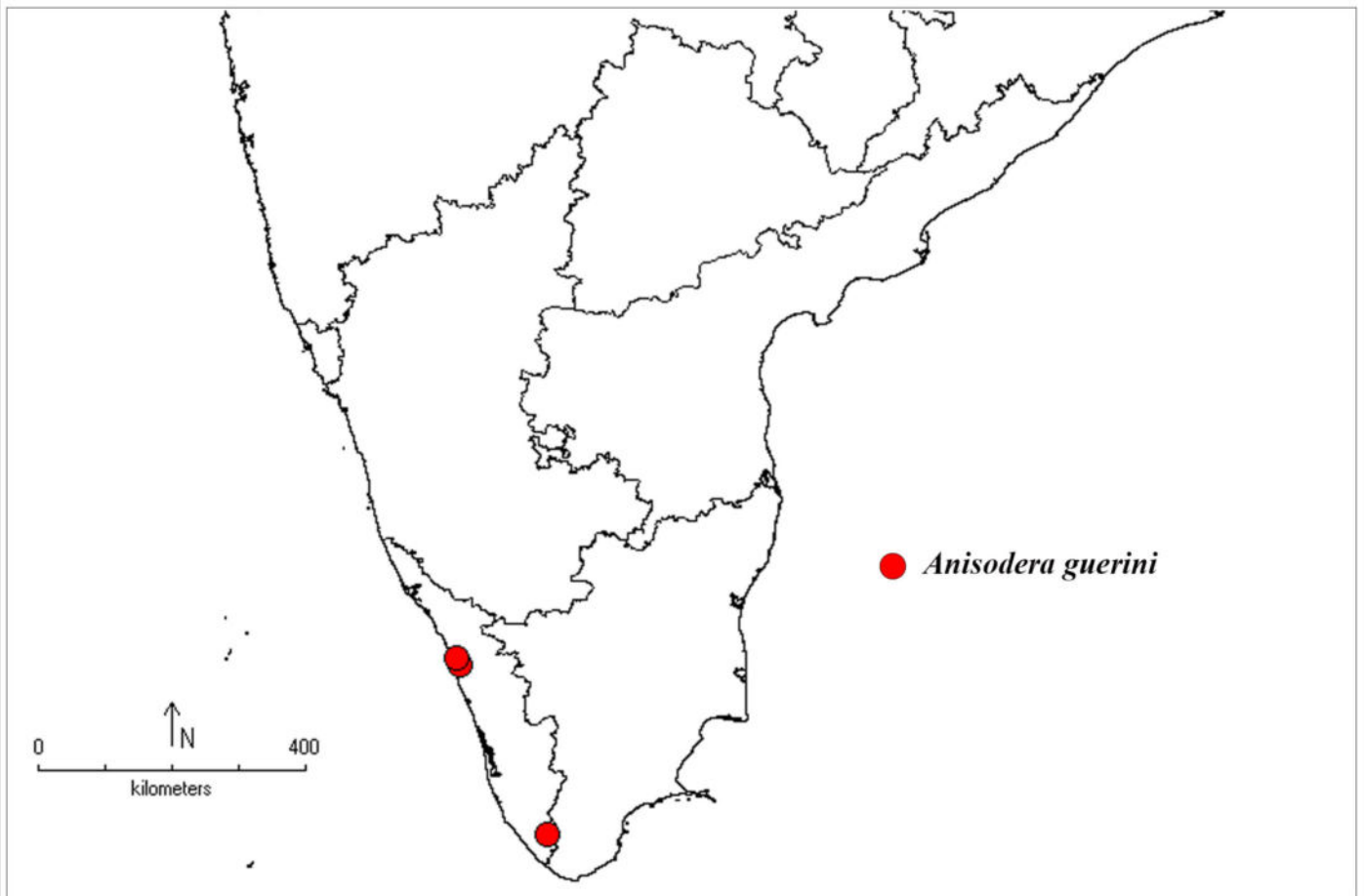


Fig. 65. *Anisodera guerini* Baly.



Map 2. Localities of *Anisodera* Chevrolat species studied.

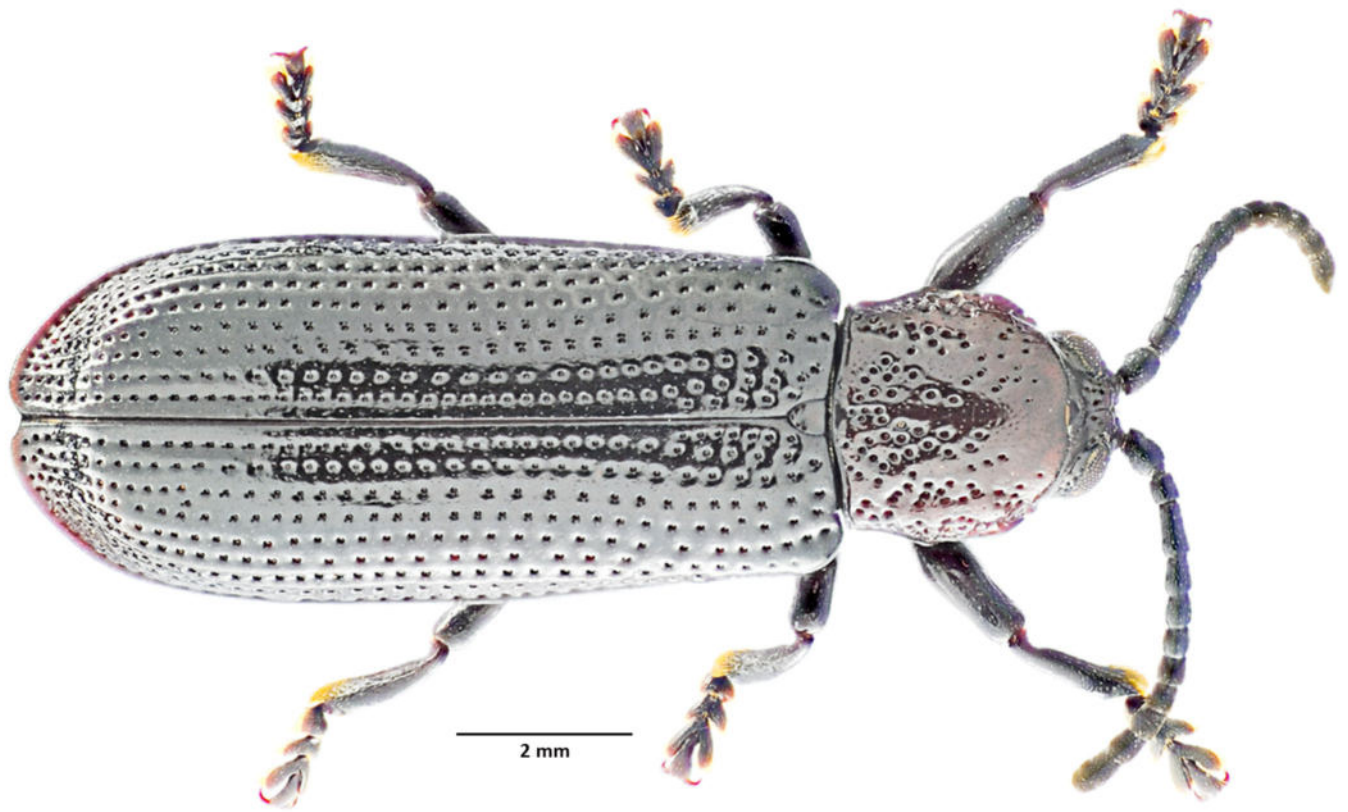
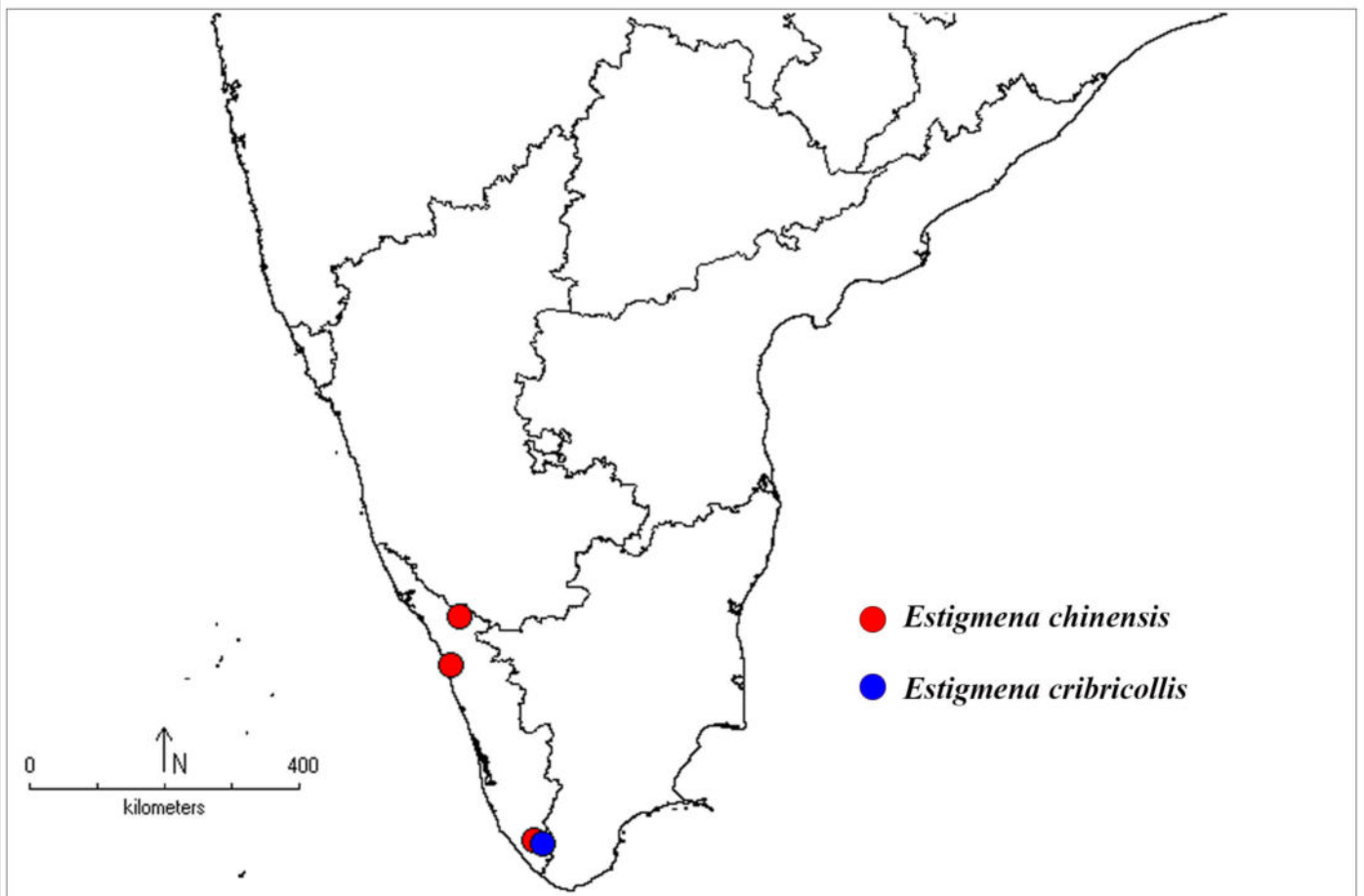


Fig. 66. *Estigmene chinensis* Hope.



Map 3. Localities of *Estigmene* Hope species studied.

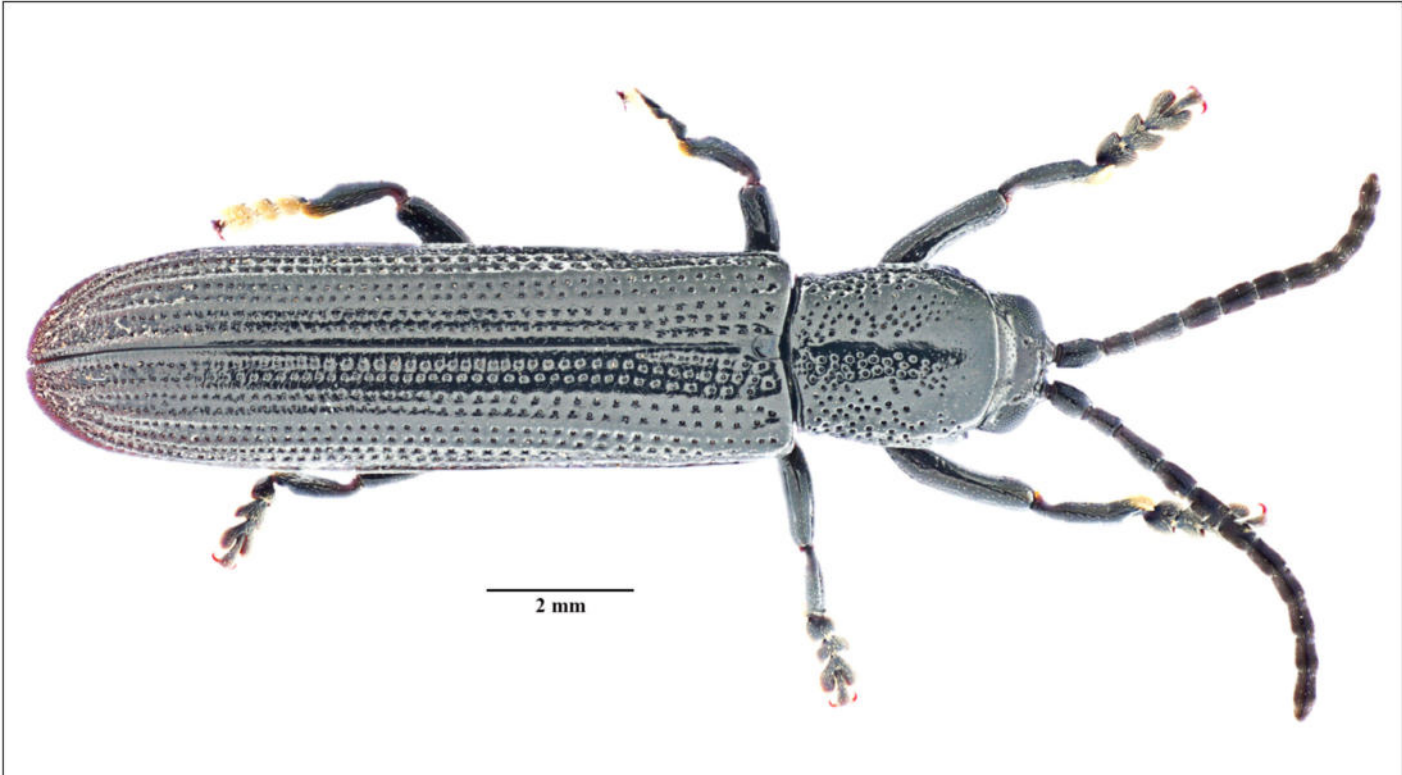
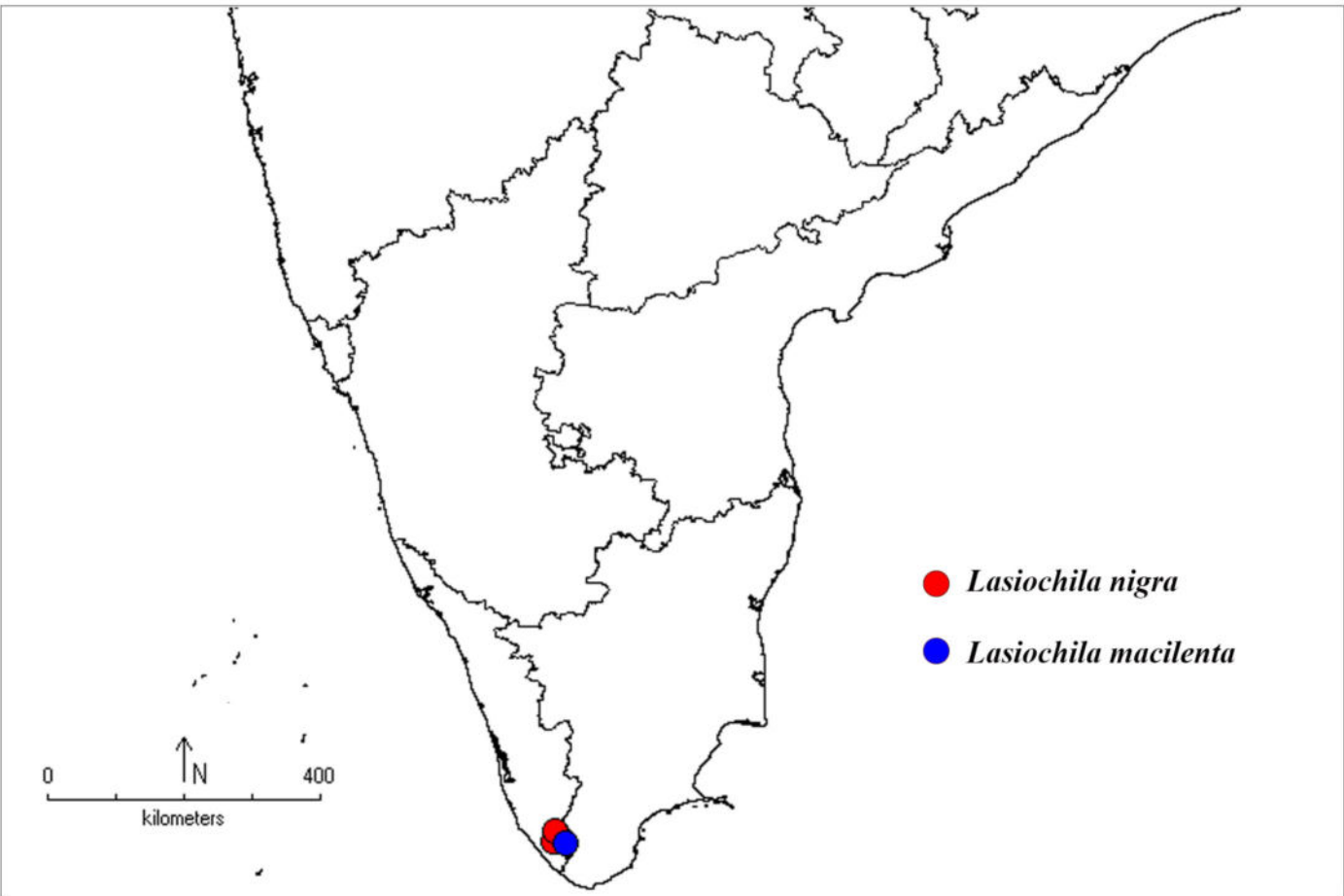


Fig. 67. *Lasiochila nigra* Maulik.



Map 4. Localities of *Lasiochila* Weise species studied.

4.2.2 Tribe Bothryonopini Chapuis, 1875

Body elongate, parallel or subparallel, flat, neither spiny nor tuberculate (Figs. 68–69). Head visible in dorsal and ventral views, nearly rounded; vertex not acutely produced between antennae (Figs. 8, 10); anterior margin of mouth cavity close to base of antennal sockets; frontoclypeus lacking or transverse and narrow (Fig. 8). Pronotum transverse, angles without trichobothria (Fig. 10). Elytra punctate striate, scutellar row present (Fig. 12) or absent (Fig. 13), sutural angle toothed. Claw tarsomeres project beyond bilobed third tarsomeres.

The tribe is represented by five genera, three of them are recorded in India and two in south India.

***Bothryonopa* Guérin-Méneville, 1840**

(Figs. 8, 68; Map 5)

Botryonopa Chevrolat, 1836: 387, *nomen nudum*.

Bothryonopa Guérin-Méneville, 1840b: 332. Type species: *Bothryonopa sanguinea* Guérin-Méneville, 1840b, designated by Baly 1859.

Botryonopa Blanchard, 1845: 181.

Botrionopa Chevrolat (sic). Chenu & Desmarest 1870: 341 (*lapsus calami*).

Hispopria Baly, 1859: 90. Type species: *Hispopria foveicollis* Baly, 1859, by original designation.

Hisparia Baly (sic). Anand 1989: 4 (*lapsus calami*).

Diagnosis: Size: 5–24 mm long; body oblong, flat. Labrum transverse, with long setae (Fig. 8). Antennae robust, reaching humerus or little beyond; first antennomere thick, subglobose. Elytra moderately convex, flattened along disc, nearly parallel-sided, punctate-striate, scutellar row present (Fig. 12). Hypomeron without tooth. Apex of abdomen reaching almost near apex of elytra. Femora generally with a ventral spine. Colour variable, red, black or metallic green or combination of these.

Sexual dimorphism: In females, the last ventrite is characterized by an inverted U-shaped transverse row of thick setae, and its posterior margin is distinctly concave in the middle and convex on either side, giving it a sinuate appearance. The posterior end of the last visible tergite in females forms a broad, oblique brace. In males, the last ventrite lacks the

characteristic curved transverse row of setae, and its posterior margin is evenly concave. The posterior end of the last visible tergite forms a smaller, narrower brace in males compared to females.

Diversity: 33 described species, three in India, one from south India.

Number of species studied: One.

Distribution: Bangladesh, Bhutan, India, Laos, Myanmar, Thailand, Indonesia, Malaysia, Philippines, Taiwan, Vietnam (Asia); New Guinea (Oceania).

Host plants: Poaceae (Gestro 1919), Arecaceae (Dammerman 1929; Kalshoven 1951; Steiner 2001; Shameem & Prathapan 2019).

***Bothryonopa sahyadrica* Shameem & Prathapan, 2019**

(Figs. 8, 12, 68; Map 5)

Bothryonopa sahyadrica Shameem & Prathapan, 2019: 294.

Diagnosis: Length 9.08–13.15 mm, width 3.15–4.51 mm. Body subparallel. Colour highly variable, dorsum entirely rufous brown or piceous, elytral apex piceous in three brown specimens; antenna black, last antennomere apically brown; hypomeron concolorous with pronotum; venter more shiny than dorsum; middle of sternites and generally first two ventrites paler; rest of venter concolorous with general colour of dorsum; general colour of legs variable, dark rufous brown to brown to piceous; coxae, trochanters and tarsomeres mostly lighter than femur and tibia; distal part of all femora, all tibiae concolorous with darker part of venter. Head with distinct midcranial suture anteriorly; vertex coarsely punctate; punctures on vertex deep, rounded, larger and coarser than those on anterior portion of pronotum; frontoclypeus without deep punctures. Antenna 0.41–0.46X longer than body, reaching humerus; antennomeres II–VII apically wider than proximally; antennomere I thickest; I–IV distinctly punctate; VI–XI densely covered with thin, minute setae. Pronotum 0.74–0.81X longer than wide; anteriorly narrower than posteriorly; anterolateral angles evenly rounded; lateral margin anteriorly narrower than posteriorly, weakly scalloped; posterolateral angles notched, forming a denticle with posterior margin; anterior margin of pronotum weakly, but convexly arched, narrowly margined; posterior margin weakly sinuate, distinctly margined; disc of pronotum moderately convex, without impressions; profusely, uniformly punctate, punctures rounded, smaller than those on

elytra, distance between punctures less than half diameter of a puncture. Punctures on pronotum denser than those on hypomeron. Scutellum longer than wide, with narrowly rounded apex, minutely punctate, nearly flat on top. Elytra slightly wider at apical 1/3rd; each elytron with 10 regular rows of punctures in middle; seventh additional row arises near anterior 1/3rd; scutellar row short with 5–9 punctures; elytral punctures nearly rounded, diameter of a puncture subequal to 3X width of an interstice; interstices flat, except on distal 1/3rd, costate towards apical 1/4th; elytral apex rounded, forms denticle with sutural angle. Hypomeron deeply punctate; punctures stronger than those on pronotum towards tergo-sternal suture, punctures sparse and weaker towards lateral margin. All femora without ventral spine; all tibiae apically notched, canaliculate dorsally from proximal end to middle or a little beyond.

Distribution: India (Kerala).

Host plant: *Calamus gamblei* Becc. ex. Becc. & Hook. f. (Arecaceae).

Remarks: *Bothryonopa sahyadrica* is an atypical species within the genus characterized by the absence of ventral spine on all femora. In most members of *Bothryonopa*, including the two Indian species, at least one of the femora is armed with a spine. *Bothryonopa sahyadrica* resembles *B. daiacca* Würmli and *B. schultzei* Uhmman, the two Southeast Asian species (Borneo and Philippines respectively) in having similar femora without ventral spines. *Bothryonopa daiacca* differs from *B. sahyadrica* by the pronotum anteriorly nearly as wide as posteriorly. In *B. schultzei*, denticle on sutural apex of elytra is distinctly prominent compared to that in *B. sahyadrica*. Moreover, the above two species are geographically widely separated from *B. sahyadrica*.

Material examined (n=10): 1 ♂, “(1) India: Kerala / Bonacaud / N 08° 41' 01.6" / E 77° 11' 24.0" 1276 m / 25.v.2013 / Prathapan & Shameem Coll. / Ex *Calamus* (2) HOLOTYPE / *Bothryonopa sahyadrica* n. sp. / des. Shameem & Prathapan, 2017” (red label)”. 9 specimens, all specimens with a white locality label as given below, besides a second pink label: “PARATYPE / *Bothryonopa sahyadrica* n. sp. / des. Shameem & Prathapan, 2017”): 2 ♂, 2 ♀ with the same labels as for holotype; 2 ♂, 2 ♀, 1 unsexed (in alcohol). India: Kerala / Bonacaud / N 08° 41.352' / E 77° 11.200' 1083 m / 9.iv.2017 1083 m / Prathapan & Shameem Coll. / Ex *Calamus*.

Wallacea Baly, 1859

(Figs. 10, 13, 69; Map 6)

Wallacea Baly, 1859: 97. Type species: *Wallacea bowringii* Baly, by original designation.

Pistosia Weise 1905d: 93. Type species: *Pistosia maculata* Weise 1905d, by monotypy; Sekerka 2015 (Removal from synonymy).

Pistocia Weise (sic). Kimoto 2005: 105 (*lapsus calami*).

Wallaceana Maulik 1928:159 (replacement name for *Wallacea* Baly). Type species: *Wallacea bowringi* Baly [sic], by original designation.

Neodownesia Gressitt 1953:121. Type species: *Neodownesia rubra* Gressitt, by monotypy; Sekerka 2015 (Removal from synonymy).

Diagnosis: Size 4.1–12.0 mm; elongate, flat; colour variable from hues of brown, or red or yellow in combination with black or dark brown. Head deeply inserted into pronotum in dorsal view, not projecting forward (Fig. 10); supraorbital pore represented by a well margined tubercle bearing a single seta; labrum very short. Antennae reach humerus, antennomeres II–XI thickening towards distal ones; at least four basal antennomeres submoniliform, distinctly constricted at base and widening apically; four basal antennomeres sparsely pubescent and shiny. Oral cavity broader than long; dorsal border of oral cavity separated from antennal sockets by a distance no more than half diameter of a socket. Pronotum quadrate, broader than long, without deep impressions, lateral and posterior margins strongly bordered; posterior angle sharply angulate; anterior angle obtuse, rounded. Elytra flat, nearly parallel sided; punctate-striate with eight regular rows of deep punctures, in addition to rows beyond middle; scutellar row absent. Behind procoxa, ventral end of prothoracic hypomeron with a spine. Foretibia with an excavation on inner side, bearing a row of stiff bristles; claws simple without any basal tooth; claw tarsomere extends beyond bilobed tarsomere.

Sexual dimorphism: Posterior margin of last abdominal ventrite concave in males, straight in females.

Diversity: 30 described species, three in India, two from south India.

Number of species studied: One.

Distribution: China, Nepal, Laos, Vietnam, Myanmar, Taiwan, Thailand, India, Indonesia, Malaysia, Philippines (Asia); France (Europe) (Introduction: Drescher & Martinez 2005).

Host plants: Arecaceae (Gestro 1919; Dammerman 1929; Corbett 1929, 1932; Kalshoven 1957, 1981; Lange 1950; Lepesme 1947; Maulik 1919a, 1930; Zaitsev 2006; Lee & Cheng 2010; Drescher & Martinez 2005).

Key to south Indian species of *Wallacea* Baly, 1859

1. Each elytron with a brown dorsal band in addition to a marginal one.....
..... *W. limbata* Gestro, 1906
- Each elytron without a brown dorsal band, with or without black marginal band,
rarely apical 1/3rd piceous..... *W. dactyliferae* Maulik, 1919

***Wallacea dactyliferae* Maulik, 1919**

(Figs. 10, 13, 69; Map 6)

Wallacea dactyliferae Maulik, 1919a:107 (type: India, Madras, Chingleput; Vamambady; Bengal, Pusa, BMNH).

Wallaceana dactyliferae (Maulik). Maulik 1937:150.

Pistosia dactyliferae (Maulik). Chen *et al.* 1986:599.

Pystosia dactyliferae (Maulik) (sic). Zaitsev 2006:1031 (*lapsus*).

Diagnosis: Length 4.50–6.69 mm, width 1.75–2.62. Colour highly variable, shining, yellowish brown to dark brown with a posteriorly broadened brown or black band laterally on elytra, which fuses apically at suture with its fellow member on opposite elytron; elytral bands entirely absent or apical 1/3rd darker in many specimens; antenna darker than vertex, I–IV antennomeres shining, V–XI dull; palps yellowish; venter paler than dorsum or concolorous. Head finely punctate with a distinct medial sulcus, gena irregularly punctate dorso-laterally behind eyes, rugulose ventrolaterally below eyes; labrum punctate bearing long erect setae. Antennae with basal four antennomeres finely punctate and sparsely setose; distal seven densely pubescent. Pronotum broader than long, sides more or less parallel, anterolateral angle nearly rounded, posterolateral angles produced into acute tooth; surface coarsely punctate except longitudinal narrow region along middle and another transverse region along basal margin; punctures larger than those on vertex, distinct fovea present near the basal margin in front of the scutellum. Scutellum widest in

middle, apical margin triangular. Elytra punctate striate with 10 rows of punctures behind the middle, 10th row arises after 6th row from the middle; interstices 1–6 flat and depressed except near apex, rest of interstices distinctly costate throughout. Hypomeron, mesepisterna, mesepimera, metasterna laterally and metepisterna coarsely punctate, rest of sternites, all ventrites, all femora and tibiae sparsely and finely punctate.

Distribution: India (Bihar, Chingleput, Karnataka, Kerala, Pusa, Tamil Nadu). *Elsewhere:* China, Taiwan, Thailand (Asia); France (Europe) (Introduction, Drescher & Martinez 2005). **New record from Karnataka and Kerala.**

Host plants: Arecaceae: *Arenga tremula* (Blanco) Becc. (Lee & Cheng 2010); *Arenga wightii* Griff., *Bentinckia condapanna* Berry ex Roxb., *Borassus flabellifer* L. (**New record**); *Calamus* sp. (Zaitzev 2006); *Calamus travancoricus* Bedd. ex Becc. (**New record**); *Chamaerops humilis* L. (Drescher & Martinez 2005); *Corypha umbraculifera* L. (**New record**); *Metroxylon* sp. (Gestro 1919); *Phoenix* sp. (Maulik 1919a); *Phoenix canariensis* Hort. ex. Chabaud (Drescher & Martinez 2005); *Phoenix loureiroi* var. *pedunculata* (Griff.) Govaerts, *Phoenix roebelenii* O'Brien; *Phoenix sylvestris* (L.) Roxb. (**New record**); *Washingtonia filifera* (Linden ex André) H. Wendl. (Drescher & Martinez 2005).

Remarks: The endophallic sclerites remain the only reliable diagnostic character at species level for most members of the genus, and they are known only for three species (Prathapan & Shameem 2017; Lee & Sekerka 2018a) including *W. dactyliferae* Maulik and *W. jarawa* Prathapan & Shameem from India. Identity of *W. dactyliferae* was ascertained by studying the endophallic sclerites of a ‘cotype’ from Vaniambady (= Vamambady in Maulik 1919) in Tamil Nadu, southern India. The two species superficially resemble each other in having similar size and colour pattern, especially in the lateral black band that covers the elytral apex. In *W. dactyliferae*, the median sclerite is horse-shoe shaped in ventral view, while the same is polygonal in *W. jarawa*. *Wallacea dactyliferae* can be distinguished from *W. limbata* Gestro, another south Indian species by the absence of the median dorsal band on each elytron extending from humerus to apex in addition to the lateral band.

Material examined (n=199): 16♂, 18♀. India: Karnataka / Kottigehara / N 13° 07' 18.4" E 75° 29' 38.2" / 6.v.2011 920 m / Prathapan & Shameem Coll. / Ex *Phoenix loureiroi*; 7♂, 6♀. India: Karnataka / Kottigehara / N 13° 07' 07.7" E 75° 30' 37.9" / 8.v.2011 938 m /

Prathapan & Shameem Coll. / Ex *Phoenix loureiroi*; 2♂, 1♀. India: Karnataka / Kottigehara / 9.v.2011 / Prathapan & Shameem Coll. / Ex *Phoenix loureiroi*; 2♀. India: Karnataka / Somanakaadu Estate / 13°05'46.58"N 75°28'58.49"E / 15.v.2011 641 m / Prathapan & Shameem Coll. / Ex *Arenga wightii*; 7♂, 5♀. India: Karnataka / Malaya Marutha / 13°07'17.27"N 75°30'10.54"E / 30.ix.2017 1007 m / Prathapan & Shameem Coll. / Ex *Phoenix loureiroi*; 2♀. India: Karnataka / Devaramane / 13°03'29.13"N 75°32'22.94"E / 1.x.2017 1237 m / Shameem KM Coll. / Ex *Phoenix loureiroi*; 5♂, 3♀. India: Karnataka / Kogile / 13°05'07.4"N 75°32'34.2"E / 1.x.2017 1093 m / Shameem KM Coll. / Ex *Phoenix loureiroi*; 6♂, 8♀. India: Kerala / Pattambi / 16.x.2007 / Prathapan Coll. / Ex *Borassus*; 1♀. India: Kerala / Ponmudi, 18.v.2011 / Prathapan & Shameem Coll. / Ex *Phoenix loureiroi*; 5♂, 1♀. India: Kerala / Arippa / N 08° 50' 11", E 77° 01' 46.1" 236 m / 19.iv.2012 / Prathapan & Shameem Coll. / Ex *Calamus*; 1♂, 4♀. Same data except for the date 13.xi.2014 and collector Shameem KM; 1♂. India: Kerala / Silent Valley N. P. / Nilikkal / Vannampara / 21.i.2013 / Shameem K. Coll. / Ex *Phoenix*; 1♂. India: Kerala / Trivandrum / Kallar / N08°42'30.9" E77°07'59.7" / 24.v.2013 160 m / Prathapan & Shameem Coll. / Ex *Calamus*; 7♂, 7♀. India: Kerala / Kizhuparamba / 13.ix.2014 / Shameem KM Coll. / Ex *Corypha umbraculifera*; 5♂, 1♀. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 15.ix.2014 / Shameem K.M. Coll. / Ex *Arenga wightii*; 1♂, 3♀. India: Kerala / Trivandrum / 6.iv.2015 / Prathapan KD Coll. / Ex *Phoenix roebelenii*; 14♂, 10♀. India: Kerala / Ramakkalmedu / 24.x.2015 / Prathapan KD coll. / Ex *Phoenix loureiroi*; 1 unsexed, 29♂, 19♀. India: Tamil Nadu / Tiruvalangadu Railway Station / N 13° 05' 24.34" / E 79° 45' 51.07" 60 m / 23.ix.2016 / Shameem KM Coll. / Ex *Phoenix sylvestris*.

***Wallacea limbata* Gestro 1906**

Wallacea limbata Gestro 1906a:468 (type: India, Madras, MCSN).

Wallaceana limbata (Gestro). Uhmman 1958a:230.

Distribution: India (Tamil Nadu).

Host plants: Arecaceae: Palm (Gestro 1919).

Material examined: Nil.

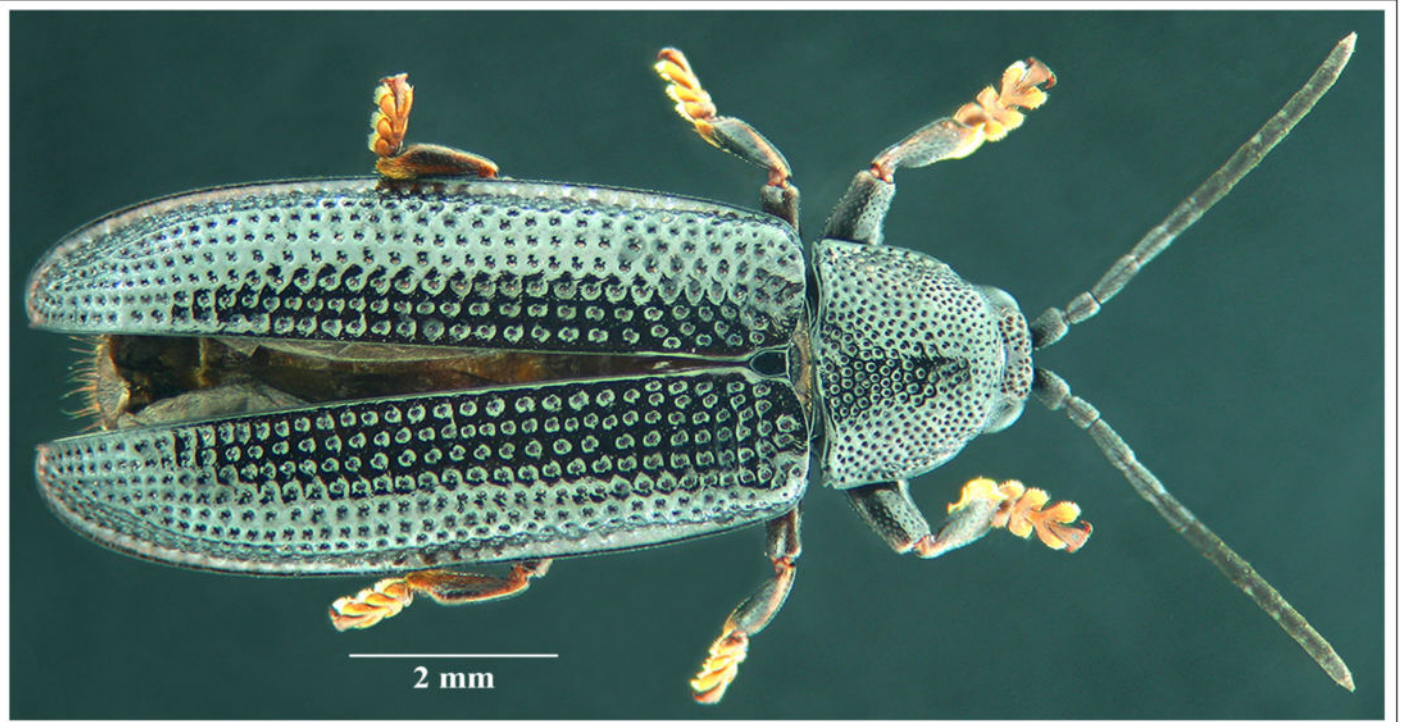
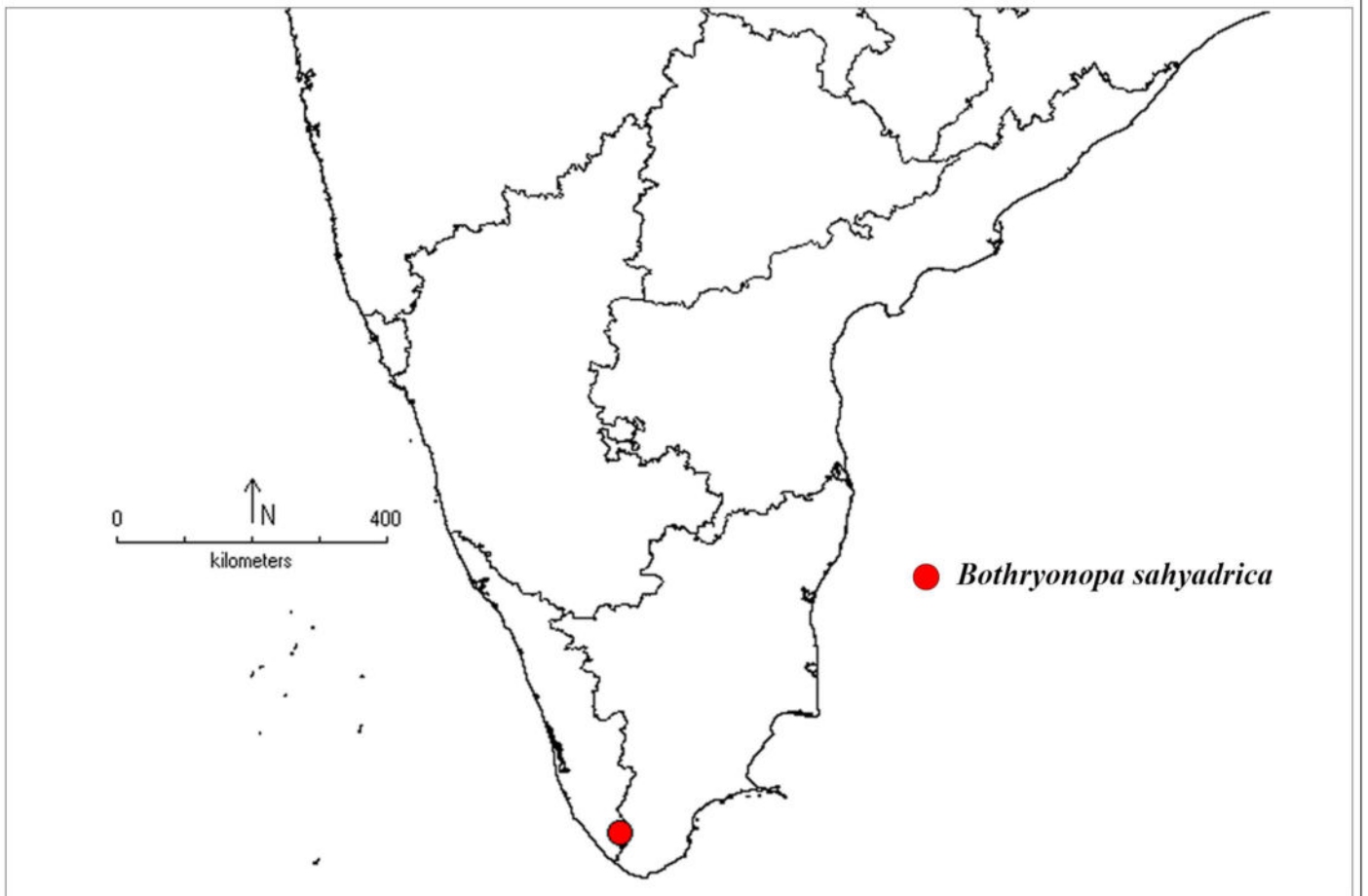


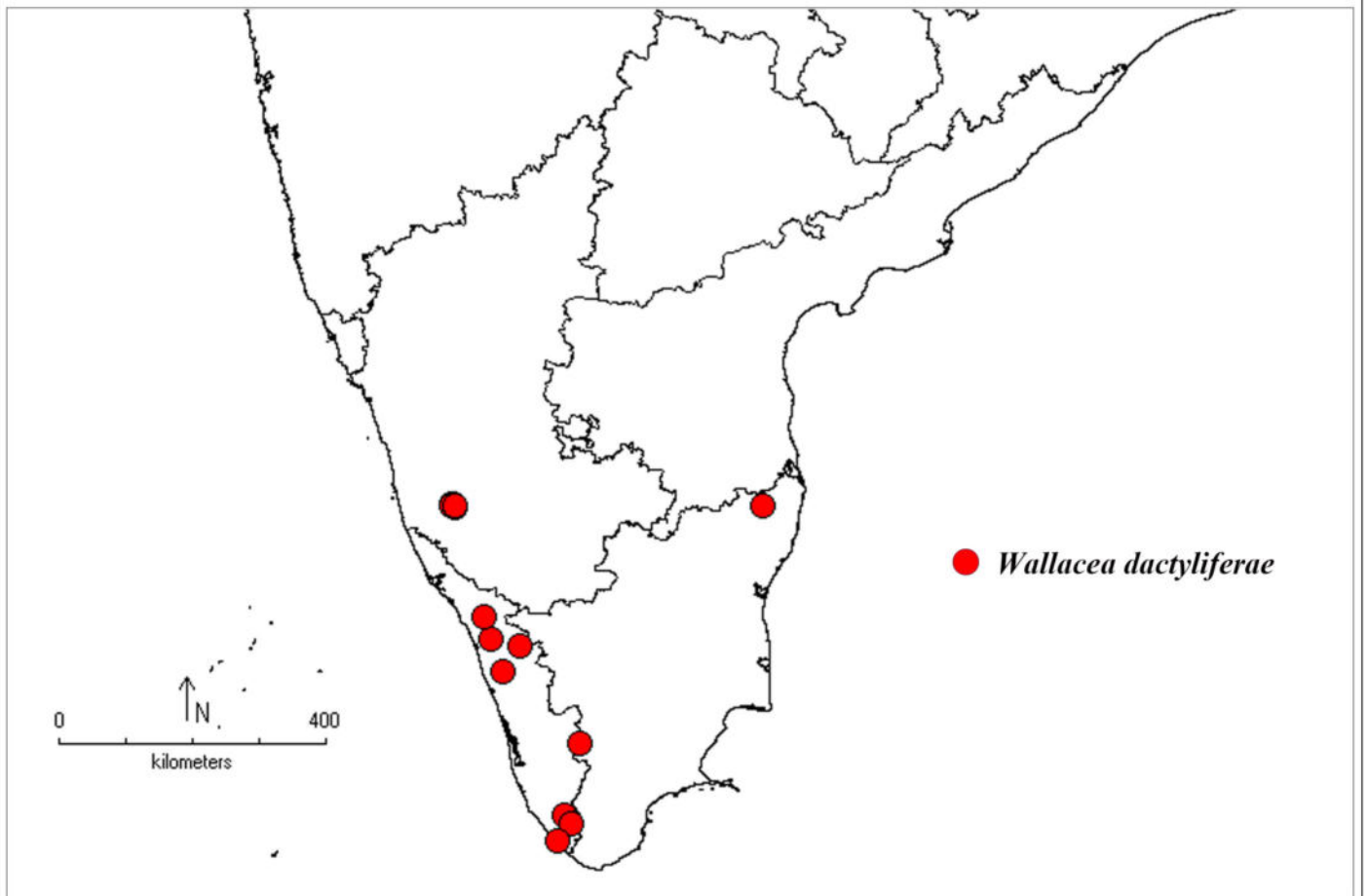
Fig. 68. *Bothryonopa sahyadrica* Shameem & Prathapan.



Map 5. Localities of *Bothryonopa* Guérin-Ménéville species studied.



Fig. 69. *Wallacea dactyliferae* Maulik.



Map 6. Localities of *Wallacea* Baly species studied.

4.2.3 Tribe Callispini Chapuis, 1875

Shape variable, elongate parallel sided to ovate, body neither spiny nor tuberculated, vertex acutely produced anteriorly between antennal sockets (Figs. 11, 25); anterior margin of mouth cavity situated close to the base of antennal insertions; each posterolateral angle of pronotum with trichobothrium (Fig. 11); elytra punctate-striate, first five rows of punctures do not run straight, rather curved outwardly in basal half; scutellar row present; apical margin of elytra rounded (Figs. 70–71, 74).

The tribe comprises four genera, three of them are present in India and two in south India.

Amblispa Baly, 1859

(Figs. 22–23, 70–72; Map 7)

Amblispa Baly, 1859: 10.

Diagnosis: Size 5–6 mm. Body elongate, parallel-sided or ovate; colour variable; entirely blue-black or black with greenish tinge, head and pronotum bright red in one species. Head convex, slightly produced between antennae; eyes smaller, less convex (Figs. 22–23); antenna filiform, reaches base of pronotum. Pronotum subquadrate, not dilated laterally; lateral margin convergent from base to apex, narrowly margined; anterolateral angles obtuse; anterior margin rounded, slightly emarginate in middle; posterior margin sinuate; posterolateral angles acute; surface irregularly punctate, without lateral depressions (Fig. 23).

Diversity: Two described species, one occurs in India, including the study area.

Number of species studied: One.

Distribution: Bangladesh, India, Nepal, Sri Lanka (Asia).

Host plants: Poaceae (Maxwell-Lefroy 1909).

Amblispa laevigata (Guérin-Méneville, 1844)

(Figs. 22–23, 70–72; Map 7)

Microrhopala laevigata Guérin-Méneville, 1844: 278 (type: India, Pondichery, depository unknown).

Amblispa laevigata (Guérin-Méneville). Baly 1859: 12 (transfer).

Amblyspa laevigata viridis Maulik, 1919a: 73 (type: South India; Trichur, ZUIC).

Amblyspa laevigata purpurascens Maulik, 1919a: 73 (type: Ceylon; India, United Provinces, Ranikhet, BMNH).

Callispa violaceicornis Pic 1937: 109 (type: South India, MNHN) **new synonym**.

Diagnosis: Length 4.65–5.65 mm, width 1.95–2.35 mm (Size 5.50–6.0 mm in Maulik 1919). Body oblong-ovate. Dorsum shining dark blue-black, sometimes with greenish or purplish sheen; ventral side variable, concolorous with dorsum or dull black.

Distribution: India (Bihar, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh, West Bengal). *Elsewhere:* Bangladesh, Nepal, Sri Lanka (Asia).

Host plants: Poaceae: Grass (Maxwell-Lefroy 1909).

Material examined (n=6): 1 unsexed. INDIA: Karnataka / Bangalore 916 m / 1.viii.1998 / Prathapan Coll.; 1 unsexed. INDIA: Kerala / Vellayani / 26.x.2002 / Prathapan Coll.; 1 unsexed. India: Kerala / Vellayani / 27.x.2002 / K. D. Prathapan Coll. 1 unsexed. India, TN: Chidambaram / Ex Grass 14.i.2017 / Sankararaman. H; 1 unsexed. Same data except date 19.ii.2017; 1 unsexed. Same data except date 16.i.2018.

***Callispa* Baly, 1859**

(Figs. 11, 17, 24, 25, 74–75, 77, 79, 81; Map 8)

Callispa Baly, 1859: 4. Type species: *Callispa fortunei* Baly, 1859, by original designation.

Miltinaspis Weise, 1904: 443. Type species: *Cephaloleia cassidoides* Guérin-Ménéville 1844, by monotypy.

Melispa Weise, 1897: 114. Type species: *Melispa andrewesi* Weise, 1897, by monotypy.

Rhinocassis Spaeth, 1905: 255. Type species: *Cephaloleia cassidoides* Guérin-Ménéville, 1844, by monotypy.

Callispa (*Callispella*) Spaeth, 1935: 255. Type species: *Callispa gracilicornis* Weise, 1910a, by original designation.

The genus is one of the most speciose taxa among the Old World hispine Cassidinae. It is divided into two subgenera, namely *Callispa* and *Callispella* Spaeth, 1935, primarily based on the thickness of antennae and length of the third antennomere. Of the two subgenera, only the nominotypical subgenus is found in India.

Diagnosis: Size 3–10 mm. Adults vary from slender-parallel sided to oblong-ovate, flat to moderately convex beetles. Head narrowly produced anteriorly between antennae, covering the base of antennomere I in dorsal view. Antennae filiform, slightly thickened apically. Pronotum broader than long, narrowed apically; lateral sides margined, with (Fig. 25) or without distinct scallopings (Fig. 11); anterolateral angles rounded; posterolateral angles acute; disc convex, transversely impressed basally; shallowly depressed on either side laterally (Figs. 11, 25). Scutellum small, subquadrate, often slightly widened towards apex; apical margin rounded or weakly conical. Elytra parallel sided to slightly expanding towards apex, apex rounded. Each elytron generally with ten rows of punctures in middle, in addition to a short scutellar row (rarely more than 10); 6th and 7th rows arise from basal 1/3rd; interstices flat and never costate. Claw tarsomeres small, hardly extending beyond bilobed third tarsomere.

Diversity: 162 described species, 30 in India, 12 from south India.

Number of species studied: Eight (two undescribed).

Host plants: Arecaceae (Uhmann 1929; Miller 1932; Kalshoven 1951, 1957; Reid 1998; Mohamedsaid 2004; Schöller 2007, 2008; Shameem & Prathapan 2013), Cyperaceae (Uhmann 1969; Lee *et al.* 2012), Orchidaceae (Leefmans 1918); Poaceae (Schultze 1916; Gestro 1919; Maulik 1919a; Chen 1929; Uhmann 1929; Gressitt 1950; Gressitt & Kimoto 1963; Anand 1989; Maddison 1993; Hutacharern & Tubtim 1995; Hua 2002; Mukunthan & Nirmala 2002; Lee *et al.* 2012), Rubiaceae (Booth *et al.* 1990).

Distribution: Angola, Cameroon, Congo, Bioko, Guinea, Kenya, Liberia, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Rhodesia, Tanzania, Togo, Uganda, Zambia, Zimbabwe (Africa); Bangladesh, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam (Asia).

Key to south Indian species of *Callispa* Baly, 1858

1. Dorsum or at least elytra entirely metallic blue or blue-green..... 2
 - Neither dorsum nor elytra entirely metallic 6
2. Lateral margins of pronotum straight and without scallopings..... 3
 - Lateral margins of pronotum with scallopings..... 5

3. Scutellum with a strong triangular prominence dorsally with its apex directed posteriorly..... ***C. coeruleodorsata* Maulik, 1919**
- Scutellum without any prominences dorsally..... 4
4. Elytral interstices rugose basally..... ***C. minima* Gestro, 1902**
- Elytral interstices smooth throughout..... ***Callispa* sp. 1**
5. Apex of vertex bluntly pointed; pronotum with green tinge, disc strongly convex and more raised towards apex, lateral margins straight and strongly scalloped, punctures coarser and deep..... ***C. keram* Shameem & Prathapan, 2013**
- Apex of vertex sharply pointed; pronotum dark brown, disc uniformly convex, lateral margins distinctly curved towards anteriorly and weakly scalloped, punctures smaller and shallower..... ***Callispa* sp. 2**
6. Elytra entirely of one colour..... 7
- Elytra with black or yellow markings..... 9
7. Body entirely yellow, antennae black; pronotum strongly narrowed anteriorly, nearly semicircular in dorsal view, lateral margin strongly convex, disc weakly depressed laterally, punctate area not darker..... ***C. nigricornis* Baly, 1859**
- Body entirely testaceous, antenna ferruginous; pronotum comparatively less narrower apically, lateral margins straight or weakly convex, disc strongly depressed near lateral margins..... 8
8. Lateral margins of pronotum without scalloping, depressions on either side of midline of pronotal disc strong, densely punctate; scutellum triangular with rounded apex..... ***C. andrewesi* (Weise, 1897)**
- Lateral margins of pronotum with scalloping, depressions on either side of midline of pronotal disc weak, sparsely punctate; scutellum only slightly narrowed apically, apex broadly rounded..... ***C. contaminata* Weise, 1913**
9. Dorsum orange yellow, each elytron with a black medial band extending from humerus to near apex; body slender and nearly parallel sided...***C. vittata* Baly, 1859**
- Dorsum variable, elytra with circular spots or irregular markings; body comparatively broader, oblong-ovate with elytra distinctly expanding towards apex..... 10
10. General colour of dorsum black; disc of elytra with four yellow spots, margins partly yellow ***C. angusticollis* Maulik, 1919**
- General colour of dorsum yellow or orange with black spots or markings..... 11
11. Elytra with 12 spots ***C. duodecimaculata* Chapuis, 1876**

- Elytra with less than 12 spots..... 12
- 12. Dorsum orange-red, each elytron with three black spots, posterior 1/3rd of elytra with a single large spot which fuses at suture with its counterpart on opposite elytron forming a transverse band in resting position.....
..... ***C. sexmaculata* Weise, 1905 new status**
- Each elytron with four black markings..... 13
- 13. Dorsum yellow, each elytron with four spots, posterior 1/3rd with two spots, a single spot near the suture fuses with its counterpart on the opposite elytron forming a circular or heart-shaped spot, giving seven spotted appearance to the elytra in resting position..... ***C. septemmaculata* Weise, 1908**
- Ground colour of dorsum yellow with green tinge, each elytron with three spots besides a longitudinal irregular patch extending from humerus to apex..... ***C. maculipennis* Gestro, 1911**

***Callispa andrewesi* (Weise, 1897)**

Melispa andrewesi Weise, 1897: 116 (type: India, Madura, BMNH).

Distribution: India (Tamil Nadu).

Host plants: Unknown.

Remarks: *Callispa andrewesi* (Weise, 1897) closely resembles *C. contaminata* Weise, 1913. The two species differ from all other members of the genus by the entirely testaceous body and ferruginous antennae. From the photographs of the types of both species, as well as the illustration of the dorsal habitus of *C. andrewesi* provided by Maulik (1919a), it is evident that the two species differ in the characters of the pronotum. In *C. contaminata*, the pronotum is sparsely punctate in depressed areas, and its lateral margin is distinctly scalloped, whereas in *C. andrewesi*, the lateral margin lacks distinct scallops (not clear in the photograph), and the punctures are denser in depressed areas on the disc. Further studies on the types of both species or specimens from their type localities, are needed to reach a final conclusion about the identity of these species.

Material examined: Nil.

***Callispa angusticollis* Maulik, 1919**

Callispa angusticollis Maulik, 1919a: 54 (type: India, Madras, Nilgiri Hills, BMNH).

Distribution: India (Tamil Nadu).

Host plants: Unknown.

Material examined: Nil.

***Callispa coeruleodorsata* Maulik, 1919**

Callispa coeruleodorsata Maulik, 1919a: 65 (type: India, Madras, Nilgiri Hills, BMNH).

Distribution: India (Tamil Nadu).

Host plants: Unknown.

Material examined: Nil.

***Callispa contaminata* Weise, 1913**

Callispa contaminata Weise, 1913b: 109 (type: India, Shembaganur, ZMHB).

Distribution: India (Tamil Nadu).

Host plants: Unknown.

Remarks: See the “Remarks” section under *C. andrewesi*.

Material examined: Nil.

***Callispa duodecimaculata* Chapuis, 1876**

Callispa duodecimaculata Chapuis, 1876: xvii (type: Philippines, Bojol, ISNB).

Callispa duodecimaculata confluens Leefmans, 1931: 274 (type: Indonesia, Java, depository unknown).

Distribution: India (Bombay). *Elsewhere:* Indonesia, Philippines, Thailand (Asia).

Host plant: Orchidaceae: *Spathoglottis plicata* Blume (Leefmans 1918).

Material examined: Nil.

***Callispa keram* Shameem & Prathapan, 2013**

(Map 8)

Callispa keram Shameem & Prathapan 2013: 3 (type: India, Kerala, BMNH).

Diagnosis: Length 3.36–4.32 mm, width 1.73–2.35 mm. Body oblong-ovate, shining. Vertex metallic black with blue tint; antenna piceous to dark rufous brown, proximal antennomeres darker than distal; pronotum metallic green, turns metallic blue laterally; lateral margins rufous brown; scutellum metallic green; elytra metallic blue, suture basally tinted green on a short length; venter and legs dark rufous brown; palps paler; tarsi paler than respective tibiae. Vertex bluntly pointed between antennae, anterior margin weakly reflexed; surface sparsely and minutely punctate. Pronotum 1.53–1.67X wider than long; posteriorly 1.14–1.20X wider than anteriorly. Disc distinctly raised along middle 1/3rd, gradually depressed towards base and lateral sides; impunctate anteriorly in middle as well as along a narrow mid-line; rest of raised middle portion with scattered small and minute punctures; either side of raised middle area moderately depressed, coarsely and more or less densely punctate; lateral margins strongly scalloped with four to six emarginations. Scutellum broader than long, more or less pentagonal, convex on top, very minutely punctate and reticulate. Elytra subparallel, slightly narrowed at base; each elytron with eleven rows of punctures behind middle, first row forms an impressed line beyond anterior 1/3rd, sixth and seventh rows arise near middle. Hypomeron, episterna, epimera and lateral sides of metasterna coarsely punctate; ventrites covered with sparse and minute indistinct punctures, indistinctly setose. Legs short and stout, femora not extending out of body margin; claw projects beyond bilobed third tarsomere.

Distribution: India (Kerala, Goa). **New record from Goa.**

Host plants: Arecaceae: *Calamus* sp. (**New record**); *Cocos nucifera* L. (Shameem & Prathapan 2013); *Corypha umbraculifera* L. (**New record**); *Livistona chinensis* R.Br., *Syagrus romanzoffiana* (Cham.) Glassman (Shameem & Prathapan 2013).

Remarks: *Callispa keram* resembles *Callispa* sp. 2, another metallic blue species that has similar scallopings on the lateral margins of pronotum. However, *C. keram* differs from *Callispa* sp. 2 by the following characters: apex of vertex only bluntly pointed; lateral sides of pronotum straight and strongly scalloped; disc of pronotum more convex in middle, more raised towards apex, punctures large and deep, a large and broader area along middle and near anterior margin impunctate. In *Callispa* sp. 2, apex of vertex sharply pointed; lateral sides of pronotum distinctly curved towards apex and weakly scalloped; pronotum uniformly convex, punctures smaller and shallower, impunctate area along middle and near anterior margin narrower.

Material examined (n=107): **Types** (n=99): 1 ♂ India: Kerala / Vellayani / N08°25'47.5", E76°59'8.3"/9.ii.2012 18 m / Shameem K. Coll. / *Ex* Coconut (white label). 2) HOLOTYPE / *Callispa keram* sp. n. / des. Shameem & Prathapan, 2012 (red label). Paratypes (98 specimens, all specimens with a white locality label as given below, besides a second pink label: PARATYPE / *Callispa keram* sp. n. / des. Shameem & Prathapan, 2012): 5 unsexed. same labels as for holotype; 1 ♀, 1 unsexed. same data as for holotype except date 8.i.2012; 1 unsexed. same data except date 19.i.2012; 6 unsexed. same data except date 24.i.2012; 1 ♀. same data except date 27.i.2012; 8 unsexed. same data except date 2.ii.2012; 2 unsexed. Same data except date 9.ii.2012; 4 unsexed. same data except date 16.ii.2012; 3 unsexed. same data except date 21.ii.2012; 1 ♀, 1 unsexed. same data except date 22.ii.2012; 8 unsexed. India: Kerala / Vellayani / N08°25'47.5", E76°59'8.3"/ 12.xii.2011 18 m / Shameem K. Coll. / *Ex Livistona*; 1 ♀, 1 unsexed. same data except date 22.xii.2011; 2 ♂, 1 ♀, 1 unsexed. same data except date 2.ii.2012; 1 unsexed. Same data except date 9.ii.2012; 1 unsexed. India: Kerala / Vellayani / N08°25'47.5", E76°59'8.3"/9.i.2012 18 m / Shameem K. Coll. / *Ex Syagrus*; 1 ♀. same data except date 21.i.2012; 2 ♂, 1 ♀, 9 unsexed. India: Kerala / Vellayani / N08°25'47.5", E76°59'8.3"/ 6.i.2012 18 m / Shameem K. Coll.; 3 ♂, 6 unsexed. same data except date 7.i.2012; 1 ♂, 1 ♀. same data except date 8.i.2012; 2 unsexed. same data except date 9.i.2012; 1 ♀, 1 unsexed. same data except date 11.i.2012; 2 ♂, 3 unsexed. same data except date 12.i.2012; 2 unsexed. same data except date 17.i.2012; 1 ♂. same data except date 19.i.2012; 1 unsexed. same data except date 24.i.2012; 1 unsexed. India: Kerala / Vallamkulam / 25.xii.2011 / Prathapan KD Coll. / *Ex* Coconut; 1 ♀. same data except locality Pandanad; 1 ♀, 1 unsexed. India: Kerala / Tirurangadi / 25.xii.2011 / Shameem K. Coll. / *Ex* Coconut; 2 unsexed. India: Kerala / Calicut University / 26.xii.2011 / Shameem K. Coll. / *Ex* Coconut; 1 unsexed. India: Kerala / Tirurangadi / 25.xii.2011 / Shameem K. Coll. / *Ex Livistona*; 1 unsexed. same data except date 6.ii.2012. (4 specimens with the following labels, besides a pink label: PARATYPE / *Callispa keram* sp. n. / des. Shameem & Prathapan, 2012) 1 unsexed. 1) On Coconut / Vellayani / 26-8-56 / M.R.G.K.N. 2) 2. 3) Z.S.I. / Lot No. 47 / 1956; 1 unsexed. 1) 2. 2) Z.S.I. / Lot No. 47 / 1956; 1 unsexed. 1) 2. 2) Z.S.I. / Lot No. 47 / 1956. 3) *Callispa* sp / nr. *minima* / gestro / S.P. Shukla det '57; 1 unsexed. 1) 5. 2) ? *Callispa* sp. / R. N. Mathur det. (10 BMNH, 5 MCSN, 10 NBAIL, 48 NPC, 3 PKDC, 13 UASB, 10 USNM).

Non-type specimens (n=8): 2 unsexed. India: Goa / Saligao / 27.viii.2016 / Shameem KM Coll. / *Ex* Coconut; 3 unsexed. India: Kerala / Perinthalmanna / N 11° 03' 05.6" / E 76° 13' 55.6" / 13.x.2012 81.9 m / Prathapan & Shameem KM Coll.; 1 unsexed. (1) India: Kerala /

Kadalundy / 20.iii.2013 / Shameem K Coll., (2) Ex Coconut; 1 unsexed. India: Kerala / Tirurangadi / 14.vii.2013 / Shameem K Coll. / Ex Coconut; 1 unsexed. India: Kerala / Velimukku, Palakkal / 9.vii.2016 / Shameem KM Coll.

***Callispa maculipennis* Gestro, 1911**

(Map 8)

Callispa maculipennis Gestro, 1911a: 14 (type: India, Nilgiri Hills, BMNH, MCSN).

Diagnosis: Length 3.88–4.42 mm, width 1.97–2.30 mm. Body oblong, shining, fulvous; apex of vertex, a median band on pronotum dusky brown; antennae, raised part of suture behind middle of elytra, three spots on each elytron— an elongated spot adjacent to scutellar row, two circular spots near middle and apical 1/3rd respectively, a long and irregular patch extending from humerus to apex covering lateral margins at apical 1/3rd black; a narrow stripe covering lower part of hypomeron, episterna and epimera black; all coxae, all femoro-tibial articulations, all tarsi dusky brown to piceous. Vertex smooth and impunctate; antennae slightly thickened apically. Pronotum broader than long, slightly narrowed apically, margins straight with distinct scallopings; disc convex, densely and strongly punctate along middle and towards lateral sides. Scutellum elongate, lateral margins constricted in middle, apex rounded. Elytra more or less parallel-sided, slightly widened apically; suture distinctly raised behind middle; punctural rows more regular with ten rows in middle and eight in base. Claw tarsomeres project beyond bilobed third tarsomeres.

Distribution: India (Karnatka, Kerala) (Nadgani, Malabar). **New record from Karnataka.**

Host plant: Poaceae: Unidentified grass (**New record**).

Remarks: *Callispa maculipennis* closely resembles *C. angusticollis*, in having similar body size, form and colour. However, *C. maculipennis* can be differentiated from *C. angusticollis* by the following characters: 1) head and pronotum more fulvous, with a dusky band medially (uniformly black or piceous in *C. angusticollis*); 2) pronotum densely punctate in the medial as well as lateral depressions (sparsely punctate in *C. angusticollis*); 3) lateral sides of the scutellum distinctly constricted in middle and more or less spatulate (quadrate in *C. angusticollis*); 4) ground colour of elytra yellow with black markings (ground colour is black with yellow markings in *C. angusticollis*); and 5) all punctural rows on elytra are regular (punctural rows are irregular except for the first three near the suture in *C. angusticollis*).

Material examined (n=16): 3 unsexed. India: Karnataka / Castle Rock / 13.xi.2012 / Prathapan KD Coll.; 9 unsexed. India: Karnataka / Kottigehara, Malaya Marutha / 13°07'06.2"N 75°30'17.9"E / 1.x.2017 920 m / Shameem KM Coll. / Ex Grass; 1 unsexed. India: Karnataka / Kottigehara, Tharuve / 1.x.2017 / Shameem KM Coll. / Ex Grass; 3 unsexed. India: Karnataka / Attigere / Somanakkadu Estate / 13° 05' 46.58" N 74° 28' 58.49" E / 2.x.2017 641 m / Shameem KM Coll. / Ex Grass.

***Callispa minima* Gestro, 1902**

Callispa minima Gestro, 1902: 51 (type: Ceylon, MCSN).

Distribution. India (Kerala). *Elsewhere:* Sri Lanka (Asia).

Host plant: Poaceae: *Zea mays* L. (Anand 1989).

Remarks: This species was originally described from Sri Lanka (Gestro 1902), and it is unlikely to occur in south India. Therefore, the single report of *C. minima* on *Zea mays* L. (Poaceae) in Kerala by Anand (1989) is questionable.

Material examined: Nil.

***Callispa nigricornis* Baly, 1859**

(Map 8)

Callispa nigricornis Baly, 1859: 8 (type: Ceylon, BMNH).

Diagnosis: Length 5.31–5.75 mm, width 3.37–3.50 mm. Body oblong-ovate, shining, pale fulvous; antennae reddish brown to black with basal one or two antennomeres paler; mouth parts except palpi and margins of mouth cavity dark brown; palps yellowish; all trochanters and tarsi darker than their respective femora. Vertex bluntly pointed anteriorly, convex, more convex and distinctly higher than level of eyes towards apex; sparsely and minutely punctate, medial sulcus indistinct. Antennae shorter, filiform; antennomeres more or less uniformly thickened. Pronotum 1.95–2.12X wider than long; widest at base, strongly narrowed towards apex; lateral margin strongly curved, smooth and even, never scalloped; surface convex, transverse basal impression weak, lateral longitudinal depression feeble; sparsely covered with coarse punctures; a narrow region along anterior margin and another longitudinal region along midline impunctate; punctures larger towards lateral sides and smaller towards middle. Scutellum subquadrate, slightly widened apically, apex rounded; surface smooth, granulate basally, impressed pre-apically in middle. Elytra narrowed at

base, slightly widened after middle; each with 10 regular rows of punctures in middle, in addition to 2 or 3 confusing rows of punctures near lateral margin, which unite and runs as a single row towards apex; punctures of first row distinct throughout, not forming an impressed line; punctures finer towards apex and lateral margins, coarser towards middle of elytra; interstices flat, epipleuron distinctly explanate on lateral sides, narrowed towards apex. Hypomeron and lateral sides of metasterna coarsely punctate; ventrites sparsely and minutely setose. Legs short and stout; apices of femora not extending beyond body margin; femora covered with sparse minute punctures; claw projects beyond bilobed third tarsomeres.

Distribution: India (Kerala). *Elsewhere:* Sri Lanka (Asia).

Host plants: Poaceae: Bamboo, *Dendrocalamus strictus* (Roxb.) Nees (**New record**).

Remarks: The species can be easily distinguished from all other species by its peculiar yellow colour with dark brown to black antennae. Other characters include: more or less semi-circular pronotum with its lateral sides curved and strongly narrowed towards apex; each elytron with more than 10 rows of punctures in middle, two or three confusing rows near lateral margin; epipleura slightly explanate without distinct demarcation in dorsal view.

Material examined (n=20): 1 unsexed. India: Kerala / Tirurangadi / 4.vii.2013 / Shameem K. Coll. / Ex Bamboo; 1 unsexed. Same data except date 15.vii.2013; 2 unsexed. Same data except date 27.viii.2013; 1 unsexed. India: Kerala / Tirurangadi / N 11° 02' 14.3" / E 75° 55' 27.6" / 14.xii.2014 / Prathapan & Shameem Coll. / Ex Bamboo; 2 unsexed. Same data except date 10.vii.2016 and collector Shameem KM; 7 unsexed. India: Kerala / Tirurangadi / N 11° 02' 21.8" / E 75° 55' 18.91" 14m / 2.ix.2016 / Shameem KM Coll. / Ex Bamboo; 3 unsexed. Same data except 24.ii.2017; 1 unsexed. India: Kerala / Calicut Univ. Campus / N 11° 07' 59.01" / E 75° 53' 22.83" 77 m / 19.v.2015 / Shameem KM Coll. / Ex Bamboo; 2 unsexed. India: Kerala / Chelari / 1.xi.2011 / Shameem KM Coll. / Ex Bamboo.

***Callispa septemmaculata* Weise, 1908**

(Figs. 24–25, 74; Map 8)

Callispa septemmaculata Weise, 1908: 213 (type: India, Nilgiri Hills, BMNH).

Diagnosis: Length 5.19–5.94 mm, width 2.56–3.0 mm. Body oblong-ovate. Colour yellowish; antennae black; four spots on each elytron black: a small one base adjacent to scutellum, extending between 1st and 3rd row of punctures, a more or less elongated spot

behind humerus extending between 5th and 9th row, a larger, nearly semi-circular spot at apical 1/3rd extending from suture to 4th row which unite with its fellow ember on opposite elytron at suture, and a more or less rounded spot in same transverse line extending from 5th row up to lateral margin; venter concolorous with general colour of dorsum; a broad line starting from posterior border of eyes, covering lateral margin of prosternum, ventral half of hypomeron, episterna, epimera and lateral margins of metasternum black; all trochanters partly dark brown; rest of venter and legs yellow. Vertex bluntly pointed anteriorly between antennae; surface distinctly higher than level of eyes; minutely and indistinctly punctate; medial sulcus indistinct. Pronotum widest at base, slightly narrowed towards apex; sides margined with strong 6–7 scallopings; disc coarsely and sparsely punctate, a narrow transverse area along anterior margin and three longitudinal area, one along middle and others on either side before lateral depressions impunctate. Scutellum pentagonal, slightly narrowed towards base, apex triangular and bluntly pointed; surface impunctate and granulate. Elytra slightly narrowed before middle, distal 1/3rd slightly wider than base; each elytron with ten rows of punctures in middle; first row turns an impressed line behind, middle; punctures smaller towards suture and greatly enlarged towards lateral sides. Hypomeron towards ventral margin, episterna, mesepimera partly, lateral sides of metasternum coarsely punctate. Legs long and slender; apices of femora slightly extend beyond body margin.

Distribution: India (Kerala, Tamil Nadu). **New record from Kerala.**

Host plant: Unidentified species of Commelinaceae (**New record**).

Remarks: This species can be easily distinguished from all other congeneric members by its characteristic arrangement of spots on the elytra.

Material examined (n=14): 2♂, 1♀, 11 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 15.ix.2014 / Shameem K.M. Coll. / Ex Commelinaceae; 5 unsexed. Same data except year “2015”.

***Callispa sexmaculata* Weise, 1905 new status**

(Figs. 77, 79, 81; Map 8)

Callispa sexmaculata Weise, 1905 **new status** to *Callispa octopunctata sexmaculata* Weise, 1905b: 113 (type: India, ZMHB).

Callispa maindoni (Pic, 1943) (*lapsus calami*) **new synonym**.

Hispa maindroni Pic, 1943: 3; Type: India, Mahe, MNHN) **name corrected.**

Hispa maindoni (Pic, 1943) Pic 1943:3 (*lapsus calami*).

Callispa maindoni (Pic, 1943) Uhmman 1952a: 232.

Callispa nigronotata (Pic, 1943) (= *Hispa nigronotata* Pic, 1943: 3; Type: South India, Wallayar Forest, MNHN) **new synonym.**

Diagnosis: Length 4.75–5.12 mm, width 2.44–2.50 mm. Body oblong-ovate. Colour orange red, colour of antennae varies from reddish brown to black; three spots on each elytron black: a small and more or less oval or rounded at base adjacent to scutellum and extending up to 3rd row of punctures, an elongated spot behind humerus extending between 3rd and 9th rows of punctures, a larger elongate spot at apical 1/3rd extending transversely from suture to 9th row which appears as a transverse band with its fellow member on opposite elytron in repose; venter and legs concolorous with general colour of dorsum. Vertex acutely produced anteriorly between antennae; surface distinctly lower than level of eyes, sparsely and minutely punctate, punctures slightly larger behind eyes. Pronotum 1.60–1.69X wider than long, widest in middle; apex narrower than base; lateral sides distinctly margined with 5–6 strong scallopings; surface coarsely and densely punctate, a narrow transverse area along anterior margin and three narrow longitudinal areas in middle impunctate. Scutellum pentagonal, apex triangular, surface smooth and shining. Elytra slightly expanded towards apex, Each elytron with ten rows of punctures, first row forms an impressed line behind middle; all interstices slightly elevated in basal 1/3rd; 7th slightly costate at apical 1/3rd; 8th entirely costate except near apex. Hypomeron, episterna, sides of metasternum coarsely punctate. Legs long and slender; apices of femora slightly extend out of body margin; all coxae coarsely punctate; claw projects beyond bilobed third tarsomeres.

Distribution: India (Karnataka, Kerala, Tamil Nadu). **New record from Karnataka.**

Host plant: Commelinaceae: *Cyanotis* sp. (**New record**).

Remarks: Pic (1943) described *Callispa maindroni* (Fig. 79) and *C. nigronotata* (Fig. 81), collected from Mahe and Walayar, respectively, distinguishing the two due to slight variations in their body width. He named *C. maindroni* in honor of the famous French entomologist Maurice Maindron. However, unfortunately, due to a printer's error or *lapsus calami*, the name was published as '*maindoni*' instead of the correct spelling '*maindroni*' in his original publication, although it was correctly spelled on the original type label (Fig. 80). Therefore, in this work, the species name is corrected to '*C. maindroni*', as per Article

32.5.1 of the International Code of Zoological Nomenclature: "If there is in the original publication itself, without recourse to any external source of information, clear evidence of an inadvertent error, such as a *lapsus calami* or a copyist's or printer's error, it must be corrected."

Callispa sexmaculata (Fig. 77) was originally described by Weise (1905b) based on specimens collected from Kanara and the Nilgiris, as a variant of *C. octopunctata* (Fig. 75), a Sri Lankan species described by Baly (1859). In the present investigation, we found that this species is identical to the other two species of *Callispa*, namely, *C. maindroni* and *C. nigronotata*, described by Pic (1943) (Figs. 79, 81). Additionally, all three of these south Indian species are distinctly different from the Sri Lankan species, *C. octopunctata* Baly. Therefore, *C. maindroni* Pic and *C. nigronotata* Pic are synonymized with *C. octopunctata sexmaculata* Weise, and the latter is upgraded to the species level. In addition to the morphological differences (described in the next paragraph) between *C. octopunctata* Baly and *C. sexmaculata* Weise, the allopatric distribution of both taxa (south India and Sri Lanka) also indicates that they are distinct.

The two species, *C. sexmaculata* and *C. octopunctata*, closely resemble each other in body form, coloration and disposition of spots. However, they primarily differ in the number of spots present on the elytra. In *C. octopunctata*, each elytron has four spots, with two at the apical 1/3rd of the elytra (Fig. 75), whereas *C. sexmaculata* has three spots, with a single large marking instead of two circular spots at the 1/3rd of elytral apex (Figs. 77, 79, 81). In the present study, it was observed that the species of *Callispa* those feed on Commelinaceae have a similar body form, but they differ primarily in the disposition of spots on the elytra. The arrangement of spots is consistent within species and can thus be used as a key character to distinguish them at the species level.

Material examined (n=6): 1 unsexed. INDIA: Karnataka / Mudigere / 20.xi.2004 / Prathapan Coll.; 1♀, 1 unsexed. India: Kerala / Calicut Univ. Campus / N 11° 07' 59.01" / E 75° 53' 22.83" 77 m / 15.v.2015 / Shameem KM Coll. / Ex *Cyanotis* sp.; 1 unsexed. same data except date 24.vii.2015; 1 unsexed. India: Kerala / Tirurangadi / N 11° 02' 31.60" / E 75° 55' 8.72" 23 m / 28.vi.2015 / Shameem KM Coll. / Ex *Cyanotis* sp.; 1 unsexed. India: Kerala / Tirurangadi / N 11° 02' 12.0" / E 75° 56' 12.6" 47 m / 8.viii.2015 / Shameem KM Coll. / Ex *Cyanotis* sp.

***Callispa vittata* Baly, 1859**

(Map 8)

Callispa vittata Baly, 1859: 7 (type: India, BMNH).

Diagnosis: Length 5.70–4.40 mm, width 1.80–2.22 mm. Body elongate, parallel sided; colour orange yellow; antennae dark brown to black; a posteriorly widening medial band on each elytron starting from humerus to pre-apex, neither reaching margins nor meeting at suture black; all trochanters, femoro-tibial articulations, distal ends of all tibiae, all tarsi brown. Vertex weakly depressed in middle, minutely punctate. Antennae uniformly thickened throughout. Pronotum subquadrate, slightly narrowed anteriorly, lateral sides distinctly margined and slightly curved towards apex after middle; disc convex, lateral depressions distinct; distinctly punctate along middle and at depressed areas towards lateral margins; punctures smaller and sparser along middle, coarser and denser in lateral depressed areas. Scutellum small, narrower basally, widened apically; apex rounded; surface finely granulate and impunctate. Elytra more or less parallel sided; each elytron with 10 rows of punctures in middle.

Distribution: India (Goa, Karnataka, Kerala, Tamil Nadu, West Bengal). **New record from Goa and Kerala.**

Host plants: Unidentified species of Cyperaceae (**New record**); Pandanaceae: *Pandanus* (**New record**); Poaceae: *Erianthus* spp., *Saccharum* × *sinense* Roxb., *S. officinarum* L., *S. robustum* E.W.Brandes & Jeswiet ex Grassl, (Mukunthan & Nirmala 2002).

Remarks: This species was collected from the crowns of screw pine, *Pandanus* Parkinson (Pandanaceae), and from sedges (Cyperaceae), where it lives and feeds within the unopened leaves. In Vellayani, the species was collected from a very short and narrow-leaved sedge species, and individuals were observed feeding openly on the leaves. It is possible that *C. vittata* in south India is a species complex, however, it can be easily distinguished from all other south Indian members of the genus by their orange-yellow dorsum with black posteriorly widening longitudinal bands on elytra. Additionally, *C. vittata* has a more slender and parallel sided body compared to other members of the genus

Material examined (n=226): 1 unsexed. India: Goa / Madgaon / 20.vii.2012 / Prathapan KD Coll. // Ex Grass ?; 1 unsexed. India: Karnataka / Kottigehara / N 13° 07' 18.4" E 75° 29' 38.2" / 6.v.2011 920 m / D. Prathapan & K. Shameem Coll.; 2 unsexed. India: Karnataka

/ Kottigehara / N 13° 07' 18.4" E 75° 29' 38.2" / 6.v.2011 920 m / Prathapan & Shameem Coll. // Sedge; 2 unsexed. India: Karnataka / Kottigehara / N 13° 07' 07.7" E 75° 30' 37.9" / 8.v.2011 938 m / Prathapan & Shameem Coll. // Sedge; 1 unsexed. India: Karnataka / Kottigehara / 9.v.2011 920 m / D. Prathapan & K. Shameem Coll. // Sedge; 9 unsexed. India: Karnataka / Bisle Forest / N 12° 42' 47.3" E 75° 41' 31.1" / 10.v.2011 802 m / D. Prathapan & K. Shameem Coll. // Ex *Pandanus*; 5 unsexed. India: Karnataka / Kudremukha N. P. / 11.v.2011 / D. Prathapan & K. Shameem Coll. // Ex *Pandanus*; 5 unsexed. Same data except date 14.v.2011; 1 unsexed. India: Karnataka / Kudremukha Peak / 13.v.2011 / D. Prathapan & K. Shameem Coll. // Ex Sedge; 1 unsexed. India: Karnataka / Kottigehara / 15.v.2011 920 m / D. Prathapan & K. Shameem Coll. // Sedge; 1 unsexed. India: Karnataka / Kottigehara / 15.v.2011 920 m / D. Prathapan & K. Shameem Coll.; 6 unsexed. India: Karnataka / Jog Falls / N 14° 13.962' / E 74° 48.793' 515 m / 31.x.2013 / Prathapan KD Coll.; 9 unsexed. India: Karnataka / Castle Rock / 13.xi.2012 / Prathapan KD Coll. / Ex *Pandanus*; 2 unsexed. India: Karnataka / Kottigehara, Tharuve / 1.x.2017 / Shameem KM Coll.; 6 unsexed. India: Karnataka / Attigere / Somanakkadu Estate / 13° 05' 46.58" N 74° 28' 58.49" E / 2.x.2017 641 m / Shameem KM Coll. / Ex Sedge; 1 unsexed. INDIA: Kerala / Vellayani / 13.vi.2009 / Prathapan Coll.; 1 unsexed. INDIA: Kerala / Vellayani / 25.vi.2011 / Shameem Coll.; 1 unsexed. India: Kerala / Vellayani / 24.v.2014 / Shameem K. Coll.; 1 unsexed. India: Kerala / Vellayani / 13.viii.2014 / Shameem KM Coll. / Ex Sedge; 1♂, 1 unsexed. same data except date 19.x.2014; 1♀. Same data except date 26.x.2014; 3 unsexed. same data except date 10.vi.2017; 1 unsexed. India: Kerala / Vellayani / 19.viii.2016 / Shameem KM Coll.; 1 unsexed. India: Kerala / Kallar Aanappara / 29.v.2011 / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Kerala / Trivandrum Kallar / 2.x.2011 / Prathapan & Shameem Coll. // Ex grass; 18 unsexed. India: Kerala / Ponmudi / N 8° 45' 32.6" E 77° 76' 14.1" / 2.x.2011 850.5 m / D. Prathapan & K. Shameem Coll. // Ex *Pandanus*; 1 unsexed. India: Kerala / Ponmudi / N 8° 45' 19.9" E 77° 06' 43.7" / 21.iii.2012 872 m / Prathapan & Shameem Coll. // *Pandanus*; 3 unsexed. India: Kerala / Ponmudi / N 8° 45' 19.9" E 77° 06' 43.7" / 21.iii.2012 872 m / Prathapan & Shameem Coll. // Sedge; 4 unsexed. India: Kerala / Bonaccord-Athirumala / 24.iii.2014 / Prathapan D & Shameem K Coll. / Ex Sedge; 4 unsexed. India: Kerala / Bonaccord-Athirumala / 24.iii.2014 / Prathapan D & Shameem K Coll. / Ex Grass; 3 unsexed. India: Kerala / Bonacaud-Pandipath / N 08°41'01.6" / E77°11' 24.0" 1276 m / 9.iv.2017 / Shameem KM Coll. / Ex Sedge; 3 unsexed. India: Kerala / Shendurney WLS / Kattalappara / 22.iii.2012 / Prathapan & Shameem Coll. // Ex Sedge; 5 unsexed. India: Kerala / Sankily Forest / 12.i.2014 /

Prathapan & Shameem Coll. / Ex Sedge; 5 unsexed. India: Kerala / Chozhiyakodu / N 08° 51' 17.06" / E 77° 01' 58.12" 169 m / 15.xi.2014 / Shameem KM Coll. / Ex *Pandanus*; 1 unsexed. India: Kerala / Agasthyamala / Athirumala / N 08° 37' 04.5" / E 77° 13' 46.7" 1022 m / 25.iii.2014 / Prathapan D & Shameem K Coll. / Ex *Pandanus*; 1 unsexed. India: Kerala / Trivandrum, Kallar / N 08° 42' 30.9" / E 77° 07' 59.7" 160 m / 14.xi.2014 / Shameem KM Coll.; 1 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" / E 77° 01' 46.1" 236 m / 13.xi.2014 / Shameem KM Coll. / Ex *Pandanus*; 3 unsexed. India: Kerala / Bonacaud-Pandipath / N 08° 41' 01.6" / E 77° 11' 24.0" 1276 m / 9.iv.2017 / Prathapan KD Coll.; 1 unsexed. India: Kerala / Ponmudi / 8° 45' 58.5N, 77° 6' 38.9"E / 01.xi.2017 / Amritha Kumari S Coll.; 1 unsexed. India: Kerala / Bonaccord Env. 24–26.xi.2022 / Prathapan KD Coll.; 3 unsexed. INDIA: Kerala / Kolahalamedu / 01.iii.2011 / Shameem Coll. // HP 14; 2 unsexed. INDIA: Kerala / Pampadumpara / 03.iii.2011 / Shameem Coll. // HP 21; 1 unsexed. India: Kerala / CRS Pampadumpara / 5.x.2017 / Vishwajyothi K Coll.; 1 unsexed. India: Kerala / Silent Valley Nat. Park / Sairandhri / N 11° 7' 4.4" E 76° 28' 23.5" / 15.xi.2011 1030 m / Prathapan & Shameem Coll. // Ex Sedge; 3 unsexed. India: Kerala / Silent Valley Nat. Park / Poochippara-Walakkad / 16.xi.2011 / Prathapan & Shameem Coll. // Ex Sedge; 2 unsexed. India: Kerala / Kuttiyadi, Janakikkadu / 14.iii.2013 / Shameem K. Coll. // Ex *Pandanus*; 20 unsexed. India: Kerala / Tirurangadi / 29.xi.2013 / Shameem K Coll. / Ex *Pandanus*; 2 unsexed. India: Kerala / Tirurangadi / 16.iv.2017 / Shameem KM Coll. / Ex *Pandanus*; 1 unsexed. India: Kerala / Calicut Univ. Campus / 11.ix.2017 / Shameem KM Coll.; 2 ♂, 61 unsexed. India: Kerala / Janakikkadu / 27.xi.2013 / Shameem K Coll. / Ex *Pandanus*; 4 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 15.ix.2014 / Shameem K.M. Coll. / Ex Sedge; 3 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 2015 / Shameem K.M. Coll.; 2 unsexed. India: Kerala / Wayanad, Kuruvadweep / 2.iv.2014 / Shameem K Coll. / Ex Sedge.

***Callispa* sp. 1**

(Map 8)

Diagnosis: Length 4.06–5.12 mm, width 2.00–2.37 mm. Oblong-ovate, parallel sided, shining. Dorsum metallic blue with green tinge; antennae, venter, legs piceous. Vertex acutely produced between eyes, anterior margin strongly concave on either side of acute projection; surface convex, with distinct medial sulcus extending from base to apex, minutely and densely punctate and indistinctly setose; narrow stripe around medial sulcus impunctate. Pronotum 1.50–1.53X wider than long, nearly parallel sided, lateral sides

straight and strongly margined; anterolateral angles rounded; posterolateral angles acute; disc distinctly raised along middle, gradually depressed laterally and apically; anterior 1/3rd very minutely and sparsely punctate, rest of surface coarsely and densely punctate; punctures smaller in middle along raised area, larger and denser towards lateral sides. Scutellum more or less pentagonal, surface impunctate and finely granulate. Elytra subparallel, slightly narrowed at base; each elytron with eleven rows of punctures in middle, last row being irregular and rugged, 6th and 7th rows arise from near middle; punctures of first six rows finer and shallower, rest comparatively larger and deep. Hypomeron and sides of metasterna densely and coarsely punctate; ventrites minutely setose. Legs short and stout; apices of femora not extending out of body margin; claw tarsomeres project beyond bilobed third tarsomeres.

Distribution: India (Kerala, Tamil Nadu). **New record.**

Host plants: Arecaceae: *Phoenix loureiroi* Kunth, *Phoenix sylvestris* (L.) Roxb. (**New record**).

Remarks: This species is very closely allied to *C. coeruleodorsata* in colour and body shape, especially in having a more or less parallel sided body, straight and non-scalloped lateral pronotal margins. However, it can be easily distinguished from *C. coeruleodorsata* by its normal scutellum. In *C. coeruleodorsata*, the surface of the scutellum possesses a triangular raised area on the top, with its apex directed towards apex.

Material examined (n=32): 1♂, 2♀, 6 unsexed. India: Kerala / Silent Valley N.P. / Nilikkal, Vannampara / 21.i.2013 / Shameem K. Coll. / Ex *Phoenix*; 3 unsexed. India: Tamil Nadu / Tiruvalangadu Rlwy Stn / N 13° 05' 24.34" / E 79° 45' 51.07" 60 m / 24.ix.2016 / Shameem KM Coll. / Ex *Phoenix sylvestris*; 15 unsexed. India: Tamil Nadu / Manavur / N 13° 05' 34.18" / E 79° 48' 22.85" 57 m / 24.ix.2016 / Shameem KM Coll. / Ex *Phoenix sylvestris*; 7 unsexed. India: Tamil Nadu / Valparai / 4.vii.2014 / Yeshwanth H. M. Coll.

***Callispa* sp. 2**

(Map 8)

Diagnosis: Length 4.06–4.44 mm, width 2.06–2.19 mm. Body oblong-ovate, subparallel sided, dorsum shining, less shining in dried specimens. Head metallic black, antennae dark brown to piceous; pronotum dark brown, more paler towards sides; scutellum dark brown; elytra metallic blue, tinted dark brown in dried specimens; venter and legs yellowish brown.

Vertex sharply produced between eyes, with distinct medial sulcus extending from base to apex, densely covered with small punctures. Pronotum 1.60–1.62X wider than long; lateral sides more or less rounded, widest at base, narrowed towards apex; lateral sides margined and weakly scalloped; disc more or less uniformly convex, gradually depressed towards lateral sides, densely covered with coarse punctures, a narrow longitudinal area along middle impunctate. Scutellum more or less pentagonal, surface generally finely granulate and impunctate, with one or two deep punctures in some individuals. Elytra subparallel, slightly narrowed at base; each elytron with eleven rows of punctures in middle, last row being irregular and rugged, 6th and 7th rows arises from near middle. Hypomeron densely and coarsely punctate, distinctly setose; episterna, epimera and sides of metasterna coarsely punctate; ventrites minutely punctate and distinctly setose; setae more on distal three ventrites. Legs short and stout; apices of femora not extending out of body margin; ventral sides of femora and entire tibia distinctly setose; claw tarsomeres project beyond bilobed third tarsomere.

Distribution: India (Karnataka, Kerala). **New record.**

Host plants: Areaceae: *Arenga wightii* Griff., *Calamus rheedei* Griff., *Calamus* sp.; Pandanaceae: *Pandanus* spp. (**New record**).

Remarks: *Callispa* sp. 2 resembles *C. keram*, however, can be easily differentiated by its sharply pointed interantennal projection of vertex, lateral margins of pronotum distinctly curved with weak scallopings, uniformly convex and finely punctate pronotal disc. While in *C. keram*, interantennal projection of vertex is only bluntly pointed, lateral margins of pronotum is straight with strong scallopings, and pronotum is strongly convex with coarse punctures.

Material examined (n=296): 1♂, 1♀, 142 unsexed. India: Karnataka / Castle Rock / 13.xi.2012 / ARV Kumar Coll. / Ex *Pandanus*; 1♀, 122 unsexed. India: Karnataka / Castle Rock / 13.xi.2012 / Prathapan KD Coll. / Ex *Pandanus*; 15 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" / E 77° 01' 46.1" 236 m / 13.xi.2014 / Shameem KM Coll. / Ex *Pandanus*; 1 unsexed. India: Kerala / Agasthyamala / Athirumala / N 08° 37' 04.5" / E 77° 13' 46.77" 1022 m / 24.iii.2014 / Prathapan D & Shameem K Coll. / Ex *Pandanus*; 13 unsexed. Same data except date 25.xi.2014. 1 unsexed. India: Kerala / Ponmudi / viii.2003 / K.D. Prathapan Coll.; 1 unsexed. (2) INDIA: Kerala / Ponmudi / 28.v.20011 / Shameem K Coll., (2) Ex *Calamus*; 12 unsexed. (1) India: Kerala / Ponmudi / 28.v.2011 872 m / D. Prathapan & K.

Shameem Coll., (2) Ex *Calamus*; 1 unsexed. India: Kerala / Ponmudi / N 8° 45' 32.6" E 77° 76' 14.1" / 2.x.2011 850.5 m / D. Prathapan & K. Shameem Coll.; 1 unsexed. Same label except GPS data; 4 unsexed. India: Kerala / Ponmudi / 8° 45' 58.5" N, E 77° 6' 38.9" E / 01.ix.2017 / Amritha Kumari S Coll.; 3 unsexed. India: Kerala / Arippa / N 8° 50' 11.0" E 77° 1' 46.1" / 19.iv.2012 236 m / Prathapan & Shameem Coll. / Ex *Calamus*; 3 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" / E 77° 01' 46.1" 236 m / 13.xi.2014 / Shameem KM Coll. / Ex *Calamus*; 2♀, 12 unsexed. India: Kerala / Chozhiyakodu / N 08° 51' 17.06" / E 77° 01' 58.12" 169 m / 15.xi.2014 / Shameem KM Coll. / Ex *Calamus*; 1 unsexed. Same data except "emerged on June 2013" instead of date; 3 unsexed. India: Kerala / Bonacaud-Pandipath / N 08° 41.352' / E 77° 11.200' 1083 m / 9.iv.2017 / Prathapan & Shameem Coll. / Ex *Calamus*; 1 Unsexed. India: Kerala / Shendurney WLS / Darbhakulam 523 m / N 08° 54' 45.3" / E 77° 12' 06.7" / 19.ii.2011 / Shameem K. Coll.; 2 unsexed. (1) India: Karnataka / Kottigehara / 9.v.2011 / D. Prathapan & K. Shameem Coll.; (2) Ex *Arenga*; 1 unsexed. Same data except date 15.v.2011; 1 unsexed. India: Karnataka / Attigere / Somanakkadu Estate / 13° 05' 46.58" N 74° 28' 58.49" E / 2.x.2017 641 m / Shameem KM Coll.

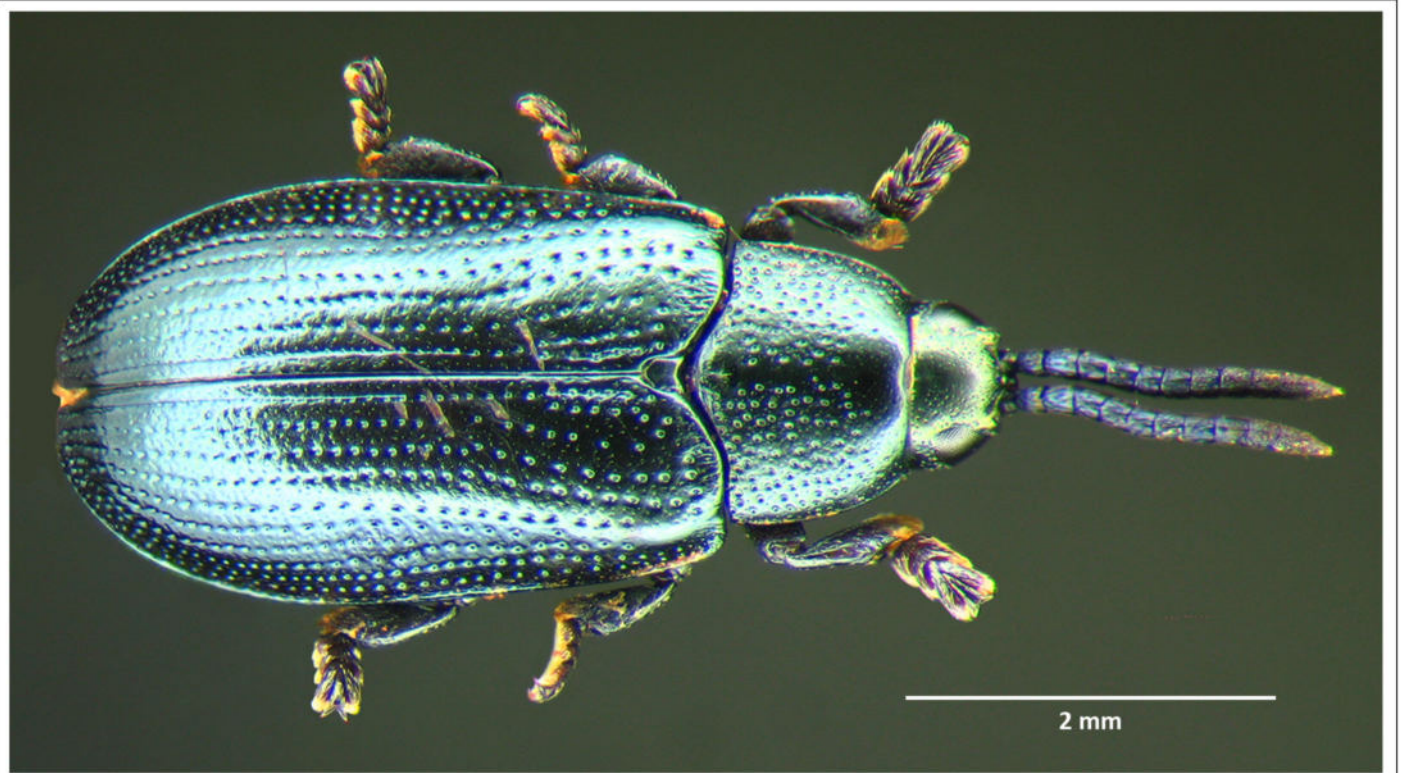
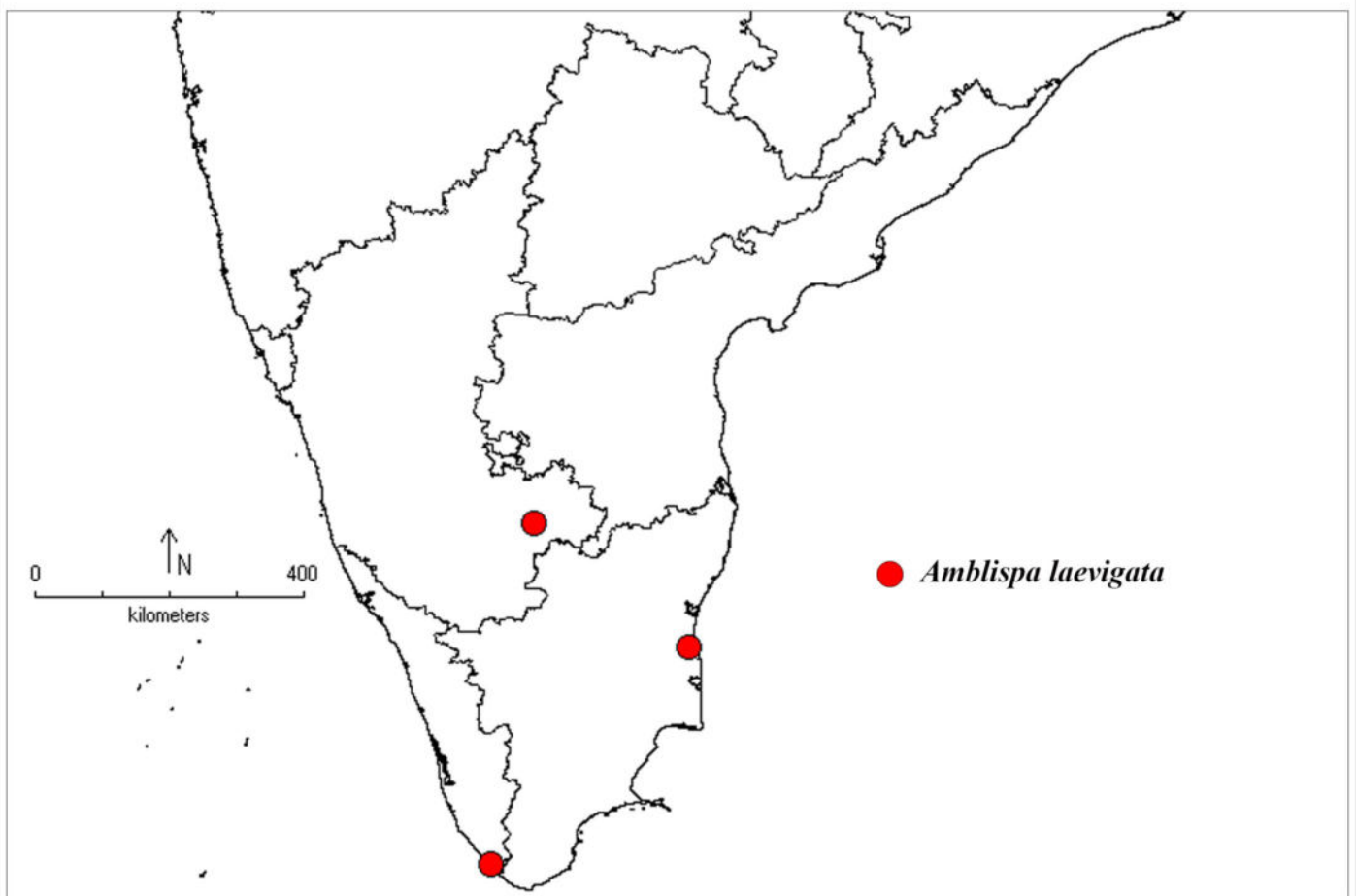


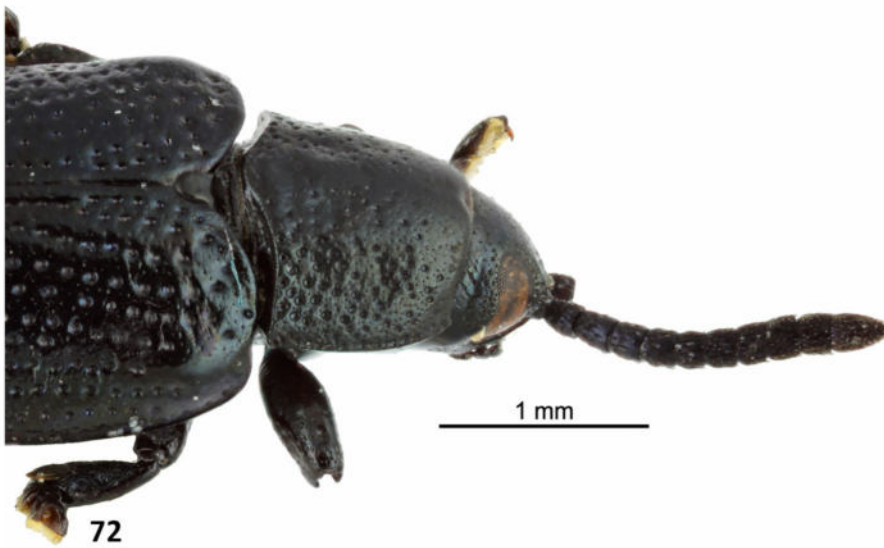
Fig. 70. *Amblispa laevigata* (Guérin-Méneville).



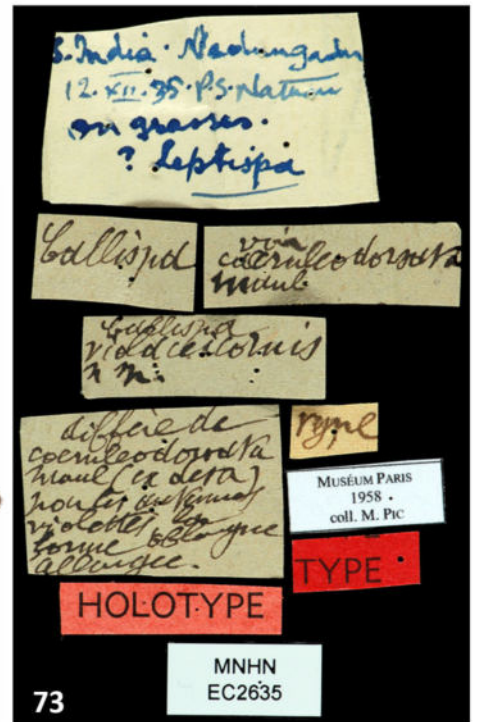
Map 7. Localities of *Amblispa* Baly species studied.



71



72

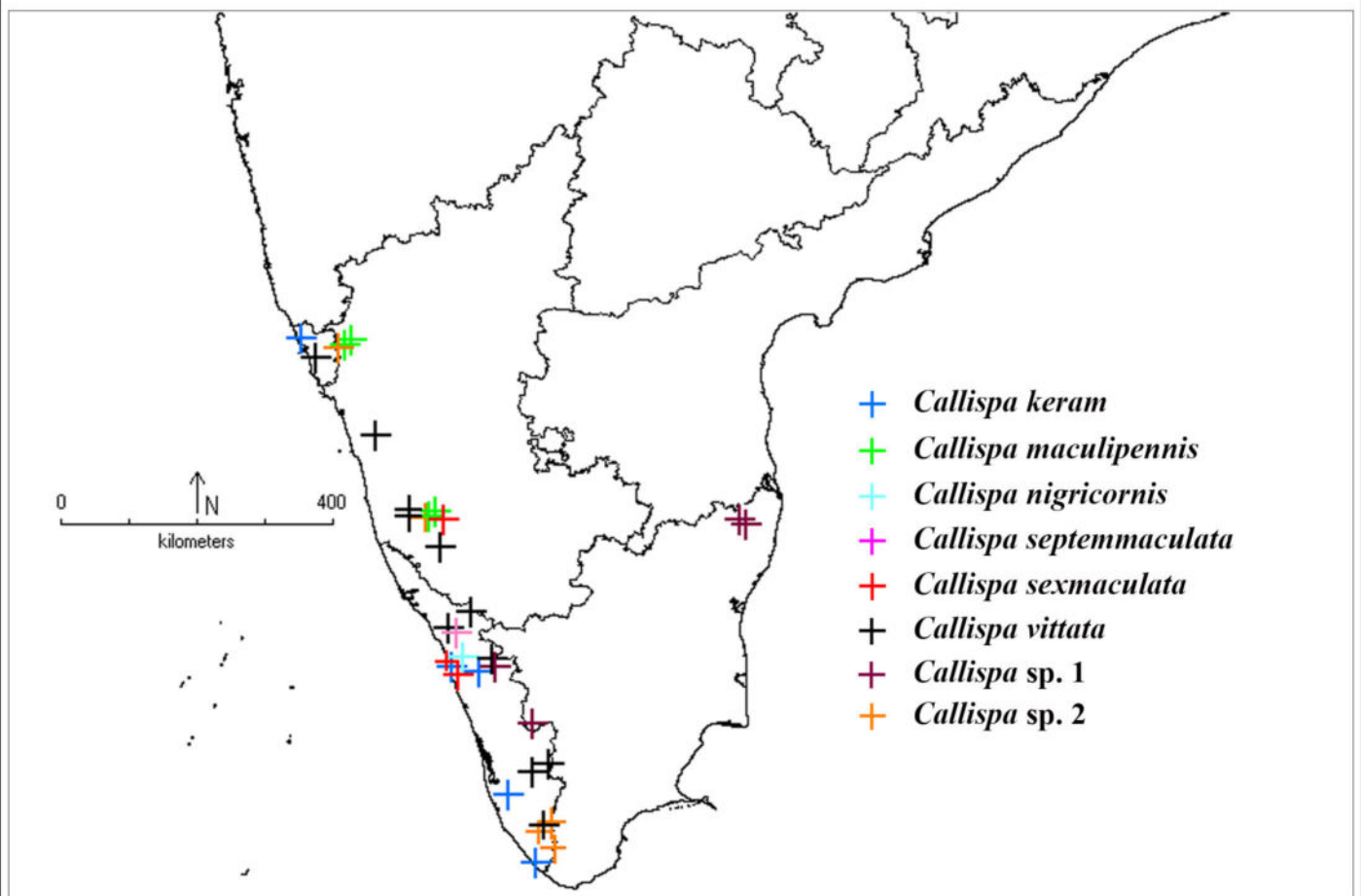


73

Figs. 71–73. *Callispa violaceicornis* Pic., Holotype; 71. Dorsal habitus; 72. Head, pronotum and base of elytra – dorso-lateral view; 73. Type labels.



Fig. 74. *Callispa septemmaculata* Weise.



Map 8. Localities of *Callispa* Baly species studied.



75

2 mm



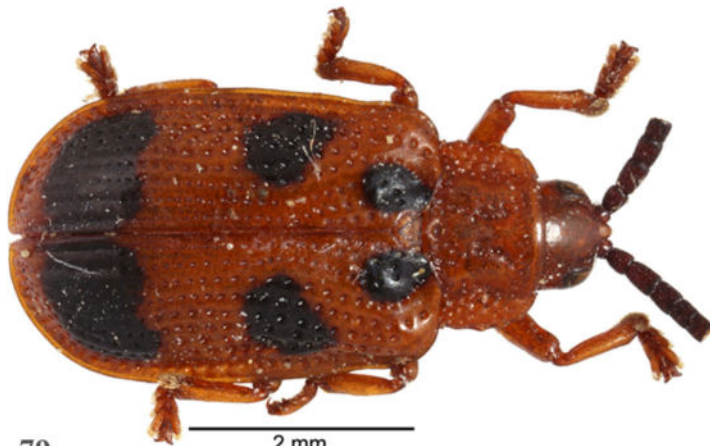
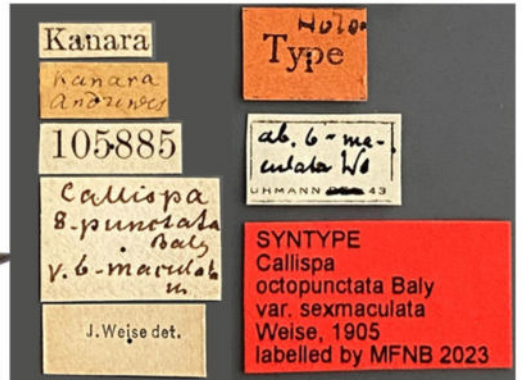
76

NHMUK015010144



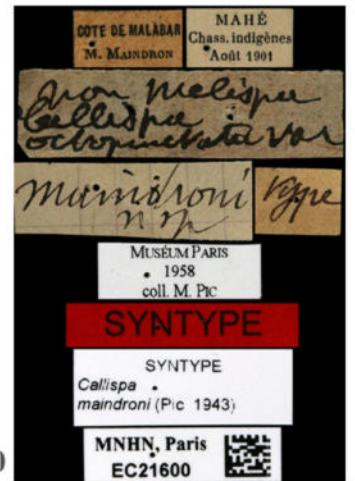
77

78



79

2 mm



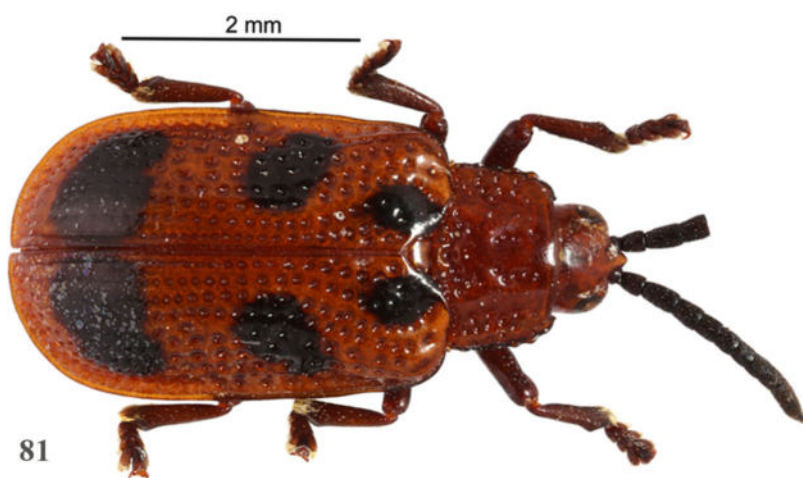
80

MUSEUM PARIS
1958
coll. M. PIC

SYNTYPE

SYNTYPE
Callispa
maindroni (Pic 1943)

MNHN, Paris
EC21600



81

2 mm



82

MUSEUM PARIS
1958
coll. M. PIC

SYNTYPE

SYNTYPE
Callispa
nigronotata (Pic, 1943)

MNHN, Paris
EC21599

Figs. 75–82. 75–76. *Callispa octopunctata* Baly; 75. Holotype – dorsal habitus; 76. Type labels; 77–78. *C. octopunctata sexmaculata* Weise; 77. Syntype – dorsal habitus; 78. Type labels; 79–80. *C. maindroni* (Pic); 79. Syntype – dorsal habitus; 80. Type labels; 81–82. *C. nigronotata* (Pic); 81. Syntype – dorsal habitus; 82. Type labels.

4.2.4 Tribe Coelaenomenoderini Weise, 1911

Body elongate, parallel to subparallel sided; neither spiny nor tuberculate (Fig. 83). Anterior margin of mouth cavity close to base of antennal insertions; clypeus absent or feeble and represented as a thin transparent flap (Fig. 15); number of antennomeres variable from VI–XI. Pronotum with strong pits distally or series of deep excavations throughout (Fig. 14); both anterior and posterior angles with trichobothria (Fig. 14). Elytra punctate-striate; scutellar row absent; interstices 3, 4 and 5 often costate (Fig. 83).

Eight described genera, one from India which also occurs in south India.

Javeta Baly, 1859

(Figs. 14–15, 83; Map 9)

Javeta Baly, 1859:108. Type species: *Javeta pallida* Baly 1859, by monotypy.

Ekagonia Maulik, 1916:571.

Javeta (*Ekagonia*) Maulik. Uhmman 1958a:217.

Diagnosis: Size: 3.5–7 mm long. Elongate, parallel to subparallel sided (Fig. 83); colour variable, entirely yellowish or reddish brown or yellow with black stripes on elytra. Head as broad as prothorax, deeply inserted into pronotum in dorsal view (Fig. 14), largely exposed in ventral view (Fig. 15); vertex not acutely produced between antennae, apex bluntly pointed (Figs. 14–15). Antennae short reaching humerus; gradually thickened towards apex; antennomeres I thickest and rounded, II attached to the inner side of I giving a little bent appearance when antennae kept parallel to each other (Fig. 83); apical antennomere subacute. Eyes strongly convex (Figs. 14–15). Articulation of mandibles and maxillae closer to ventral margin of eyes (Fig. 15). Pronotum subquadrate, convex, with distinct depressions near anterior margins (Fig. 14). Scutellum elongate. Elytra parallel to subparallel, wider than pronotum, apex rounded; surface convex, strongly punctate-striate; alternate interstices costate. Anterior margin of prosternum concave, acutely produced in middle forming an anteriorly directed denticle (Fig. 15).

Members of this genus superficially resemble some species of *Agonita* Strand in having a similar body form, presence of trichobothria at both anterolateral and posterolateral angles of pronotum, and similar depressions on pronotal disc. However, species of *Javeta* can be easily distinguished by their reduced clypeus, presence of short

median denticle on the anterior margin of prosternum and the obliquely articulated antennomere III on II, giving a slightly bent appearance to the antennae.

Distribution: China, India, Indonesia, Laos, Malaysia, Philippines, Thailand (Asia).

Diversity: 19 described species, One in India and the same from study area.

Number of species studied: One.

Host plants: Areaceae (Uhmann 1943b, 1955a; Kalshoven 1957, 1981; Jolivet 1989; Jolivet & Hawkeswood 1995; Santiago-Blay 2004, Steiner 2001; Shameem *et al.* 2016, 2017).

***Javeta pallida* Baly, 1859**

(Figs. 14–15, 83; Map 9)

Javeta pallida Baly, 1859: 108 (type: India, Madras, BMNH).

Distolaca flavida Gestro, 1911a: 16 (type: India, Nilghiri Hills, Pilloor, MCSN, BMNH).

Agonia (Agonia) flavida (Gestro). Weise 1911: 56 (catalog).

Diagnosis: Length 4.94–7.19 mm, width 1.94–2.44 mm. Body elongate, subcylindrical; orange yellow; turns yellowish on drying; antennae yellowish basally and turns light brown distally; mandibles dark brown to piceous; ventrites paler than sternites. Interocular space strongly convex, apical half medially ridged and strongly depressed on either side; surface sparsely and minutely punctate, sparsely setose; finely granulate on a narrow region medially behind apical ridge. Pronotum 0.87–0.96X longer than wide; lateral sides subparallel, widest before middle, narrowed anteriorly; anterior margin convex, posterior margin bisinuate; disc convex with eight strong depressions in addition to a small depression in front of the scutellum, coarsely punctate in depressed areas, punctures circular, varies in depth. Scutellum small, widest at base, slightly narrowed apically, apex rounded, surface smooth, shiny, impunctate and agranulate. Elytra narrowed basally, slightly and gradually expanding towards apex; sparsely and indistinctly setose; disc with nine rows of punctures in middle; ten at base and apex; punctures deep and larger than those on pronotum; interstices 3, 5 and 7 weakly costate. Hypomeron convex in middle of dorsal half; rest of surface depressed. Prosternal denticle prominent and setose. Mesosternum strongly depressed except laterally and apically; impunctate and setose medially. Mesepisternum and mesepimeron deeply punctate; punctures similar to those on hypomeron and bears long setae. Metasternum with a few sparse shallow punctures at

lateral margins, rest of surface sparsely and minutely punctate and sparsely setose. Metepimeron minutely punctate and setose. Ventrites minutely punctate and sparsely setose, punctures and setae denser medially; lateral margins of all ventrites, apical margin of last ventrite minutely punctate and densely clothed with brown setae. All coxae scarcely setose; fore femora strongly thickened; tarsomere I of front leg asymmetrical, anterior lobe larger than posterior; all trochanters and femora with long setae ventrally, rest of femora and all tibiae with sparse short setae; distal ends of all tibiae clothed with stiff setae; all tarsomeres with sparse long setae dorsally.

Sexual dimorphism: In males, posterior margin of pygidium deeply notched in middle, forming a V-shaped cleft. While in females, posterior margin of pygidium is weakly convex, and never clefted.

Distribution: India (Karnataka, Kerala, Tamil Nadu, Uttar Pradesh, West Bengal). **New record from Karnataka and Kerala.**

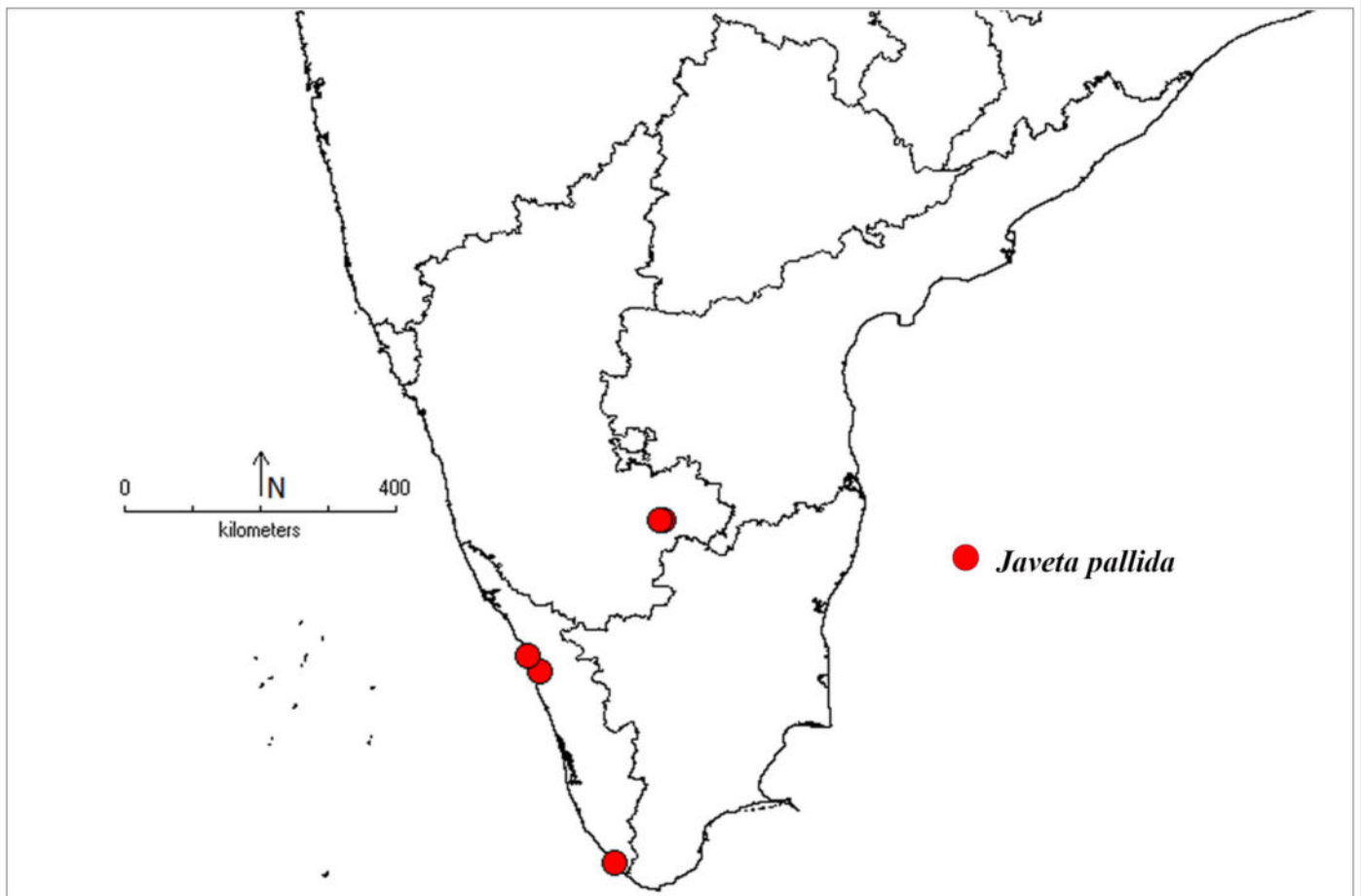
Host plants: *Phoenix dactylifera* L. (Shameem & Prathapan 2015); *P. loureiroi* Kunth (New record); *P. roebelenii* O'Brien (Shameem & Prathapan 2017); *P. sylvestris* (L.) Roxb. (Shameem & Prathapan 2015).

Remarks: This species is known to feed on various members of *Phoenix* L., including both native and introduced species. An epidemic outbreak of *J. pallida* has been observed on *P. dactylifera* L., *P. roebelenii* O'Brien, and *P. sylvestris* (L.) Roxb. throughout Kerala, where these palms have been introduced as ornamental plants.

Material examined (n=154): 1 unsexed. (1) India: Karnataka / Bengaluru, Jakkur Lake / 12.viii.2012 / Prathapan KD Coll. (2) Ex Phoenix; 4 unsexed. India: Karnataka / Bangalore, GKVK Campus / 9-12.xi.2014 / Yeshwanth HM Coll. / Ex *Phoenix* sp.; 19 unsexed. India: Kerala / Tirurangadi / N 11° 02' 12.0" / E 75° 56' 12.6" 47 m / 12.xii.2014 / Shameem KM Coll. / Ex *Phoenix* sp.; 76 unsexed. India: Kerala / Tirurangadi / N 11° 02' 12.0" / E 75° 56' 12.6" 47 m / 12.xii.2014 / Prathapan & Shameem Coll. / Ex *Phoenix* sp.; 18 unsexed. India: Kerala / Tirurangadi / N 11° 02' 12.0" / E 75° 56' 12.6" 47 m / 28.xii.2014 / Shameem KM Coll. / Ex *Phoenix sylvestris*; 2 unsexed. India: Kerala / Trivandrum, Pachalloor / N 08° 26' 15.4" / E 76° 57' 42.4" 28 m / 2.iv.2015 / Shameem KM Coll. / Ex *Phoenix dactylifera*; 34 unsexed. India: Kerala / Kozhikode / N 11° 15' 17.31" / E 75° 47' 02.92" 14 m / 3.iv.2016 / Shameem KM Coll. / Ex *Phoenix roebelenii*.



Fig. 83. *Javeta pallida* Baly.



Map 9. Localities of *Javeta* Baly species studied.

4.2.5 Tribe Eurispini Chapuis, 1875

Elongate, cylindrical or spindle shaped; body neither spinose nor tuberculate, covered to varying extent with longer, erect scales; head not produced between antennae; antennae 10 or 11 segmented; anterior boarder of mouth cavity distinctly separated from the base of antennae by a well-developed clypeus (Figs. 39–42, 85). Pronotum cylindrical, nearly as long as wide ($L/W = 0.87-1.37$), slightly narrowed towards apex; antero-lateral angles with trichobothria (Fig. 41), often difficult to locate in hirsute species. Elytra widest at or behind middle, strongly narrowed towards apex almost parallel-sided, greatest width of body at or behind middle of elytra ($L/W = 4.2-5.2$) (Fig. 42); elytra punctate-striate; scutellar row present or absent. Legs very short; claws single, double or rarely absent (Fig. 85).

Three described genera, one in India and south India.

Squamispa Maulik, 1928

(Figs. 39–42, 84–85; Map 10)

Squamispa Maulik, 1928:151. Type species: *Squamispa fasciata* Maulik, 1928, by original designation.

Diagnosis: Body elongate, subparallel or nearly spindle shaped; whole body, including antennae and legs, clothed with whitish semi-erect scale like setae (Figs. 84–85). Head greatly extended in front of eyes; vertex distinctly raised into a more or less rectangular plate with a strong medial impression along middle (Figs. 40–41); frontoclypeus trapezoidal; mouthparts situated ventrally between eyes; eyes minute, separated from antennal socket by a distance of 2X diameter of eye. Antennae with 11 antennomeres, antennomeres I–V sparsely scaly, distal VI–XI densely setose. Pronotum much longer than wide, sides weakly margined; each anterior angles of pronotum with a single seta (Fig. 41). Scutellum minute, triangular, apex pointed, sides not extending over elytra (Fig. 40). Elytra narrowed at base and more narrowed towards apex; widest just behind middle; apex of elytra not produced into a sharp point; punctate striate with eight rows at base and nine in middle; scutellar row absent. Abdomen deeply embedded in elytral cavity in ventral view (Fig. 42). Legs short and stumpy; tibiae very short, almost equal to tarsi in length (Fig. 42); claws double, well developed.

Diversity: Monotypic genus described from Karnataka (India).

Number of species studied: One.

Distribution: India (Karnataka).

Host plant: Poaceae (New record, Dr. K.D. Prathapan Pers. Comm.).

***Squamispa fasciata* Maulik, 1928**

(Figs. 39–42, 84–85; Map 10)

Squamispa fasciata Maulik, 1928:154 (type: India, Mysore, Chikkaballapura, BMNH).

Squamispa ballapurana Maulik, 1928:155 (type: India, Mysore, Chikkaballapura, BMNH)

Diagnosis: Length 5.25–6.31 mm, width 1.25–1.54 mm. Body elongated, subparallel; colour subnitid with elytra shining at some angles; distal five antennomeres darker than proximal ones; pronotum brown, anterior and posterior margins as well as two longitudinal stripes one on either side of the midline darker; scutellum black; elytra pitch-brown, with lateral margins nearly yellowish; venter paler than dorsum; ventrites towards lateral sides blackish; articulation of legs and parts of hind femora pitch brown.

Distribution: India (Karnataka).

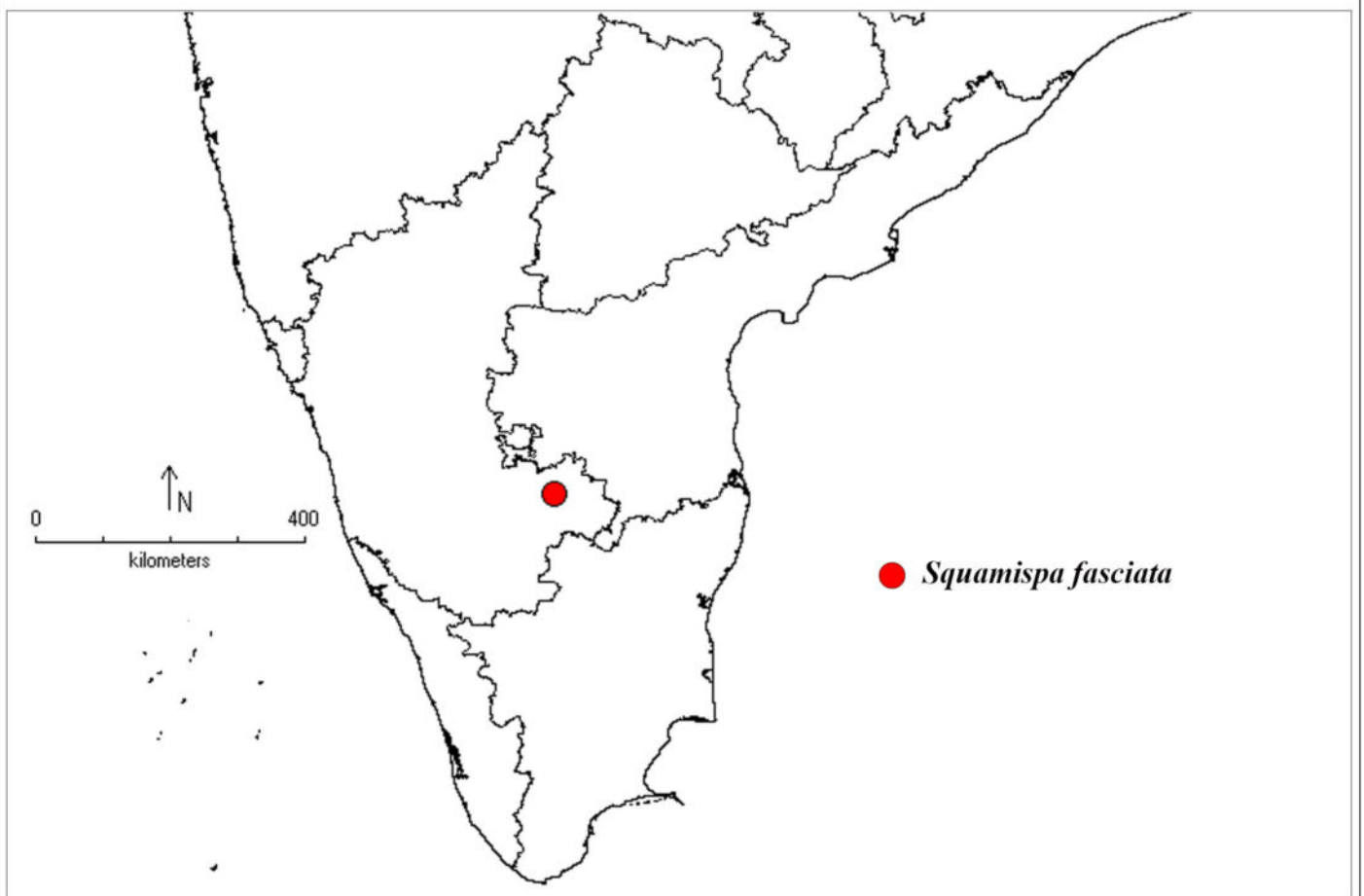
Host plant: Poaceae: Unidentified grass (Dr. K.D. Prathapan Pers. Comm.). **New record.**

Remarks: This species was described by Maulik (1928) from Chikkaballapura, Karnataka, and it is the only known representative of the tribe Eurispini in the Oriental region.

Material examined (n=1): 1 unsexed. INDIA: Karnataka / Nandi Hills / 9.viii.1999 / Prathapan Coll.



Figs. 84–85. *Squamispa fasciata* Maulik, habitus; 84. Dorsal view; 85. Ventral view.



Map 10. Localities of *Squamispa* Maulik species collected.

4.2.6 Tribe Gonophorini Chapuis, 1875

Elongate, small to large beetles; head not produced between antennae (Fig. 9, 29, 37); vertex with single long supra orbital setae, often placed in a pit or groove (distinct pit or groove absent in *Downesia strigicollis* Baly); anterior margin of mouth cavity separated from base of antennae by a well-developed clypeus (Figs. 9, 38). Antennae 11 segmented. Both anterior and posterior angles of pronotum with trichobothria (Fig. 37); disc of pronotum without series of strong depressions or excavations near apical margin (Figs. 45–47). Elytra punctate-striate; scutellar row absent; costae well developed at least apically (Figs. 48–49).

The tribe is represented by ten genera, three of them are present in India and south India.

Agonita Strand, 1942

(Figs. 6, 9, 45, 47, 49, 86; Map 11)

Agonita Strand, 1942:391. Type species: *Gonophora wallacea* Baly 1859, designated by Maulik 1919a.

Agonia Weise, 1905b:116 (not Forster).

Gonophora (Distolaca) Baly. Gestro 1897b:404 (faunal list).

Distolaca Baly. Kraatz 1895:191.

Gonophora (Lachnispa) Gestro, 1897a:64.

Agonita (Lachnispa) Gestro. Uhmman 1954d: 191 (faunal list).

Gonophora Baly (in part). Chapuis 1875:303 (redescription).

Gonophora (Sinagonia) Chen *et al.* 1962:133.

Sinagonia Chen & Tan. Borowiec & Sekerka 2010:383 (catalog).

Gonophora (Agonita) Strand. Chen *et al.* 1962:121 (faunal list).

Agoniella Weise. Gressitt 1957b:305 (misidentification).

Diagnosis: Size variable, 3.6–15 mm long. Body elongate, convex, slender, parallel, subparallel sided or slightly broadened towards apex (Figs. 6, 86); colour variable, non-metallic. Head smooth, shiny or granulate, without deep punctures; supra orbital setae distinct and placed in a pit or short groove on either side; eyes strongly convex and prominent (Figs. 9, 45, 17); gena generally smooth and shiny; granulate in some, with a row of short setae around eyes and near upper protuberance; posterior margin of mouth cavity widely separated from anterior margin of prosternum (Fig. 9); articulations of

mandibles visible in frontal view. Antennae longer, reaching humerus; antennomeres I–II thickest, third slender, narrower basally than apex, III–XI thickened towards apex; basal two antennomeres less setose, rest of them pubescent. Prothorax more or less cylindrical, widest at base or near middle; lateral sides never straight, partly or completely margined, margins smooth and never serrated; surface strongly convex (Figs. 45, 47). Elytra parallel sided, slightly expanded apically in some; tricostate, third costa sometimes partly obliterated (Figs. 45, 47, 48); apex generally rounded (Figs. 48), straight and truncate in some. Fore tarsi subequal to fore tibiae and longer than mid and hind tarsi; claw tarsomeres may or may not project beyond 3rd tarsomere.

Diversity: 111 described species, 19 in India and six from south India.

Number of species studied: Six (three undescribed).

Distribution: Angola, Cameroon, Congo, Equatorial Guinea, Guinea, Ivory Coast, Kenya, Niger, Nigeria, Rhodesia, Senegal, Sierra Leone, South Africa, Sudan, Togo, Uganda, Zimbabwe (Africa); Afghanistan, Bangladesh, Bhutan, Cambodia, China, Indonesia, Japan (Ryukyu Islands), Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam (Asia).

Host plants: Arecaceae (Kalshoven 1951; Uhmann 1961b), Balsaminaceae, Bignoniaceae, Combretaceae (Uhmann 1961b); Cyperaceae (Lee *et al.* 2011); Euphorbiaceae, Fabaceae, Malvaceae, Marantaceae (Uhmann 1961b); Liliaceae (Lee & Cheng 2007); Onagraceae, Ochnaceae (Uhmann 1961b); Orchidaceae (Uhmann 1929; Kalshoven 1951); Pandanaceae (Kalshoven 1957); Poaceae (Spaeth 1933; Uhmann 1954b, 1961b; Hua 2002; Hargreaves 1937; Takizawa 1978; Lee *et al.* 2011); Smilacaceae (Lee & Cheng 2007; Lee *et al.* 2011); Vitaceae (Uhmann 1961b).

Key to south Indian species of *Agonita* Strand, 1942

1. Each elytron with seven rows of punctures in middle; 7th and 8th rows merged into a single row in middle..... 2
 - Each elytron with eight rows of punctures in middle; 7th and 8th rows run separately and do not merge in middle..... 4
2. Dorsum agranulate and shiny; costae not strongly produced, 3rd costae visible only near the apex *A. andrewesi* (Weise, 1897)
 - Dorsum granulate and subnitid; all costae entire and strongly raised 3

3. Lateral sides of pronotum distinctly and completely margined, easily visible in lateral view; dorsum yellowish with suture slightly brownish..... *Agonita* sp. 3
- Lateral sides of pronotum without distinct margin, not visible in lateral view; colour of the elytra variable, mostly checkered with yellow and black, entirely yellow in some..... *A. fallax* Gestro, 1911
4. Size larger, length 7 mm or more..... 5
- Size smaller, length 6 mm or less..... 6
5. Pronotum densely punctate, without a distinct wider impunctate area medially; elytra red; entire suture and part of the extreme apical margin black; apical area between third costa and lateral margin with two rows of punctures.....
..... *A. suturella* (Baly, 1859)
- Punctures on the pronotum less denser, medial impunctate area distinct and wider; elytra generally red, rarely yellow; part of the suture black or piceous, extreme apical margin red; apical area between third costa and lateral margin with 3–4 rows of punctures *A. suturellamima* Maulik, 1919
6. All the three costae entire throughout 7
- One or more costate interrupted..... 8
7. Dorsum shiny; antennae long, nearly reaching middle of the body; elytra slightly narrowed in the middle..... *Agonita* sp. 1
- Dorsum subnitid; antennae short, hardly reaching the base of pronotum; elytra parallel sided..... *A. chlorina* Maulik, 1928
8. Size smaller, 3.50–4.35 mm long; colour yellowish brown, lateral and apical margins of elytra black; antennae, except basal two antennomeres, dark brown to black..... *Agonita* sp. 2
- Size larger, 6 mm long; prothorax with narrow black bands on lateral margins..... *A. cribricollis* (Gestro, 1901)

Agonita andrewesi (Weise, 1897)

(Figs. 6, 47–48; Map 11)

Gonophora andrewesi Weise, 1897:125 (type: India, Kanara, BMNH, ZMHB).

Agonia andrewesi (Weise). Weise 1911:56.

Agonita (Agonita) andrewesi (Weise). Uhmann 1958a:236.

Gonophora andrewesi bicolor Weise, 1897:125 (not Gestro).

Agonia andrewesi bicolor (Weise). Weise 1911:56.

Agonita andrewesi mutata Uhmman, 1958a:236.

Diagnosis: Length 3.45–4.90 mm, width 1.35–1.85 mm. Elongate, subparallel, shiny. Colour highly variable; dorsum generally yellowish brown to reddish brown, entire elytra or its apex black or piceous in some; antennae dark brown to black; basal two antennomeres paler; ventrites concolorous with dorsum. Head smooth and shiny; eyes moderately convex; antennae shorter reaching 1/3rd of body. Pronotum subcylindrical; lateral sides margined, obliterated near apex; disc more convex; sparsely and irregularly covered with shallow punctures; punctures denser towards sides; a good deal of surface impunctate in middle. Scutellum smaller; not strongly narrowed in middle, surface smooth, shiny and impunctate. Elytra subparallel, slightly widened towards apex; apex rounded; apical margin distinctly serrated; disc with seven rows of punctures in middle; tricostrate; costae not strongly raised; third costae visible only at apical 1/3rd. Ventrites sparsely and minutely setose. Femora clothed with sparse long hairs; claw hardly projects beyond bilobed 3rd tarsomere.

Distribution: India (Karnataka, Kerala). **New record from Kerala.**

Host plants: Poaceae: *Dendrocalamus strictus* (Roxb.) Nees; *Oryza sativa* L. (**New record**).

Remarks: This species differs from all other south Indian congeneric members having similarly yellowish dorsum by the following combination of characters: shiny dorsum; shorter antennae, hardly reaching the base of the pronotum; strongly convex pronotum without strong depressions on the disc; elytra distinctly wider near the apex than the base, and all three costae being less pronounced. *Agonita* sp. 1 and *Agonita* sp. 2 have shining dorsum, but they differ from *A. andrewesi* by their longer and slender antennae, pronotum with several depressions, elytra nearly parallel with base as wide as apex and with strongly raised costae.

Material examined (n=65): 4 unsexed. India: Kerala / Janakikkadu / 27.xi.2013 / Shameem K Coll. / Ex Bamboo; 2 unsexed. India: Kerala / Nadukani Pass / N 11° 23' 35.8" E 76° 21' 45.0" / 13.x.2012 259 m / Prathapan & Shameem Coll. / Ex Bamboo; 1 unsexed. (i) INDIA: Kerala / Tirurangadi / 15.i.2012 / Shameem Coll., (ii) Ex Bamboo; 3♀, 1 unsexed. India: Kerala / Tirurangadi / 1.xi.2012 / Shameem K Coll. / Ex Bamboo; 1 unsexed. India: Kerala / Tirurangadi / 9.viii.2013 / Shameem K. Coll. / Ex Bamboo; 2♀, 2 unsexed. India: Kerala / Tirurangadi / N 11° 02' 21.80" / E 75° 55' 18.91" 14 m / 2.ix.2016

/ Shameem KM Coll. / Ex Bamboo; 1 unsexed. same data except date 30.vii.2017; 2♂, 10♀, 35 unsexed. Same data except date 24.ii.2017; 1 unsexed. India: Kerala / Tirur, Athanikkal / 17.i.2013 / Shameem K. Coll. / Ex Rice.

***Agonita chlorina* Maulik, 1928**

Agonia chlorina Maulik, 1928:157 (type: India, Nilgiri Hills, BMNH).

Agonita (Agonita) chlorina (Maulik). Uhmman 1958a:237.

Distribution: India (Tamil Nadu).

Host plants: Unknown.

Remarks: This species is very closely allied to *A. fallax* and *Agonita* sp. 3 in size, body form, similar granulate and subnitid dorsum, and short and stout antennae. However, it can be distinguished from both species by eight rows of punctures at the middle of the elytra, whereas *Agonita fallax* and *Agonita* sp. 3 have only seven rows as 7th and 8th rows merged in the middle of the elytra.

Material examined: Nil.

***Agonita cribricollis* (Gestro, 1901)**

Distolaca cribricollis Gestro 1901:471 (type: India, Ghates, MNHN).

Agonia cribricollis (Gestro). Weise 1911:56.

Agonita cribricollis (Gestro). Uhmman 1958a:237.

Distribution: India (Tamil Nadu).

Host plants: Unknown.

Material examined: Nil.

***Agonita fallax* (Gestro, 1911)**

(Map 11)

Agonia fallax Gestro, 1911a:18 (type: India, Nilghiri Hills, BMNH, MCSN).

Agonita (Agonita) fallax (Gestro). Uhmman 1958a:237.

Agonia nigricornis Gestro, 1911a:19 (type: India, BMNH, MCSN) **new synonym.**

Agonita nigricornis (Gestro). Uhmman 1958a:239 **new synonym.**

Diagnosis: Length 3.6–4.3 mm, width 1.20–1.55 mm. Body elongate, narrow, parallel sided, slightly broadened towards apex of elytra, subnitid. Colour highly variable; head yellowish, fuscous at base; gena ventrally, gula and mouth parts except palps dark brown to black; palps and frontoclypeus yellow; colour of antennae varies from yellow to yellowish brown with I–III darker to entirely dark brown or black with basal one paler; middle III–VIII or IV–VIII yellowish and paler than rest in some; pronotum yellow with an elongated or rhomboidal brownish patch in middle; scutellum variable from yellow brown to dark brown in paler specimens or black in dark specimens; elytra vary from yellow with varying number of brown patches on costae to entirely dark brown or black, costae alternatingly marked with black and yellow patches giving checkered appearance; suture at basal depressed portion yellow; ventral half of hypomeron, anterior margin of prosternum and mesepisternum partly or completely dark brown to black; metasternum, except anteriorly and metepisternum black; ventrites entirely yellow in paler specimens; distal ventrites darker in dark specimens; legs yellow; coxae variable, yellow, yellow brown, partly or completely dark brown or black; tarsi pale brown to dark brown. Head granulate between eyes, smooth and shiny behind. Pronotum subcylindrical, narrower at base, widest before middle; anterior margin straight, weakly emarginated in some specimens; lateral sides indistinctly margined, margins less prominent; disc densely and coarsely punctate except on a narrow smooth and shiny area medially. Elytra parallel sided; slightly expanding towards apex; entire apical margin with closely placed sharp and minute serrations; all costae entire and distinctly raised. Ventrites with minute sparse setae. Femora and tibiae clothed with longer sparse setae; claw distinctly projects beyond bilobed third tarsomere.

Distribution: India (Kerala, Tamil Nadu). **New record from Kerala.**

Host plant: Poaceae: *Ochlandra* sp. (**New record**).

Remarks: Gestro (1911a) described two species of *Agonita*, viz. *A. fallax* and *A. nigricornis* from Nilgiris and he separated them primarily based on differences in the colour of antennae. Maulik (1919a:131) was the first to discuss the possible synonymy of both species due to their great resemblance. He even opined that *A. fallax* could be a ‘variety’ of *A. nigricornis*. In the present study, all the eight specimens collected from Silent Valley National Park, part of the Nilgiris, greatly varied in colour. This indicates that colour is not a reliable character in identifying this species and thus, it necessitates the

formal synonymization of the junior name. Since the name *Agonita fallax* has page precedence (Gestro 1911a:18) over *A. nigricornis* (Gestro 1911a:19), *A. fallax* should be retained.

Agonita fallax is allied to *A. chlorina* and *Agonita* sp. 3. *Agonita chlorina* can be distinguished from the other two species by the absence of a smooth and shiny impunctate area in the middle of the pronotum, and the presence of eight rows of punctures in the middle of the elytra. *Agonita* sp. 3 differs from *A. fallax* by the extent of development of the serrations at the apical margin of the elytra. In *Agonita fallax* serrations are distinctly developed and prominent, while in *Agonita* sp. 3 they are only weakly developed.

Material examined (n=8): 1 unsexed. (i) India: Kerala / Silent Valley Nat. Park / Poochippara-Walakkad / 16.xi.2011 / Prathapan & Shameem Coll., (ii) Ex *Ochlandra*; 1 ♀, 2 unsexed. (i) India: Kerala / Silent Valley Nat. Park / Walakkad-Sispara / 18.xi.2011 / Prathapan & Shameem Coll., (ii) Ex *Ochlandra*; 1 ♀, 1 unsexed. (i) India: Kerala / Silent Valley Nat. Park / Sairandhri-Punnamala / 21.xi.2011 / Prathapan & Shameem Coll., (ii) Ex *Ochlandra*; 2 unsexed. India: Kerala / Silent Valley Nat. Park / Sairandhri-Punnamala / 20.i.2013 / Shameem K. Coll. / Ex *Ochlandra*.

Agonita suturella (Baly, 1859)

Gonophora suturella Baly, 1859:110 (type: Indonesia, Java, BMNH).

Agonia suturella (Baly). Weise 1905b:116.

Agonita suturella (Baly). Kalshoven 1957:10.

Distribution: India (Karnataka, Tamil Nadu). *Elsewhere:* Indonesia, Laos, Malaysia (Asia).

Host plant: Pandanaceae: *Pandanus* sp. (Kalshoven 1957).

Remarks: This species was described by Baly in 1859 from Java, Indonesia and is known to feed on *Pandanus* sp. (Pandanaceae) (Kalshoven 1957). Maulik (1919) listed its additional distribution in south India (Madras: Kanara). In the present study, extensive collections in search of this species on *Pandanus* spp. could only recover *A. suturellamima*, another closely related species described by Maulik (1919). Therefore, the distribution of *A. suturella* in India needs to be confirmed based on the re-examination of all the specimens from India studied by Maulik (1919).

Material examined: Nil.

***Agonita suturellamima* (Maulik, 1919)**

(Figs. 9, 45, 84; Map 11)

Agonia suturellamima Maulik, 1919a:134 (type: India, Madras, Kharkur, Nilgiri Hills, BMNH).

Agonita suturellamima (Maulik). Uhmman 1958a: 241.

Diagnosis: Length 7.01–10.08 mm, width 2.54–4.08 mm. Body elongate, parallel sided, slightly broadened behind, shining; dorsum and hypomeron red, yellow in some dried and preserved specimens; suture except on a short length at base and apex black; antennomere I often concolorous with head or yellowish or entirely black. Pro- and mesosternum, margin of mesocoxal process of metasternum and a narrow medial line yellowish; mesepisternum and mesepimeron reddish brown to dark brown; anterior margin of ventrite 1 and suture between 1 and 2 brownish; rest of metasternum, ventrites and metepisternum black; coxae concolorous with their respective sternites; trochanters yellow brown; under side of fore femora, mid femora to a lesser extent and inner surface of fore tibiae yellowish; rest of femora and tibiae and all tarsi black. Head slightly depressed anteriorly near base of antennae; surface smooth, shiny, sparsely and minutely punctate and indistinctly setose; distinctly punctate and setose around supra orbital setae. Antennae nearly reaching 1/3rd of body or beyond, gradually thickened apically. Pronotum 0.80–0.86 X longer than wide, widest at base, narrowed towards apex, lateral sides distinctly and completely margined; posterior angle laterally produced; disc convex, with a longitudinal impression in middle; coarsely and densely punctate; punctures often coalesced; a narrow region medially and two raised oblique area commencing from basal depression smooth and impunctate. Scutellum elongate, widest at base; narrowed and parallel sided towards apex; apex rounded; surface convex or weakly depressed medially, distinctly punctate and setose basally, smooth and shining distally. Elytra subparallel sided, slightly widened towards apex; apex rounded and minutely serrated; with eight rows of punctures in middle; rows doubled between costae; rows in between 3rd costa and lateral margin near base and apex confusing with 3–4 rows instead of two; some individuals with three rows in middle between 1st and 2nd costae. Hypomeron as punctate as pronotum except at margins. All femora and tibiae distinctly punctate and sparsely setose. Claw tarsomere not projecting beyond bilobed third tarsomere.

Distribution: India (Karnataka, Kerala, Tamil Nadu). **New record from Karnataka and Kerala.**

Host Plants: Pandanaceae: *Pandanus* spp. (New record).

Remarks: Nair (1957) reported the incidence of *A. fuscipes* on screw pine (*Pandanus* sp.) in Vellayani, Kerala. In the present study, examination of the voucher specimens available in the Travancore Insect Collection revealed that the species had been misidentified as *A. fuscipes* instead of *A. suturellamima*. The distribution and exact type locality of *A. fuscipes* still remain unknown, and therefore, *A. fuscipes* is not included in the present work.

Agonita suturella closely resembles *A. suturellamima* in coloration, body form and size. Maulik (1919) provided comparative notes on the two species with illustrations of their elytra. These two species differ from all other congeneric members from south India due to their larger size and rufescent dorsum. *Agonita suturella* can be differentiated from *A. suturellamima* by its more densely punctate pronotum, without a distinct impunctate area medially. In *A. suturellamima*, the punctures on the pronotum are not as dense as in *A. suturella*, and there is a distinct impunctate area medially. Additionally, the two species can be separated based on the extent of the dark colour on the suture, as mentioned in the key.

Material examined (n=38): 1 unsexed. India: Karnataka / Kudremukha N. P. / 14.v. 2011 / D. Prathapan & K. Shameem Coll.; 12 unsexed. India: Kerala / Shendurney WLS / Darbhakulam 523 m / N 08° 54' 45.3" / E 77° 12' 06.7" / 19.ii.2011 / Shameem K. Coll.; 1 ♂. India: Kerala / Shendurney WLS / Kattalappara/ 22.iii.2012 / Prathapan & Shameem Coll.; 4 unsexed. INDIA: Kerala / Shendurney / 13.iv.2002 / Prathapan Coll.; 1 unsexed. INDIA: Kerala / Ponmudi / 30.vi.2009 / Prathapan Coll.; 1 unsexed. India: Kerala / Ponmudi / 28.v.2011 / D. Prathapan & K. Shameem Coll.; 2 unsexed. India: Kerala / Arippa / N 8° 50' 11" E 77° 1' 46.1" / 23.iii.2012 236 m / Prathapan & Shameem Coll.; 5 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" / E 77° 01' 46.1" 236 m / 13.xi.2014 / Shameem KM Coll. / Ex *Pandanus*; 2 unsexed. India: Kerala / Chozhiyakodu / N 08° 51' 17.06" / E 77° 01' 58.12" 169 m / 15.xi.2014 / Shameem KM Coll. / Ex *Pandanus*; 4 unsexed. India: Kerala / Agasthyamala / Athirumala / N 08° 37' 04.5" / E 77°13' 46.7" 1022 m / 25.iii.2014 / Prathapan D & Shameem K Coll. / Ex *Pandanus*; 2 unsexed. India: Kerala / Agasthyamala / Athirumala-Pongalappara / N 08° 37' 22.0" / E 77° 14' 18.9"

1189 m / 26.iii.2014 / Prathapan D & Shameem K Coll. / Ex *Pandanus*; 2 unsexed. India: Kerala / Ponmudi / N 08° 45' 57.8" / E 77° 06' 38.7" 1034 m / 21.i.2014 / Prathapan KD Coll. / Ex *Pandanus*; 1 unsexed. India: Kerala / Wayanad, Kuruvadweep / 2.iv.2014 / Shameem K Coll. / Ex *Pandanus*.

***Agonita* sp. 1**

(Map 11)

Diagnosis: Length 3.80–3.90 mm, width 1.15–1.20 mm. Elongate, slender; parallel sided; dorsum shiny, yellow to yellowish brown; vertex, scutellum, suture and a narrow longitudinal stripe on elytra dark brown; first two rows of punctures, lateral margins of elytra in middle darker; antennae dark brown with basal two antennomeres paler; ventral half of hypomeron, sterna, episterna, epimera, ventrites, femorotibial articulations, apices of tibiae, all tarsi dark brown to piceous; rest of venter and legs yellow. Head smooth and shiny; eyes distinctly convex; antennae distinctly longer and reaching middle of the body. Pronotum 1.11–1.14X longer than wide; disc with strong elevations and depressions; coarsely and irregularly punctate; a large area in middle impunctate. Scutellum longer, exposed part distinctly widened towards apex; apex rounded. Elytra slightly narrowed in middle, apex rounded; serrulations on apical margin prominent towards sutural angle; all costae entire. Ventral sides shiny with sparse long setae; ventrites 4 and 5 more setose. Legs long and slender; femora and tibiae sparsely clothed with long setae; claws project much beyond bilobed third tarsomere.

Distribution: India (Kerala). **New record.**

Host plant: Areaceae: *Calamus* sp. (**New record**).

Remarks: This species closely resembles *Agonita* sp. 2 in having parallel-sided body, long and slender antennae reaching middle of the body, and strongly pronounced costae, however, it can be easily distinguished from *Agonita* sp. 2 by uninterrupted third costae (in *Agonita* sp. 2, third costa is interrupted in middle). The two species also differ in coloration, and the number and disposition of depressions on the pronotum.

Material examined (n=2): India: Kerala / Bison Valley / Uppala / 8.iii.2011 / Shameem K. Coll. (2) HP 9b *Calamus*.

***Agonita* sp. 2**

(Map 11)

Diagnosis: Length 3.50–4.35 mm, width 1.10–1.55 mm. Elongate, parallel sided, slightly expanded towards apex. Dorsum shiny; colour highly variable; yellow to yellowish brown. Antennae dark brown to piceous, basal two antennomeres paler; scutellum variable from entirely yellow to piceous; suture, lateral sides of elytra extending up to 2nd costae in middle and sometimes posteriorly extending up to sutural angle dark brown to piceous; ventral sides variable, generally concolorous with dorsum, entirely yellow brown or with last one or two ventrites partly or completely piceous; lateral sides of metasternum, epimera, episterna and ventral half of hypomeron in most cases piceous; pygidium piceous; legs except tarsi concolorous with sternites, all tarsi dark brown. Head smooth and shiny; eyes large and strongly convex; antennae slender and shorter, nearly reaching 1/3rd of the body. Pronotum subcylindrical; narrower at base, widest before middle, sides margined except near apex; surface densely and coarsely punctate; narrow longitudinal area along middle impunctate. Scutellum short; sides distinctly constricted in middle. Elytra subparallel sided, slightly expanded after middle towards apex; apex distinctly serrated, more prominent towards sutural angle; disc with eight rows of punctures; tricostate; 1st and 2nd costae entire, 3rd lowered in middle; ventral sides shiny and asetose. Legs scarcely setose without long setae; claws project much beyond bilobed third tarsomeres.

Distribution: India (Kerala). **New record.**

Host plant: Areaceae: *Calamus* sp. (**New record**).

Remarks: See the “Remarks” section under *Agonita* sp. 1.

Material examined (n=18): 3 unsexed. INDIA: Kerala / Ponmudi / 10.viii.2003 / Prathapan Coll.; 2 unsexed. (i) India: Kerala / Shendurney WLS / Darbhakulam 523 m / N 08° 54' 45.3" / E 77° 12' 06.7" / 19.ii.2011 / Shameem K. Coll.; (ii) Ex *Calamus*; 1 ♀, 6 unsexed. (i) India: Kerala / Shendurney WLS / Kattalappara/ 22.iii.2012 / Prathapan & Shameem Coll., (ii) Ex *Calamus*; 2 unsexed. India: Kerala / Trivandrum, Kallar / N 08° 42' 30.9" E 77° 07' 59.7" / 24.v.2013 160 m / Prathapan & Shameem Coll. / Ex *Calamus*; 2 unsexed. India: Kerala / Athirumala-Bonaccord / 28.iii.2014 / Prathapan D & Shameem K Coll.; 1 unsexed. India: Kerala / Arippa / N 8° 50' 11" E 77° 1' 46.1" / 19.iv.2012 236 m / Prathapan & Shameem Coll. / Ex *Calamus*; 1 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 2.x.2017 / Shameem KM Coll.

***Agonita* sp. 3**

(Map 11)

Diagnosis: Length 4.00–4.95 mm, width 1.25–1.65 mm. Elongate, parallel sided, slightly expanding towards apex. Colour subnitid; dorsum fulvous; most of head, antennae, scutellum, suture, first two rows of punctures hardly reach apex, third and fourth rows in proximal 1/3rd darker; ventral sides yellow; metasternum except anteriorly and metepisternum generally black; ventrites variable, entirely yellow or yellow with dark brown to black towards apex. Head granulate; eyes less convex; antennae shorter reaching 1/3rd of body length. Pronotum subcylindrical, narrower at base; widest before middle; lateral sides distinctly margined; disc granulate and coarsely punctate, small shiny area in middle nearly impunctate. Elytra subparallel; slightly widened towards apex; apex rounded; serrations at apical angle weak but distinct near sutural angles; disc with seven rows of punctures in middle; eight rows near base and apex; interspaces of punctures of first two rows distinctly lower in anterior 1/3rd; all costae entire and strongly raised throughout. Ventrites minutely setose. Femora and tibiae scarcely indistinctly setose; claws hardly project beyond bilobed third tarsomeres.

Distribution: India (Kerala). **New record.**

Host plant: Poaceae: *Ochlandra* sp. (**New record**).

Remarks: This species is similar to *Agonita fallax*, but can be distinguished by its distinctly margined lateral sides of the pronotum, more or less uniformly coloured elytra, and densely punctate abdominal ventrites. In *Agonita fallax*, lateral side of the pronotum is indistinctly margined, the elytra are usually checkered with black and yellow, and the abdominal ventrites are only sparsely punctate.

Agonita sp. 3 also resembles *A. chlorina* in general body form and coloration, but it can be differentiated by the presence of a shiny impunctate area in the middle of the pronotum and seven rows of punctures in middle of the elytra, whereas in *A. chlorina*, the pronotum lacks a distinct impunctate area in the middle and elytra bear eight rows in the middle.

Material examined (n=6): 1 unsexed. India: Kerala / Bonaccord-Pandipat / N 08° 41' 01.6" E 77° 11' 24.0" / 25.v.2013 1276 m / Prathapan & Shameem Coll. / Ex *Ochlandra*; 1 unsexed. India: Kerala / Bonacaud-Pandipath / N 08° 40' 45.9" / E 77° 11' 35.8" 1340 m / 9.iv.2017 / Shameem K.M. Coll. / Ex *Ochlandra*; 4 unsexed. India: Kerala / Agasthyamala / Pongalappara / N 08° 37' 24.4" / E 77° 14' 44.9" 1473 m / 26.iii.2014 / Prathapan D & Shameem K Coll. / Ex *Ochlandra*.

Downesia Baly, 1859

(Figs. 27, 29, 46, 87–88, 90, 92; Map 12)

Downesia Baly, 1859:107. Type species: *Downesia insignis* Baly 1859, by monotypy.

Hanoia Fairmaire, 1888:375.

Diagnosis: Size variable, 3.50–9.00 mm. Body elongate, slender, parallel or subparallel (Figs. 27, 87–88, 90, 92). Colour generally entirely black or bicolored with a combination of hues of yellow or red with black. Posterior margin of mouth cavity usually touching or nearer to anterior margin of prosternum; articulations of mandibles not visible in frontal view; labrum more or less cup shaped and it partly conceals mandibles. Antennae short, reaching base of pronotum or beyond, slightly thickened distally; distal antennomeres more setose; basal two or three less setose or aetose. Pronotum generally quadrate, sometimes longer than wide; sides smooth, parallel (slightly narrowed towards apex in *D. strigicollis* Baly, 1876) or slightly sinuate in some, strongly margined and subreflexed; surface smooth, finely punctate (strongly striated in *D. strigicollis*) and sometimes impunctate (Figs. 29, 46). Elytra subparallel sided; either as wide as pronotum or slightly wider at base, generally slightly widened towards apex; sides smooth and never serrated (weakly crenulated in *D. strigicollis*). Elytra punctate-striate with eight rows of punctures in middle, one or two sets of rows coalesced in middle (in *D. strigicollis*, six rows in middle and 7th visible apically); rows often appear as partly merged as punctures of one row oppose interspaces of adjacent row; alternate interstices costate, generally with three costae; costae flattened and broadened towards base (Figs. 46, 87), distinctly raised towards apex (Fig. 87). Pro-, meso- and metasternites together with pro- and mesocoxae flattened ventrally; pro- and mesocoxae larger and prominent and in same plane with sternites; all femora swollen in middle; fore tarsi longer than mid and hind tarsi, more or less subequal to fore tibiae; claw tarsomeres project beyond bilobed 3rd tarsomere.

Distribution: Congo (Africa); Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam (Asia).

Diversity: 40 described species, nine in India and three in south India.

Number of species studied: Six (three undescribed).

Host plants: Poaceae (Maulik 1923, 1933; Spaeth 1933; Gressitt 1950; Kalshoven 1957; Gressitt & Kimoto 1963; Medvedev & Zaitsev 1979; Maddison 1993; Hua 2002).

Key to South Indian species of *Downesia* Baly, 1859

1. Elytra with seven rows of punctures; only a single row present between suture and first costa; colour entirely black or rufo-testaceous..... ***D. insignis* Baly, 1859**
- Elytra with eight rows of punctures near middle or apex; rows doubled towards apex between suture and first costa; colour variable..... 2
2. Rows of punctures between suture and first costa doubled only near apex; colour shiny black with a rufescent area at the middle of the vertex.....
..... ***D. andrewesii* Gestro, 1911a**
- Rows of punctures between suture and first costa doubled from or just behind middle; colour not described as above.....3
3. All the three costae strongly raised except at basal 1/3rd; 3rd costae broken in middle and in front of the apical margin ***Downesia* sp. 2**
- All the costae distinctly raised only in apical 1/3rd 4
4. Size large and broad (length: 7.08–8.01 mm; width 2.23–2.77 mm)
..... ***Downesia* sp. 3**
- Size smaller and slender (length: 4.47–6.62 mm; width 1.31–2.00 mm) 5
5. Dorsum yellow brown, apical 1/3rd to half of elytra black and extends anteriorly along suture and lateral margins forming a W-shaped marking.....
..... ***Downesia* sp. 1**
- Dorsum yellow brown to reddish brown with apex of the elytra piceous; ventral side concolorous with dorsum..... ***D. kanarensis* Weise, 1897**

***Downesia andrewesii* Gestro, 1911**

Downesia andrewesii Gestro, 1911a:21 (type: India, Nilghiri Hills, Naduvatam, MCSN, BMNH).

Downesia andrewesi Gestro. Maulik 1919a:118.

Distribution: India (Kerala).

Host plants: Unknown.

Remarks: This species was not collected during the present study. The available descriptions and photographs of the Cotype obtained from BMNH indicate that the species resembles *D. insignis* in colour and body form. However, *D. andrewesii* can be differentiated from *D. insignis* by the presence of a rufescent area in the middle of the

vertex (vertex is entirely black in *D. insignis*) and eight rows of punctures near the apex of elytra (seven rows in *D. insignis*).

Material examined: Nil.

***Downesia insignis* Baly, 1859**

(Map 12)

Downesia insignis Baly, 1859:107 (type: Northern India, BMNH).

Gonophora insignis (Baly). Gemminger & Harold 1876:3607

Diagnosis: Length 4.47–5.85 mm, width 1.23–2.54 mm. Elongate, narrow, subcylindrical, generally shiny black, sometimes rufo-testaceous; palps paler, ventrites tinged brown; colour entirely brownish in one specimen. Vertex granulate, as punctate as pronotum, punctures sparse and finer; indistinctly setose; clypeus strongly depressed in middle. Pronotum nearly as wide as long, more or less parallel sided; slightly narrowed basally; widest before middle in most individuals and weakly curved in some; strongly margined; weakly notched before posterolateral angles; disc entirely covered with sparse and fine punctures. Elytra narrowed at base; slightly widened towards apex; tricostate; seven rows of punctures present, only a single row present between suture and costa 1, 6th and 7th rows merged into a single row in middle; costae 1 and 2 flattened towards base; interspaces and interstices reticulated. Hypomeron densely and coarsely punctate; ventrites sparsely and minutely punctate. Fore and mid coxae flattened and impunctate ventrally; all trochanters sparsely setose; ventral side of all femora sparsely clothed with long hairs; mid and hind tibiae with 1–3 denticles apically; claws project beyond bilobed third tarsomeres.

Distribution: India (Kerala, Northern India). **New record from south India.**

Host plant: Poaceae: *Chrysopogon hackelii* (Hook.f.) C.E.C.Fisch. (**New record**).

Remarks: This species can be easily distinguished from all other south Indian members of the genus by its entirely black colour and the presence of seven rows of punctures on the elytra, both at the middle and near the apex. In *D. insignis*, there is only a single row of punctures between suture and costa 1, while in all other species, the row is doubled either from near the middle or at least near the apex.

Material examined (n=60): 1♂, 2♀, 27 unsexed. India: Kerala / Ponmudi / N 8° 45' 19.9" E 77° 6' 43.7" / 28.v.2011 872 m / D. Prathapan & K. Shameem Coll.; 11 unsexed. India: Kerala / Ponmudi / N 8° 45' 19.9" E 77° 6' 43.7" / 21.iii.2012 872 m / Prathapan & Shameem Coll.; 4 unsexed. India: Kerala / Ponmudi / N 8° 45' 57.8" E 77° 6' 38.7" /

29.xi.2011 1034 m / D. Prathapan & K. Shameem Coll.; 1 unsexed. INDIA: Kerala / Ponmudi / 28.v.2011 / Shameem K Coll.; 1 unsexed. India: Kerala / Ponmudi / N 08° 45' 57.8" / E 77° 06' 38.7" 1034 m/ 14.xi.2014 / Shameem KM Coll. /Ex Grass; 1 unsexed. India: Kerala / Ponmudi / 1.ix.2017 / Prathapan KD Coll.; 7 unsexed. India: Kerala / Silent Valley Nat. Park / Sairendhri / N 11° 5' 35.8" E 76° 26' 47.7" / 15.xi.2011 1030 m / Prathapan & Shameem Coll.; 2 unsexed. India: Kerala / Silent Valley Nat. Park / Sairendhri-Poochippara / 22.xi.2011 / Prathapan & Shameem Coll.; 2 unsexed. India: Kerala / Silent Valley N. P. / Sairendri / 21.i.2013 / Shameem K. Coll.; 1 unsexed. India: Kerala / Silent Valley N. P. / Poochippara / 22.i.2013 / Shameem K. Coll.

***Downesia kanarensis* Weise, 1897**

(Figs. 27, 29, 46, 88, 90, 92; Map 12)

Downesia kanarensis Weise, 1897:123 (type: India, Kanara, BMNH, ZMHB).

Downesia linkei Uhmman, 1963a:475 (type: India, Wallardi, DEI, MNHN) **new synonym.**

Diagnosis: Length 4.47–6.62 mm, width 1.31–2.00 mm. Elongate, parallel sided. Colour reddish brown, antennae and elytral apex black, tarsi darker. Head distinctly punctate and setose between eyes; punctures smaller and sparser; rest of the surface granulate. Pronotum parallel sided; sparsely and finely punctate with a few large punctures near lateral margin in the posterior half. Elytra with eight rows of punctures; 2nd arises from middle; 7th and 8th merged in middle in some; punctures shallower; all costae strongly produced near apex.

Distribution: India (Karnataka, Kerala).

Host plants: Poaceae: *Dendrocalamus strictus* (Roxb.) Nees, *Ochlandra* sp. (**New record**).

Remarks: In specimens collected from the TBGRI Campus, the elytra between humerus and lateral margins as well as epipleura in the anterior 1/3rd are distinctly setose (in others, anterior 1/3rd of the elytra is usually bare or scarcely setose).

Weise (1897) described *D. kanarensis* from Kanara, which was a part of the Madras presidency in British India (Figs. 88–89). Uhmman (1963a) described *D. linkei* from Wallardi, Idukki, Kerala (Figs. 90–93), and distinguished it from *D. kanarensis* by its finer punctures present on the elytra. In the present study, examinations of multiple specimens from various localities in Kerala, as well as photographs of the types of both species, revealed that both are identical. Therefore, *D. linkei* must be synonymized with *D. kanarensis*.

Downesia kanarensis resembles *Downesia* sp. 3 in having similar coloration and body form. *Downesia* sp. 3 differs from *D. kanarensis* due to its strongly raised costae except at the base and middle of the third costae (costae raised only at apical 1/3rd in others).

Material examined (n=17): 3 unsexed. India: Kerala / JNTBGRI Campus / N 08° 45' 10.1" E 77° 01' 30.8" / 20.v.2013 114 m / Prathapan & Shameem Coll. / Ex *Ochlandra*; 4 unsexed. India: Kerala / Nadukani Pass / N 11° 23' 35.8" E 76° 21' 45.0" / 13.x.2012 259 m / Prathapan & Shameem Coll. / Ex Bamboo; 1 unsexed. India: Kerala / Tirurangadi / 9.viii.2013 / Shameem K. Coll. / Ex Bamboo; 1 unsexed. India: Kerala / Tirurangadi / N 11° 02' 21.80" / E 75° 55' 18.91" 14 m / 24.ii.2017 / Shameem KM Coll. / Ex Bamboo; 1 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" E 77° 01' 46.1" 236 m / 13.xi.2014 / Shameem KM Coll. / Ex *Ochlandra*; 1 unsexed. India: Kerala / Chozhiyakodu / N 08° 51' 17.06" / E 77° 01' 58.12" 169 m / 15.xi.2014 / Shameem KM Coll. / Ex *Ochlandra*; 6 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 28.ii.2016 / Shameem KM Coll. / Ex *Ochlandra*.

***Downesia* sp. 1**

(Fig. 87; Map 12)

Diagnosis: Length 5.24–6.39 mm, width 1.62–2.00 mm. Elongate, parallel sided. Colour highly variable; dorsum yellowish brown; antenna black; apex of elytra black, extending anteriorly along suture up to middle and along lateral margins up to the middle or humerus of elytra, thus forming a W-shaped marking in dorsal view; pronotum with or without middle brown triangular patch; head dark brown to black; interocular space, palps and clypeus in most individuals yellow; scutellum varies from yellow, dark brown to black; metasternum, metepisternum and pygidium dark brown to black; rest of sternites and ventrites vary from yellow to piceous; posterior margin of ventrite 2–4 yellow in darker specimens. Coxae, trochanters yellow to piceous; all femora and tibiae vary from entirely yellow to dark brown or in combination of yellow and dark brown; all tarsi dark brown to piceous. Vertex granulate, interocular space depressed than eyes, not grooved around eyes; supra orbital setae longer and arising from a pit; surface sparsely covered with shallow irregular minute punctures, indistinctly setose, rest of surface impunctate and granulate. Pronotum as wide as long; lateral sides weakly sinuate with weak dorso-ventrally wavy margin; distal part of hypomeron often partly visible in dorsal view; disc subnitid;

impunctate and finely granulate. Elytra subparallel, slightly widened towards apex; surface more or less flat, convex towards apex; lateral margins not visible in dorsal view; eight rows of punctures; 2nd row arises before middle of elytra; tricostate, all costae not strongly raised, only weakly ridged apically compared to other congeneric species; 1st and 2nd more or less flat throughout; 3rd costa more strongly raised from humerus up to middle of elytra. Hypomeron distinctly convex anteriorly; punctate, sparsely clothed with long curved setae. Ventrites minutely punctate; claw projects much beyond bilobed third tarsomere.

Distribution: India (Kerala). **New record.**

Host plant: Poaceae: *Ochlandra* sp. (**New record**).

Remarks: This species resembles *D. kanarensis* in having similar body size and flattened elytral costae, but can be easily distinguished from all other congeneric species by its peculiar colour pattern. In *Downesia* sp. 2, the black markings on the apex of elytra form a characteristic W-shaped pattern that extends laterally up to the humerus and medially along the suture up to the middle of the elytra. Furthermore, the metasternum, metepisternum and metepimeron are black, and the colour of the head, pronotum and rest of the ventral sides vary from yellow to black (ventral side is concolorous with dorsum in others).

Material examined (n=27): 3 unsexed. India: Kerala / Bonaccord-Pandipat / N 08° 41' 01.6" E 77° 11' 24.0" / 25.v.2013 1276 m / Prathapan & Shameem Coll. / Ex *Ochlandra*; 9 unsexed. India: Kerala / Agasthyamala / Pongalappara / N 08° 37' 24.4" / E 77° 14' 44.9" 1473 m / 26.iii.2014 / Prathapan D & Shameem K Coll. / Ex *Ochlandra*; 15 unsexed. India: Kerala / Bonacaud-Pandipath / N 08° 41' 01.6" / E 77° 11' 24.0" 1276 m / 9.iv.2017 / Shameem KM Coll. / Ex Bamboo.

***Downesia* sp. 2**

(Map 12)

Diagnosis: Length 5.62–6.08 mm, width 1.85–2.08 mm. Elongate, parallel sided; dorsum shiny. Colour red brown; basal two antennomeres paler; apex of elytra black; ventral side concolorous with dorsum; tarsi darker than their respective tibiae. Head smooth and impunctate. Pronotum as wide as long, parallel sided; hypomeron partly visible anteriorly in dorsal view; disc smooth, shining, covered with very minute indistinct sparse punctures; few punctures near lateral sides in distal half deep and large. Elytra slightly widened

towards apex; eight rows of punctures; 2nd row arises from near middle of elytra; 7th and 8th rows merged in middle; punctures strong and deep; all costae strongly raised; 1st and 2nd costae flattened only near base; 3rd costae obliterated behind middle and near apex.

Distribution: India (Kerala). **New record.**

Host plant: Poaceae: *Ochlandra* sp. (**New record**).

Remarks: *Downesia* sp. 3 is an atypical species among the members of the genus, characterized by its well-developed costae. All three costae are strongly raised throughout the length of the elytra, except near the base. Moreover, the species was collected from inside the temporary leaf shelters formed due to the feeding of adults on *Ochlandra* sp.

Material examined (n=2): 2 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 28.ii.2016 / Shameem KM Coll. / Ex *Ochlandra*.

***Downesia* sp. 3**

(Map 12)

Diagnosis: Length 7.08–8.01 mm, width 2.23–2.77 mm. Colour yellow brown to reddish brown; antennae and apical 1/3rd of elytra black; basal two antennomeres tinged red; ventral side concolorous with dorsum; tarsi darker than their respective tibiae. Vertex granulate, impunctate, without distinct long setae except supra orbital setae placed in a deep pit. Pronotum as wide as long; minutely punctate; few punctures towards lateral sides in posterior half large and deep. Elytra slightly widening towards apex; eight rows of punctures; 2nd row arises from near middle of elytra; 7th and 8th rows merged in middle; tricostrate; first two costae elevated in apical 1/3rd; 3rd row more pronounced behind humerus, obliterated in apical 1/3rd again disappears pre-apically. Hypomeron subnitid, granulate and setose; claw projects beyond bilobed 3rd tarsomere.

Distribution: India (Kerala). **New record.**

Host plant: Poaceae: *Ochlandra* sp. (**New record**).

Remarks: This species can be easily distinguished from all other congeneric south Indian species by their larger size (length 7.08–8.01 mm, width 2.23–2.77 mm).

Material examined (n=2): 1 unsexed. India: Kerala / JNTBGRI Campus / N 08° 45' 10.1" E 77° 01' 30.8" / 20.v.2013 114 m / Prathapan & Shameem Coll. / Ex *Ochlandra*; 1 unsexed. INDIA: Kerala / Ponmudi / 13.ix.2003 / Prathapan Coll.

Gonophora Chevrolat, 1836

(Figs. 1–5, 37–38, 43, 49, 94–95, 97, 99; Map 13)

Gonophora Chevrolat, 1836:390. Type species: *Hispa haemorrhoidalis* Weber 1801, by monotypy.

Gonophora Baly, 1859:109.

Distolaca Baly, 1859:116.

Gonophora (Distolaca) Baly. Gestro 1897b:404.

Diagnosis: Length; 4.50–6.10 mm. Body elongate, subparallel with elytra little broadened towards apex; surface granulate and coarsely sculptured. Colour variable, generally yellow, brown or reddish with darker markings. Head granulate, minutely punctate, indistinctly setose; articulations of mandibles visible in frontal view. Antennae longer, usually reaching half of body or more; slightly thickened apically; I–IV sparsely setose, rest more pubescent. Pronotum subquadrate, widest in middle; lateral sides rounded, distinctly margined and serrated or uneven; anterolateral angle emarginate and more or less rounded pre apically; posterior angle acute; anterior margin weakly concave in dorsal view; posterior margin bisinuate; disc strongly convex in middle and transversely depressed at base and often with a raised longitudinal area in middle bearing a strong medial impression; surface rugose, coarsely and densely punctate; punctures often coalesced (Figs. 37, 43). Elytra subparallel, slightly expanding towards apex; lateral margins slightly laminate and distinctly serrated; apex rounded or angulate; punctate-striate usually with eight rows of punctures near base and apex, seven in middle, 7th and 8th rows merged into a single row in middle in some species; tricostate; costae strongly raised, upper edges sharp, rounded or scalloped; second and third mostly interrupted; all entire in some species (Fig. 49). Legs longer, fore tibiae longer than fore tarsi, claw tarsomeres hardly project beyond bilobed 3rd tarsomeres.

Distribution: Bangladesh, Cambodia, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam (Asia); Fiji (Oceania).

Diversity: 53 species, six in India, one from south India.

Number of species studied: One.

Host plants: Cannaceae (Gestro 1890); Musaceae (Uhmann 1955a); Zingiberaceae (Spaeth 1933; Taylor 1937; Uhmann 1955a; Kalshoven 1957; Bhumannavar 1991; Hua 2002).

Remarks: The genus can easily be distinguished from all other genera of the tribe by its rugose sculpturing on the pronotum, uneven or serrated margins of both pronotum and elytra, and strongly raised and often broken costae.

***Gonophora brevicornis* Weise, 1905**

(Figs. 1–5, 37–38, 43, 49, 94–100; Map 13)

Gonophora brevicornis Weise, 1905b:114 (type: India, Nilgiri Hills, BMNH).

Gonophora donckieri Pic, 1930:4 (type: India, Travancore, Wallardi, MNHN) **new synonym.**

Diagnosis: Length 3.70–5.25 mm, width 1.55–2.20 mm. Elongate, subparallel, slightly widened towards apex. Colour fulvous, yellowish to reddish; head darker than pronotum; antennae concolorous with head, middle 3 or 4 antennomeres paler; two patches on pronotum, one on either side of midline and scutellum darker, reddish brown to black; five spots on costae of each elytron, two on 1st costa and three on 2nd costa dark brown to black; semi-circular band connecting first spots of each costae brown to red brown; ventral half of hypomeron, mesepisternum, mesepimeron, metasternum laterally in some individuals and anterior part of metepisternum darker than their respective sternites; tarsomeres slightly darker than respective tibiae in paler specimens. Vertex granulate, very sparsely and indistinctly punctate with a weak longitudinal impression in middle; supra orbital setae longer and placed in shallow depression, followed by few setose punctures around eyes. Antennae reaching 1/3rd of body length. Pronotum 0.79–0.88X longer than wide; slightly expanded towards apex; widest behind antero-lateral notch; lateral sides irregularly serrated; surface strongly convex, strongly raised, ridged medially with a narrow groove and two more or less rounded tubercle one on either side of ridge in anterior half. Elytra slightly widened behind anterior 1/3rd, margins finely serrated; tricostrate with two rows in between them, thus 8 rows of punctures behind middle; rows confusing and more than two near base between costae 1 and 2; 7th and 8th rows merged into a single row at anterior 1/3rd; punctures circular, deeper and larger; costa 1 entire and higher than others, 2nd interrupted in middle, 3rd undulated.

Distribution: India (Karnataka, Kerala, Tamil Nadu).

Host plants: Costaceae: *Hellenia speciosa* (J.Koenig) S.R.Dutta; Zingiberaceae: *Elettaria cardamomum* (L.) Maton; *Zingiber zerumbet* (L.) Smith. (**New record**).

Remarks: Weise (1905b) described *Gonophora brevicornis* which was collected from the Nilgiri Hills (Figs. 95–96). In 1930, Pic described the second south Indian species, *G. donckieri*, collected from Wallardi, Munnar, Kerala (Figs. 97–100), without stating the differentiating characters of both species. The photographs of the types of both species obtained from BMNH and MNHN showed that they only differ in the intensity of the general body colour. However, both possess identical pattern of markings on the elytra (Figs. 94–95, 97, 99), which is a key character at the species level within the genus, indicating that both are identical. Moreover, the examination of more than 250 specimens collected from various localities in Karnataka and Kerala revealed that the general body colour varies from paler yellow to orange-red. Since *G. brevicornis* Weise, 1905 has precedence over *G. donckieri* Pic, 1930, the former name should be retained.

Material examined (n=261): 2 unsexed. India: Karnataka / Kottigehara / N 13° 07' 18.4" E 75° 29' 38.2" / 6.v.2011 920 m / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Karnataka / Kottigehara / 9.v.2011 / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Karnataka / Kudhremukha N.P. / 14.v.2011 / D. Prathapan & K. Shameem Coll.; 18 unsexed. India: Karnataka / Jog Falls / N 14° 13.962' / E 74° 48.793' 515 m / 31.x.2013 / Prathapan KD Coll.; 6 unsexed. India: Karnataka / Attigere / Somanakkadu Estate / 13° 05' 46.58" N 75° 28' 58.4" E / 2.x.2017 641 m / Shameem KM Coll.; 1 unsexed. India: Karnataka / COH, Mudigere / 13.1152° N, 75.6328° E / 30.ix.2017 / Amritha Kumari S Coll.; 2 Unsexed. India: Kerala / Shendurney WLS / Rose Mala 225 m / N 08° 54' 49.5" / E 77° 10' 54" / 18.ii.2011 / Shameem K. Coll.; 24 Unsexed. India: Kerala / Shendurney WLS / Darbhakulam 523 m / N 08° 54' 45.3" / E 77° 12' 06.7" / 19.ii.2011 / Shameem K. Coll.; 4 unsexed. India: Kerala / Shendurney WLS / Kattalappara / 22.iii.2012 / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Silent Valley Nat. Park / Sairandhri / 10.xi.2011 / Prathapan & Shameem Coll.; 2 Unsexed. India: Kerala / Silent Valley N. P. / Varappara / N 11° 02' 32.8" E 76° 31' 32.1" / 14.xi.2011 759 m / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Silent Valley Nat. Park / Sairandhri / N 11° 7' 4.4" E 76° 28' 23.5" / 15.xi.2011 1030 m / Prathapan & Shameem Coll.; 7 unsexed. India: Kerala / Silent Valley Nat. Park / Sairandhri / 20.xi.2011 / Prathapan & Shameem Coll.; 2 unsexed. India: Kerala / Silent Valley Nat. Park / Walakkad / N 11° 10' 33.7" E 76° 24' 39.6" / 17.xi.2011 1101 m / Prathapan & Shameem Coll.; 7 unsexed. India: Kerala / Silent Valley Nat. Park / Sairandhri-Punnamala / 21.xi.2011 / Prathapan & Shameem Coll.; 5 unsexed. India: Kerala / Silent N.P. / Sirendri / 20.i.2013 / Shameem K. Coll.; 4 unsexed. India:

Kerala / Silent N.P. / Sirendri-Nilikkal / 21.i.2013 / Shameem K. Coll.; 2 unsexed. India: Kerala / Silent N.P. / Nilikkal-Poochippara / 22.i.2013 / Shameem K. Coll.; 2 unsexed. Same data except locality Nilikkal-Poochippara; 9 unsexed. India; Kerala / Ponmudi / 30.viii.2002 / K.D. Prathapan Coll.; 2 unsexed. Same data except date i.iii.2003; 4 unsexed. Same data except date viii.2003; 2 unsexed. Same data except date 24.xii.2007; 6 unsexed. India: Kerala / Ponmudi / 2.v.2011 / D. Prathapan & K. Shameem Coll.; 1 unsexed. INDIA: Kerala / Ponmudi / 28.v.2011 / Shameem Coll.; 4 unsexed. India: Kerala / Ponmudi / 28.v.2011 / D. Prathapan & K. Shameem Coll.; 2 unsexed. India: Kerala / Ponmudi / N 8° 45' 57.8" E 77° 6' 38.7" / 29.xi.2011 1034 m / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Kerala / Ponmudi / 21.iii.2012 / Prathapan & Shameem Coll.; 2 unsexed. India: Kerala / Ponmudi / N 8° 45' 19.9" E 77° 6' 43.7" / 28.v.2011 872 m / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Ponmudi / N 08° 45' 57.8" E 77° 06' 38.7" 1034 m / 21.i.2014 / Prathapan K.D. Coll.; 2 unsexed. India: Kerala / Kallar Aanappara / 29.v.2011 / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Kerala / Trivandrum-Kallar / 29.v.2011 / D. Prathapan & K. Shameem Coll.; 5 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" E 77° 01' 46.1" 236 m / 31.viii.2013 / Prathapan D. & Shameem K. Coll. / Ex Zingiberaceae; 3 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" / E 77° 01' 46.1" 236 m / 13.xi.2013 / Shameem KM Coll. / Ex Zingiberaceae; 5 unsexed. India: Kerala / Sankily Forest / 11.i.2014 / Prathapan & Shameem Coll. / Ex Zingiberaceae; 18 unsexed. Same data except date 12.v.2014; 11 unsexed. India: Kerala / Bonaccord- Athirumala / 24.iii.2014 / Prathapan D & Shameem K Coll. / Ex Zingiberaceae; 1 unsexed. Same data except without host data; 8 unsexed. India: Kerala / Agasthyamala / Athirumala / N 08° 37' 04.5" / E 77° 13' 46.7" 1022 m / 24.iii.2014 / Prathapan D & Shameem K Coll. / Ex Zingiberaceae; 5 unsexed. Same data except without host data; 10 unsexed. Same data except date 25.iii.2014; 4 unsexed. India: Kerala / Athirumala / N 08° 37' 04.5" / E 77° 13' 46.7" 1022 m / 24.iii.2014 / Prathapan D & Shameem K Coll.; 8 unsexed. Same data except date 26.iii.2014 and an additional host data as Ex Zingiberaceae; 3 unsexed. India: Kerala / Agasthyamala / Athirumala-Pongalappara / N 08° 37' 22.0" / E 77° 14' 18.9" 1189 m / 26.iii.2014 / Prathapan D & Shameem K Coll. / Ex Zingiberaceae; 1 unsexed. INDIA: Kerala / Ponmudi / 8.iii.2008 / Prathapan Coll.; 1 unsexed. Same data except date 28.vi.2011 and collector Shameem K; 2 unsexed. 1 unsexed. India: Kerala / Peringamala / 30.xi.2016 / N 8° 45' 37.3" E 77° 02' 56.8" / K. D. Prathapan Coll.; India: Kerala / Bonacaud-Pandipath / N 08° 40' 45.9" / E 77° 11' 35.8" 1340 m / 9.iv.2017 / Shameem K.M. Coll. / Ex Zingiberaceae; 1 unsexed.

India: Kerala / Periyar Tig. Res. / 28.ii.2011 1205 m / N 9° 30' 42.2" E 77° 7' 0.29" / Shameem K. Coll.; 6 unsexed. INDIA: Kerala / Periyar Tig. Res. / 02.iii.2011 / Shameem Coll.; 14 unsexed. India: Kerala / Vagamon / 23.v.2017 / Prathapan KD Coll. / Ex Zingiberaceae; 1 ♀. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 15.ix.2014 / Shameem K.M. Coll.; 19 unsexed. Same data except date 28.ii.2016; 5 unsexed. India: Kerala / Thiruvambady, Vellarimala / 13.ix.2014 / Shameem K.M. Coll. / Ex Zingiberaceae.

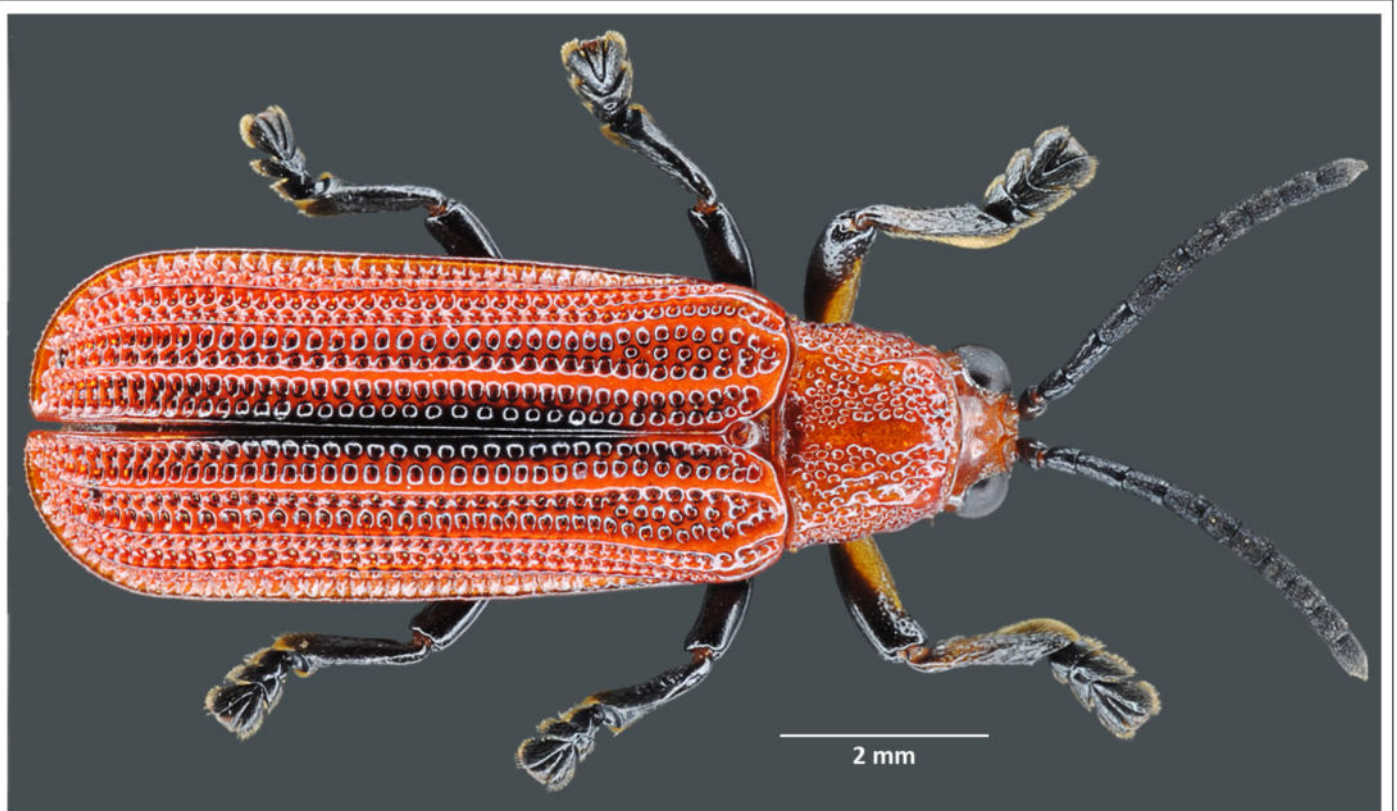
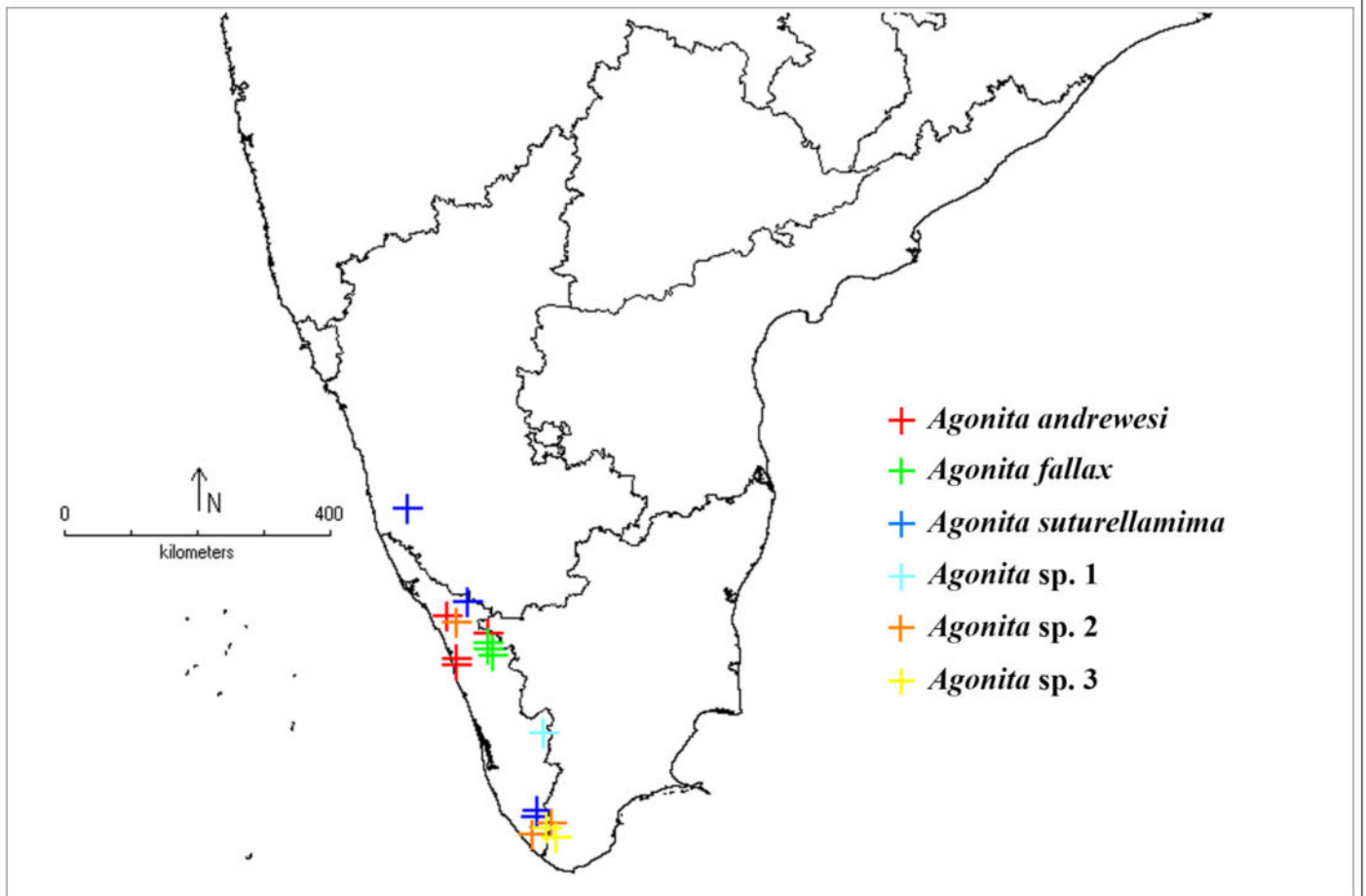
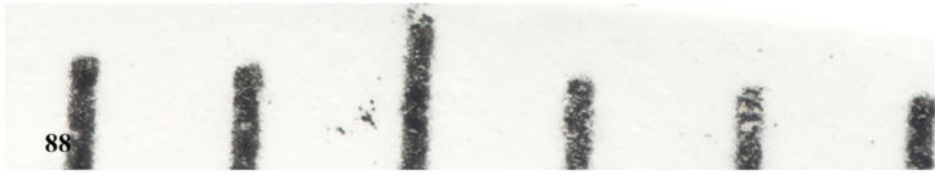


Fig. 86. *Agonita suturellamima* (Maulik).

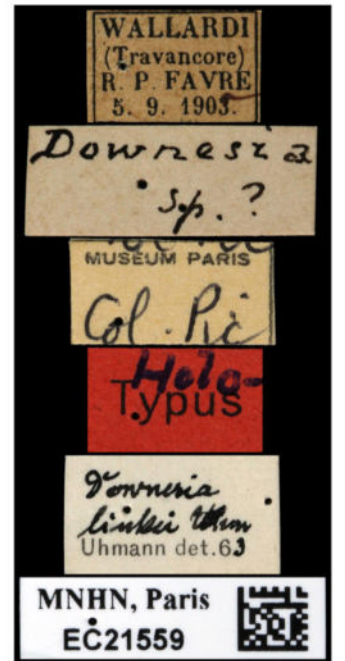
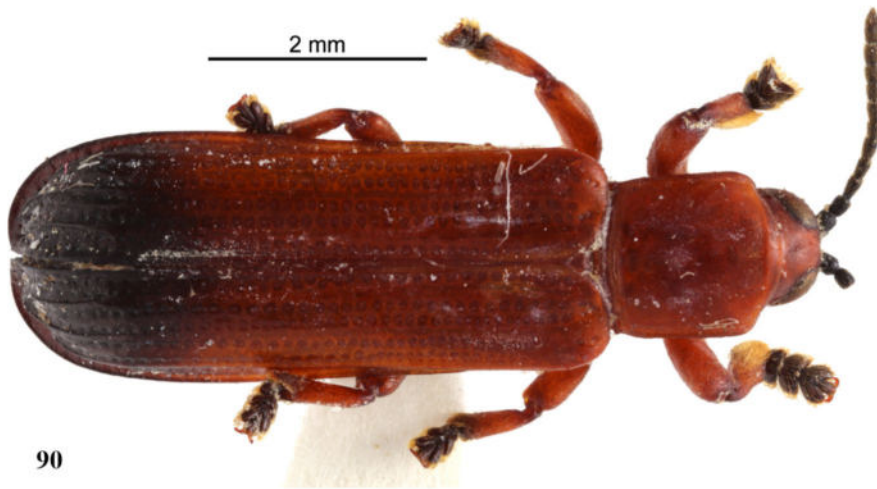


Map 11. Localities of *Agonita* Strand species studied.



88

89



90

91



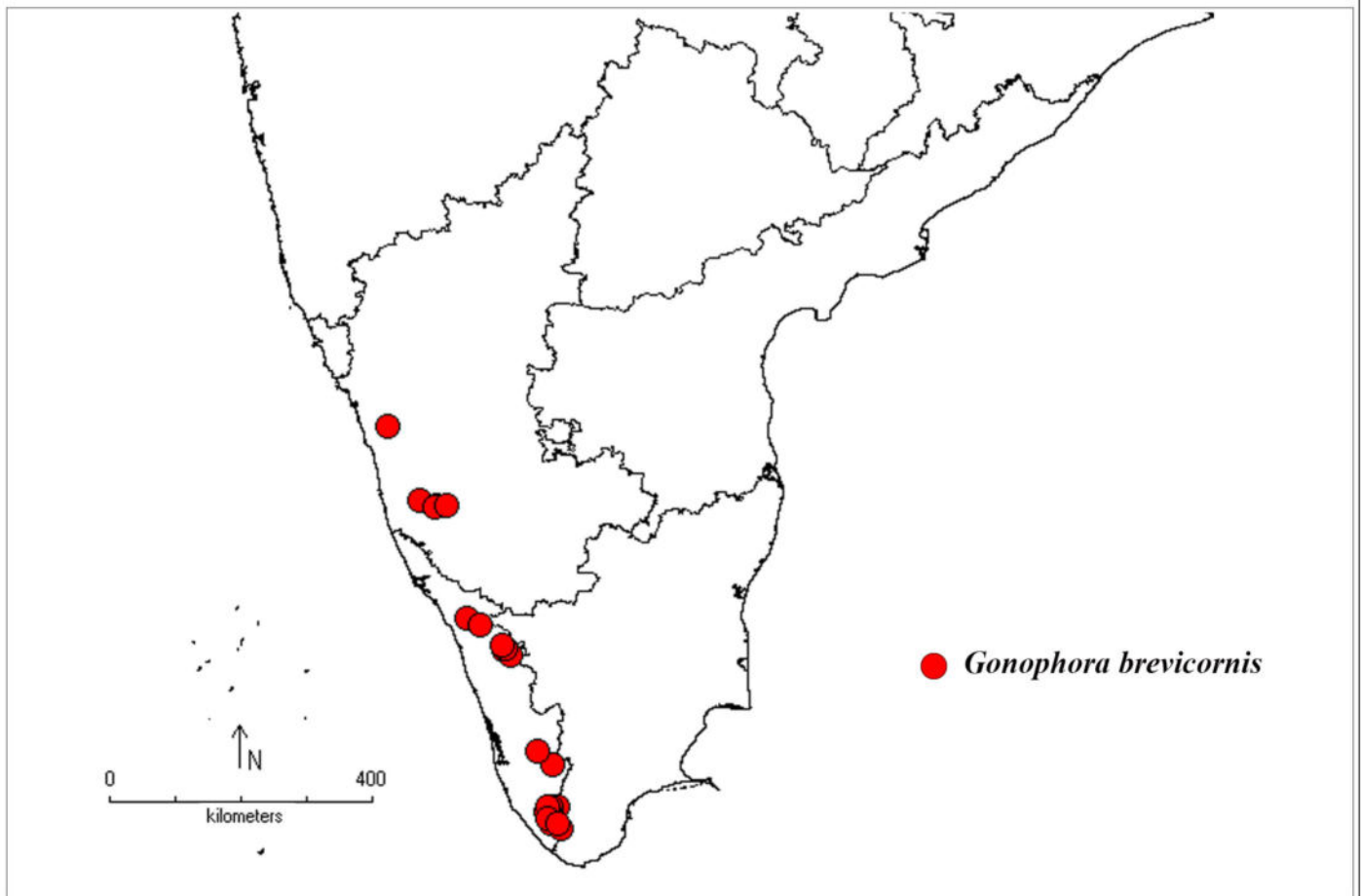
92

93

Figs. 88–93. 88–89. *Downesia kanarensis* Weise, Cotype; 88. Dorsal habitus; 89. Type labels; 90–91. *D. linkei* Uhm, Holotype; 90. Dorsal habitus; 91. Type labels; 92–93. *D. linkei* Uhm, Paratype; 92. Dorsal habitus; 93. Type labels.



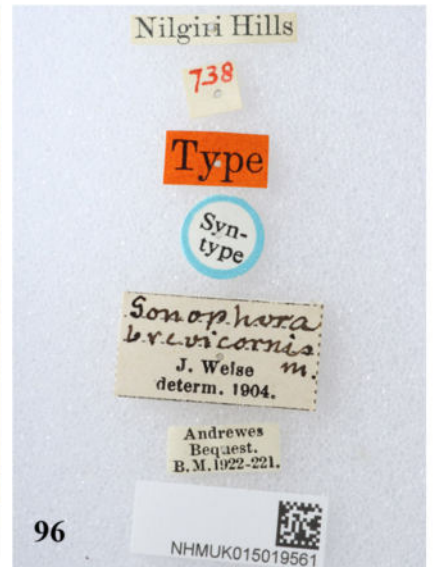
Fig. 94. *Gonophora brevicornis* Weise.



Map 13. Localities of *Gonophora* Chevrolat species studied.



95



96



2 mm

97



98



2 mm

99



100

Figs. 95–100. 95–96. *Gonophora brevicornis* Weise, Holotype; 95. Dorsal habitus; 96. Type labels; 97–100. *G. donckieri* Pic., Syntypes; 97, 99. Dorsal habitus; 98, 100. Type labels.

4.2.7 Tribe Hispini Gyllenhal, 1813

Size and shape variable. Head not produced anteriorly between antennae (Figs. 59, 63–64); anterior margin of mouth cavity distinctly separated from base of antennae by a well developed clypeus; antenna 9 or 11 segmented (Figs. 50–51); lateral margins of pronotum and elytra armed with spines (Figs. 7, 50–51, 57–58, 101–107, 112, 117), anterior and posterior angles of pronotum with trichobothria (Fig. 59, 63) (in *Platypria* anterior trichobothria moved to the base of pronotal lobe and arises from a spine like tubercle); elytra punctate-striate; scutellar row usually well developed (Figs. 50–51), poorly developed in some species with one or two punctures or even absent in others; interstices spinose or tuberculate; claw tarsomeres generally double and pointed (Fig. 56), rarely single with or without pointed tip (Fig. 55).

25 described genera, nine in India and seven from south India.

Dactylispa Weise, 1897

(Figs. 7, 51, 54, 59, 61, 63, 101; Map 14)

Dactylispa Weise, 1897:137. Type species: *Hispa andrewesi* Weise (= *Hispa severini* Gestro 1897), by Maulik 1919a.

Hispa Chapuis, 1875:333 (not Linnaeus).

Dactylispa (*Triplispa*) Weise, 1897:150.

Dactylispa (*Triplispa*). Chen *et al.* 1961:458.

Dactylispa (*Platypriella*) Chen & T'an 1961:459.

Dicladispa Anand, 1997:9 (not Weise).

Diagnosis: Size highly variable, Indian species varies from 2.80–7.00 mm. Body elongate, subparallel, dorsum convex; colour varies from entirely black or combination of shades of yellow or reddish brown with dark brown or black. Head anteriorly carinated between antennae; interocular space with a distinct medial sulcus and usually with a row of setae encircling eyes; head behind eyes constricted, smooth and shining, and forms a distinct collar (Figs. 59, 63). Antennae long, reaching humerus or beyond, with 11 antennomeres, antennomeres without any dorsal spines; antennae uniformly thickened, apical antennomeres slightly thickened in some species, never forms a strong club (Figs. 54, 63); antennomere I generally thicker and outwardly curved. Pronotum transverse; anterior margin with a pair of two or more spines in middle; lateral margins with two or more spines; disc usually punctate and setose; basal transverse impression present; a similar

impression present anteriorly in front of middle in most species (Figs. 59, 63). Scutellum triangular, apex rounded (Fig. 59). Elytra punctate-striate with 8–10 rows of punctures; scutellar row present; both disc and margins spinose, spines on apical margin distinct. Legs longer; mid tibiae not strongly curved; claws double and equal, usually project beyond bilobed third tarsomere (Fig. 56).

Diversity: more than 371 described species, 61 in India, 23 from south India.

Number of species studied: 18 (three undescribed).

Distribution: Angola, Cameroon, Congo, Egypt, Eritrea, Equatorial Guinea, Ethiopia, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Liberia, Madagascar, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Thomé Island, Togo, Uganda, Zambia, Zimbabwe (Africa); Afghanistan, Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Iran, Japan, Laos, Malaysia, Myanmar, Nepal, North Korea, Pakistan, Philippines, Saudi Arabia, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Vietnam, Yemen (Asia); Russia (Europe); Australia, Bismark Islands, New Guinea, Solomon Islands (Oceania).

Host plants: Areaceae (Maulik 1919a; Bernard & Menzel 1924; Uhmman 1961b), Acanthaceae (Hering 1957; Uhmman 1957b), Anacardiaceae (Gressitt 1963), Asteraceae (Shirôzu 1957), Balsaminaceae (Uhmman 1961b), Betulaceae (Mizukoshi *et al.* 2011; Takizawa 1978; Hua 2002), Celastraceae (Hua 2002), Commelinaceae (Uhmman 1953b), Cyperaceae (Uhmman 1961b), Dioscoreaceae (Wheeler *et al.* 2007), Euphorbiaceae (Uhmman 1958b), Fabaceae (Uhmman 1961b; Sun *et al.* 2006), Fagaceae (Chûjô & Kimoto 1961; An *et al.* 1985; Takizawa 1994; Hua 2002; Lee & Cheng 2010; Lee 2009), Flacourtiaceae (Hua 2002), Hypoxidaceae (Hua 2002), Juglandaceae (Hua 2002), Lamiaceae (Gressitt 1950; Hua 2002), Lythraceae (Kalshoven 1951), Malvaceae (Uhmman 1961b), Marantaceae (Uhmman 1961b), Moraceae (Uhmman 1950), Onagraceae (Uhmman 1961b), Poaceae (Zehntner 1894; Schultze 1916; Collart 1928; Maulik 1932; Uhmman 1935, 1955b, 1956a, 1961a, 1958b, 1961b, 1962; Paulian 1949; Gressitt 1950; Risbec 1950; De & Konar 1954; Kalshoven 1957; Demaux 1961; Tiberghien 1976; Zaka-Ur-Rab 1991; Maddison 1993; Barrion & Litsinger 1994; Banwo *et al.* 2001a; Hua 2002; Lee & Cheng 2007; Dai *et al.* 2012; Zaitsev 2012), Polygonaceae (Ding *et al.* 2000), Rosaceae (Maulik 1937; Gressitt 1950; Uhmman 1956a; Takizawa 1978; An *et al.* 1985; Booth *et al.* 1990; Hua 2002; Lee & Cheng 2007, 2010; Lee 2009; Gupta *et al.* 2012; Zaitsev 2012),

Rubiaceae (Ritchie 1929; Bernard 1924; Kalshoven 1957; Uhmman 1956a, 1957b), Rutaceae (Hua 2002), Sterculiaceae (Uhmman 1929, 1949a, 1968a; Kimoto 1999), Tilaceae (Hua 2002), Ulmaceae (Lee & Cheng 2010), Verbenaceae (Chûjô & Kimoto 1961), Zingiberaceae (Bernard & Menzel 1924), Zygophyllaceae (Maulik 1919a).

Key to south Indian species of *Dactylispa* Weise, 1897.

1. Anterior margin of pronotum with two groups of two spines in each group..... 2
 - Anterior margin of pronotum with two groups of more than two spines in each group..... 19
2. Lateral sides of pronotum with three spines..... 3
 - Lateral sides of pronotum with four spines..... 18
3. Body entirely black..... 4
 - Body not entirely black..... 7
4. All three spines on lateral sides of pronotum arising from a common base..... 5
 - Anterior two spines arising on a common stalk; third spine separate..... 6
5. Third lateral spine on pronotum longer than first or at least not shorter than first..... *D. perroteti* (Guérin-Méneville, 1841)
 - Third lateral spine on pronotum distinctly shorter.....
.....*D. krishna* Maulik, 1919 status restored
6. Punctural rows on elytra regular, elytra sparsely setose, marginal spines comparatively more in number.....*D. spinipes* Weise, 1905
 - Punctural rows on elytra little confusing, elytra more setose, marginal spines comparatively less in number..... *D. cinchonae* Uhmman, 1961
7. Third lateral spines on pronotum long, at least not shorter than either of the anterior two..... 8
 - Third lateral spines shorter than either of the anterior two.....11
8. Pronotum with three transversely arranged raised shining impunctate prominences *D. corpulenta* Weise, 1897
 - Pronotum without any raised impunctate prominences..... 9
9. Antennomere III subequal to I; spines on lateral sides of pronotum yellowish with darker apex..... *D. chanchala* Basu & Saha, 1977
 - Antennomere III shorter than I; spines on lateral sides of pronotum black or piceous..... 10
10. Pronotum opaque and densely pubescent... *D. filiola* Weise, 1897 status restored

- Pronotum shining and sparsely pubescent..... ***Dactylispa* sp. 3 nr. *filio***
- 11. Length 7.0 mm or more; pronotum with slightly raised horse shoe-shaped granulate area..... ***D. longicornis* (Motschulsky, 1861)**
- Length 3.0–6.0 mm; pronotum without such granulate raised area..... 12
- 12. Dorsum uniformly black or dark brown ***D. pitapada* Maulik, 1919**
- Ground colour of dorsum yellow to dark brown with at least some elytral spines black 13
- 13. Pronotum with three longitudinal tubercles in middle....***D. higoniae* (Lewis, 1896)**
- Pronotum without any longitudinal tubercles in middle.....14
- 14. Pronotum without any transverse, impunctate and asetose raised area in middle.....15
- Pronotum with a transverse, impunctate or less punctate and asetose raised area in middle..... 16
- 15. Antennae more or less uniformly thickened, entirely reddish brown in colour; elytra glabrous, marginal spines on elytra closer, spines on apical margin very minute..... ***Dactylispa* sp. 2 nr. *higoniae***
- Antennomeres III–VI very slender, VII–XI distinctly thickened; elytra sparsely clothed long erect setae, marginal spines on elytra widely spaced and alternated with long and short spines, spines on apical margin subequal to shortest spines on lateral margins..... ***D. nalika* Maulik, 1919**
- 16. Third lateral spine on pronotum contiguous with anterior two, but not on same stem ***D. praefica* Weise, 1897**
- Third lateral spine on pronotum completely free and distinctly separated from anterior two 17
- 17. Raised area in middle of pronotum narrower; border not straight, interrupted with punctures ***Dactylispa* sp. 1 nr. *albopilosa***
- Raised area strongly convex, smooth and comparatively broader, with a longitudinal impressed line in between them; border more or less straight and not interrupted with punctures, often bordered with dark patches
- ***D. albopilosa* (Gestro, 1888)**
- 18. Spines on lateral margins of pronotum appendiculate, all four spines arising from a common base..... ***D. andrewesiella* Weise, 1905**

- Spines on lateral margins of pronotum not appendiculate, first three spines arising from a common base, third separate but closer to the base of anterior group..... ***D. gairi* Maulik, 1919**
- 19. Ground colour of dorsum shining black..... ***D. parbatya* Maulik, 1919**
- Ground colour of dorsum yellow, yellowish brown or reddish brown..... 20
- 20. Humerus prominent, with a series of 6–7 slightly backwardly curved strong black spines..... ***D. humeralis* Weise, 1905**
- Humerus not so prominent, with less than six strong spines..... 21
- 21. Spines on lateral sides of pronotum not appendiculate..... 22
- Spines on lateral sides of pronotum appendiculate..... 23
- 22. Lateral sides of pronotum with three unbranched spines, first two arising from a common base, third separate; spines on lateral margins of elytra slightly curved backwards..... ***D. sjoestedti* Uhmans, 1928**
- Lateral sides of pronotum with four unbranched spines, first three broadly united basally before joining to the pronotal margin, third single but closer to the base of anterior group; spines on lateral margins of elytra straight.....
..... ***D. chaturanga* Maulik, 1919**
- 23. Spines on lateral sides of elytra short, uniform in length and distinctly curved backwards..... 24
- No such combination of characters..... 25
- 24. All principal spines on lateral margin of pronotum subequal in length, independently and broadly joined with pronotum..... ***D. kantakita* Maulik, 1919**
- First two joined through a short stalk, third shorter, separate and arises from near the base of anterior group ***D. anula* Maulik, 1919**
- 25. Interocular space nearly as wide as the distance between two groups of spines on anterior margin of pronotum; each elytron with 12–15 marginal spines..... ***D. tarusama* Maulik, 1919**
- Width of interocular space at narrowest part nearly equals to 0.5X distance between two groups of spines on anterior margin of pronotum; each elytron with 18–19 marginal spines..... ***D. jonathani* Basu & Saha, 1977**

***Dactylispa albopilosa* (Gestro, 1888)**

(Map 14)

Hispa albopilosa Gestro 1888:181 (type: Burma, Thagata, MCSN).*Dactylispa albopilosa* (Gestro). Weise 1897:131.*Dicladispa albopilosa* (Gestro). Anand 1997:9.*Hispa discicollis* Gestro 1890:254 (type: Burma, Pegu, Palon, MCSN).*Dactylispa discicollis* (Gestro). Weise 1897:135.*Dicladispa discicollis* (Gestro). Anand 1997:9.*Hispa maculata* Gestro 1890:252 (type: Burma, MCSN).*Dactylispa maculata* (Gestro). Weise 1897:149.*Dicladispa maculata* (Gestro). Anand 1997:9.*Dactylispa soror* Weise 1897:134 (type: India, Belgaum; Kanara, BMNH, ZMHB).*Hispa soror* (Weise). Donckier 1899:611.*Dicladispa soror* (Weise). Anand 1997:9.*Dactylispa kamarupa* Maulik 1919a:223 (type: India, Assam, Mazbat, NZSI?).*Dactylispa maculata kamarupa* (Maulik). Uhmman 1949a:670.*Dicladispa kamarupa* (Maulik). Anand 1997:9 (morphology).

Diagnosis: Length 3.75–5.00 mm, width 1.55–2.20 mm. Body elongate. Colour yellow to testaceous; collar darker in some individuals; colour of antennae varies from concolorous with vertex to entirely piceous; mouth parts dark brown, palpi paler; pronotum varies from yellow to entirely brown or black, transverse raised area surrounded by dark brown or piceous patches in several specimens; spines on pronotum tipped with dark brown or black; scutellum yellowish; discal spines on elytra and their bases dark brown to black, marginal spines paler with dark apices, entirely black in some individuals; venter concolorous with dorsum; femora and tibiae paler than their respective sternites; tarsomeres slightly darker than their respective tibiae. Interocular space as high as eyes; anterior margin of pronotum with a pair of spines on each side; lateral sides with three spines, first two on a common stalk, third being separate and shortest; all pronotal spines with setose spinules; disc of pronotum with a transverse raised, smooth and impunctate area in middle; each elytron with 15–17 discal spines, 12–16 marginal spines; marginal spines alternated with long and short spines, spines longer towards base and shortened towards apex. Femora with irregular denticles.

Distribution: India (Arunachal Pradesh, Assam, Karnataka, Kerala, Maharashtra, Sikkim, Tamil Nadu, West Bengal). *Elsewhere:* Bangladesh, Indonesia, Malaysia, Myanmar, Nepal, Sri Lanka (Asia).

Host plants: Poaceae: Bamboo, *Coix lacryma-jobi* L., *Panicum maximum* Jacq. (**New record**); *Sorghum bicolor* (L.) Moench (De & Konar 1954, Zaka-Ur-Rab 1991); *Zea mays* L. (Risbec 1950); Rosaceae: Plum tree (= *Prunus domestica* L.) (Maulik 1919a); Zygophyllaceae *Guaiacum* sp. (Maulik 1919a).

Remarks: This species is closely allied to *Dactylispa* sp. 1 nr. *albopilosa* due to their identical body form, colouration and arrangement of spines on pronotum and elytra. However, both species can be differentiated by the degree of development of the raised transverse area on the pronotum. In *D. albopilosa*, this area is prominent, often with dark border, and the basal transverse depression is shallower, while in *Dactylispa* sp. 1 nr. *albopilosa*, the raised transverse area is weakly developed with its borders rugged with punctures, and the basal transverse depression is stronger.

In the present study, *D. albopilosa* was collected on various grasses (Poaceae) confirming the previous reports by Risbec (1950), De & Konar (1954) and Zaka-Ur-Rab (1991).

Material examined (n=114): 1 unsexed. INDIA: Karnataka / Mudigere / 20.ix.2004 / Prathapan Coll.; 1 unsexed. India: Karnataka / Kudremukha N.P. / N 13° 17' 0.21" E 75° 7' 47.6" / 12.v.2011 / D. Prathapan & K. Shameem Coll.; 4 unsexed. INDIA: Kerala / Vellayani / 1.ii.2011 / Shameem Coll.; 4 unsexed. Same data except dating 3.ii.2011; 1 unsexed. Same data except dating 7.ii.2011; 4 unsexed. Same data except dating 8.ii.2011; 1 unsexed. Same data except dating 11.ii.2011; 1 unsexed. Same data except dating 22.ii.2011; 3 unsexed. Same data except dating 24.ii.2011; 1 unsexed. Same data except dating 3.iv.2011; 1 unsexed. Same data except dating 1.vii.2011; 2 unsexed. Same data except dating 20.vii.2011; 3 unsexed. Same data except dating 07.ix.2011; 1 unsexed. Same data except dating 16.ix.2011; 1 unsexed. Same data except dating 24.i.2012; 1 unsexed. India: Kerala / Vellayani / N 08° 25' 47.5" E 76° 59' 8.3" / 16.ii.2012 18 m / Shameem K. Coll. / Ex Bamboo; 1 unsexed. India: Kerala / Vellayani / 15.xi.2013 / Shameem K. Coll.; 10 unsexed. India: Kerala / Tirur Railway Station / 2.xi.2013 / Shameem KM Coll. / Ex *Coix lacryma*; 4 unsexed. India: Kerala / Shendurney WLS / Rose Mala 225 m / N 08° 54' 49.5" / E 77° 10' 54" / 18.ii.2011 / Prathapan K.D. Coll.; 4

unsexed. Same data except collector Shameem K.; 8 unsexed. India: Kerala / Calicut University / Botanical Garden / 9.i.2012 / Shameem K. Coll.; 1 unsexed. India: Kerala / Calicut Univ. Campus/ 28.ix.2012 / Shameem K. Coll.; 2 unsexed. INDIA: Kerala / Calicut Univ. / 10.ix.2011 / Shameem Coll.; 1 ♀, 2 unsexed. India: Kerala / Thiruvambady, Vellarimala /13.ix.2014 / Shameem K.M. Coll.; 1 ♀, 1 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 15.ix.2014 / Shameem K.M. Coll.; 3 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 2015 / Shameem KM Coll.; 2 unsexed. India: Kerala / Tirurangadi / 14.vii.2013 / Shameem K. Coll. / Ex Bamboo; 1 unsexed. India: Kerala / Tirurangadi / 6.ix.2014 / Shameem K.M. Coll.; 1 unsexed. INDIA: Kerala / Tirurangadi / 13.viii.2011 / Shameem K Coll.; 4 unsexed. India: Kerala / Trivandrum: Kollayil / N 08° 47' 20.5" / E 77° 0' 54.3" 119 m / 31.viii.2013 / Prathapan D. & Shameem K. Coll.; 3 unsexed. India: Kerala / ICRI Campus / Myladumpara / 12.iv.2013 / Prathapan KD Coll.; 1 ♀, 6 unsexed. India: Kerala / Nadukani Pass / N 11° 23' 35.8" E 76° 21' 45.0" / 13.x.2012 259 m / Prathapan & Shameem Coll.; 1 ♀, 6 unsexed. (1) India: Kerala / Ponmudi- Kallar / N 8° 45' 4.7" E 77° 7' 33.5" / 29.xi.2011 860 m / D. Prathapan & K. Shameem Coll., (2) Hisp 31; 2 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" / E 77° 01' 46.1" 236 m / 31.viii.2013 / Prathapan D & Shameem K Coll.; 2 unsexed. Same data except dating 13.xi.2014 and collector Shameem KM; 1 unsexed. India: Kerala / Arippa / 11.i.2014 / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Ponmudi / N 8° 45' 57.8" E 77° 6' 38.7" / 29.xii.2011 1034 m / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Kerala / Ponmudi / 28.v.2011 1034 m / D. Prathapan & K. Shameem Coll.; 2 unsexed. INDIA: Kerala / Pampadumpara / 03.iii.2011 / Shameem Coll.; 2 unsexed. INDIA: Kerala / Ponmudi-Kallar Rt. / 2.x.2011 / Shameem K Coll.; 1 unsexed. INDIA: Kerala / Kallar-Anappara / 29.II.2011 / Shameem Coll.; 1 unsexed. INDIA: Kerala Calicut-Mananchira / 29.vi.2011 / Nikhila P. Coll.; 1 unsexed. INDIA: Kerala / Kolahalamedu / 27.ii.2011 / Shameem Coll.; 1 unsexed. India: Kerala / Nedumangad- 8 km to Palode / 31.viii.2013 / Prathapan D & Shameem K Coll. / Ex Grass; 1 unsexed. India: Kerala / Janakikkadu / 27.xi.2013 / Shameem K Coll.; 1 unsexed. India: Kerala / Silent Valley N.P. / Mukkali / 19.i.2013 / Shameem K. Coll.; 1 unsexed. India: Kerala / RARS Pattambi / 10.ix.2013 / Ranjith R. Coll.; 1 unsexed. India: Kerala / Neyyar W.L. San. / 8.II.2002 / Prathapan Coll.; 1 unsexed. INDIA: Kerala / Shendurney / 13.iv.2002 / Prathapan Coll.; 1 unsexed. India: Kerala / Bonacaud-Pandipath / N 08° 41' 01.6" / E 77° 11' 24.0" 1276 m / 9.iv.2017 / Shameem KM Coll.

***Dactylispa andrewesiella* Weise, 1905**

Dactylispa andrewesiella Weise 1905b:118 (type: India, Nilgiri Hills, ZMBH, BMNH).

Dicladispa andrewesiella (Weise). Anand 1997:9.

Distribution: India (Tamil Nadu).

Host plants: Unknown.

Material examined: Nil.

***Dactylispa anula* Maulik, 1919**

(Map 14)

Dactylispa anula Maulik 1919a:243 (type: India, Assam, Patkai Hills, BMNH).

Dicladispa anula (Maulik). Anand 1997:9.

Diagnosis: Length 5.00 mm, width 2.44 mm. Oblong, yellowish brown; antennae uniformly coloured; mouth parts except palps brownish; two broad longitudinal bands on pronotum, basal corners of scutellum, most of discal spines on elytra, exterior apical angles and their 2–3 marginal spines, suture adjacent to scutellum, a small circular spot between humerus and scutellum near basal margin, a longitudinal irregular patch on humerus, a circular spot between humerus and lateral margin black; mesepisternum and metepisternum partly dark brown; legs except tarsi paler than venter; tarsi darker than respective tibiae. Interocular space depressed than eyes, with a row of setae around eyes; eyes very closer; shortest distance between eyes equal to half distance between two groups of spines on anterior margin of pronotum; collar strongly constricted. Antennae long and slender, reaching 3/4th of body; uniformly setose, basal two antennomeres less setose. Anterior margin of pronotum with a pair of three spines; first two on a common stalk, stalk longer than the spines; third vertical, longest, bears a short and setose spinule anteriorly; lateral margins with three principal spines arising from a common base; first two stalked and subequal in length; third shorter, separate but contiguous at base, first two and sometimes third bears small spinules; disc transversely depressed before middle, weakly raised in middle; surface coarsely and densely punctate with semi-erect setae; a narrow longitudinal area along middle impunctate and asetose; medial sulcus distinct. Scutellum triangular, apex rounded, surface granulate, weakly depressed on top in distal half. Elytra clothed with long setae; each elytron with 20–24 discal spines and about 23 marginal spines; marginal spines backwardly curved, long and more or less uniform in length in basal 2/3rd, spines shorter at apical margin.

Distribution: India (Assam, Karnataka). *Elsewhere:* Nepal (Asia). **New record from south India (Karnataka).**

Host plant: Probably feeds on *Strobilanthes* sp. (Acanthaceae).

Remarks: This is the first report of the occurrence of *D. anula* in south India. A single specimen of this species was collected from Abbi Falls, Coorg District, Karnataka. *Dactylispa anula* resembles *D. jonathani* and *D. tarusama* in body form and coloration. However, it can be easily distinguished from them by numerous (about 23) short, closely placed, and backwardly curved spines present on the lateral margins of the elytra. In *D. jonathani* and *D. tarusama*, these spines are straight, longer, and widely spaced. *Dactylispa tarusama* differs from *D. jonathani* in the proportionate length of antennomeres and the number of spines present on the lateral margins of the elytra. In *D. tarusama*, antennomere III is the longest and distinctly longer than I, and the elytra possess about 12–15 marginal spines. However, in *D. jonathani*, antennomere III is shorter than I, and the lateral margins of the elytra possess 18–19 spines.

Material examined (n=1): 1 unsexed. India: Karnataka / Abbi Falls / N 12° 27' 32", E 75° 43' 11.1" / 18.v.2011 1038 m / D. Prathapan & K. Shameem Coll.

***Dactylispa chanchala* Basu & Saha, 1977**

Dactylispa chanchala Basu & Saha 1977:383 (type: India, West Bengal. Near Barbati Busti, ZSI).

Distribution: India (Kerala, Sikkim, West Bengal).

Host plants: Unknown.

Material examined: Nil.

***Dactylispa chaturanga* Maulik, 1919**

(Map 14)

Dactylispa chaturanga Maulik, 1919a:237 (type: India, Madras, Nilgiri Hills, BMNH).

Dactylispa (Triplispa) chaturanga Maulik. Borowiec & Sekerka 2010:385.

Dicladispa chaturanga (Maulik). Anand 1997:9.

Dactylispa haturanga Maulik (sic). Zaitsev 2012:310.

Diagnosis: Length 3.50 mm, width 1.85 mm (size “about 5 mm” in Maulik 1919a). Oblong, yellowish brown; two broad patches on pronotum, discal spines on elytra and their bases, extending into punctural rows at some areas, 3–4 marginal spines on exterior apical angle black; rest of spines on elytra and pronotum yellow with dark apices; lateral sides of sternum slightly darker. Interocular space depressed than eyes, with a row of long setae around eyes; surface granulate; distinct medial sulcus present; eyes larger and strongly convex; collar strongly constricted. Antennae comparatively shorter; III–VI antennomeres subequal in length, VII slightly longer; VII–XI more pubescent. Anterior margin of pronotum with a pair of three spines; first two on a common stalk, stalk longer and vertical. Lateral margins with four spines arising from a common base; first three more or less equal in length and broadly fused basally before joining pronotal margin; fourth shortest; disc slightly convex, without anterior transverse depression; coarsely and densely punctate with semi-erect long setae except on a narrow longitudinal area along middle. Scutellum triangular, apex rounded, surface granulate, weakly depressed on top near apex. Each elytron with about 30 discal spines including shorter spines and 17 marginal spines; marginal spines nearly straight, longer and more or less uniform in length in basal 2/3rd; spines on apical margin shorter.

Distribution: India (Kerala, Tamil Nadu). *Elsewhere:* China, Myanmar, Thailand, Vietnam (Asia). **New record from Kerala.**

Host plants: Rosaceae: *Malus sylvestris* (L.) Mill. (Hua 2002); *Rubus* sp. (Zaitsev 2012).

Remarks: *Dactylispa chaturanga* is unique among congeneric members from south India due to the presence of a pair of three spines on the anterior margin of the pronotum, combined with the presence of four spines on its lateral sides.

Material examined (n=1): 1 unsexed. India: Kerala / Kallar, 25.iii.2018 / N 8° 41' 48.9", E 77° 7'53.6" / S. R. Hiremath Coll.

***Dactylispa cinchonae* Uhmman, 1961**

Dactylispa cinchonae Uhmman 1961a:46 (type: South India, Anamalai Hills, Cinchona, NMNH).

Distribution: India (Kerala).

Host plants: Unknown.

Material examined: Nil.

***Dactylispa corpulenta* Weise, 1897**

(Map 14)

Dactylispa corpulenta Weise, 1897:132 (type: India, Kanara, BMNH, ZMHB).

Hispa corpulenta (Weise). Donckier 1899:604.

Dicladispa corpulenta (Weise). Anand 1997:9.

Diagnosis: Length 3.95–4.85 mm, width 2.10–2.50. Body oblong, more or less stout, yellow to yellowish brown; antennae brownish, first two antennomeres often darker than rest; large discal spines on elytra, discontinuous patches, and 3–4 marginal spines on exterior apical angle dark brown or black; rest of spines on elytra and pronotum yellowish tipped with black or brown; venter yellow; anterior margin of prosterna, dorsal margin of mesepimera darker in some; mesepisterna and mesepimera partly darker; all coxae partly dark brown in some, tarsomeres darker than respective tibiae. Interocular space depressed medially; surface granulate, with a distinct medial sulcus and an indistinct row of setae around eyes; collar strongly constricted. Antennae longer, nearly reaching middle of body; distal five antennomeres more pubescent than basal ones. Anterior margin of pronotum with a pair of two spines. Lateral sides with three spines on a common stalk; anterior two subequal and joins together before attaching third; third slightly longer than rest; disc with three transversely arranged granulate prominences, medial sulcus distinct on median prominence. Scutellum granulate and triangular. Elytra slightly broadened towards apex; punctures large, more or less quadrate, each with single short seta arising from its margin; each elytron with about 25 prominent spines in addition to numerous minute spines along suture and all over the elytra; 14–17 marginal spines; marginal spines longer towards base, gradually shortened towards apex; spines on apical margin shorter. Ventrites granulate, punctate and sparsely clothed with long setae. Femora smooth and devoid of ventral spines.

Distribution: India (Kerala, Karnataka). *Elsewhere:* China, Laos, Nepal, Taiwan, Vietnam (Asia).

Host plants: Malvaceae: *Helicteres isora* L., *Sterculia guttata* Roxb. (**New record**).

Remarks: This species can be readily identified by its three transversely placed prominences in the middle of the pronotum.

Material examined (n= 54): 1♀. India: Karnataka / Kottigehara / N 13° 7' 7.7" E 75° 30' 37.9" / 8.v.2011 938 m / D. Prathapan & K. Shameem Coll.; 3 unsexed. (1) India: Kerala / Silent Valley N.P. / Sirendri-Nilikkal/ 21.i.2013 / Shameem K. Coll., (2) Hisp 37; 5F, 3 unsexed. (1) India: Kerala / Silent Valley Nat. Park / Varappara / N 11° 02' 32.8" E 76° 31' 32.1" / 14.xi.2011 759 m / Prathapan & Shameem Coll., (2) Hisp 37; 1 unsexed. India: Kerala / Silent Valley N. P. / Nilikkal / 22.i.2013 / Shameem K. Coll.; 3♀, 5 unsexed. (1) India: Kerala / Silent Valley N.P. / Nilikkal-Poochipara / 22.i.2013 / Shameem K. Coll., (2) Hisp 37; 7 unsexed. INDIA: Kerala / Vallamkulam / 13.ii.2011 / Prathapan K.D. Coll.; 1♀, 2 unsexed. . India: Kerala / Arippa / N 08° 50' 11.0" / E 77° 01' 46.1" 236 m / 3.viii.2013 / Prathapan D. & Shameem K. Coll.; 1 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" / E 77° 01' 46.1" 236 m / 13.xi.2014 / Shameem KM Coll.; 1♀, 3 unsexed. India: Kerala / Tirurangadi / 1.xi.2012 / Shameem Coll.; 1 unsexed. INDIA: Kerala / Calicut Univ. / 10.ix.2011 / Shameem Coll.; 2♀, 3 unsexed. India: Kerala / Calicut Univ. Campus/ 20.xi.2012 / Shameem K Coll.; 3 unsexed. (1) INDIA: Kerala / Periyar Tig. Res. / 02.iii.2011 / Shameem Coll., (2) HP 19; 1 unsexed. INDIA: Kerala / Arippa / 8.ii.2004 / Prathapan Coll.; 2 unsexed. India: Kerala / Janakkikadu / 23.ii.2016 / Ranjith AP Coll.; 1 unsexed. India: Kerala / Perinthalamanna / N 11° 03' 05.6" E 76° 13' 55.6" / 13.xi.2012 819 m / Prathapan & Shameem Coll., 1♀. India: Kerala / Ponmudi / 21.iii.2012 / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Palode / 31.vii.2013 / Prathapan D & Shameem K Coll.; 1 unsexed. India: Kerala / Trivandrum, Kallar / N 08° 42' 30.9" / E 77° 07' 59.7" 160 m / 4.xi.2014 / Shameem KM Coll.; 1 unsexed. India: Kerala / Nadukani Pass / N 11° 23' 35.8" E 76° 21' 45.0" / 13.x.2012 259 m / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / JNTBGRI Campus / N 08° 45' 10.1" E 77° 01' 30.8" / 28.iv.2013 114 m / Prathapan KD Coll.

***Dactylispa filiola* Weise, 1897 status restored**

(Map 14)

Dactylispa filiola Weise, 1897:135 (type: India, Kanara, BMNH).

Hispa filiola (Weise). Donckier 1899:605.

Di cladispa piliola (Weise) [sic]. Anand 1997:9.

Dactylispa flavomaculata Uhmman, 1930b: 133 (type: Vietnam, Nord-Tonkin, Ha-Lang, DEI).

Diagnosis: Length 3.12–3.93 mm, width 1.37–1.97 mm. Body oblong. Head, antennae, disc of pronotum except anteriorly and basally, spines on lateral margins of pronotum, scutellum, larger spines on elytra, venter dark brown to black; spines on anterior margin of pronotum tipped black or dark brown; ground colour of elytra and legs yellowish. Interocular space more or less in same level as eyes, deeply sulcated medially, with a row of silvery setae encircling eyes. Antennae nearly reaching middle of body; apical five antennomeres slightly thickened and more pubescent than basal III–VI antennomeres. Anterior margin of pronotum with a pair of two spines; anterior and posterior spines of each pair make an acute angle, posterior spine slightly longer than anterior one. Lateral margin with three spines on a short stalk, first two joined together before joining with third; disc coarsely punctate, densely pubescent and clothed with longer semi erect setae behind anterior pair of spines; disc in front of anterior pair of spines smooth, impunctate and aetose. Scutellum triangular, apex broadly rounded, surface granulate with a circular depression in middle. Elytra parallel-sided, punctural striae regular, scutellar row distinct; punctures circular, each with a single long erect setae arising from its margin; each elytron with 18 prominent discal spines, with three spines on humerus, first two spines on humerus distinctly shorter than third; elytral margin with 12 spines, spines on lateral margin not in uniform in length, spines longer towards base and shortened towards apex; distinctly shorter at apical margin. Ventral sides clothed with long setae; claw tarsomere projects beyond bilobed third tarsomere.

Distribution: India (Karnataka, Kerala, Maharashtra and Tamil Nadu). *Elsewhere:* China, Sri Lanka (Asia).

Host plant: Poaceae: *Oryza sativa* L. (New record).

Remarks: *Dactylispa filiola* is similar to *D. feae*, a species described by Gestro (1888) from Myanmar. Maulik (1919a) separated both species primarily based on their differences in the arrangement of spines on the lateral margins of the pronotum. In *D. feae*, all three lateral spines on the pronotum arise independently from a common base and are never stalked, while in *D. filiola*, the spines are placed on a short stem, and the first two join together at a higher point before joining with the third. Würmli (1976b) considered these differences as merely variations and thus synonymized *D. filiola* with *D. feae*. However, later workers such as Basu (1919) and Borowiec & Świątojańska (2007) treated *D. filiola* as a distinct species without formally reviving its species status.

Dactylispa filiola closely resembles *Dactylispa* sp. 3 nr. *filiola* due to its similar body form, coloration and arrangement of spines on pronotum. However, *D. filiola* can be differentiated from *D. filiola* by the following characters: pronotum opaque and densely setose, spines on lateral margin of elytra not of uniform length, spines on apical margin distinctly shorter and equals to 1/5th length of spines in middle of elytra, and first two spines on humerus distinctly shorter than third spine. While in *Dactylispa* sp. 3 nr. *filiola*, pronotum shining and less setose, spines on lateral margins of elytra longer and uniform in length, spines on apical margins comparatively longer and equal to half or at least 1/3rd length of spines in middle of elytra, and first two spines on humerus comparatively longer than third spine.

Material examined (n= 76): 1 ♀, 19 unsexed. India: Karnataka / Castle Rock / 13.xi.2012 / Prathapan KD Coll.; 3 unsexed. India: Karnataka / Jog Falls / N 14° 13.962' / E 74° 48.793 515 m / 31.x.2013 / Prathapan KD Coll.; 1 unsexed. INDIA: Karnataka / Kottigehara / 22.IX.2004 / Prathapan Coll.; 2 unsexed. India: Karnataka / Kottigehara, Malaya Marutha / 13° 07' 06.2"N 75° 30' 17.9"E / 1.x.2017 / Shameem KM Coll. / Ex grass; 2 unsexed. INDIA: Kerala / Vellayani / 31.i.2011 / Shameem Coll.; 1 unsexed. same data except dating 2.ii.2011; 2 unsexed. same data except dating 8.ii.2011; 3 unsexed. same data except dating 24.v.2011; 14 unsexed. same data except dating 1.vii.2011; 4 unsexed. same data except dating 19.vii.2011; 1 unsexed. same data except dating 20.vii.2011; 3 unsexed. INDIA: Kerala / Vellayani / 20.vii.2011 / Shameem K. Coll.; 2 unsexed. same data except dating 29.vii.2011; 1 unsexed. India: Kerala / Vellayani / 80.viii.2012 / Shameem K. Coll.; 1 ♀, 7 unsexed. India: Kerala / Janakikkadu / 27.xi.2013 / Shameem K Coll.; 4 unsexed. India: Kerala / Ottapilavu / 6.x.2013 / Ranjith R. Coll. / Ex Rice; 3 unsexed. India: Kerala / Calicut, Mundoth / 10.x.2013 / Ranjith R. Coll. / Ex Rice; 2 unsexed. India: Kerala / Palakkad, Thenoor / 28.vii.2013 / Ranjith R. Coll. / Ex Rice; 1 unsexed. India: Kerala / Kannur, Ezhome / 5.viii.2015 / Rajesh KM Coll.; 1 unsexed. India: Kerala / Mongom / 12.i.2017 / Jalala Coll. / Ex Grass.

***Dactylispa gairi* Maulik, 1919**

Dactylispa gairi Maulik, 1919:227 (type: India, Madras, Nilgiri Hills, BMNH).

Distribution: India (Tamil Nadu).

Host plants: Unknown.

Material examined: Nil.

***Dactylispa higoniae* (Lewis, 1896)**

Hispa higoniae Lewis, 1896:342 (type: Japan, Higo, Yuyama, BMNH).

Dactylispa higoniae (Lewis). Weise 1911:66.

Dactylispa (Triplispa) higoniae (Lewis) (sic). T'an & Yu 1993:353

Dactylispa higoniae higoniae (Lewis). Hua 2002:290

Dactylispa (Triplispa) higoniae higoniae (Lewis). Borowiec & Sekerka 2010:386

Hispa platyprioides Gestro, 1890:262 (type: Burma, MCSN).

Dactylispa asoka Maulik, 1919a:218 (type: India, Madras, Nilgiri Hills, BMNH).

Dicladispa asoka (Maulik). Anand 1997:9.

Dactylispa corpulentina Uhmann, 1927b: 113 (type: Taiwan, Hokuto; Chosokei; Paroe; Kankau; Kosempo; Taihoku, DEI).

Dactylispa (Triplispa) higoniae szechuanensis Chen & T'an, 1961:472 (type: China, Szechuan, IZAS).

Distribution: India (Tamil Nadu, Sikkim). *Elsewhere:* Bhutan, China, Japan, Laos, Myanmar, Nepal, Taiwan, Thailand, Vietnam (Asia).

Host plant: Verbenaceae: *Callicarpa mollis* Siebold & Zucc. (Chûjô & Kimoto 1961).

Material examined: Nil.

***Dactylispa humeralis* Weise, 1905**

Dactylispa humeralis Weise, 1905b:202 (type: India, Nilgiri Hills, ZMHB, BMNH).

Dicladispa humeralis (Weise). Anand 1997:9.

Distribution: India (Tamil Nadu). *Elsewhere:* Nepal (Asia).

Host plants: Unknown.

Material examined: Nil.

***Dactylispa jonathani* Basu & Saha, 1977**

Dactylispa jonathani Basu & Saha, 1977:379 (type: India, West Bengal, Rangirum, ZSI).

Distribution: India (Kerala, Uttar Pradesh, West Bengal).

Host plants: Unknown.

Material examined: Nil.

***Dactylispa kantakita* Maulik, 1919**

(Map 14)

Dactylispa kantakita Maulik, 1919a:239 (type: India, Madras, Nilgiri Hills, BMNH).

Dicladispa kantakita (Maulik). Anand 1997:9.

Diagnosis: Length 4.10 mm, width 2.20 mm. Oblong, yellowish brown; antennae dark brown and uniformly colored; two longitudinal patches on pronotum, discal spines of elytra and their bases, a single spine at exterior apical angle dark brown; rest of marginal spines on elytra and all spines on pronotum yellow tipped with dark brown. Interocular space strongly depressed than level of eyes; densely setose towards sides of eyes; collar strongly constricted. Pronotum coarsely and densely punctate; densely setose; disc transversely raised in middle; distinct medial sulcus present; anterior margin with a pair of three spines; first two directed forward and placed on a common stalk; first being smaller than second; third longest, vertical, short appendiculate spines; lateral margins with three principal spines arising from a common base; first two and sometimes the third branched. Scutellum triangular, apex rounded, surface granulate, weakly depressed on top in distal half. Elytra clothed with long setae; each elytron with 23 discal spines and about 22 marginal spines; marginal spines closely placed and backwardly curved, spines on anterior 1/3rd longer and then gradually shortened towards apex.

Distribution: India (Kerala, Tamil Nadu). *Elsewhere:* Myanmar (Asia). **New record from Kerala.**

Host plants: Unknown.

Remarks: *Dactylispa kantakita* resembles *D. anula* and *D. sjoestedti* in body form and arrangement of spines on the elytra. However, *D. anula* differs from both *D. kantakita* and *D. sjoestedti* in having longer antennae that reach up to the apical 1/3rd of the elytra. In *D. kantakita* and *D. sjoestedti*, the antennae are comparatively shorter and only reach up to the middle of the elytra. Additionally, in *D. anula*, the spines on the lateral margins of the pronotum are more or less straight, with the first two placed on a common stalk and the third one shorter and arising from its base. The spines on the lateral margins of the elytra are more or less uniform in length. On the other hand, in *D. kantakita* and *D. sjoestedti*,

the spines on the lateral margins of the pronotum are distinctly curved upwards and are broadly fused (three principal spines in the case of *D. kantakita*) with the pronotum, and the spines on the lateral margins of the elytra are shorter towards the apex. Furthermore, in *D. kantakita*, the antennae are dark brown, antennomere VII is distinctly shorter than III, and apical VII–XI are opaque, slightly thickened, and more pubescent compared to basal I–VI. In contrast, in *D. anula* and *D. sjoestedti*, the antennae are yellowish-brown and uniformly opaque, antennomeres III and VII are subequal in length, and VII–XI are not distinctly thickened or more pubescent than I–VI. *Dactylispa sjoestedti* can be distinguished from both *D. anula* and *D. kantakita* by the presence of a smooth, transverse, and raised area in the middle of the pronotum and its non-appendiculate or non-branched spines on the lateral margins of the pronotum.

Material examined (n=1): 1 unsexed. India: Kerala / KFRI, Palappilly / 12.v.2015 / Ranjith AP Coll.

***Dactylispa krishna* Maulik, 1919 status restored**

(Map 15)

Dactylispa krishna Maulik, 1919a:181 (type: India, Bombay, Castle Rock; Madras, Nilgiri Hills, NZSI?, BMNH). **Removed from synonymy with *Dactylispa spinipes* Weise, 1905.**
Dicladispa krishna (Maulik). Anand 1997:9.

Diagnosis: Length 4.56–5.62 mm, width 1.81–2.25 mm. Elongated, entirely black, collar and elytra shining. Interocular space as high as level of eyes, granulate with a row of adpressed setae around eyes; head behind eyes strongly constricted, smooth and shining. Antennae long and slender; proximal six antennomeres shining and sparsely setose; distal five slightly thickened, opaque and densely clothed with short setae. Anterior margin of pronotum with a pair of two spines having a common stem, distal spine, 2X times longer than proximal spine; lateral margins with a group of three spines standing on a common stem, second longer than others; first two with a common stalk; third shortest and arises from base of stalk; all pronotal spines bear minute setiferous spinules; disc behind anterior spines punctate, except on a transverse raised area in middle; punctures coarser and each possess short semi-erect seta. Scutellum triangular, apex broadly rounded; surface granulate with a weak depression in middle. Elytra slightly broadened near apex; rows confusing laterally; interstices sparsely clothed with short setiferous spinules; each elytron

with 13–14 discal spines; 12–13 marginal spines, basal 4 or 5 longer and widely separated; spines on apical margin shorter.

Distribution: India (Kerala, Karnataka, Tamil Nadu). **New record from Kerala.**

Host plants: Poaceae: Unidentified grasses (**New record**).

Remarks: *Dactylispa krishna* resembles *D. perroteti*, *D. pitapada* and *D. spinipes* in having similar black or piceous shiny dorsum. *Dactylispa pitapada* can be readily separated from the others by its fulvous ventral sides and legs (in all the others, body is entirely black or piceous). *Dactylispa krishna* and *D. perroteti* differ from *D. spinipes* in having all three spines on the lateral margin of the pronotum arising from a common base. In *D. spinipes*, the first two spines share a common base while the third is widely separated from the anterior two and arises from behind the middle of the pronotum. *Dactylispa krishna* differs from *D. perroteti* in having 1) a distinctly raised transverse area on the pronotum, 2) very short third lateral spine on the pronotum, and 3) scutellum devoid of depressions. Conversely, in *D. perroteti*, pronotum lacks a raised area in the middle, has a longer third spine that almost equals the second, and its scutellum bears a strong circular depression in the center.

Maulik (1919a) described *D. krishna* from the Nilgiris Hills. Takizawa (1987) synonymized *D. krishna* with *D. spinipes*, a closely related species described by Weise (1905b) also from the Nilgiris Hills, by considering their differences in the arrangement of pronotal spines as mere variations. However, in the present study, more than 30 specimens of each species collected from various localities of Karnataka and Kerala consistently showed these differences. This necessitates resurrection of *D. krishna* from synonymy with *D. spinipes*. Therefore, *D. krishna* and *D. spinipes*, are treated as separate species in this work.

Material examined (n=35): 1 unsexed. South India Western Ghats / Karnataka env. Madikeri / 19.XI.2003 1100 m dry forest / N 12° 28' 20" E 75° 42' 30" / leg. Konstantinov, Prathapan, Saluk; 1♀, 2 unsexed. India: Kerala / Silent Valley Nat. Park / Walakkad / N 11° 10' 33.7" E 76° 24' 39.6" / 17.xi.2011 1101 m / Prathapan & Shameem Coll.; 5♀, 13 unsexed. India: Kerala / Silent Valley Nat. Park / Walakkad–Sispara / 18.xi.2011 / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Silent Valley Nat. Park / Sairandhri / 20.xi.2011 / Prathapan & Shameem Coll.; 1♀. India: Kerala / Silent Valley Nat. Park / Sairandhri–Punnamala / 21.xi.2011 / Prathapan & Shameem Coll.; 1 unsexed.

India: Kerala / Silent Valley Nat. Park / Sairandhri–Poochippara / 22.xi.2011 / Prathapan & Shameem Coll.; 1 unsexed. India: Karnataka / Kottigehara / N 13° 7' 18.4" E 75° 29' 38.2" / 6.v.2011 920 m / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Karnataka / Kottigehara / 9.v.2011 / D. Prathapan & K. Shameem Coll.; 2 ♀, 1 unsexed. India: Karnataka / Kudremukha N.P. / 11.v.2011 / D. Prathapan & K. Shameem Coll.; 1 ♀, 1 unsexed. India: Karnataka / Jamboti / 11.xi.2012 / Prathapan KD Coll.; 3 unsexed. India: Karnataka / Castle Rock / 13.xi.2012 / Prathapan KD Coll.

***Dactylispa longicornis* (Motschulsky, 1861)**

(Map 15)

Hispa longicornis Motschulsky, 1861:240 (type: Burma, ZMUM).

Dactylispa longicornis (Motschulsky). Weise 1897:148.

Hispa severinii Gestro 1897a:129 (type: India, Barway, MCSN, ISNB).

Dactylispa severinii (Gestro). Weise 1911:68.

Di cladispa severini (Gestro). Anand 1997:9.

Dactylispa andrewesi Weise 1897:129 (type: India, Belgaum, BMNH).

Hispa indica (Weise). Donckier 1899:606.

Diagnosis: Length 5.54–6.93 mm, width 2.77–3.46 mm.

Body elongate. Colour yellow brown to red brown; antennae red brown and uniformly coloured; punctate area surrounding granular raised area on pronotum, scutellum partly or completely, discal spines of elytra, one or two marginal spines at exterior apical angle of elytra black; rest of spines on elytra and pronotum yellow with dark brown apex; venter concolorous with the ground colour of dorsum. Interocular space as high as level of eyes, with a row of sparse setae around eyes; eyes strongly convex; collar strongly constricted. Antennae long and slender, nearly reaching apical 1/3rd of elytra; filiform, antennomeres uniformly thickened except more thickened first antennomere. Anterior margin of pronotum with a pair of two spines, anterior one slightly shorter than posterior; lateral margin with three spines, first two on a common stalk, third being separate and shorter; all pronotal spines with setose spinules; disc with a horse-shoe shaped or U-shaped granular raised area in middle, with their arms directing anteriorly; rest of surface coarsely punctate with semi-erect, sparse, long setae. Each elytron with 16–17 discal spines, 17–18 marginal spines; marginal spines alternated with long and short spines, and much shorter

spines between them; spines longer towards base and shortened towards apex; spines at apical margin very shorter.

Distribution: India (Bihar, Karnataka, Kerala, Maharashtra, Uttar Pradesh). *Elsewhere:* Thailand (Asia).

Host plant: Unidentified dicotyledon.

Remarks: This species can be readily identified by its larger size and the presence of horse-shoe shaped granular raised area in the middle of the pronotum.

Material examined (n=17): 1 unsexed. India: Karnataka / Kottigehara / 9.v.2011 / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Karnataka / Kottigehara / 14.xi.2012 / D. Prathapan KD Coll. 1♀. 3 unsexed. India: Kerala / Kallar; 25.iii.2018 / N 8° 41' 48.9" E 77° 7' 55.6" / S. R. Hiremath Coll.; 4 unsexed. India: Kerala / PRS Panniyoor / 03.i.2018 / Amritha Kumari S. Coll.; 7 unsexed. India: Kerala / Sreekandapuram BDP / 04.i.2018 / Amritha Kumari S. Coll.

Dactylispa nalika Maulik, 1919

(Map 15)

Dactylispa nalika Maulik, 1919a:220 (type: India, Bombay, Matheran, BMNH).

Di cladispa nalika (Maulik). Anand 1997:9.

Diagnosis: Length 3.40–4.30 mm, width 1.45–2.15 mm. Oblong; colour yellowish brown to reddish brown; collar, mouth parts except palpi dark brown to black; basal 1 or 2 antennomeres in most individuals and apical three or five from VII onwards dark brown to black; two longitudinal patches in middle of pronotum which fuses into a single broader patch in some individuals dark brown to black, apices of pronotal spines darker; scutellum entirely yellow to dark brown; elytra generally yellow, largely suffused with black in some individuals, discal spines tipped black, 2nd and 3rd marginal spines near base, exterior apical angles and their spines, one or few spines before exterior apical angle darker, rest of marginal spines yellow tipped dark brown, all longer spines darker in a few individuals; ventral sides variable, entirely yellowish brown, mesosternum, parts of metasternum, episterna and epimera darker in many individuals; all coxae darker; all trochanters and all tarsi darker than their respective femora and tibiae. Interocular space slightly depressed medially, as wide as distance between two groups of spines on anterior

margin of pronotum; surface distinctly punctate and sparsely setose towards collar, setae longer and adpressed. Antennae long, reach middle of body; antennomeres III–VI narrower than rest. Anterior margin of pronotum with a pair of two spines, posterior spine vertical and slightly longer than anterior spine; lateral margins with three spines, first two placed on a common stalk, 2nd slightly longer than 1st, third being shortest and widely separated from anterior two; disc coarsely and densely punctate, sparsely clothed with long semi-erect setae; disc in front of anterior spines, a narrow transverse area near basal margin and narrow regions near lateral margins impunctate and asetose. Scutellum triangular, slightly constricted behind middle, apex broadly rounded; surface granulate, weakly depressed in distal half. Elytra little constricted in middle, distinctly widened apically; punctural-striae regular; punctures larger, subquadrate, each with a single long erect setae on margin; each elytron with 19–25 prominent discal spines; 11–15 marginal spines, alternated with long and short spines after middle, spines longer towards base and shorter towards apical margin. Prosternal process without lateral angulations. Ventrites punctate and clothed with long setae. Femora not denticulate.

Distribution: India (Karnataka, Kerala, Maharashtra, Tamil Nadu). **New record from Karnataka and Kerala.**

Host plants: Acanthaceae: *Strobilanthes* spp. (**New record**).

Remarks: *Dactylispa nalika* resembles *D. albopilosa* and *Dactylispa* sp. 1 in having a similar arrangement of spines on the pronotum and elytra. However, *D. nalika* can be easily distinguished from the others by its characteristic antennal coloration and the absence of a raised, transverse, and smooth area on the pronotum. Antennomeres I–II and VII–X in *D. nalika* are pitch-black in colour, whereas in *D. albopilosa* and *Dactylispa* sp. 1, the pronotum bears a transverse raised area in the middle, and the antennae are more or less uniformly red-brown. Additionally, *D. nalika* feeds on members of *Strobilanthes* Blume (Acanthaceae), whereas *D. albopilosa* and *Dactylispa* sp. 1 feed on grasses (Poaceae).

Material examined (n=36): 3 unsexed. (1) India: Karnataka / Kottigehara / 9.v.2011 / D. Prathapan & K. Shameem Coll., (2) *Strobilanthes*; 3 unsexed. Same data except dating 15.v.2011 and second label as *Strobilanthes*, winged stem; 1 unsexed. (1) India: Karnataka / Kudremukha Peak / 13.v.2011 / D. Prathapan & K. Shameem Coll., (2) *Strobilanthes*

Hisp 28; 1 unsexed. India: Karnataka / Abbi Falls / N 12° 27' 32" E 75° 43' 11.1" / 18.v.2011 1038 m / D. Prathapan & K. Shameem Coll.; 3 unsexed. India: Karnataka / Kottigehara / N 13° 7' 7.7" E 75° 30' 37.9" / 8.v.2011 938 m / D. Prathapan & K. Shameem Coll.; 1♀, 8 unsexed. (1) India: Kerala / Silent Valley N.P. / Nilikkal-Poochipara / 21.i.2013 / Shameem K. Coll., (2) Ex *Strobilanthes*; 1♀. India: Kerala / Silent Valley Nat. Park / Sairandhri / N 11° 7' 4.4" E 76° 20' 23.3" / 15.xi.2011 1030 / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Silent Valley Nat. Park / Varappara / N 11° 02' 32.8" E 76° 31' 32.1" / 14.xi.2011 759 m / Prathapan & Shameem Coll.; 9 unsexed. (1) India: Kerala / Elappara / 1.iii.2011 / Shameem K. Coll. (2) HP 17a; 1 unsexed. India: Kerala / Janakikkadu / 31.v.2013 / Ranjith Coll.; 1♀. India: Kerala / Janakikkadu / 6.ix.2013 / Ranjith R. Coll.; 1 unsexed. Same data except dating 29.vii.2014; 1♀. India: Kerala / Janakikkadu / 23.ii.2016 / Ranjith AP Coll.; 1 unsexed. India: Kerala / KFRI, Palapilly / 12.v.2015 / Ranjith AP Coll.

***Dactylispa parbatya* Maulik, 1919**

Dactylispa xanthopus Maulik, 1918:70 (not Gestro) (type: India, United Provinces, W. Almora; Sikkim, Darjeeling, Jalapahar, NZSI?, BMNH, MCSN).

Dactylispa parbatya Maulik, 1919:234.

Di cladispa parbatya (Maulik). Anand 1997:9.

Dactylispa (Triplispa) parbatya Maulik. Borowiec & Sekerka 2010:386.

Distribution: India (Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal). *Elsewhere:* Bangladesh, China, Myanmar, Nepal (Asia).

Host plant: Rosaceae: *Rubus* sp. (Maulik 1937).

Material examined: Nil.

***Dactylispa perroteti* (Guérin-Méneville, 1841)**

(Map 15)

Hispa perroteti Guérin-Méneville, 1841:9 (type: India, Nilgiri Hills, MNHN?).

Dactylispa perroteti (Guérin-Méneville). Weise 1897:144.

Di cladispa perroteti (Guérin-Méneville). Anand 1997:9.

Hispa brunnipes Motschulsky 1861:238 (type: Indonesia, Java, depository unknown).

Dactylispa brunnipes (Motschulsky). Weise 1897:149.

Dactylispa perroteti brunnipes (Motschulsky). Uhmann 1953a: 90.

Hispa trifida Chapuis 1877:55 (type: Malacca, ISNB, NMNH).

Dactylispa trifida (Chapuis). Weise 1897:149.

Dactylispa flavolimbata Gestro 1909(1910):138 (type: Borneo, Quop, Kutcing, MCSN).

Dactylispa perroteti flavolimbata Gestro. Uhmann 1954e:21.

Dactylispa xanthospila picipes Uhmann 1935: 149 (type: Indonesia, Java, Zuid Banjoemas, Koebangkangkoeng, depository unknown).

Dactylispa malayana Gestro, 1909 (1910):139 (type: Borneo, Kutcing, MCSN).

Dactylispa perroteti malayana Gestro. Uhmann 1949a: 670.

Dactylispa xanthospila Gestro. Uhmann 1935: 149.

Diagnosis: Length 3.70–4.95 mm, 1.75–2.3 mm (Length 5.00–5.50 in Maulik 1919). Oblong, entirely black, shining. Interocular space granulate, strongly depressed in middle. Antennae reaching middle of body; proximal six antennomeres sparsely setose, distal five slightly thickened and pubescent. Disc of pronotum strongly depressed transversely near base; weakly depressed anteriorly next to anterior pair of spines; surface rugose with dense and coarse punctures bearing semi-erect long setae; a small region varying in size, in middle impunctate and asetose; anterior margin with two very closely placed pairs of spines, distance between pairs shorter than minimum width of interocular space, proximal spine slightly shorter than distal; lateral sides with three spines on a common stalk; first two subequal and joins together before joining third; third slightly longer than rest. Scutellum smaller, subquadrate, narrowed apically, apex broadly rounded; surface smooth, shining with a large, circular, strong depression on top. Elytra subparallel, slightly widened apically; sparsely clothed with long setae; each elytron with 28–32 discal spines; 14–15 marginal spines; spines on lateral margins longer, slightly shortened distally; spines on apical margin shorter and uniform in length.

Distribution: India (Kerala, Tamil Nadu, West Bengal). *Elsewhere:* Indonesia, Malaysia, Philippines (Asia). **New record from Kerala.**

Host plant: Poaceae: Grass (Uhmann 1955b).

Remarks: See the “Remarks” section under *Dactylispa krishna*.

Material examined (n= 28): 1 unsexed. INDIA: Kerala / Kolahalamedu / 27.ii.2011 / Shameem Coll.; 2 unsexed. (1) India: Kerala / Bisonvalley Uppala / 8.iii.2011 / Shameem

K. Coll., (2) Ex Grass; 2 unsexed. (1) India: Kerala / Elappara / 1.iii.2011 / Shameem K. Coll., (2) HP 16; 9 unsexed. India: Kerala / Agasthyamala / Pongalappara / N 08° 37' 24.4" / E 77° 14' 44.9" 1473 m / 27.iii.2014 / Prathapan D & Shameem K Coll.; 1 unsexed. India: Kerala / Silent Valley Nat. Park / Walakkad / N 11° 10' 33.7" E 76° 24' 39.6" / 17.xi.2011 1101 m / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Silent Valley Nat. Park / Walakkad–Sispara / 18.xi.2011 / Prathapan & Shameem Coll.; 1 unsexed. India: Nilgiris South / Naduvattam / N 11° 29' 48.4" E 76° 31' 0.15" / 16.x.2012 1222 m / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Eravikulam Nat. Park / 18.v.12 / B. Ramesha Coll.; 1 unsexed. India: Kerala / Bonaccord-Pandipath / N 08° 41' 01.6" E 77° 11' 24.0" / 25.v.2013 1276 m / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Bonacaud-Pandipath / N 08° 41' 01.6" / E 77° 11' 24.0" 1276 m / 9.iv.2017 / Shameem KM Coll.; 8 unsexed. India: Kerala / Idukki, Rajamala / 5.iv.2016 / Ranjith AP Coll.

***Dactylispa pitapada* Maulik, 1919**

(Figs. 63, 101; Map 15)

Dactylispa pitapada Maulik, 1919a:212 (type: India, Madras, Nilgiri Hills; BMNH).

Dicladispa pitapada (Maulik). Anand 1997:9.

Dactylispa pitapada nathani Uhmman 1964b: 737 (type: India, Nilgiri Hills, Devala, NHMB).

Diagnosis: Length 3.85–5.00 mm, width 1.70–2.15 mm. Body oblong, dorsum entirely black, elytra tinged dark brown in some, frontoclypeus dark brown, palps yellow; sternites dark brown; fore-, mid coxae and ventrites generally paler than their respective sternites, concolorous with sternites in some specimens; all femora and tibiae yellow; all trochanters, femoro-tibial articulations darker; all tarsomeres darker than respective tibiae. Inter-ocular space with a weak, more or less circular depression; surface more or less striated. Antennae longer; proximal six antennomeres shining and sparsely setose; apical five dull and pubescent. Pronotum densely and coarsely punctate, clothed with short adpressed setae except on a transverse granular raised area in middle; anterior margin with a pair of two spines on a common stalk, proximal spine shorter and nearly half length of distal, distal spine vertical and often with short setigerous spinules; lateral sides with three spines on a common stalk; anterior most slightly shorter than next, first two with one or a few setigerous spinules, third shortest and arises from base of stalk. Scutellum

subquadrate, slightly narrowed apically, apex broadly rounded, surface granulate. Elytra slightly widened towards apex; disc with a triangular strong fossae enclosing scutellar rows and boarded by strongly costate interstice present in between scutellar row and first row of punctures; sparsely clothed with long erect setae; punctural rows regular; second interstices prominently costate in basal 1/3rd; each elytron with 16–18 discal spines, 13–14 marginal spines; spines on lateral sides longer and widely separated, spines at apical margin much shorter.

Distribution: India (Kerala, Tamil Nadu).

Host plant: Poaceae: Unidentified grass (**New record**).

Remarks: This species resembles *Dactylispa krishna*, especially in body form, arrangement of spines and similarly raised transverse area on the pronotum. In *Dactylispa pitapada*, elytra possess a triangular fossa behind the scutellum, bordered by the costate interstices between the scutellar row and first row of punctures; punctural rows of elytra more regular and the 2nd interstices distinctly costate in the basal 1/3rd of the elytra. In *D. krishna*, distinct fossae are absent behind the scutellum, interstices are not costate, and the disc of the elytra more rugose with confusing rows of punctures. Moreover, *D. krishna* is entirely black in colour, whereas *D. pitapada* has black dorsum with fulvous legs and venter.

Material examined (n=119): 1 unsexed. India: Karnataka / Kudremukha Peak / 13.v.2011 / D. Prathapan & K. Shameem Coll.; 1♀, 1 unsexed. India: Karnataka / Kudremukha N.P. / 14.v.2011 / D. Prathapan & K. Shameem Coll.; 1♀, 2 unsexed. SOUTH INDIA Western Ghats / Karnataka Env. / Chikmangalur / 15.XI.2003 1800 m alp. Meadow / 13° 23' 23"N 75° 43' 09"E / leg. Konstantinov, Prathapan, Saluk; 1♀, 3 unsexed. India: Kerala / Silent Valley Nat. Park / Sairandhri / N 11° 5' 35.8" E 76° 26' 47.7" / 15.xi.2011 1030 / Prathapan & Shameem Coll.; 2 unsexed. Same data without GPS data; 10 unsexed. India: Kerala / Silent Valley Nat. Park / Walakkad–Sispara / 18.xi.2011 / Prathapan & Shameem Coll.; 2♀, 11 unsexed. India: Kerala / Silent Valley Nat. Park / Sairandhri–Punnamala / 11.xi.2011 / Prathapan & Shameem Coll.; 2♀. India: Kerala / Silent Valley Nat. Park / Poochippara – Walakkad / 16.xi.2011 / Prathapan & Shameem Coll.; 2♀, 36 unsexed. India: Kerala / Silent Valley Nat. Park / Walakkad / N 11° 10' 33.7" E 76° 24' 39.6" / 17.xi.2011 1101 m / Prathapan & Shameem Coll.; 8 unsexed. India: Kerala / Eravikulam N.P. / 8.iii.2014 / Shameem K Coll. / Ex Bamboo; 5 unsexed. (1) India: Kerala / Elappara

/ 1.iii.2011 / Shameem K. Coll. (2) HP 16; 1 unsexed. Same data except collector Prathapan K.D.; 1 unsexed. India: Kerala / Periyar Tig. Res. / 28.ii.2011 1205 m / N 9° 30' 42.2" E 77° 7' 29" / Shameem K. Coll.; 1 ♀. India: Kerala / Agasthyamala / Pongalappara / N 08° 37' 24.4" / E 77° 14' 44.9" 1473 m / 26.iii.2014 / Prathapan D & Shameem K Coll.; 1 unsexed. India: Kerala / Agasthyamala / Athirumala-Pongalappara / N 08° 37' 22.0" / E 77° 14' 18.9" 1189 m / 26.iii.2014 / Prathapan D & Shameem K Coll.; 1 unsexed. India: Kerala / Bonaccord-Pandipat / N 08° 41' 01.6" E 77° 11' 24.0" / 25.v.2013 1276 m / Prathapan & Shameem Coll.; 1 unsexed. (1) INDIA: Kerala / Pampadumpara / 03.iii.2011 / Shameem Coll. (2) HP 20; 3 unsexed. INDIA: Kerala / Udumbanchola / 09.ii.2010 / Prathapan Coll.; 2 unsexed. INDIA: Kerala / Karuvarakkundu / 19.xi.2011 / Shameem Coll.; 1 unsexed. Kerala / Silent Valley NP /19.X.11 / B. Ramesha; 2 unsexed. India: Kerala / Silent Valley N.P. / Sirendri / 20.i.2013 / Shameem K. Coll.; 1 unsexed. India: Kerala / Silent Valley N.P. / Sirendri-Nilikkal/ 21.i.2013 / Shameem K. Coll.; 1 unsexed. India: Kerala / Silent Valley N.P. / Nilikkal-Poochipara / 21.i.2013 / Shameem K. Coll.; 1 unsexed. Same data except dating 22.i.2013; 1 unsexed. India: Kerala / Silent Valley N.P. / Poochipara-Sirendri / 23.i.2013 / Shameem K. Coll.; 3 unsexed. India: Kerala / Agasthyamala / N 08° 36' 58.2" / E 77° 14' 44.9" 1873 m / 27.iii.2014 / Prathapan D & Shameem K Coll.; 2 unsexed. India: Kerala / Bonacaud-Pandipath / N 08° 41' 01.6" / E 77° 11' 24.0" 1276 m / 9.iv.2017 / Shameem KM Coll.; 5 unsexed. India: Tamil Nadu / Gudalur, Balmadies Est. / N 11° 28' 13.8" E 76° 31' 5.9" / 14.x.2012 1472 m / Prathapan & Shameem Coll.; 1 ♀. Same data except collector B. Ramesha; 1 unsexed. Kerala / Silent Valley NP /19.X.11 / B. Ramesha; 1 unsexed. India: Nilgiris South / Naduvattam / N 11° 29' 48.4" E 76° 31' 0.15" / 16.x.2012 1222 m / Prathapan & Shameem Coll.

***Dactylispa praefica* Weise, 1897**

(Map 15)

Dactylispa praefica Weise, 1897:135 (type: India, Belgaum; Kanara, BMNH, ZMHB).

Di cladispa praefica (Weise). Anand 1997:9

Diagnosis: Length 3.60–4.60 mm, width 1.50–1.90 mm. Oblong, yellow brown, longer spines on elytra and their bases black; head and pronotum darker, piceous in darker specimens; colour of antennae variable, basal two and apical five antennomeres darker, entirely brown in paler specimens; ventral side of head and thorax dark brown to piceous; abdominal ventrites yellow brown to piceous; legs yellow to yellowish brown. Interocular

space nearly as high as eyes, with distinct deep sulcus medially and a row of setae encircles eyes. Antennae long and slender, nearly reaching middle of body; antennomere II shortest and nearly conical in lateral view, III longest and slender, slightly thickened at its apex, IV–VI similar to III and gradually shortened towards apex, VII–XI thicker than basal II–VI; I scarcely setose, II–VI sparsely setose, VII–XI densely pubescent. Pronotum nearly as long as broad; anterior margin with a pair of two spines, anterior spine being slightly shorter than posterior; lateral margin with three spines on each side, first two arises from a short common stalk, third shorter and arises from base of stalk. Disc coarsely punctate, clothed with long adpressed setae except on a narrow transverse raised area in middle; medial sulcus distinct in middle. Scutellum triangular, rounded apically, surface nearly flat and coarsely granulate. Elytra subparallel, slightly narrowed in middle; punctural rows regular; punctures subquadrate; each elytron with around 17 discal spines, including shorter spines and around 10 distinct marginal spines; spines longer and widely spaced on lateral margins, shorter on apical margins.

Distribution: India (Karnataka, Kerala, Maharashtra, Meghalaya, Sikkim, Tamil Nadu, West Bengal). *Elsewhere:* Nepal (Asia). **New record from Kerala.**

Host plant: Poaceae: Unidentified grass (**New record**).

Remarks: *Dactylispa praefica* resembles *Dactylispa* sp. 1 in having a similar pronotum and arrangement of spines on the elytra. However, they can be differentiated by the arrangement of spines on the lateral margins of the pronotum. In *D. praefica*, the third spine is contiguous and not separated from the base of the anterior two, whereas in *Dactylispa* sp. 1, the third spine is distinctly separate from the anterior two.

Material examined (n=99): 1 unsexed. INDIA: Karnataka / Kottigehara / 22.IX.2004 / Prathapan Coll.; 1 unsexed. INDIA: Karnataka / Sakleshpur / 18.IX.2004 / Prathapan Coll.; 6 unsexed. (1) India: Karnataka / Kottigehara / N 13° 7' 7.7" E 75° 30' 37.9" / 8.v.2011 938 m / D. Prathapan & K. Shameem Coll., (2) Hisp 25; 1 unsexed. India: Karnataka / Kudremukha N.P. / 11.v.2011 / D. Prathapan & K. Shameem Coll.; 2 unsexed. India: Karnataka / Abbi Falls / N 12° 27' 32" E 75° 43' 11.1" / 18.v.2011 1038 m / D. Prathapan & K. Shameem Coll.; 2 unsexed. India: Karnataka / Castle Rock / 13.xi.2012 / Prathapan KD Coll.; 1 unsexed. India: Karnataka / Bangalore, GKVK Campus / -.ii.2014 / Shameem KM Coll.; 4 unsexed. India: Karnataka / Kottigehara,

Malaya Marutha / 13° 07' 06.2"N 75° 30' 17.9"E / 1.x.2017 / Shameem KM Coll. / Ex Grass; 2 unsexed. India: Karnataka / Ettina Bhujja / 12° 58' 51.83"N 75° 34' 13.83"E / 1.x.2017 / Viswajyothi K. Coll.; 1 unsexed. India: Karnataka / Attigere / Somanakaadu Estate / 13° 05' 46.58"N 75° 28' 58.49"E / 2.x.2017 / Amritha Kumari S Coll.; 1 unsexed. India: Kerala / Peringammala, 30.xi.2016 / N 8° 45' 37.3" E 77° 02' 56.8 / K. D. Prathapan Coll.; 4 unsexed. India: Kerala / Ponmudi / 21.iii.2012 / Prathapan & Shameem Coll.; 1♀, 2 unsexed. India: Kerala / Shendurney WLS / Rose Mala 225 m / N 08° 54' 49.5" / E 77° 10' 54" / 18.ii.2011 / Shameem K. Coll.; 1 unsexed. Same data except dating 20.ii.2011; 1 unsexed. India: Kerala / Shendurney WLS / Kattalappara / 22.iii.2012 / Prathapan & Shameem Coll.; 6 unsexed. India: Kerala / Nedumangad- 8 km to Palode / 31.viii.2013 / Prathapan D & Shameem K Coll. / Ex Grass; 7 unsexed. (1) INDIA: Kerala / Pampadumpara / 03.iii.2011 / Shameem Coll. (2) HP 20; 1♀. INDIA: Kerala / Peruvannamuzhy / 5.v.2011 / Prathapan Coll.; 1 unsexed. Same data except collector Shameem; 2 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" / E 77° 01' 46.1" 236 m / 20.viii.2013 / Prathapan D & Shameem K Coll.; 2 unsexed. Same data except dating 31.viii.2013; 1 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" / E 77° 01' 46.1" 236 m / 13.xi.2014 / Shameem KM Coll.; 1♀. India: Kerala / Arippa / N 08° 50' 11.0" E 77° 01' 46.1" / 23.iii.2012 236 m / Prathapan & Shameem Coll.; 1 unsexed. INDIA: Kerala / Arippa / 8.ii.2004 / Prathapan Coll.; 3 unsexed. India: Kerala / Arippa / Emerged on 20-31.viii.2013 / Shameem KM Coll.; 1 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 15.ix.2014 / Shameem K.M. Coll.; 1 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 2015 / Shameem KM Coll.; 1 unsexed. Same data except date 28.ii.2016; 1 unsexed. India: Kerala / Trivandrum: Kollayil / N 08° 47' 20.5" / E 77° 0' 54.3" 119 m / 31.viii.2013 / Prathapan D. & Shameem K. Coll.; 1 unsexed. India: Palni Hills / Pethupara / N 10° 17' 9.7" / E 77° 32' 22.9" / 20.v.2012 1567 m / Prathapan KD Coll.; 1 unsexed. India: Kerala / Meppady / 18.IV.2003 / Prathapan Coll.; 1 unsexed. (1) India: Kerala / Trichur, Vellani Pacha / 29.x.2010 / Prathapan K.D. Coll., (2) 231 *Cayratia japonica*; 1 unsexed. India: Kerala / Bonacaud-Pandipath / N 08° 41' 01.6" / E 77° 11' 24.0" 1276 m / 9.iv.2017 / Shameem KM Coll.; 1 unsexed. India: Kerala / Tirurangadi / 10.vii.2016 / Shameem KM Coll.; 4 unsexed. (1) India: Kerala / Silent Valley N.P. / Walakkad / 19.xi.2011 / Shameem Coll., (2) Ex Grass; 2 unsexed. (1) India: Kerala / Silent Valley Nat. Park / Varappara / N 11° 02' 32.8" E 76° 31' 32.1" / 14.xi.2011 759 m / Prathapan & Shameem Coll., (2) Hisp 36; 2 unsexed. India: Kerala / Silent Valley Nat. Park / Walakkad / N 11° 10' 33.7" E 76° 24' 39.6" / 17.xi.2011 1101 m / Prathapan &

Shameem Coll.; 1 unsexed. India: Kerala / Silent Valley Nat. Park / Mukkali / N 11° 03' 53.3" E 76° 32' 10.9" / 14.xi.2011 557 m / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Silent Valley Nat. Park / Sairandhri / 20.xi.2011 / Prathapan & Shameem Coll.; 1 ♀, 1 unsexed. India: Kerala / Silent Valley N. P. / Mukkali / 19.i.2013 / Shameem K. Coll.; 1 unsexed. India: Kerala / Silent Valley N. P. / Sirendri / 20.i.2013 / Shameem K. Coll.; 1 unsexed. India: Kerala / Silent Valley N. P. / Nilikkal / 22.i.2013 / Shameem K. Coll.; 17 unsexed. India: Kerala / CRS Pampadumpara / 8.iii.2017 / Amritha Kumari S Coll.; 1 unsexed. India: Kerala / Kannur, Kuruveli / 8.iii.2017 / Viswajyothi K. Coll.; 1 unsexed. India: Kerala / Kallar / 8° 42' 43.0"N 77° 7' 47.3"E / 18.ix.2017 / Amritha Kumari S Coll.; 1 unsexed. India: Tamil Nadu / Nigiris, Burliar Hills / 25.x.2003 / Prathapan K. D. Coll.

***Dactylispa sjoestedti* Uhmann, 1928**

(Figs. 7, 51, 59; Map 16)

Dactylispa (Triplispa) sjoestedti Uhmann, 1928a:102 (type: India, Trichinopolis, NHRS).

Dactylispa sjoestedti Uhmann. Gressitt 1939:181.

Diagnosis: Length 4.31–5.19 mm, width 1.87–2.37 mm. Body oblong, yellow to yellow brown; antennae slightly darker than vertex; mouthparts except palps dark brown; pronotal spines yellow with dark brown apex; scutellum dark brown, turns paler towards apex; long discal spines dark brown to black; rest of elytral discal spines and marginal spines yellow tipped with dark brown. Interocular space as high as level of eyes, not depressed; collar strongly constricted. Pronotum with a transversely raised area in middle bearing a narrow smooth and shining impunctate area, rest of surface coarsely and densely punctate and sparsely setose; anterior margin generally with a pair of three spines on a common stalk; first shorter, obliquely placed and arises as an anterior branch of second; both second and third vertical; lateral margins with three spines, first two on a common stalk, third separated; 2nd longest, makes an acute angle with 1st, 2nd and 3rd, perpendicular to pronotum, 3rd shortest, all lateral spines slightly upwardly curved. Scutellum triangular, apex narrowly rounded, surface granulate with a circular shallow depression near apex; elytra subparallel, slightly broadened behind middle; each elytron with 19–21 discal spines; 18–21 marginal spines; spines on lateral margin longer and gradually shortened after middle; spines at apical margin very short and more or less uniform in length; all discal spines and spines on lateral marginal slightly curved backwards.

Distribution: India (Kerala, Tamil Nadu). *Elsewhere:* China (Asia). **New record from Kerala.**

Host plants: Poaceae: *Bambusa cerosissima* McClure, *Bambusa chungii* McClure (Gressitt 1950), *Bambusa multiplex* (Lour.) Raeusch. ex Schult. (Gressitt 1950; Maddison 1993), *Bambusa sinospinosa* McClure, *Bambusa tuldoides* Munro (Gressitt 1950), *Dendrocalamus strictus* (Roxb.) Nees (**New record**); *Sinobambusa tootsik* (Makino) Makino ex Nakai (Gressitt 1950).

Remarks: See the “Remarks” section under *D. kantakita*.

Material examined (n= 63): 2 unsexed. INDIA: Kerala / Vellayani / 19.xii.2011 / Shameem K Coll.; 1 unsexed. INDIA: Kerala / Vellayani / 7.i.2012 / Shameem Coll.; 2 unsexed. Same data except dating 9.i.2012; 1 unsexed. Same data except dating 13.i.2012; 3 unsexed. Same data except dating 24.i.2012; 10 unsexed. India: Kerala / Vellayani / 9.i.2012 / K. Shameem Coll.; 1 unsexed. Same data except dating 12.i.2012; 1♂, 38 unsexed. India: Kerala / Vellayani / N 08° 25' 47.5", E 76° 59' 8.3" / 16.ii.2012 18 m / Shameem K. Coll. / Ex Bamboo; 1 unsexed. India: Kerala / Koliyoor / 3.iii.2013 / Prathapan KD Coll. / Ex Bamboo; 2 unsexed. India: Kerala / Tirurangadi / 14.vii.2013 / Shameem K. Coll. / Ex Bamboo; 1 unsexed. India: Kerala / Tirurangadi / N 11° 02' 21.80" / E 75° 55' 18.91" 14 m / 24.ii.2017 / Shameem KM Coll. / Ex Bamboo.

Dactylispa spinipes Weise, 1905

(Map 16)

Dactylispa spinipes Weise 1905b:119 (type: India, Nilgiri Hills, BMNH, ZMHB).

Dicladispa spinipes (Weise). Anand 1997:9.

Diagnosis: Length 4.31–5.85 mm. Body oblong, shining, entirely black. Interocular space shallowly depressed in middle. Antennae long and slender; proximal six antennomeres shining and sparsely clothed with long setae; distal five dull and pubescent. Anterior margin of pronotum with a pair of two spines; proximal spine shorter than distal spine; each side with three spines; 1st two on a common stalk, first shorter than second; third shortest and quite separate from anterior two; all pronotal spines with short spinules bearing long setae; disc behind anterior 1/3rd coarsely punctate and setose, except on a transverse impunctate, asetose and granulate raised area in middle bearing a distinct medial sulcus. Scutellum triangular, apex, broadly rounded, surface granulate, weakly

depressed in middle. Elytra sparsely clothed with long erect setae arising from interspaces; each elytron with about 18 discal spines; 16–19 marginal spines besides minute spines in between them; marginal spines longer towards base and shortened towards apex.

Distribution: India (Karnataka, Kerala, Tamil Nadu). *Elsewhere:* Thailand (Asia). **New record from Kerala.**

Host plant: Poaceae: Unidentified grass (**New record**).

Remarks: See the “Remarks” section under *Dactylispa krishna*.

Material examined (n=11): 1 unsexed. India: Karnataka / Kottigehara / N 13° 7' 18.4" E 75° 29' 38.2" / 6.v.2011 920 m / D. Prathapan & K. Shameem Coll.; 2 unsexed. India: Karnataka / Kudremukha N.P. / N 13° 12' 59.7" E 75° 11' 2.3" / 11.v.2011 889 m / D. Prathapan & K. Shameem Coll.; 2 unsexed. Same data without GPS co-ordinates and altitude; 1 unsexed. India: Karnataka / Kudremukha N.P. / 16.v.2011 / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Kerala / Silent Valley Nat. Park / Poochippara–Walakkad / 16.xi.2011 / Prathapan & Shameem Coll.; 2 unsexed. India: Kerala / Silent Valley Nat. Park / Walakkad / N 11° 10' 33.7" E 76° 24' 39.6" / 17.xi.2011 1101 m / Prathapan & Shameem Coll.; 1 unsexed. (1) India: Kerala / Ponmudi / N 8° 45' 19.9" E 77° 6' 43.7" / 28.v.2011 872 m / D. Prathapan & K. Shameem Coll. (2) 327; 1 unsexed. India: Kerala / Ponmudi / 2.x.2011 / D. Prathapan & K. Shameem Coll.

Dactylispa tarusama Maulik, 1919

(Map 16)

Dactylispa tarusama Maulik, 1919a:240 (type: India, Madras, Nilgiri Hills, BMNH)

Dactylispa tarsaura Maulik (sic). Takizawa 1985:4.

Dicladispa tarusama (Maulik). Anand 1997:9.

Dactylispa kunala Maulik, 1919a:245 (type: India, Bombay, Castle Rock, NZSI?) **new synonym.**

Dicladispa kunala (Maulik). Anand 1997:9.

Diagnosis: Length 3.50–4.85 mm, width 1.70–2.30 mm. Oblong; colour yellow to yellowish brown; collar dark brown; mouthparts dark brown with yellowish palps; proximal one or two antennomeres and apical four or five brownish, rest yellowish; pronotum generally with two broad longitudinal patches, varies from brown to black; spines on pronotum yellowish with darker apices; scutellum darker basally; a circular or

an elongated patch on humerus, a circular spot between humerus and scutellum, exterior apical angle, most discal spines of elytra, first marginal spine near base and 1–4 spines on external apical angle, sometimes a single marginal spine behind middle dark brown to black; mesosterna laterally, epimera, episterna, dark brown to piceous; metasternum varies from yellow with lateral margin darker to entirely dark brown to black; all coxae partly or entirely darker, trochanters vary from yellow to darker, all tarsomeres darker than respective tibiae. Interocular space as wide as distance between two groups of spines on anterior margin of pronotum. Disc of pronotum flat, transverse depression before middle shallower; surface coarsely punctate; each puncture bears a single long semi-erect seta; a narrow smooth and raised transverse area in middle impunctate; anterior margin with a pair of three spines arising from a common stalk, 1st shorter and obliquely placed, 2nd slightly longer than 1st and slightly curved upwards; 1st and 2nd joins together forming a short stalk before joining to the third; 3rd longest and vertical, bears 1 or 2 spinules; lateral margin with three principal spines: first two on a common stalk and bears short spinules; 3rd shorter, distinctly separated from anterior two, rarely with spinules. Scutellum triangular, apex broadly rounded, surface granulate, weakly depressed on top near apex. Elytra clothed with moderately long, erect setae arising from interspaces; each elytron with 26–30 discal spines; marginal spines 12–15, spines longer near base, shortened towards apex; spines on apical margin shorter. Intercoxal process of prosternum deeply channeled, sparsely clothed with long hairs, laterally with a short sharply angulated projections in middle.

Distribution: India (Karnataka, Kerala, Maharashtra, Tamil Nadu). **New record from Kerala.**

Host plants: Acanthaceae: *Strobilanthes* spp. (**New record**).

Remarks: Maulik (1919a) described *Dactylispa tarusama* and *D. kunala* based on single specimens, collected from Nilgiri Hills (Tamil Nadu) and Castle Rock (Karnataka), respectively. He circumscribed the two species based on the degree of development of anterior-most spines present on the front border of the pronotum and also provided differences in the colouration of ventral sides in species descriptions. In the present study, the specimens collected even from the same locality vary greatly in the extent of dark colour on the ventral sides and also in the degree of the development of the anterior-most spine present near the apical margin of the pronotum, indicating that both are identical and

must be synonymized. Since *D. tarusama* has precedence over *D. kunala*, as the description of the former species appears first on page 240, before the description of the latter species on page 245 in the same work (Maulik 1919a), the name *D. tarusama* must be retained.

Material examined (n=30): 1♀, 1♂+1♀. South India Western Ghats / Karnataka env. Madikeri / 21.XI.2003 1052 m / N 12° 29' 16" E 75° 41' 58" / leg. Konstantinov, Prathapan, Saluk; 2 unsexed. INDIA: Karnataka / Kudremukha / 12.v.2011 / Shameem Coll.; 2 unsexed. (1) India: Karnataka / Kudremukha Peak / 13.v.2011 / D. Prathapan & K. Shameem Coll., (2) *Strobilanthes* Hisp 28; 1 unsexed. India: Karnataka / Kottigehara / N 13° 7' 18.4" E 75° 29' 38.2" / 6.v.2011 920 m / D. Prathapan & K. Shameem Coll.; 21 unsexed. (1) India: Karnataka / Kottigehara / 9.v.2011 / D. Prathapan & K. Shameem Coll., (2) Ex *Strobilanthes*; 12 unsexed. Same data except dating 15.v.2011; 1 unsexed. India: Karnataka / Mageribetta / 17.v.2011 / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Karnataka / Kottigehara, Malaya Marutha / 13° 07' 06.2"N 75° 30' 17.9"E / 1.x.2017 / Shameem KM Coll.; 7 unsexed. (1) INDIA: Kerala / Pampadumpara / 03.iii.2011 / Shameem Coll., (2) HP 17b; 2 unsexed. India: Kerala / Silent Valley N.P. / Nilikkal-Poochipara / 22.i.2013 / Shameem K. Coll.; 2 unsexed. India: Kerala / Elappara / 1.iii.2011 / Shameem K. Coll.; 1 unsexed. India: Kerala / Janakikkadu / 6.ix.2013 / Ranjith R. Coll.; 2♀, 1 unsexed. Same data except dating 29.vii.2014; 2 unsexed. India: Kerala / Janakikkadu / 23.ii.2016 / Ranjith AP Coll.

Dactylispa* sp. 1 nr. *albopilosa

(Map 16)

Diagnosis: Length 3.65–4.55 mm, width 1.70–2.05 mm. Body oblong. Dorsum shiny, yellow brown to dark brown, antennae concolorous with head; antennomeres VII–XI dull, slightly darker in paler specimens; pronotal spines often tipped dark brown or black; pronotum with tint of dark brown around the raised area; discal spines on elytra, their bases, all marginal spines except short spines on apical margin dark brown; colour of venter varies, generally concolorous with ground colour of dorsum, entirely dark brown or piceous; sides of metasternum, metepisternum and metepimeron darker in some individuals. Head with inter-ocular space as high as level of eyes; shallowly depressed in middle; medial sulcus distinct; surface granulate, with a row of silvery setae around eyes; mid-frontal ridge reaches middle of clypeus, sparsely clothed with long erect setae.

Antennae reach middle of elytra; antennomeres I–VI shiny, sparsely setose; VII–XI slightly thicker than basal ones, dull and thickly pubescent; I thickest, subcylindrical, slightly curved inwards; II nearly 0.5X longer than I, narrower at base and widened apically; III longest, slightly longer than I, cylindrical; IV similar to II, slightly shorter; V–VII subconical, V subequal to VII, VI shorter than V; VIII–X cylindrical; XII pointed apically. Anterior margin of pronotum with a pair of two spines, each arising on a common stalk; anterior spine obliquely placed, slightly shorter than posterior; posterior spine vertical. Lateral margin with three spines: first two on a common stalk; 1st slightly shorter than 2nd; 3rd spine shortest and widely separated from anterior two, arising from behind middle of lateral margin; all pronotal spines except 3rd lateral spine bear one or two short setigerous spinules. Disc of pronotum transversely raised in middle, transverse depression before middle shallower than basal one; medial sulcus distinct in middle; disc behind anterior pair of spines coarsely and densely punctate; small, irregular and discontinuous patches on transverse raised area impunctate; punctures large, deep, circular and closely placed; each with a single long semi-erect seta arising from its centre; interspaces represented by borders of adjacent punctures. Scutellum triangular, apex broadly rounded, surface finely granulate, weakly depressed on top near apex. Elytra subparallel, weakly constricted in middle, slightly widened towards apex. Each elytron with 10 rows of punctures near base and apex; 9th and 10th merged into a single row in middle; scutellar row well developed, represented by 4–6 punctures; punctures large, deep and circular, each with a short indistinct seta in middle; interspaces shorter than diameter of individual puncture; clothed with sparse long erect setae; suture slightly depressed near along scutellar row; with 14–16 discal spines; 14–16 marginal spines, spines on lateral margins longer, spines on apical margin very short. Hypomeron deeply punctate, sparsely clothed with long setae; apex of intercoxal process more or less straight; mesosternum strongly depressed in middle; punctate and setose laterally; mesepisterna with a row of deep setose punctures along its posterior margin, rest of surface impunctate and asetose; mesepimera deeply punctate in dorsal half; metasternum smooth and shiny in middle, sparsely setose, densely punctate towards lateral sides; metepisterna punctate and setose in ventral half; metepimera rugulose and covered with long setae. All ventrites sparsely clothed with long semi-erect setae. Legs sparsely setose; all femora ventrally with a few sparse strong spinules; claw projects beyond bilobed third tarsomere.

Distribution: India (Karnataka, Kerala). **New record.**

Host plants: Poaceae: Unidentified grasses, *Oryza sativa* L. (New record).

Remarks: This species is very similar to *D. albopilosa* in all characters, except for the development of the transverse raised area in the middle of the pronotum. In *D. albopilosa*, the raised transverse area is broader with a distinct dark border on the lateral sides. However, in *Dactylispa* sp. 1, the raised area is narrower and rugged with punctures and lacks a distinct colored border on the sides.

Material examined (n= 41): 2 unsexed. India: Karnataka / Kottigehara / N 13° 7' 7.7" E 75° 30' 37.9" / 8.v.2011 938 m / D. Prathapan & K. Shameem Coll.; 2 unsexed. INDIA: Kerala / Vellayani / 2.ii.2011 / Shameem Coll.; 3 unsexed. INDIA: Kerala / Vellayani / 19.vii.2011 / Shameem K. Coll.; 3 unsexed. INDIA: Kerala / Vellayani / 20.vii.2011 / Shameem Coll.; 1 unsexed. Same data except dating 28.i.2011; 2 unsexed. Same data except dating 23.ix.2012; 1 unsexed. India: Kerala / Vellayani / 9.viii.2012 / Shameem K Coll.; 1 unsexed. India: Kerala / Vellayani / 12.xi.2014 / Shameem KM Coll.; 1 unsexed. India: Kerala / Tirurangadi / 2015 / Shameem KM Coll.; 4 unsexed. Same data except dating 10.vii.2016; 3♀, 4 unsexed. India: Kerala / Calicut, Mundoth / 10.x.2013 / Ranjith R. Coll. / Ex Rice; 1 unsexed. India: Kerala / Calicut Univ. Campus / 4.ix.2016 / Shameem KM Coll. / Ex Grass; 1♀. India: Kerala / Calicut Univ. Campus / 14.vii.2013 / Ranjith R. Coll.; 1 unsexed. India: Kerala / Calicut University / Botanical Garden / 9.i.2012 / Shameem K. Coll.; 3 unsexed. India: Kerala / Tirur, Athanikkal / 17.i.2013 / Shameem K Coll. / Ex Rice; 1 unsexed. India: Kerala / Vembayam / 28.vii.2013 / Prathapan KD Coll. / Ex Grass; 3 unsexed. India: Kerala / Trivandrum / Gandhi Park, East Fort / 30.vi.2013 / Shameem K. Coll.; 1♀, 2 unsexed. India: Kerala / Nedumangad- 8 km to Palode / 31.viii.2013 / Prathapan D & Shameem K Coll. / Ex Grass; 1 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 15.ix.2014 / Shameem K.M. Coll. / Ex Grass.

Dactylispa* sp. 2 nr. *higoniae

(Map 16)

Diagnosis: Length 4.10–4.05 mm, width 2.30 mm. Body oblong, yellowish brown; antennae reddish brown; pronotum with two ill-defined patches in middle, basal part of scutellum, suture adjacent to scutellar row, discal spines on elytra, first three marginal spines, two at exterior apical angle black; interspaces between spines at humerus and apical 1/3rd of elytra suffused with black or dark brown. Interocular space nearly as high

as eyes, granulate, with distinct medial sulcus. Pronotum flat, transverse impression present only near the base; coarsely and densely punctate with semi-erect setae, except on a granular, narrow region along midline; distinct medial sulcus present; anterior margin with a pair of two spines arising from a common stalk; lateral margins with three spines arising from a common base, first two stalked and subequal in length, third separate and shorter than first two. Scutellum triangular, apex rounded, surface granulate, not depressed. Each elytron with about 20 discal spines and 17 marginal spines; all marginal spines slightly curved backwards; marginal spines longer towards base, spines on apical margin very short.

Distribution: India (Kerala). **New record.**

Host plants: unknown.

Remarks: This species resembles *D. higoniae* in colouration, body form and the arrangement of spines. However, *Dactylispa* sp. 2 can be easily distinguished from *D. higoniae* by the absence of three longitudinal tubercles in the middle of the pronotum which are present in *D. higoniae*.

Material examined (n=2): 2 unsexed. India: Kerala / Shendurney WLS / Dharbhakkulam / N 08° 54' 45.3" / E 77° 12' 06.7" / 19.ii.2011 / Shameem K. Coll.

Dactylispa* sp. 3 nr. *filiola

(Map 16)

Diagnosis: Length 2.62–3.53 mm, width 1.18–1.71 mm. Oblong. Head, antennae, pronotum, pronotal spines, scutellum, spines on on elytra, venter dark brown to black; ground colour of elytra and legs yellowi. Interocular space more or less at same level as eyes, deeply sulcated medially, with a row of silvery setae encircling eyes; distinctly carinated medially, with a row of setae encircling eyes. Antennae nearly reaching middle of body; apical five antennomeres slightly thickened and more pubescent than basal III–VI antennomeres. Anterior margin of pronotum with a pair of two spines; anterior and posterior spines of each pair long and nearly equal in length; lateral margin with three spines on a short stalk, first two nearly equal in length and joins together before joining to third, third longer than precedings; disc rugose, coarsely punctate, sparsely clothed with long semi-erect setae. Scutellum triangular, apex broadly rounded, surface shining with a deep circular depression in middle. Elytra parallel-sided, regularly punctate, scutellar row

distinct; punctures circular, each with a single long erect setae arising from its margin; each elytron with about 15 prominent discal spines, with three spines on humerus, first two spines on humerus only slightly shorter than third; elytral margin with 10–11 long spines, spines on lateral margin longer and uniform in length up to 2/3rd length from base; spines on apical margin nearly equals to half or at least 1/3rd length of spine near base. Ventral sides clothed with long setae; claw tarsomere projects beyond bilobed third tarsomere.

Distribution: India (Karnataka, Kerala). **New record.**

Host plants: Poaceae: Unidentified grasses (**New record**).

Remarks: See the “Remarks” section under *Dactylispa filiola*.

Material examined (n=34): 1 unsexed. India: Karnataka / Kudremukha N.P. / 11.v.2011 / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Kerala / Kuttiyadi, Janakikkadu / 14.iii.2013 / Shameem K. Coll.; 1 unsexed. INDIA: Kerala / Calicut Univ. / 26.xii.2011 / Shameem Coll.; 1 unsexed. India: Kerala / Calicut Univ. Campus/ 28.vii.2013 / Ranjith R. Coll.; 1 unsexed. India: Kerala / Calicut Univ. Campus/ 26.xi.2013 / Shameem K. Coll.; 1 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 15.ix.2014 / Shameem K.M. Coll.; 2 unsexed. India: Kerala / Tirurangadi / 30.ix.2012 / Shameem K. Coll.; 1 unsexed. India: Kerala / Tirurangadi / 16.ix.2014 / Shameem K.M. Coll. / Ex Grass; 1 unsexed. India: Kerala / Tirurangadi / 3.vii.2016 / Shameem KM Coll.; 1♀, 2 unsexed. India: Kerala / Vallana / 21.viii.2002 / Prathapan Coll.; 1 unsexed. India: Kerala / Nadukani Pass / N 11° 23' 35.8" E 76° 21' 45.0" / 13.x.2012 259 m / Prathapan & Shameem Coll.; 2 unsexed. India: Kerala / Ponmudi / N 8° 45' 57.8" E 77° 6' 38.7" / 29.xii.2011 1034 m / D. Prathapan & K. Shameem Coll.; 2 unsexed. India: Kerala / Trivandrum: Kollayil / N 08° 47' 20.5" / E 77° 0' 54.3" 119 m/ 31.viii.2013 / Prathapan D. & Shameem K. Coll.; 2 unsexed. India: Kerala / Perinthalmanna / 13.x.2012 / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / KFRI, Nilambur / 18.v.2015 / Ranjith AP Coll.; 1 unsexed. India: Kerala / Nedumangad- 8 km to Palode / 31.viii.2013 / Prathapan D & Shameem K Coll. / Ex Grass; 3 unsexed. India: Kerala / Velimukku, Palakkal / 9.vii.2016 / Shameem KM Coll.; 5 unsexed. India: Kerala / KFRI, Palapilly / 12.v.2015 / Ranjith AP Coll.; 1 unsexed. Indi: Kerala / Idukki: Myladumpara / July 2015 / Prathapan KD Coll.; 2 unsexed. Indi: Kerala / Ezhukone, Kollam / 8° 59' 03.45"N 76° 42' 57.89"E / 2.xi.2018 34m / Viswajyothi K Coll.

***Dicladispa* Gestro, 1897**

(Fig. 60, 102; Map 17)

Hispa (*Dicladispa*) Gestro, 1897a:81. Type species: *Hispa testacea* Linnaeus, 1767; designated by Chapuis 1875.

Dicladispa Gestro. Gestro 1898a:712.

Dicladispa (*Dicladispa*) Gestro. Uhmman 1958a:324.

Hispa Chapuis, 1875:333 (not Linnaeus).

Brachispa Gestro, 1906a:488.

Hispa Maulik, 1919a:247 (not Linnaeus). Wu 1937:915.

Dicladispa (*Eutrichispa*) Gestro, 1923:21.

Dicladispa (*Decispa*) Uhmman, 1928b: 81.

Cirrispa Uhmman, 1936:123, (*nomen nudum*).

Cirrispa Uhmman, 1940a:143.

Diagnosis: 2.90–7.60 mm. Oblong, slender to moderately broader, convex; color variable from light brown to black or metallic blue-black (Fig. 102). Vertex with a median longitudinal deep sulcus between eyes; frons sharply ridged between antennae (Fig. 60); clypeus well developed and large, more or less triangular. Antenna 11 segmented, slightly thickened apically; antennomeres without any dorsal spines; antennomere I thickened, with or without acute tooth apically on its ventral side, proximal 6 or 7 sparsely setose, distal 4 or 5 densely pubescent. Lateral sides of pronotum spinose (Fig. 60). Scutellum smaller; shape variable: subquadrate, subconical to semicircular. Elytra with sides parallel to slightly expanding towards apex, disc spinose (Fig. 102); punctate-striate with nine rows of punctures at base in addition to a short scutellar row; 9th and 8th merged into a single row in middle; punctural rows confusing in some; lateral margins armed with long spines; apical margin either spinose or denticulate. Long and slender, femora little thickened in middle; tibiae thickened towards distal end; mid tibiae straight; claws double and equal.

Diversity: 125 described species, six in India, three from south India.

Number of species studied: Three.

Distribution: Algeria, Angola, Botswana, Cameroon, Congo, Egypt, Eritrea, Equatorial Guinea, Guinea, Guinea-Bissau, Kenya, Madagascar, Morocco, Mozambique, Nigeria,

Rwanda, Senegal, South Africa, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe (Africa); Bangladesh, Bhutan, China, Cyprus, India, Indonesia, Iran, Japan, Laos, Lebanon, Malaysia, Myanmar, Nepal, Pakistan, Saudi Arabia, Sri Lanka, Syria, Taiwan, Thailand, Turkey, Vietnam, Yemen (Asia); Albania, Bulgaria, Canary Islands, Crete, Croatia, France, Germany, Greece, Italy, Poland, Portugal, Netherlands, Spain, Switzerland (Europe); Bismark Islands, New Guinea, Solomon Islands (Oceania).

Host plants. Anacardiaceae (Biondi *et al.* 1995), Cistaceae (Brullé 1838; Laporte & Laporte 1852; Lesne 1904; Grandi 1935; Amsel & Hering 1931; Hering 1967; García-Ocejo *et al.* 1992), Cyperaceae (Ravelojaona 1982; Choudhary *et al.* 2002), Fabaceae (Uhmann 1953c, 1957b; Hering 1957), Lamiaceae (Beeson 1941), Malvaceae (Kadapa 1959; Hering 1957), Poaceae (Zehntner 1894; Morstatt 1913; Kalshoven 1957; Gestro 1919; Maulik 1919a; Frappa 1929; Uhmann 1949a; Gressitt 1950, 1957b, 1963; Paulian 1950; Risbec 1950; Hazarika & Sattar 1955; Dhaliwal 1979; Kimoto *et al.* 1984; Anand 1989; Dale 1994; Choudhary *et al.* 2002; Hua 2002 Lee & Cheng 2010), Rosaceae (Maulik 1919a; Gressitt 1957b; Uhmann 1957b; Ravelojaona 1982; Anand 1989), Tiliaceae (Hering 1957; Uhmann 1957b, 1958b; Kadapa 1959), Undetermined family-Mûrier du Cap (Collart 1934).

Key to south Indian species of *Dicladispa* Gestro, 1897

1. Lateral sides of pronotum with five spines, anterior four on a common base, fifth separate; body scarcely setose..... 2
- Lateral sides of pronotum with seven spines on a common base; pronotum densely setose ***D. pallescens* (Guérin-Méneville, 1841)**
2. Vertex not transversely constricted behind eyes; gena asetose behind eyes; pronotum with a more or less circular flattened, finely granulate and shallowly punctate area; spines longer; apical margin of elytra with long spines; rows of punctures irregular; claw tarsomere projects beyond bilobed 3rd tarsomere; dorsum piceous, spines and rest of body reddish brown or black; size 3.12 mm.....
.....***D. aerea* (Gestro, 1897)**
- Vertex transversely constricted behind eyes; gena distinctly setose on a narrow region behind eyes; pronotum not as above, depressed laterally and medially, strongly punctate; spines comparatively shorter; apical margin of elytra with 2–3 short denticles; rows of punctures regular; claw tarsomere concealed within

bilobed 3rd tarsomere; color black or blue-black with metallic sheen; size 4.00–4.81 mm *D. armigera* (Olivier, 1808)

***Dicladispa aerea* (Gestro, 1897)**

(Map 17)

Hispa (Dicladispa) aerea Gestro, 1897a:125 (type: Barway, ISNB).

Dactylispa aerea (Gestro). Uhmann 1952a:237.

Dicladispa area (Gestro) [sic]. Sprecher-Uebersax 2011:490.

Hispa belli Weise, 1897:127 (type: India, Belgaum; Kanara, BMNH).

Diagnosis: Length 3.12 mm, width 1.62 mm. Oblong, shining black; antennae and spines dark brown to black; ventral sides and legs reddish brown. Head neither raised between eyes, nor constricted behind; finely granulate, with a deep longitudinal sulcus in middle; sparsely punctate and clothed with adpressed setae. Antennae shorter, nearly reaching half of body; gradually thickened towards apex; proximal antennomeres short and stout; apex of antennomere I sharply produced into a tooth ventrally. Disc of pronotum with a circular, flattened, finely granulate and sparsely punctate area with adpressed setae; lateral sides armed with five spines, anterior four grouped on a common base; fifth short and separate, placed after middle; transverse basal impression weak. Scutellum smaller, nearly semi-circular, finely granulate. Punctures on elytra not forming regular striae; interspaces clothed with indistinct setae; each elytron with 13 marginal spines and 17–18 discal spines; spines on lateral margin longer towards base and turns shorter towards apex. Claw tarsomeres project much beyond bilobed third tarsomere.

Distribution: India (Bengal, Bihar, Karnataka, Madras, Maharashtra, Mysore, Odisha).

Elsewhere: Bangladesh (Asia).

Host plant: Poaceae: Unidentified grass. (New record).

Remarks: This species can be readily distinguished from all other congeneric members from south India by its smaller size, subnitid and asetose dorsum and enormously longer spines on pronotum and elytra. The spines present on the lateral margins of the elytra are nearly as long as the width of each individual elytron.

Material examined (n=1): 1 unsexed. India: Karnataka / Pushpagiri / 17.v.2011 / D. Prathapan & K. Shameem Coll.

***Dicladispa armigera* (Olivier, 1808)**

(Figs. 60, 102; Map 17)

- Hispa armigera* Olivier, 1808:763 (type: India, Bengal, MNHN?).
- Hispa (Dicladispa) armigera* (Olivier). Sen & Chakravorty 1970:123
- Dicladispa armigera* (Olivier). Uhmman 1952a:236.
- Dicladispa armigera armigera* (Olivier). Borowiec & Sekerka 2010:386.
- Dicladispa armigera (Linnaeus)*. Sharma & Kaul 2003:558.
- Dactylispa armigera armigera* (Olivier). Gressitt 1950:134.
- Dactylispa (Hispa) armigera* (Olivier). Sen-Gupta & Behura 1957:7.
- Hispa cyanipennis* Motschulsky 1861:238 (type: Burma, depository unknown).
- Hispa aenescens* Baly 1887:412 (type: India, Chittagong District, BMNH).
- Hispa (Dicladispa) aenescens* Baly. Gestro 1897a:82.
- Dicladispa aenescens* (Baly). Barber 1951:18.
- Hispa boutani* Weise, 1905d: 101 (type: Vietnam, Tonkin, Thai-Binh, ZMHB).
- Dicladispa boutani* (Weise). Uhmman 1952a:237.
- Dicladispa armigera boutani* (Weise). L. Medvedev 2000:181.
- Dactylispa boutani* (Weise). Hua 2002:290.
- Hispa similis* Uhmman 1927b: 116 (type: Formosa, Tainan, DEI?).
- Dicladispa armigera similis* (Uhmman). Gressitt 1950:134.
- Dicladispa boutani similis* (Uhmman). Gressitt 1950:134.
- Hispa semicyanea* Pic 1932:26 (type: China, NMNH).
- Dicladispa armigera yunnanica* Chen & Sun 1962:130 (type: China, Yunnan, Xi-shuang-banna, IZAS).
- Dicladispa yunusi* Abdullah & Qureshi 1969:103 (type: Pakistan, Kalashah, ZMLP).

Diagnosis: Length 4.00–4.81 mm, width 1.69–2.12 mm. Oblong, shining, generally black or blue-black; elytra dark brown in some; mouth parts brown; antennae dark brown to black, proximal six or seven antennomeres shining, distal five or four dull; sternites generally black; middle of metasterna brown in paler specimens; ventrites generally paler than metasternum; femora reddish brown, tibiae and tarsi darker than femora. Interocular space distinctly raised and rugose; head behind eyes strongly constricted, smooth, and impunctate. Antennomere I generally with a ventral tooth apically, III–VI slender, slightly thickened at their apical end, III longest, IV–VI gradually diminishing in length, VII–XI forms a weak club. Pronotum flat, surface rugose, deeply and coarsely punctate, sparsely

setose; a narrow longitudinal stripe in middle smooth, shining, impunctate and asetose; transverse basal impression strong; lateral sides with five spines: anterior four grouped on a common base followed by a single short spine; all spines straight and not curved. Scutellum subquadrate, apex rounded. Elytra with first four punctural rows regular, rest towards lateral margin confusing; interspaces shorter than diameter of individual punctures; each elytron with nine marginal spines and 10–13 discal spines; apical margin with a few short denticles. Claw tarsomere projects beyond third bilobed tarsomere.

Distribution: India (Andhra Pradesh, Assam, Bihar, Himachal Pradesh, Jammu, Kashmir, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal). *Elsewhere:* Bangladesh, Bhutan, China, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Pakistan, Sri Lanka, Taiwan, Thailand, Vietnam (Asia); New Guinea (Oceania).

Host plants: Cyperaceae: *Carex* sp., *Cyperus rotundus* L. (Choudhary *et al.* 2002); **Lamiaceae:** *Tectona grandis* L.f. (Beeson 1941); **Poaceae:** *Andropogon gayanus* Kunth. (Lee & Cheng 2010); *Chrysopogon zizanioides* (L.) Roberty (Dale 1994); *Chrysopogon* sp. (Lee & Cheng 2010); *Cynodon dactylon* (L.) Pers. (Dhaliwal 1979); *Digitaria sanguinalis* (L.) Scop (Rao *et al.* 1971); *Echinochloa colonum* (L.) Link, *E. crus-galli* (L.) P. Beauv. (Dhaliwal 1979); *E. stagnina* (Retz.) P. Beauv. (Hazarika & Sattar 1955); *Hygroryza aristata* (Retz.) Nees ex Wight & Arn., *Imperata cylindrica* (L.) Raeusch (Lee & Cheng 2010); *Leersia hexandra* Sw. (Hazarika & Sattar 1955); *Megathyrus maximus* (Jacq.) B.K. Simon & S.W.L. Jacobs (Gressitt 1950); *Oryza sativa* L. (Gestro 1919); *Panicum repens* L. (Dale 1994); *Paspalum distichum* L. (Dhaliwal 1979, Dale 1994); *Saccharum* × *sinense* Roxb. (Hua 2002); *Saccharum officinarum* L. (Zehntner 1894); *Saccharum* sp. (Gressitt 1950); *Saccharum spontaneum* L. (Lee & Cheng 2010); *Sorghum halepense* (L.) Pers. (Lee & Cheng 2010); *Themeda anathera* (Nees ex Steud.) Hack. (Lee & Cheng 2010); *Triticum aestivum* L. (Hua 2002); wild grasses (Maulik 1919a); *Zea mays* L. (Anand 1989); *Zizania aquatica* L. (Hazarika & Sattar 1955); *Zizania latifolia* (Griseb.) Turcz. ex Stapf (Risbec 1950).

Remarks: This is one of the well-known species, as it is a pest of rice. *Di cladispa armigera* differs from all other south Indian members of the genus by its shining metallic blue-black and asetose dorsum. The presence of four spines on the lateral sides of

pronotum, sparser and widely separated spines on both lateral margins and disc of the elytra, and lack of distinct spines at its apical margin are also unique to this species.

Material examined (n=39): 5 unsexed. INDIA: Kerala / Vellayani / 31.i.2011 / Shameem Coll.; 7 unsexed. same data except date 2.ii.2011; 5 unsexed. same data except date 8.ii.2011; 1 unsexed. same data except date 11.ii.2011; 1 unsexed. same data except date 19.vii.2011; 1♂, 4 unsexed. same data except date 20.vii.2011; 1 unsexed. India: Kerala / Vellayani / 12.xi.2014 / Shameem KM Coll. (Print); 2 unsexed. India: Kerala / Tirur, Athanikkal / 17.i.2013 / Shameem K. Coll. / Ex Rice (Print); 1 unsexed. India: Kerala / Calicut, Mundoth / 10.x.2013 / Ranjith R. Coll. / Ex Rice (Print); 3 unsexed. India: Kerala / Tirurangadi / N 11° 02' 15.32" / E 75° 55' 26.64" 14 m / 21.ix.2016 / Shameem KM Coll. (Print); 4♀, 4 unsexed. India: Tamil Nadu / Manavur / N 13° 05' 34.18" / E 79° 48' 22.85" 57 m / 24.ix.2016 / Shameem KM Coll. / Ex Rice.

***Dicladispa pallescens* (Guérin-Méneville, 1841)**

(Map 17)

Hispa pallescens Guérin-Méneville, 1841:13 (type: India, Pondicherry, MNHN?).

Dicladispa pallescens (Guérin-Méneville). Uhmman 1952a:233.

Hispa (Dicladispa) palescegens (Guérin-Méneville) [sic]. Anand 1997:8.

Hispa pallida Guérin-Méneville, 1841:13 (type: Senegal, MNHN?).

Dicladispa pallida (Guérin-Méneville). Gestro 1905:554 (catalog).

Hispa pavidata Weise, 1901:234 (type: German East Africa, Mbungu; British East Africa, Mombas, ZMHB).

Dicladispa pavidata (Weise). Gestro 1904a:174.

Hispa holtzi Uhmman 1928b: 88 (type: Nairobi to Tanga, depository unknown).

Diagnosis: Length 3.69–4.31 mm, width 1.87–2.87 mm. Oblong-ovate, subnitid, brown; head, pronotum and scutellum darker than elytra; apices of thoracic spines and almost all elytral spines black; mouth parts darker than frontoclypeus; proximal seven antennomeres shining and concolorous with vertex; distal five dull; hypomeron and prosterna dark brown to black; mesosterna, metasterna, epimera and episterna black; ventrites generally paler than sternites or concolorous with sternites, more paler towards its lateral sides; all coxae concolorous with their respective sternites; claw tarsomere turns black towards apex, claw light brown; whole body clothed with yellowish setae. Antennae stout, gradually thickened towards apex; proximal antennomeres shorter and thicker compared

to *D. armigera*; first antennomere longer, subconical, truncate apically, without any apical tooth ventrally. Disc of pronotum coarsely and densely punctate; densely clothed with thick dense long setae; each of lateral sides with a group of seven spines arising from a common base. Scutellum triangular, apex slightly, surface granulate. Elytra punctate-striate; punctural rows confusing laterally; punctures larger and circular; interspaces much shorter than diameter of individual punctures; sparsely clothed with long erect setae; each elytron with about 35 discal spines and 18–20 marginal spines; spines at apical margin shorter.

Distribution: India (Bihar, Madhya Pradesh, Pondicherry, Punjab). *Elsewhere:* Angola, Congo, Egypt, Eritrea, Ethiopia, Kenya, Malawi, Mozambique, Nigeria, Senegal, South Africa, Tanzania, Zimbabwe (Africa); Saudi Arabia, Yemen (Asia).

Host plants: Malvaceae: *Abutilon indicum* (L.) Sweet (**New record**); *Abutilon* sp., *Triumfetta rotundifolia* Lam. (Kadapa 1959).

Remarks: *Dicladispa pallescens* is the only known south Indian member of the genus that has been recorded on eudicotyledons. The present study documents *Abutilon indicum* (L.) Sweet. as the food plant of this species. *Dicladispa pallescens* can be readily identified by their chocolate brown colour, densely pubescent pronotum and setose elytra, presence of seven spines on lateral sides of pronotum, and short and closely placed spines on the lateral margins of the elytra.

Material examined (n=26): 4 unsexed. India: Tamil Nadu / Cumbam / 20.v.2012 / Prathapan KD Coll.; 1 ♂, 2 ♀ (i) India: Karnataka / Bengaluru, Jakkur Lake / 12.viii.2012 / Prathapan KD Coll., (ii) Ex *Abutilon* sp.; 1 ♀, 4 unsexed. India: Tamil Nadu / Pollachi / 26.vii.2013 / T N U Coll. / Ex *Abutilon indicum*; 3 ♂, 9 unsexed. India: Tamil Nadu / TNAU Botanical Garden / 6.i.2016 / Prathapan & Shameem Coll. / Ex *Abutilon* sp.; 2 unsexed. India: Tamil Nadu / Manavur / N 13° 05' 34.18" / E 79° 48' 22.85" 57 m / 24.ix.2016 / Shameem KM Coll. / Ex *Abutilon*.

Hispa Linnaeus, 1767

(Figs. 52, 103; Map 18)

Hispa Linnaeus, 1767:603. Type species: *Hispa atra* Linnaeus, 1767, designated by Chapuis 1875.

Hispella Chapuis, 1875:334 (not Linnaeus).

Diagnosis: Size 2.70–4.50 mm. Body oblong, colour entirely black or testaceous (Fig. 103). Antennae 11 segmented, reaching base of pronotum; basal six antennomeres with dorsal spines; apical five antennomeres densely pubescent and weakly clubbed (Fig. 52). Pronotum broader than long, disc transversely depressed before middle as well as near basal margin; surface rugose and sparsely setose; lateral margin rounded with three spines; anterior margin with a pair of two spines arising from a common base; elytra punctate-striate; both disc and margins armed with long spines (Fig. 103). Claws double and equal.

Diversity: Seven described species, six in India and five from south India.

Number of species studied: Six (one undescribed).

Distribution: Algeria, Egypt, Morocco, Tunisia (Africa); Afghanistan, Azerbaijan, China, India, Indonesia, Israel, Iran, Kazakhstan, Laos, Mongolia, Myanmar, Nepal, Pakistan, Sri Lanka, Syria, Thailand, Turkmenistan, Turkey, Vietnam (Asia); Albania, Austria, Bulgaria, Belgium, Bosnia, Byelorussia, Croatia, Czech Republic, Herzegovina, France, Germany, Georgia, Greece, Hungary, Italy, Macedonia, Montenegro, Netherlands, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, Yugoslavia (Europe).

Host Plants: **Poaceae** (Fletcher 1914; Maulik 1919a; Venturi 1936; Gressitt 1950; Thobbi 1959; Biondi *et al.* 1995; Bordy 2000; Hua 2002), **Verbenaceae** (Maulik 1919a).

Key to south Indian species of *Hispa* Linnaeus, 1767

1. Lateral sides of pronotum with three spines arising on a common base..... 2
 - Third spine separate, either continuous at base or widely separated from first two..... 3
2. Antennomere I with three dorsal spines: a single long and two short spines (not minute); principal spine on antennomere I subequal to that on antennomere II..... *H. waiensis* Borowiec & Świętojańska, 2007
 - Antennomere I generally with 3–5 dorsal spines: a single long spine and remaining minute spines located at its base; principal spine on antennomere I distinctly longer than that on antennomere II..... *H. brachycera* (Gestro, 1897)
3. Third spine is widely separated from anterior two..... 4
 - Third spine separate, but contiguous at base 5

4. Antennomere I with two dorsal spines.....
 *H. andrewesi* (Weise, 1897) status restored
- Antennomere I with four dorsal spines..... *H. stygia* (Chapuis, 1877)
5. Antennomere I with three dorsal spines; spines on antennomere VI reduced or even absent..... *H. ramosa* Gyllenhal, 1817
- Antennomere I with two dorsal spines; spines on antennomere VI distinct..... *Hispa* sp. 1

***Hispa andrewesi* (Weise, 1897) status restored**

Hispella andrewesi Weise, 1897:126 (type: India, Belgaum, BMNH).

Hispa andrewesi (Weise). Donckier 1899:602.

Hispa (Di cladispa) andrewesi (Weise). Anand 1997:8.

Hispa andrewsei singhalensis Maulik, 1919a:61 (type: Ceylon, Kandy; Bogawantalawa; Dikoya, BMNH).

Hispa ceylonica Motschulsky, 1861: 238, (*nomen dubium*).

Distribution: India (Karnataka, Tamil Nadu). *Elsewhere:* Sri Lanka (Asia).

Host plants: Poaceae: ‘narrow-leaved’ grass (Santiago-Blay 2004).

Remarks: Wurmli (1976) synonymized *H. andrewesi* with *H. ramosa* considering the differences between them as mere variations. However, in the present study, the examination of collected specimens of *H. ramosa*, as well as the descriptions and illustrations of both species provided by Maulik (1919a), reveal that the two species distinctly differ from each other in the number of spines on antennomere I and the arrangement of spines on the lateral margins of the pronotum. These two characters consistently vary between species and are considered key characters for distinguishing congeneric members. Therefore, in the present study, the two species are treated as distinct.

Material examined: Nil.

***Hispa brachycera* (Gestro, 1897)**

(Map 18)

Hispella brachycera Gestro, 1897a: 123 (type: Chota Nagpore, MCSN, MNHN).

Hispa brachycera (Gestro). Uhmman 1958a:271.

Hispa (Dycladispa) brachycera (Gestro). Anand 1997:8.

Dactylispa brachyvera (Gestro) (sic). Santiago-Blay 2004:60.

Diagnosis: Length 2.64–3.74 mm, width 1.10–1.92 mm. Colour entirely black or piceous; head, pronotum and scutellum opaque, elytra shining; elytral spines yellowish brown to dark brown, turns darker towards their apices; pronotal spines generally darker than elytral spines; ventral sides dark brown to piceous, often paler towards middle; all femora, distal ends of fore and hind tibiae paler. First antennomere with a single longer spine and 2–4 minute spines at its base arranged in two rows; second with a single long spine, shorter than that on antennomere I; ventral sides of I–III antennomeres bear a few minute spines. Each of the lateral sides of the pronotum with three long curved spines arising from a common stem; first two fused basally before joining with third; disc rugulose, sparsely clothed with long adpressed setae; anterior 1/3rd, a narrow longitudinal region along the middle and a narrow transverse stripe at the posterior margin granulate and asetose; setae along the anterior margin absent. Punctural rows on the elytra confusing towards the lateral sides; punctures larger, circular and shallower; each elytron with 20–21 discal spines including the smaller spines at the basal margin and humerus; 12–13 marginal spines, marginal spines longer in the basal 2/3rd; shorter at the apical 1/3rd; apical 1/3rd of epipleura bears 6–9 sparse denticles. Ventrites 2–4 with semi erect setae distally; mid tibiae with 3–5 distinct denticles distally on the ventral side.

Distribution: India (Andhra Pradesh, Bihar, Himachal Pradesh, Maharashtra, Meghalaya, Odisha, Punjab, Tamil Nadu). *Elsewhere:* Pakistan (Asia).

Host plants: Poaceae: grasses; **Verbenaceae:** *Lantana camara* L. (Maulik 1919a).

Remarks: This species resembles *H. waiensis* in having a similar arrangement of spines on the lateral margin of the pronotum, with all the three spines joining the pronotum through a short stalk. However, both species differ by the number of spines on the dorsal side of the antennomeres. In *H. brachycera*, antennomere I bears 3–5 dorsal spines, with one long spine and the others minute, minute spines placed at the base of the long spine. The principal spine on antennomere I is distinctly longer than that on antennomere II. In *H. waiensis*, antennomere I bears only three dorsal spines: a single long and two short spines (not minute). The principal spine on antennomere I is subequal to that on antennomere II. Additionally, the two species also differ in the relative length of setae present on the dorsum (setae are shorter in *H. brachycera* and longer in *H. waiensis*) and

the number of marginal spines on the elytra (12–13 in *H. brachycera* and 13–16 in *H. waiensis*).

Material examined (n=8): 8 unsexed. India: Tamil Nadu / Hogenakkal Waterfalls / 15.iv.2015 / Shameem KM Coll. / Ex Grass

***Hispa ramosa* Gyllenhal, 1817**

(Map 18)

Hispa ramosa Gyllenhal, 1817:6 (type: India, UZIU, NHRS).

Hispa ramosa Schönherr. Dejean 1837:390.

Hispella ramosa (Gyllenhal). Gestro 1897a:124.

Hispa (Dycladispera) ramosa (Gyllenhal). Anand 1997:8.

Hispella donckieri Pic 1924:28 (type: Vietnam, Tonkin, MNHN).

Hispa donckieri (Pic). Gressitt 1950:101.

Hispa ceylonica Motschulsky, 1861:238 (type: Ceylon, ZMUM).

Hispa (Hispella) ceylonica Motschulsky. Chapuis 1877:51 (noted).

Hispella ceylonica (Motschulsky). Gestro 1897a:81.

Hispa echinata Chen & Sun, 1964:115 (type: China, Yunnan, Shishong-Baanna, IZAS).

Diagnosis: Length 3.49 mm, width 1.52 mm. Head, antennae, pronotum, scutellum opaque black; elytra shining dark brown; spines on pronotum and elytra brown with darker apices; under side subnitid and black; femora proximally generally paler than rest of legs. Antennomere I with three dorsal spines, first two on a common stalk; third spine longer, arising from base of stalk, length subequal to length of antennomere I and II combined; antennomere II with a single spine dorsally and another ventrally, dorsal spine subequal or slightly longer than longest spine of antennomere I; spines of next three antennomeres progressively shortened; spine on antennomere VI shortest or reduced into a thickening or even absent. Each lateral side of pronotum with three spines on a common base; first two on a common stalk; third being longer and separated from anterior pair; disc rugose, sparsely clothed with long and thick semi-erect setae; a narrow stripe along midline and another transverse narrow region along basal margin asetose; a distinct median longitudinal impression and a row of setae along anterior margin present. Elytra sparsely clothed with long erect setae, arising from margin of each puncture; scutellar punctures absent; each elytron with 24–26 discal spines including 4 smaller spines at basal

margin and a few spines along suture; 16–17 marginal spines; spines at apical margin shorter; epipleura with a few sparse denticles at apical 1/3rd.

Distribution: India (Bihar, Karnataka, Madhya Pradesh, Odisha, Punjab, Tamil Nadu, Uttar Pradesh, West Bengal). *Elsewhere:* Afghanistan, China, Indonesia, Laos, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam (Asia).

Host plants: Poaceae: *Centotheca* sp. (Hua 2002); Grass (Fletcher 1914); *Imperata cylindrica* (L.) Raeusch. (Hua 2002); narrow leaved grass (Gressitt 1950).

Remarks: This species resembles *H. waiensis* in the arrangement of spines on antennomere I, but can be differentiated by the placement of the third spine on the lateral margins of the pronotum. In *H. ramosa*, the third spine is distinctly separated from the anterior two, whereas in *H. waiensis*, all three spines arise from a short stalk. *Hispa ramosa* also resembles *Hispa* sp.1 in having similarly arranged pronotal spines, but can be easily distinguished by the differences in the arrangement of spines on the antennomeres. In *H. ramosa*, antennomere I has three dorsal spines and its principal spine is distinctly shorter than the spines on the lateral margins of the pronotum, while in *Hispa* sp.1, antennomere I bears two dorsal spines and its principal spine is nearly as long as the spines on the lateral margin of the pronotum.

Material examined (n=2): 1 unsexed. India: Karnataka / Pushpagiri / 17.v.2011 / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Karnataka / Kogile / N 13° 05' 07.4" E 75° 32' 34.2" / 17.x.2017 / Shameem KM Coll.

***Hispa stygia* (Chapuis, 1877)**

(Map 18)

Hispa (*Hispella*) *stygia* Chapuis, 1877:51 (type: India, ISNB?).

Hispella stygia Chapuis. Weise 1897:126.

Hispa stygia Chapuis. Donckier 1899:611.

Diagnosis: Length 3.51 mm, width 1.51 mm. Entirely black; head, pronotum and scutellum opaque, elytra shining; mouth parts, except labrum, dark brown; middle of metasterna and all ventrites, all trochanters and proximal part of all femora shining, rest of venter dull. Proximal six antennomeres with dorsal spines, antennomeres II–IV spinose ventrally; antennomere I with four spines on a common base: distal one longer, slightly longer than 2nd and 3rd combined, rest of 3 spines situated at base in a single row,

gradually shortened in size; antennomere II with 2–3 dorsal spines on a common base, distal spine longer than rest, but slightly shorter than longest spine of antennomere I; each of next four antennomeres with a single spine dorsally; antennomeres III–VI each with a single gradually shortened spine. Pronotum with a row of irregular long erect setae along anterior margin; disc sparsely clothed with adpressed setae; two circular area towards lateral sides and a narrow longitudinal stripe along middle aetose. Elytral rows of punctures more or less regular; punctures towards lateral and apical sides bear long erect setae; disc with 36–37 spines, 17–18 marginal spines; epipleura with 6–8 sparse minute denticles. Ventricle 1 sparsely setose, 2–4 with a row of sparse long adpressed setae near distal margin. Mid tibiae with minute tooth distally.

Distribution: India (Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu, West Bengal). **New record from Karnataka.**

Host plants: Poaceae: *Coix lacryma-jobi* L., *Dichanthium annulatum* (Forssk.) Stapf, *Dichanthium caricosum* (L.) A. Camus, *Ischaemum polystachyum* J. Presl, *Megathyrus maximus* (Jacq.) B.K. Simon & S.W.L. Jacobs, *Oryza sativa* L., *Panicum antidotale* Retz., *Polytoca gigantea* (J. Koenig) Mabb. (Thobbi 1959); *Sorghum* sp. (Maulik 1919a); *Themeda* spp. (Thobbi 1959).

Remarks: *Hispa stygia* closely resembles *H. andrewesi*. Both species are distinguished from other congeneric members in south India by the distinctly separated third spine from the base of the anterior two on the lateral margins of the pronotum. However, *H. stygia* can be distinguished from *H. andrewesi* by the presence of four dorsal spines on antennomere I, whereas, *H. andrewesi* has only two dorsal spines on antennomere I.

Material examined (n=1). 1 unsexed. INDIA: Karnataka / Dharward / 30.viii.2011 / Prathapan Coll.

Hispa waiensis Borowiec & Świętojańska, 2007

(Figs. 52, 103; Map 18)

Hispa waiensis Borowiec & Świętojańska, 2007:289 (type: India, Maharashtra, Satara, UWCP).

Diagnosis: Length 3.02–3.84 mm, width 1.29–1.54 mm. Oblong, entirely black; elytra shining, spines on elytra and pronotum brown, elytral spines paler than pronotal spines. Antennomere I with three dorsal spines, all three generally arising from a common base;

antennomere II with a single long spine dorsally and a distinct short single spine ventrally, dorsal spine longer than longest spine on antennomere I; antennomeres III–VI with single dorsal spines; spine on antennomere IV longer than that on antennomere III. Pronotum with a row of sparse erect setae along anterior margin; disc sparsely clothed with long and thick setae; a narrow medial stripe and a narrow region near anterior margin asetose; each lateral side with three spines on a common base; anterior two on a short common stalk, third longest, strongly curved in middle. Elytra with regular rows of punctures, punctures large, deep and circular, each with a single, long, erect seta on its margin; each elytron with about 30 spines including 13–16 marginal spines; suture with irregular spines on basal 1/4th; epipleura sparsely and minutely denticulate apically. Ventriles 2–4 with a row of long curved setae distally. Distal ends of mid tibiae ventrally with few denticles.

Distribution: India (Karnataka, Kerala, Maharashtra, Tamil Nadu, Telangana, Uttarakhand). *Elsewhere:* Sri Lanka (Asia). **New record from Karnataka, Kerala and Telangana.**

Host plants: Poaceae: *Eleusine indica* (L.) Gaertn, *Megathyrsus maximus* (Jacq.) B.K. Simon & S.W.L. Jacobs, *Setaria homonyma* (Steud.) Chiov. (**New record**).

Remarks: One specimen from Narasimha Jharna has only two dorsal spines on antennomere I). This species also resembles *H. brachycera* and *H. ramosa* (See the “Remarks” section under *H. brachycera* and *H. ramosa*).

Material examined (n=100): 1 unsexed. India: Andhra Pradesh / Rudrur / N 18° 33.977' E 77° 52.706' / 12.ix.2012 383 m / Prathapan KD Coll. (Print); 8 unsexed. Same data except date 13.ix.2012; 1 unsexed. Same data except date 14.ix.2012; 1 unsexed. India: Karnataka / 2 km East of Bidar / Narasimha Jharna/ N 17° 54.061' E 77° 32.929' / 12.ix.2012 603 m / Prathapan KD Coll. (Print); 1 unsexed. India: Karnataka / GKVK / 26.x. 2014 / Prathapan KD Coll. / Ex Grass; 3 unsexed. India: Kerala / Vellayani / 20.x.2002 / K. D. Prathapan Coll.; 1 unsexed. INDIA: Kerala / Vellayani / 28.i.2011 / Shameem Coll.; 3 unsexed. Same data except date 29.i.2011; 5 unsexed. Same data except date 31.i.2011; 1 unsexed. Same data except date Feb. 2011; 14 unsexed. Same data except date 1.ii.2011; 1 ♀, 1 unsexed. Same data except date 2.ii.2011 and an additional label as Ex Rice; 5 unsexed. Same data except date 3.ii.2011; 1 unsexed. Same data except date 4.ii.2011; 1 unsexed. Same data except date 5.ii.2011; 2 unsexed. Same data except date 6.ii.2011; 1 unsexed. Same data except date 8.ii.2011; 7 unsexed. Same data except

date 9.ii.2011; 4 unsexed. Same data except date 10.ii.2011; 10 unsexed. Same data except date 11.ii.2011; 1 unsexed. Same data except date 12.ii.2011; 5 unsexed. Same data except date 17.ii.2011; 1 unsexed. Same data except date 22.ii.2011; 5 unsexed. Same data except date 24.ii.2011; 1 unsexed. Same data except date 26.ii.2011; 1 unsexed. Same data except date 30.iv.2011; 1 unsexed. Same data except date 5.vii.2011; 1 unsexed. Same data except date 20.vii.2011; 2 unsexed. India: Kerala / Vellayani / 9.viii.2012 / Shameem K Coll. (print); 1 unsexed. India: Kerala / Vellayani / 2.i.2013 / Shameem K. Coll.; 1 unsexed. India: Kerala / Vellayani / 6.vii.2013 / Shameem K. Coll. / Ex Grass (print); 1 ♀, 1 unsexed. Same data except date 27.vii.2013. 1 unsexed. India: Kerala / Vellayani / 23.ix.2014 / Shameem K.M. Coll. / Ex Grass; 1 unsexed. India: Kerala / Vellayani / 12.xi.2014 / Shameem KM Coll.; 2 unsexed. India: Kerala / Azhimala / 12.ii.2018 / Shameem KM Coll.; 1 unsexed. India: Kerala / Trivandrum, Attinkuzhy / 24.v.2018 / Viswajyothi K Coll.; 1 unsexed. India: Tamil Nadu / Hort. College, Periyakulam / 7.i.2016 / Prathapan & Shameem Coll.

***Hispa* sp. 1**

(Map 18)

Diagnosis: Length 3.12–4.61 mm, width 1.29–1.82 mm. Entirely black, elytra shining, sometimes with brownish tinge, mouth parts except labrum, gula in some, generally brownish; ventrites and proximal part of femora rarely brownish. Antennomere I generally with two curved spines on a common base, one specimen with three spines; distal spine 2X longer than proximal one and subequal to length of antennomeres II–IV combined; antennomere II with a long spine dorsally and another short ventrally, an additional short spine present dorsally in one specimen; each of next four antennomeres with a single and gradually shortened spines dorsally. Pronotum with a row of erect setae along anterior margin; disc rugose and sparsely clothed with semi-erect setae; a granular narrow longitudinal stripe along midline and a narrow transverse area behind anterior row of setae aetose; lateral margin with three spines; first two on a common stalk, third being separate but continuous at base. Elytra sparsely setose; each elytron with 31–33 discal spines; marginal spines 14–16, distinctly shorter at apical margin; epipleura at apical margin with 4–8 denticles.

Distribution: India (Kerala). **New record.**

Host plants: Poaceae: Unidentified grasses. (**New record**).

Remarks: See the “Remarks” section under *H. ramosa*.

Material examined (n= 27): 1 unsexed. India: Kerala / Ponmudi / 24.xii.2007 / K.D. Prathapan Coll.; 1 unsexed. (1) India: Kerala / Trivandrum-Kallar / 19.xi.2011 / D. Prathapan & K. Shameem Coll. (2) Ex Grass; 1 unsexed. (1) INDIA: Kerala / Kallar-Anappara / 2.x.2011 / Shameem. K Coll. (2) Ex Grass); 1 unsexed. India: Kerala / Ponmudi / N 8° 45' 19.9" E 77° 06' 43.7" 872 m / 28.v.2011 / D. Prathapan & K. Shameem Coll. (Print); 3 unsexed. India: Kerala / Ponmudi / N 8° 45' 19.9" E 77° 06' 43.7" 872 m / 21.iii.2012 / Prathapan & Shameem Coll. (Print); 1 unsexed. India: Kerala / Ponmudi / N 08° 45' 57.8" / E 77° 06' 38.7" 1034 m / 14.xi.2014 / Shameem KM Coll. / Ex Grass (Print); 2 unsexed. India: Kerala / Ponmudi / 8° 45' 58.5" N, 77° 6' 38.9"E / 01.ix.2017 / Amritha Kumari S Coll.; 2 unsexed. India: Kerala / Nadukani Pass / N 11° 23' 35.8" E 76° 21' 45.0" / 13.x.2012 / Prathapan & Shameem Coll. (Print); 3 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 2015 / Shameem KM Coll.; 1 unsexed. India: Kerala / Eravikulam N. P. / 8.iii.2014 / Shameem K Coll.; 1 unsexed. India: Kerala / Mazhuvannur / 11° 43' 45" N 75° 59' 15" E / 20.x.2018 754 m/ Viswajyothi K Coll.; 1♀, 1 unsexed. India: Kerala, Idukki, Pudukkudi / 3.iv.2016 / Ranjith AP Coll.; 1♀, 7 unsexed. India: Kerala, Idukki, Rajamala / 5.iv.2016 / Ranjith AP Coll.

Hispellinus Weise, 1897

(Figs. 53, 55, 57, 104; Map 19)

Hispellinus Weise, 1897:144. Type species: *Hispa multispinosus* Germar 1848, designated by Weise 1905c.

Monochirus Chapuis, 1875:330 (not Rafinesque).

Diagnosis: Size: 7.0–6.4 mm. Body elongate and subparallel, sparsely clothed with scale-like whitish or greyish setae; colour black, some species with bluish tinge (Fig. 104). Labrum triangular and cup shaped. Antennae nearly reaching middle of body; 11 segmented; antennomere I granulate, dorsally with a single spine; II–VI sulcate, scarcely setose; VII–XI distinctly thickened and pubescent (Fig. 53). Pronotum broader than long; lateral margin rounded, armed with three spines, either anterior two or posterior two shares a common base; anterior margin with a pair of two spines; disc convex, with two shallow transverse depressions. Elytra punctate-striate; scutellar row present; both disc and margins spinose (Fig. 57). Legs with all femora toothed ventrally; midtibiae strongly

curved; claws single, acutely pointed and distinctly projects beyond bilobed 3rd tarsomere (Fig. 55).

Remarks: This genus is closely related to *Acmenychnus*, *Asamangulia*, *Phidodonta* and *Rhadinosa* in having single dorsal spine on antennomere I, presence of spines on the anterior and lateral margins of pronotum and strongly and inwardly curved mid tibiae, but differ from all others by their characteristic single and pointed claws.

Diversity: 15 described species, three in India, one from south India.

Number of species studied: One.

Distribution: Congo, Guinea, Mozambique, South Africa, Tanzania (Africa); Bangladesh, China, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Philippines, South Korea, Sri Lanka, Taiwan, Thailand, Vietnam (Asia); Russia (Europe); Australia, New Guinea (Oceania).

Host Plants: Poaceae (Froggatt 1907; Schultze 1916; Corbett 1924; Uichanco 1929; Gressitt 1957b, 1960a; Kalshoven 1957; Chûjô & Kimoto 1961; Takizawa 1978; Kimoto *et al.* 1984; Hawkeswood 1987; Hua 2002; Lee & Cheng 2007).

***Hispellinus callicanthus* (Bates, 1866)**

(Figs. 53, 55, 57, 104; Map 19)

Hispa perotetii Motschulsky, 1861: 238 (type: India, Pondicherry, depository unknown).

Hispa callicantha Bates, 1866: 354 (type: Formosa, BMNH).

Monochirus callicanthus (Bates). Chapuis 1876: xxv.

Hispellinus callicanthus (Bates). Weise 1897: 145.

Hispellinus callicanthus callicanthus (Bates). Hua 2002: 292.

Monochirus moestus Baly, 1888: 662 (type: Burma, Bhamo, MCSN, DEI).

Hispellinus moestus (Baly). Weise 1897: 126.

Hispellinus callicanthus moestus (Baly). Chen *et al.* 1962.

Monochirus formosanus Uhmann 1927b: 111 (type: Formosa, Hokuto, DEI).

Hispellinus formosanus (Uhmann). Uhmann 1940b: 127.

Diagnosis: Length 3.78–3.41 mm, width 1.73–1.46 mm. Body oblong, shining or subnitid; colour entirely black, some with bluish tinge, one specimen with reddish brown shining elytra; setae on distal five antennomeres brownish; rest of body setae whitish.

Head not strongly constricted behind eyes; interocular space rugose with a deep longitudinal impression in middle; a transverse sinuate impression present behind eyes; surface granulate behind eyes; a row of adpressed scale like setae present around eyes. Pronotum with more or less circular excavations in anterior half, one on either side of midline; transverse basal impression distinct; surface rugose and densely clothed with scale like setae; a broader region in anterior 2/3rd asetose, more granulate and less rugose; circular excavations in anterior half and oblique area towards postero-lateral corner asetose; lateral sides with three long subequal spines, 1st two on a common base; spines of anterior margin nearly equal. Scutellum more or less quadrate; apex rounded; surface granulate and shallowly depressed. Elytra slightly widened towards apex; punctate-striate, rows confusing towards lateral sides; puncture circular bearing single scale like setae; interstices spinose; each elytron with about 20 discal spines and 17 marginal spines in addition to some irregular spines along suture; marginal spines slightly longer towards base.

Distribution: India (Kerala, Tamil Nadu, West Bengal). *Elsewhere:* China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam (Asia).

New record from Kerala.

Host plants: Poaceae: *Bambusa blumeana* Schult.f. (Schultze 1916); *Centotheca* sp., *Imperata cylindrica* (L.) Raeusch. (Hua 2002); *Miscanthus floridulus* (Labill.) Warb. ex K. Schum. & Lauterb. (Lee & Cheng 2007); *Miscanthus* sp. (Takizawa 1978); *Oryza sativa* L. (Uichanco 1929); *Saccharum* × *sinense* Roxb. (Hua 2002); *Saccharum officinarum* L. (Corbett 1924); *Saccharum* sp. (Uichanco 1929); *Zizania latifolia* (Griseb.) Hance ex F. Muell. (Hua 2002).

Material examined (n=8); 1♀, 2 unsexed. India: Kerala / Ottapilavu / 6.x.2013 / Ranjith R. Coll. / Ex Rice; 2 unsexed. India: Kerala / Calicut, Mundoth / 10.x.2013 / Ranjith R. Coll. / Ex Rice; 1♀, 1 unsexed. India: Kerala / Palakkad, Sreekrishnapuram / 26.vii.2015 / Ranjith AP Coll. / Ex Rice; 1 unsexed. India: Kerala / Mavoor / -.iii.2015 / Shweta M. Coll.

***Phidodonta* Weise, 1906**

(Figs. 56, 58, 105; Map 20)

Phidodonta Weise, 1906:404. Type species: *Phidodonta modesta* Weise, 1906, by monotypy.

Phidodonta Weise (sic). Jolivet & Hawkeswood 1995:156, (*lapsus calami*).

Philodonta Weise, 1906. Risbec 1950: 391.

Philodonta Weise, 1904. Staines 2015g: 154 (Catalog).

Pleurispella Uhmann 1931b: 159. Type species: *Pleurispella weisei* Uhmann, by monotypy.

Diagnosis: Size 2.6–5.0 mm. Body oblong, entirely black, sparsely setose, less spinose (Figs. 58, 105); antennae reaches humerus, 11 segmented; antennomere I with a single long spine; II–VI shining, sparsely setose and longitudinally sulcated; distal five antennomeres pubescent, thickened forming a weak club. Pronotum with 3 or 6 spines on lateral sides; spines on anterior margin placed near antero-lateral angles (Fig. 105). Elytra parallel sided, apex rounded; lateral margins strongly dentate or armed with short spines; spines on apical margin longer (Fig. 58); disc punctate-striate; scutellar row present; distinct spines absent; alternate interstices tuberculated. Femora spinose ventrally, mid femora strongly curved inwards; claws double, equal and pointed apically.

Diversity: Three described species, one in India and the same from south India.

Number of species studied: One.

Distribution: Congo, Ivory Coast, Mozambique, Rwanda, Zimbabwe (Africa); India, Pakistan (Asia).

Host Plants: Poaceae (Maxwell-Lefroy 1909; Fletcher 1921; Zaka-Ur-Rab 1991)

***Phidodonta modesta* Weise, 1906**

(Figs. 58, 105; Map 20)

Phidodonta modesta Weise, 1906:404 (type: India, Pusa, Bengal, BMNH, ZMHB).

Hispa (Philodonta) modesta Weise. Maxwell-Lefroy 1907:139.

Diagnosis: Length 5.34 mm, width 2.16 mm (size 5–6 mm in Maulik (1919)). Body oblong, entirely black; distal five antennomeres reddish brown; elytra and middle of ventrites shining. Vertex depressed between eyes, strongly rugose, with a distinct medial sulcus and a row of dense silvery setae around eyes; head behind eyes finely granulate; frons and gena coarsely punctate and setose; frons carinated medially between antennae; labrum crescentic in ventral view, rugose with a row of curved setae along its anterior margin. Pronotum nearly as long as wide; lateral sides rounded, weakly margined, with

three separate spines on each side, all spines subequal, bluntly pointed and directed horizontally outwards, first two spines closer, third slightly separated; anterior margin with a row of long erect setae and a pair of spines arising from a common base on each side near antero-lateral angle; spines subequal in length, pointed and directed horizontally outwards; disc convex, with a distinct medial impression behind middle, transversely depressed in middle and near base, latter being more strong; anterior 1/3rd of disc punctate and setose; rest of surface rugose, except a narrow longitudinal area around medial sulcus, sparsely setose on either side of midline and around a more or less circular area on either side. Scutellum short, widest at base, slightly narrowed towards apex, apex rounded; surface granulate with a shallow circular depression in middle. Elytra subparallel, slightly constricted behind humerus; lateral margin with 19–20 short spines; apical margin with 4–5 longer spines; each elytron with eight rows of punctures in middle, and nine rows near base and behind middle; scutellar row well developed; punctures larger, deep, more or less circular with short single indistinct seta at centre; interspaces shorter than diameter of individual punctures; interstices tuberculated, tubercles larger towards apical and lateral margins; basal margin of elytra with 4 small tubercles; elytral suture with 3–4 stout spines towards apex. Venter punctate and setose; metasternum and ventrites smooth and shining in middle. All trochanters and femora sparsely setose; all femora toothed ventrally; midtibiae distinctly curved with a few denticles apically; foretarsi larger than mid and hind tarsi and subequal or slightly larger than front tibiae.

Distribution: India (Bihar, Karnataka, Telangana). *Elsewhere:* Pakistan (Asia). **New record from Telangana.**

Host plants: Poaceae: *Avena sativa* L., *Oryza sativa* L. (Zaka-Ur-Rab 1991); *Saccharum officinarum* L. (Maxwell-Lefroy 1909); *Sorghum bicolor* (L.) Moench (Fletcher 1921, Zaka-Ur-Rab 1991); wild grasses (Maxwell-Lefroy 1909).

Material examined (n=1): 1 unsexed. (1) India: Telangana / Rudrur / N 18° 33.977' E 77° 52.706' / 13.ix.2012 383 m / Prathapan KD Coll. (Print), (2) Ex Sugar Cane.

***Platypria* Guérin-Ménéville, 1840**

(Figs. 50, 106–116; Map 21)

Platypria Guérin-Ménéville, 1840a:139. Type species: *Hispa echidna* Guérin-Ménéville, by Maulik 1919a.

Lobacantha Kirby, 1837:227 (suppressed name, ICZN Opinion 376, 1955). Uhmman 1952b:266 (petition to suppress).

Dichirispa Gestro, 1890:229. Type species: *Platypria (Dichirispa) abdominalis* Chapuis, designated by Uhmman 1949b.

Platypria (Dichirispa) Gestro. Weise 1905c:317.

Diagnosis: Size 4.20–7.20 mm. Body more or less quadrate; colour variable; generally yellow to red brown with or without dark markings on pronotum and elytra (Figs. 106–107, 112). Head deeply inserted into pronotum in dorsal view, strongly constricted behind eyes; eyes strongly convex. Antennae nine segmented, without spines (Fig. 50). Pronotum broader than long; laterally with anteriorly directed sharply palmate lamina bearing translucent area (Figs. 50, 106–107, 112); anterior trichobothria produced into a spine like process and shifted dorsally, placed adjacent to base of pronotal lobe; disc nearly flat or weakly convex. Scutellum generally triangular with apex rounded. Elytra nearly quadrate with apex rounded; lateral and apical margin laminate; each elytron laterally with two sharply palmate lobes bearing translucent patches, near base and apical 1/3rd on either side of middle single spine; disc convex, clothed with long or short sparse or dense setae; punctate-striate with about nine regular rows of punctures, scutellar row present; alternate interstices costate, two principal costae tuberculated or spinose; suture with a series of irregular spines. Legs long and slender; tibiae straight; claws double, equal and projects beyond bilobed 3rd tarsomere (Figs. 106–107, 112).

The genus comprises two subgenera namely, *Platypria (Platypria)* – the Asian subgenus and *Platypria (Dichirispa)* – the African subgenus. They differ in the degree of development of lateral lobes present on the elytra, as well as the length of median spine present between the two lobes. In *Platypria (Platypria)*, both the anterior and posterior lobes bear translucent fenestrae (windows), and the spine between the two lobes is very short. In *Platypria (Dichirispa)*, only the anterior lobe bears fenestrae and the spine between the two lobes is long and subequal to the spines on the lobes.

Remarks: The genus *Platypria* differs from all other genera of the tribe Hispini by the following combination of characters: antenna nine segmented and devoid of dorsal spines; pronotum without dorsal spines on its anterior margin; lateral margins of the pronotum and elytra with palmate lobe bearing depressions and translucent areas; scutellum triangular, apex rounded, surface with a more or less circular depression in middle.

Diversity: 34 species, six in India, four from south India.

Number of species studied: Five (one undescribed).

Distribution: *Platypria* (*Platypria*): Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam (Asia); New Guinea (Oceania).

Platypria (*Dichirispa*): Angola, Burundi, Cameroon, Congo, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Guinea, Guinea-Basso, Insel Principe, Insel São Tomé, Ivory Coast, Kenya, Madagascar, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Tanzania, Togo, Uganda, Zimbabwe (Africa); Yemen (Asia).

Host Plants: *Platypria* (*Platypria*): **Euphorbiaceae** (Hua 2002); **Fabaceae** (Fletcher 1914; Maulik 1919a; Beeson 1941; Gressitt 1950; Uhmman 1954f; Zaka-Ur-Rab 1991; Hua 2002; Rani & Sridhar 2004; Ranade *et al.* 2021); **Myricaceae** (Maulik 1936; Hua 2002); **Poaceae** (Anand 1989); **Rhamnaceae** (Maxwell-Lefroy 1909; Beeson 1941; Bhasin 1942; Zaka-Ur-Rab 1991; Ranade *et al.* 2021); **Rosaceae** (Maulik 1936; Hua 2002); **Rubiaceae** (Kalshoven 1957).

Platypria (*Dichirispa*): **Fabaceae** (Uhmman 1958b, Bernon & Graves 1979); **Icacinaceae** (Uhmman 1954g).

Key to South Indian species of *Platypria* Guérin-Ménéville, 1840

1. Antenna robust, hardly reaching beyond humerus...***P. erinaceus* (Fabricius, 1801)**
 - Antenna long, slender, reaching much beyond humerus..... 2
2. Elytra clothed with long, erect setae; disc shiny; spines and tubercles numerous..... 3
 - Elytra not clothed with long setae; disc opaque; spines and tubercles fewer..... ***P. chiroptera* Gestro, 1899**
3. Lateral lobes of pronotum with well-defined depressions, anterior trichobothria located on the lobe and appears as a short spine; anterior lobe on each side of elytra much broader (>2X broader than posterior one) and usually bears 6–7 spines; colour yellowish brown to reddish brown, elytra not suffused with black 4

- Lateral lobes of the pronotum with ill-defined depressions, anterior trichobothria located on pronotal disc close to the base of pronotal lobe and upwardly curved; anterior lobe on each side of elytra only slightly broader than posterior one and usually bears 5 spines; colour yellow brown, elytra suffused with black..... *P. hystrix* (Fabricius, 1798)
- 4. Antennomere III comparatively longer, 1.84–1.92X longer than I; spiculum gastrale parallel sided, posterior margin of sternum VIII semicircular process..... *P. echidna* Guérin-Méneville, 1840
- Antennomere III comparatively shorter, 1.27–1.45X longer than I; spiculum gastrale distinctly expanded in middle, posterior margin of sternum VIII horse shoe shaped..... *Platypria* sp. 1

***Platypria (Platypria) chiroptera* Gestro, 1899**

(Fig. 106; Map 21)

Platypria chiroptera Gestro, 1899b: 172 (type: India, Ghates, MNHN).

Platypria garthwaitei Bhasin, 1942:9 (type: Burma, Maymyo, IFRI).

Diagnosis: Length 5.19–6.25, width 3.31–3.94 mm. Body subnitid; yellowish, elytra ferruginous; four patches on pronotum, fused into two in some individuals, two spots– one on either side of scutellum, a longitudinal stripe laterally before middle, sutural angle, discal spines, spines on elytral lateral lobes and a single spine following distal lobe in most individuals black; rest of elytral marginal spines and spines of pronotal lobe yellowish with black apex; lateral lobes of elytra suffused with yellow and black; venter and legs yellow, paler than dorsum. Interocular space with only a few setae around eyes; antennae long and slender, antennomere III distinctly longer than I and II combined. Pronotal disc more or less flat, coarsely punctate, punctures large with short setae; large area anteriorly and similar region at centre and laterally near base of pronotal lobe, extreme basal margin impunctate and asetose; lateral lobes with four hyaline fenestrae and four spines in addition to a modified trichobothria anteriorly. Elytral disc velvety, densely clothed with indistinct short setae; long setae absent; disc spinose; most of spines reduced to tubercles; only a few spines prominent; anterior lateral lobe with six long spines; posterior lobe with three spines; apical margin with 7–8 spines, gradually shortened towards sutural angle.

Distribution: India (Karnataka, Kerala, Sikkim, Tamil Nadu). *Elsewhere:* Bhutan, China, Myanmar (Asia). **New record from Karnataka and Kerala.**

Host plants: Rhamnaceae: *Gouania microcarpa* DC. (**New record**); *Ziziphus incurva* Roxb. (Bhasin 1942).

Remarks: This species differs from all other congeneric members in South India by its long and slender antennae, which reach the middle of the body, and the subnitid dorsum that lacks long setae on the elytra.

Material examined (n=13): 1 ♀. India: Kerala / Neyyar W. L. San. / 8.II.2002 / Prathapan Coll.; 1 unsexed. INDIA: Karnataka / Kottigehara / 22.IX.2004 / Prathapan Coll.; 1 unsexed. India: Kerala / Elappara / 1.iii.2011 / Shameem K. Coll.; 2 unsexed. India: Karnataka / Kottigehara / N 13° 7' 7.7" E 75° 30' 37.9" / 8.v.2011 938 m / Prathapan & Shameem Coll.; 2 unsexed. INDIA: Karnataka / Kalasa / 11.v.2011 / Shameem Coll.; 5 unsexed. India: Kerala / Silent Valley Nat. Park / Sairandhri / N 11° 5' 35.8" E 76° 26' 47.7" / 15.xi.2011 / Prathapan & Shameem Coll.; 1 ♀. India: Kerala / Kuttiyadi, Janakikkadu / 14.iii.2013 / Shameem K. Coll.

***Platypria (Platypria) echidna* Guérin-Méneville, 1840**

(Figs. 50, 107–111; Map 21)

Platypria echidna Guérin-Méneville, 1840a:139 (type: India, Visapour, depository unknown).

Diagnosis: Length 5.77–7.31 mm, width 3.69–4.31 mm. Body shining; colour yellow to red brown; interocular space, disc of pronotum, proximal part of scutellum and distal four antennomeres dull; four spots on pronotum black, anterior two indistinct or even absent in some individuals; apices of pronotal spines black or dark brown; discal spines on elytra and all longer spines on lateral margins black; lateral lobes of elytra, bases of first three spines following posterior lobe rufous or coffee brown; venter and legs yellow, paler than dorsum. Interocular space densely pubescent except a narrow region along midline; antennae long and slender, clothed with long setae; antennomere III distinctly longer than I and II combined. Pronotal disc more or less flat; coarsely punctate and clothed with long setae except on a broader longitudinal area along midline and a more or less circular region laterally; lateral lobe with four translucent fenestrae and five spines in addition to tubercle bearing trichobothria anteriorly. Elytral disc densely clothed with long erect

setae; spines shorter and most of them reduced into tubercles; anterior lobe broadly joined to margin, with seven spines; posterior lobe with three spines; apical margin with 10–11 spines, first three longer, rest distinctly shorter.

Genitalia: Median lobe of aedeagus in lateral view slightly curved, apex short and recurved, biconvex in basal half, distinctly depressed ventrally behind middle (Fig. 108); apex of median lobe bluntly pointed in dorsal view (Fig. 109). Basal piece unsclerotized (Fig. 108). Spermatheca in lateral view, strongly curved in middle, receptacle not distinctly separated from pump, slightly widened towards base (Fig. 111). Pump subequal to receptacle, denticulate pre-apically; apical appendix distinct, well developed, sclerotized and triangular in shape (Fig. 111). Spiculum gastrale parallel sided; sternum VIII posteriorly with a semi-circular process, with strongly sclerotized margins and long setae (Fig. 110).

Distribution: India (Bihar, Goa, Kerala, Karnataka, Maharashtra, Sikkim, Tamil Nadu). *Elsewhere:* Bangladesh, China, Cambodia, Japan, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam (Asia).

Host plants: Euphorbiaceae: *Mallotus* sp. (Hua 2002); **Fabaceae:** *Erythrina* sp. (Beeson 1941); *Erythrina subumbrans* (Hassk.) Merr., *Erythrina variegata* L. (Fletcher 1914, Hua 2002, Zaka-Ur-Rab 1991); *Pleurolobus gangeticus* (L.) J.St.-Hil. ex H. Ohashi & K. Ohashi, *Pueraria tuberosa* (Roxb. ex Willd.) DC. (Beeson 1941); **Rhamnaceae:** *Ziziphus* spp. (Beeson 1941); *Ziziphus mauritiana* Lam., *Ziziphus nummularia* (Burm.f.) Wight & Arn. (Ranade *et al.* 2021); *Ziziphus oenopolia* (L.) Mill. (Chatterjee & Bhasin 1936); *Ziziphus rugosa* Lam., *Ziziphus xylopyrus* (Retz.) Willd. (Ranade *et al.* 2021).

Remarks: This species is nearly identical to *Platypria* sp. 1 in all external characters except in the relative length of antennomere III (slightly shorter in *Platypria* sp. 1). However, the two species greatly differ in the shape of spiculum gastrale and sternum VIII, components of female genitalia. In *P. echidna*, spiculum gastrale parallel is sided and the posterior margin of sternum VIII is semicircular (Fig. 110). In *Platypria* sp. 1, spiculum gastrale is distinctly expanded in the middle and the posterior margin of sternum VIII is arched like a horse-shoe (Fig. 115).

Material examined (n=54): 2 unsexed / INDIA: Kerala / Ponmudi / 19.IV.2010 / Prathapan Coll.; 12 unsexed. India: Karnataka / Kottigehara / N 13° 7' 18.4" E 75° 29' 38.2" / 6.v.2011 920 m / Prathapan & Shameem Coll. / Ex *Ziziphus*; 3 unsexed. India:

Karnataka / Kottigehara / N 13° 7' 7.7" E 75° 30' 37.9" / 8.v.2011 938 m / Prathapan & Shameem Coll. / Ex *Ziziphus*; 1 unsexed. India: Karnataka / Bisle Forest / 10.v.2011 / D. Prathapan & K. Shameem Coll.; 2 unsexed. India: Karnataka / Pushpagiri / 17.v.2011 / D. Prathapan & K. Shameem Coll.; 1 unsexed. India: Karnataka / Abbi Falls / N 12° 27' 32" E 75° 43' 11.1" / 18.v.2011 1038 m / D. Prathapan & K. Shameem Coll.; 2 unsexed. (i) India: Kerala / Kallar Aanappara / 29.v.2011 / D. Prathapan & K. Shameem Coll.; 1 unsexed. INDIA: Kerala / Kallar - Anappara / 29.xi.2011 / Shameem K. Coll., (ii) Ex *Ziziphus*; 1 unsexed. India: Kerala / Arippa / N 8° 50' 11" E 77° 1' 46.1" / 30.xi.2011 236 m / D. Prathapan & K. Shameem Coll. / Ex *Ziziphus*; 1 unsexed. India: Kerala / Calicut University / Botanical Garden / 9.i.2012 / Shameem K. Coll. / Ex *Ziziphus*; 1♀, 1 unsexed. (i) INDIA: Kerala / Calicut Univ. / 6.ii.2012 / Shameem Coll., (ii) Ex *Ziziphus*; 1 unsexed. India: Kerala / Trivandrum – Kallar / N 8° 45' 19.8" E 77° 6' 43.6" / 21.iii.2012 / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Shendurney WLS / Kattalappara / 22.iii.2012 / Prathapan & Shameem Coll.; 2♀, 1♂. India: Kerala / Braemore Estate / N 8° 45' 43.2" E 77° 5' 41" / 23.iii.2012 395 m / Prathapan & Shameem Coll.; 1 unsexed. (i) India: Kerala / Arippa / 19.iv.2012 / Prathapan & Shameem Coll., (ii) Ex *Ziziphus*; 1 unsexed. (i) India: Karnataka / Joide / N 15° 11.620' E 74° 33.680' / 16.viii.2012 / Prathapan KD Coll., (ii) Ex *Ziziphus*; 1 unsexed. (i) India: Karnataka / Khanapur / N 15° 39.714' E 74° 28.684' / 18.viii.2012 694 m / Prathapan KD Coll., (ii) Ex *Ziziphus*; 2♀, 2 unsexed. India: Karnataka / Khanapur / N 15° 39.714' E 74° 28.684' / 11.xi.2012 694 m / Prathapan KD Coll. / Ex *Ziziphus*; 1♀. India: Karnataka / Dandeli-Ganeshgudi / 11.xi.2012 / Prathapan KD Coll.; 1 unsexed. India: Kerala / Silent Valley N.P. / Poochippara-Sirendri / 23.i.2013 / Shameem K. Coll. / Ex *Ziziphus*; 1♀, 1 unsexed. India: Kerala / JNTBGRI Campus / N 08° 45' 10.1" E 77° 01' 30.8" / 28.iv.2013 114 m / Prathapan KD Coll.; 1♂. India: Kerala / Trivandrum, Kallar / N 08° 42' 30.9" E 77° 07' 59.7" / 24.v.2013 160 m / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Palode / 30.vii.2013 / Prathapan D & Shameem K Coll. / Ex *Ziziphus*; 1♀. India: Kerala / Vagamon / 23.x.2015 / Prathapan KD Coll.

Platypria (Platypria) erinaceus (Fabricius, 1801)

(Map 21)

Hispa erinaceus Fabricius, 1801:59 (type: India, ZMUC).

Hispa erinacea Fabricius. Olivier 1808:762.

Platypria erinaceus (Fabricius). Guérin-Méneville 1840a:141.

Platypria erinacea (Fabricius) (sic). Donckier 1899:600.

Platypria erinaceus bengalensis Gestro 1897a:112 (type: Philippines, Barway, ISNB).

Platypria andrewesi Weise 1906:404 (type: India, Bombay, ZMHB, BMNH).

Diagnosis: Length 4.61 mm, width 2.77 mm. Body subnitid; interocular space yellowish, collar shining brown; antennae brown; pronotum yellow with two brown longitudinal patches, middle of anterior 1/3rd tinged brown; elytral disc dark brown, costa 2 yellowish or paler for a short length, larger spines tipped black, rest of smaller spines black, margins yellow, marginal spines tipped black, last two spines on distal lobe and following four marginal spines including their bases, spines at sutural angle dark brown; venter and legs pale yellow. Interocular space finely granulate and asetose; antennae stout, hardly reaching middle of body; clothed with short setae; basal antennomeres not strongly narrowed; 3rd antennomere thicker and distinctly shorter than I and II combined. Pronotal disc distinctly convex; surface rugose, transversely striated in middle; punctate on either side of midline in darker area; entire disc asetose; lateral lobes broadly joined, and covering entire lateral margin except a narrow space in front of postero-lateral angle, with four translucent fenestrae and six spines in addition to a modified trichobothria anteriorly. Elytral disc velvety, densely clothed with short adpressed setae, longer setae absent, discal spines shorter and most of them reduced into tubercles; anterior lateral lobe with seven spines, lobe broadly joined to margin, nearly covering anterior 1/3rd of the margin; posterior lobe with three spines; spine in between the two lobes comparatively longer and subequal to spines of lobes; apical margin with nine spines, slightly shortened towards apex.

Distribution: India (Bihar, Kerala, Gujarat, Himachal Pradesh, Madhya Pradesh, Maharashtra, Pondicherry, Punjab, Tamil Nadu). *Elsewhere:* Bangladesh, Myanmar, Nepal, Pakistan, Sri Lanka (Asia). **New record from Kerala.**

Host plants: Fabaceae: *Erythrina* sp. (Maulik 1919a); *Pleurolobus gangeticus* (L.) J.St.-Hil. ex H. Ohashi & K. Ohashi, *Pueraria tuberosa* (Roxb. ex Willd.) DC. (Maxwell-Lefroy 1909); Poaceae: *Oryza sativa* L. (Anand 1989); **Rhamnaceae:** *Ziziphus jujuba* Mill. (Maxwell-Lefroy 1909, Zaka-Ur-Rab 1991), *Ziziphus nummularia* (Burm.f.) Wight & Arn. (Ranade *et al.* 2021); *Ziziphus* spp. (Beeson 1941).

Remarks: This species distinctly differs from all other south Indian congeneric members due to its smaller size; short and stout antennae, hardly reaching middle of the body and the subnitid dorsum devoid of long setae.

Material examined (n=2): 1 unsexed. India: Kerala / Palakkad, Chittur / 13.ii.2018 / Shameem KM Coll. / Ex *Ziziphus*; 1 unsexed. India: Tamil Nadu / Manavur / N 13° 05' 48.44" / E 79° 47' 37.66" 54 m / 24.ix.2016 / Shameem KM Coll. / Ex *Ziziphus*.

***Platypria (Platypria) hystrix* (Fabricius, 1798)**

(Map 21)

Hispa hystrix Fabricius, 1798:116 (type: India, ZMUC).

Platypria hystrix (Fabricius) (sic). Guérin-Méneville 1840a:141.

Platypria hystrix (Fabricius). Gemminger & Harold 1876:3617.

Hispa erinacea Olivier, 1808:762 (not Fabricius) (type: Indies orientales, MNHN?).

Platypria digitata Gestro, 1888:178 (type: Burma, Teinzo, MCSN).

Platypria ericulus Gestro, 1890:247 (type: Burma, MCSN).

Platypria echinogale Gestro, 1897a:71 (type: Indonesia, Sumatra, Tandjong Morawa, RMNH).

Platypria sumatrensis Csiki, 1900:196 (type: Indonesia, Sumatra, HNHM).

Platypria echinogale testaceicollis Heller, 1916:116 (type: Indonesia, Celebes, Makassar, Bontorio, depository unknown).

Platypria fenestrata latenigra Pic, 1927:26 (type: Vietnam, Tonkin, Chapa, MNHN).

Diagnosis: Length 4.38–5.22 mm, width 2.70–3.30 mm. Body shining; interocular space, distal 3 or 4 antennomeres, disc of pronotum and scutellum subnitid. Colour variable; generally yellowish brown; spots and patches on pronotum; spines on lateral lobe tipped black or dark brown; scutellum varies from red brown to black, apex black in several individuals; elytra greatly suffused with black; spines, their bases, lateral sides of disc, lateral lobes and their spines, first two spines following posterior lobe and their bases generally black, dark brown in paler specimens; rest of marginal spines and last spine of anterior lobe yellow tipped black. Interocular space distinctly setose except on a narrow region in middle; antennae long and slender, clothed with relatively long setae, antennomere III slender, longest and distinctly longer than I and II combined. Pronotal disc more or less flat, surface punctate-rugose, clothed with long setae; middle of apical 1/3rd impunctate and asetose; lateral lobes generally with four translucent fenestrae and five spines; anterior trichobothria shifted to base of lobe. Elytra shining, sparsely clothed with long erect setae, setae arises from interspaces; most of spines well developed, only a few tuberculated; anterior lobe with five spines; posterior lobe with three spines; single spine between two lobes comparatively longer; spines on apical margin generally shortened towards apex; last 3 or 4 near apex subequal and sometimes interspersed with shorter spines.

Distribution: India (Karnataka, Kerala, Maharashtra, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal). *Elsewhere:* Bhutan, China, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam (Asia).

Host plants: Fabaceae: *Abrus precatorius* L. (**New record**); *Cajanus cajan* (L.) Huth (Uhmann 1954f, Kalshoven 1957); *Centrosema* sp. (**New record**); *Erythrina* sp. (Fletcher 1914); *Erythrina stricta* Roxb. (Ranade *et al.* 2021); *Erythrina subumbrans* (Hassk.) Merr. (Zaka-Ur-Rab 1991); *Erythrina variegata* L. (Maulik 1919a, Gressitt 1950, Zaka-Ur-Rab 1991, Hua 2002), *Glycine max* (L.) Merr. (Kezhen 1992); *Lablab purpureus* (L.) Sweet (Fletcher 1921), *Mucuna pruriens* (L.) DC (Rani & Sridhar 2004); *Neustanthus phaseoloides* (Roxb.) Benth. (Ranade *et al.* 2021); *Phaseolus* spp. (Kezhen 1992); *Pleurolobus gangeticus* (L.) J.St.-Hil. ex H.Ohashi & K.Ohashi (Beeson 1941); *Pueraria montana* var. *lobata* (Willd.) Maesen & S.M.Almeida ex Sanjappa & Predeep (Ranade *et al.* 2021); *Pueraria tuberosa* (Roxb. ex Willd.) DC (Beeson 1941); *Sesbania bispinosa* (Jacq.) W.Wight (Zaka-Ur-Rab 1991); *Sesbania grandiflora* (L.) Pers. (Maulik 1919a); *Sesbania* sp. (=“Agathi”) (Maulik 1919a, Fletcher 1921; Chatterjee & Bhasin 1936; Nair 1986); *Tephrosia candida* (Roxb.) DC. (Kalshoven 1957); **Fagaceae:** *Castanea* sp. (=“chestnut”) (Nair 1986); **Myricaceae:** *Myrica rubra* (Lour.) Siebold & Zucc. (Hua 2002); *Myrica* sp. (Maulik 1936); **Rhamnaceae:** *Ziziphus* spp. (Beeson 1941); **Rosaceae:** *Rubus ellipticus* Sm. (Maulik 1936); *Rubus* sp. (Hua 2002); **Rubiaceae:** *Uncaria gambir* (W.Hunter) Roxb. (Kalshoven 1957).

Remarks: This species can be easily differentiated from other congeneric members by its coloration. Unlike other members, its elytra are more suffused with black.

Material examined (n=81): 1 unsexed. (i) INDIA: Kerala / Vellayani / 20.xii.2006 / Prathapan Coll. / ex *Erythrina stricta*, (ii) *Platypria hystrix* Fabricius / Prathapan K. D. det. 2007; 1 unsexed. same data on both labels except date 14.ii.2007; 2 unsexed. (i) INDIA: Kerala / Pattambi / 16.x.2007 / Prathapan Coll., (ii) ex ?*Centrosema*; 2♀, 21 unsexed. INDIA: Kerala / Vellayani / 5.ii.2011 / Shameem Coll.); 1♀, 34 unsexed. Same data except date 24.ii.2011; 1 unsexed. INDIA: Kerala / Vellayani / 24.v.2011 / Shameem K. Coll.; 1 unsexed. India: Kerala / Vellayani / 12.i.2012 / K. Shameem Coll.; 2♀, 1 unsexed. (i) INDIA: Kerala / Tirurangadi / 14.i.2012 / Shameem Coll., (ii) ex *Erythrina*; 1♀. (i) INDIA: Kerala / Tirurangadi / 8.ix.2011 / Shameem Coll., (ii) Ex *Abrus*; 1 unsexed. Same data on both labels except date 9.ix.2011; 1 unsexed. (i) India: Kerala /

Tirurangadi / 6.ix.2014 / Shameem KM Coll. / Ex *Erythrina*; 1 unsexed. (i) India: Kerala / Tirurangadi / N 11° 02' 14.3" E 75° 55' 27.8" / 14.xii.2014 / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Silent Valley Nat. Park / Mukkali / N 11° 03' 53.3" E 76° 32' 10.9" / 14.xi.2011 / Prathapan & Shameem Coll.; 1 ♀. India: Kerala / Karuvarakkundu / 19.xi.2011 / Shameem Coll.; 2 ♀, 1 unsexed. India: Kerala / Kallar-Ponmudi / 14.xi.2014 / Shameem KM Coll.; 6 unsexed. India: Kerala / Palakkad, Chittur / 13.ii.2018 / Shameem KM Coll.

Platypria (Platypria) sp. 1

(Figs. 112–116; Map 21)

Diagnosis: Length 6.06–6.39 mm, width 3.62–4.37 mm. Colour yellowish. Antennae darker than vertex; four spots on pronotum black, pronotal spines yellowish, tipped black; elytra suffused with reddish brown, discal tubercles and spines reddish brown with their apex dark brown; spines on lobes except first and last spine of anterior lobe, first three spines on apical margin dark brown, rest of spines yellowish and tipped dark brown or black; lateral lobes and bases of first three spines on apical margin reddish brown. Vertex with a distinct medial sulcus between eyes, sparsely setose. Frontoclypeus triangular, convex. Surface rugose, with large strong punctures, sparsely clothed with long setae; between antennae in continuation with medial sulcus on vertex. Antennae shorter, hardly reaching humerus; antennomere I thickest and subcylindrical, II shortest and cylindrical, III elongated, weakly dilated apically, IV–VI gradually diminishes in length and subconical, VII and VIII 8 cylindrical and subequal, XI cylindrical but pointed towards apex. Proximal I–V shining and sparsely covered with long setae, distal VI–XI dull and pubescent, covered with short setae; annulation on antennomere XI indistinct. Pronotum subquadrate, widest in middle. Lateral lobes inclined at an angle of nearly 45°, with bears four hyaline windows, basal two larger than distal two; six spines, first and last being shorter than rest. Disc more or less flat, with shallow transverse depression basally; weakly impressed medially in distal half. Surface rugose, coarsely punctate and densely setose, middle of apical 1/3rd and a narrow longitudinal region along middle impunctate. Scutellum triangular, apex rounded, surface rugose, sparsely setose with a single strong circular depression behind middle. Elytra shining, sparsely clothed with long curved setae. Each elytron with 10 rows of punctures in addition to a short scutellar row and another on explanate margin of elytra; punctures larger, deeper and quadrate; interspaces shorter than diameter of individual punctures; alternate interstices spinose and tuberculated; with about

15 distinct discal spines in addition to sparse, irregular spines along suture. Anterior lobe with 8–10 hyaline windows arranged in two rows; with 7–8 spines, posterior most spine generally shorter. Posterior lobe with 5–6 windows arranged in two rows; with three spines; marginal spine in between two lobes longer. Hypomerion strongly convex; shining and sparsely setose in middle, rugulose and sparsely setose behind. Prosternum distinctly margined, sparsely setose, intercoxal process depressed medially. Posterior margin of mesosternal process varies from more or less straight, sinuate to weakly conical. Mesepisterna covered with setose punctures; mesepimera impunctate and asetose. Metasternum sparsely clothed with long curved setae, except on a narrow region along midline. Metepisterna densely clothed with short setae, its anterior process more or less rounded, convex, granulate and asetose. All ventrites sparsely clothed with long curved setae. Legs. All coxae with minute warts like structures. All trochanters, femora and tibiae sparsely setose. Claw tarsomere projects beyond bilobed 3rd tarsomere.

Genitalia: Median lobe of aedeagus in lateral view slightly curved, apex short and recurved, biconvex in basal half, distinctly depressed ventrally behind middle (Fig. 113); apex of median lobe bluntly pointed in dorsal view (Fig. 114). Basal piece unsclerotized (Fig. 113). Spermatheca in lateral view, strongly curved in middle, receptacle not distinctly separated from pump, slightly widened towards base (Fig. 116). Pump subequal to receptacle with distinct and well developed and sclerotized triangular apical appendix (Fig. 116). Spiculum gastrale distinctly expanded laterally in middle, sternum VIII posteriorly with a horse shoe shaped process with strongly sclerotized margins, covered with long setae (Fig. 115).

Distribution: India (Goa). **New record.**

Host plants: Rhamnaceae: *Ziziphus* sp. (**New record**).

Remarks: This species is very closely related to *Platypria echidna* in external morphology and colour, except in the proportionate length of the antennomeres I and II. This species can be easily differentiated from *P. echidna* by the shape of spiculum gastrale of the female genitalia as mentioned in the key.

Material examined (n=7): 3♂, 4♀. India: Goa / Colva / 4.x.2015 / Prathapan KD Coll. / Ex *Ziziphus*.

***Rhodtrispa* Chen & T'an, 1964**

(Figs. 62, 64, 117; Map 22)

Dactylispa (*Rhoptrispa*) Chen & T'an, 1961:414. Type species: *Dactylispa luhi* Uhmann, by original designation.

Rhodtrispa Chen & T'an, 1964:414. Type species: *Hispa dilaticornis* Duvivier, 1891, by monotypy.

Rhoptrispa Chen & T'an (sic). Kimoto & Chu 1996:132.

Diagnosis: Size 2.85–3.40 mm. Colour entirely black. Vertex neither raised between eyes nor constricted behind; interocular space 1.5X wider than eyes. Antennae short, robust, hardly reaching base of pronotum; antennae with 11 antennomeres, aspinose; antennomeres I truncate apically, I–VI sulcate, VII–XI pubescent and forms a dilated club (Figs. 62, 117). Pronotum convex with a distinct transverse impression basally; anterior margin with a pair of two spines; lateral margins with three spines, first two on a common base, followed by a short single spine; antero-lateral angle rounded; postero-lateral angle acute and laterally projecting (Fig. 64). Scutellum smaller and pentagonal. Elytra subparallel sided, slightly narrowed near base, apex rounded; marginal spines and discal spines present; disc punctate-striate; short scutellar row present; eight regular rows near base, nine in middle and ten near apex. Venter covered with short yellow setae. Ventral sides of all femora spinose; mid tibiae strongly curved and toothed; fore- and hind tibiae straight, not toothed; claws double and equal; claw tarsomere projects beyond bilobed 3rd tarsomere.

Distribution: Eritrea, Ethiopia (Africa); Afghanistan, Bangladesh, Bhutan, China, India, Laos, Nepal, Sri Lanka, Taiwan, Thailand, United Arab Emirates, Vietnam (Asia).

Diversity: This is a monotypic genus and is recorded from both northern and southern India.

Number of species studied: One.

Host Plants: Poaceae (Maulik 1919a; Gressitt 1950; Khan & Kadapa 1957).

Remarks: This genus resembles *Dactylispa* in having a pair of spines on the anterior margin of the pronotum, and similar antennae devoid of dorsal spines. However, in *Rhodtrispa*, antennae are characteristically short and robust, with the apical five antennomeres distinctly thickened, forming a club; antennomere I is apically truncate and

ventrally angulate; head is not constricted behind the eyes; body is sparsely clothed with short, thick, adpressed setae; strongly curved mid tibiae. Whereas in *Dactylispa*, antennae are long, antennomere I is not truncate, apical antennomeres are not clubbed; head is strongly constricted behind the eyes, forming a distinct collar; body is generally clothed with sparse, long, thin setae; midtibiae either straight or only weakly curved.

***Rhodtrispa dilaticornis* (Duvivier, 1891)**

(Figs. 62, 64, 117; Map 22)

Hispa dilaticornis Duvivier, 1891: xlviii (type: India, Koubir, ISNB).

Dactylispa dilaticornis (Duvivier). Gestro 1907:71.

Rhodtrispa dilaticornis (Duvivier). Chen *et al.* 1986:349.

Dicladispa dilaticornis (Duvivier). Anand 1997:9, 10.

Rhoptrispa dilaticornis (Duvivier). Kimoto & Chu 1996:132.

Dactylispa arisana Chûjô 1933:324 (type: Taiwan, TARI).

Rhodtrispa arisana (Chûjô). Chen *et al.* 1986:347.

Dactylispa assamensis Weise, 1904:451 (type: India, Assam, ZMHB).

Dicladispa assamensis (Weise). Anand 1997:9.

Dactylispa clavata Gestro, 1904:175 (not Weise 1901) (type: Ethiopia, MCSN).

Dactylispa clavicornis Chen & T'an, 1964:415 (type: China, Yunnan, IZAS).

Rhoptrispa clavicornis (Chen & Tan). Chen *et al.* 1986:348.

Dactylispa luhi Uhmman 1951b:19 (type: China, Peking, W. Hills, USNM).

Dactylispa (*Rhoptrispa*) *luhi* Uhmman. Chen & T'an 1964:414 (noted).

Dactylispa perpusilla Gestro 1911b:28 (type: Ethiopia, MCSN).

Dactylispa pusilla Weise 1905d: 103 (type: India, Mahe, ZMHB, USNM).

Dicladispa pusilla (Weise). Anand 1997:9.

Dactylispa perpusilla Gestro 1911b:28 (type: Uganda, Ghinda, MCSN).

Diagnosis: Length 2.85–3.30 mm, width 1.24–1.46 mm (length 3.00–3.40 mm in Staines 2015). Dorsum entirely black, elytra with metallic sheen; mouth parts, gula brownish; venter generally black, coxae, trochanters, basal part of femora brown; setae on distal antennomeres brown, rest of body setae whitish. Interocular space rugose, with a distinct medial sulcus, coarsely granulate behind eyes; antero-dorsal margin of eye with a single row of setae, setae on postero-dorsal margin scattered, gena coarsely granulate and sparsely clothed with adpressed setae (Fig. 64); labrum with a semi-circular ridge in

middle and clothed with sparse, curved setae. Pronotum more or less rounded in dorsal view with a transverse impression near basal margin; lateral sides rounded, widest in middle; anterior margin with a pair of two spines; each arising from a common base, anterior one being 2X longer than posterior one; lateral margin with three spines, first two on a common base, arising just in front of middle, 3rd arises from middle, first being longest and directed forward, 2nd and 3rd subequal, shorter than 1st and directed towards lateral sides; disc convex with distinct basal transverse impression, surface rugose with reticulated sculpturing, sparsely clothed with thick adpressed setae except on a narrow longitudinal area along midline and two circular area on either side (Fig. 64). Scutellum smaller, narrowed towards apex, slightly narrowed laterally in middle, apex rounded; surface coarsely granulate, weakly depressed on top in distal half, setose basally, with a tuft of thick setae on either side. Elytra subparallel sided, slightly narrowed near base, slightly wider behind middle; apex rounded; each elytron with nine rows of punctures in middle; punctures larger, circular and deeper, bear single curved setae in centre; each elytron with 13–16 marginal spines, about 28 discal spines in addition to a few irregular short spines along suture; marginal spines longer towards base; discal spines vary in length, shorter than marginal spines, placed on 2nd, 4th and 6th interstices, a few short spines present on 1st interstice (Fig. 117). Venter, femora and tibiae sparsely clothed with adpressed setae; claw projects beyond bilobed 3rd tarsomere.

Distribution: India (Assam, Bihar, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Pondicherry, Tamil Nadu, Uttar Pradesh, West Bengal). *Elsewhere:* Eritrea, Ethiopia (Africa); Afghanistan, Bangladesh, Bhutan, China, Iran, Laos, Nepal, Sri Lanka, Taiwan, Thailand, United Arab Emirates, Vietnam (Asia).

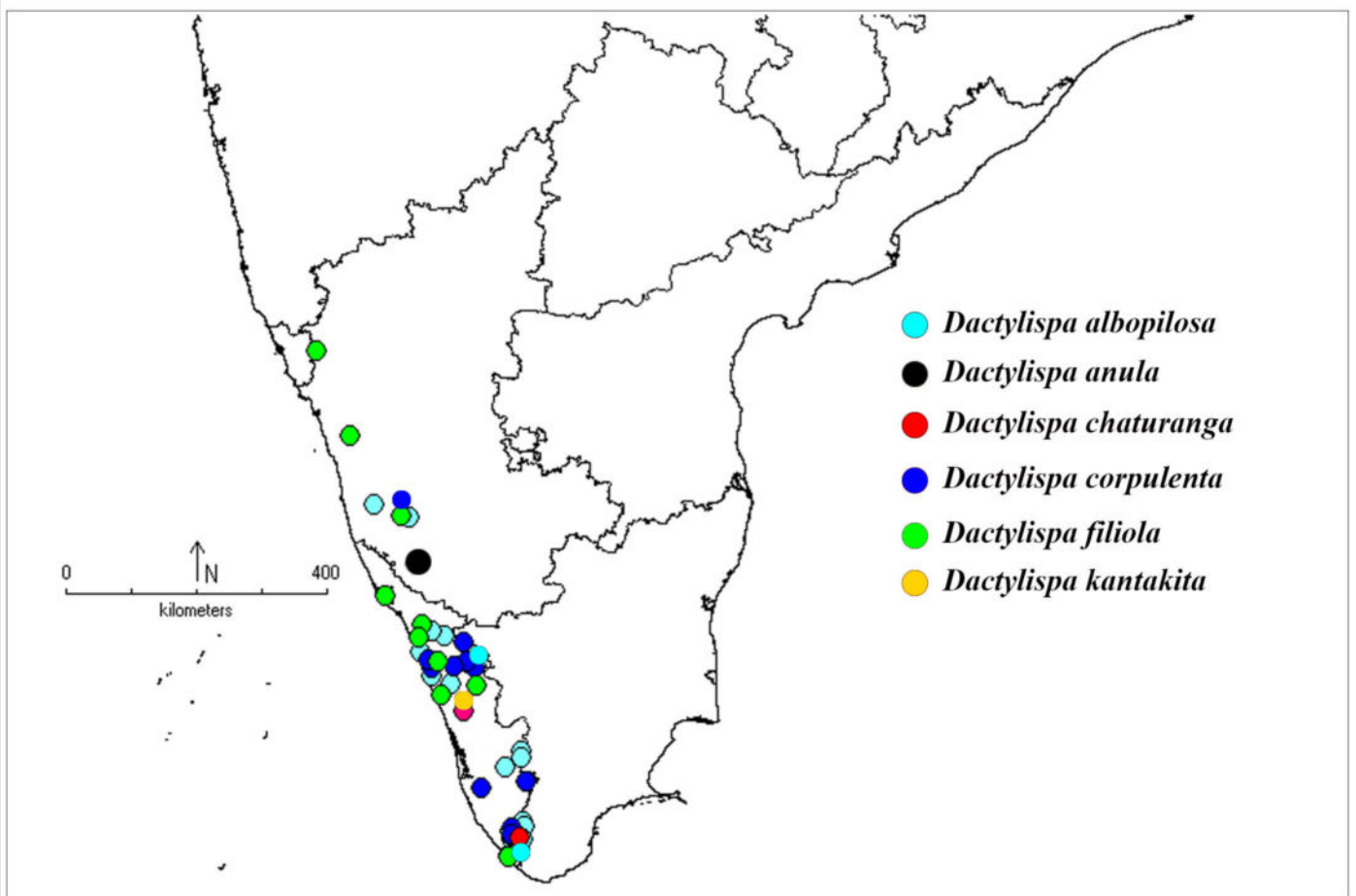
Host plants: Poaceae: *Arthraxon hispidus* (Thunb.) Makino (Gressitt 1950); dabi grass (Maulik 1919a); *Megathyrsus maximus* (Jacq.) B.K.Simon & S.W.L.Jacobs (**New record**); *Oryza sativa* L. (Khan & Kadapa 1957), *Panicum* sp. (Maulik 1919a); *Setaria homonyma* (Steud.) Chiov. (**New record**).

Material examined (n=7): 1 unsexed. INDIA: Kerala / Vellayani / 19.vii.2011 / Shameem. K Coll.; 1 unsexed. India: Kerala / Vellayani / 19.vi.2013 / Shameem K. Coll.; 1 unsexed. India: Kerala / Vellayani / 12.xi.2014 / Shameem KM Coll. / Ex Rice; 1 unsexed. India: Kerala / Vellayani / 18.v.2016 / Shameem KM Coll.; 1♀. India: Tamil Nadu / Manavur / N 13° 05' 34.18" / E 79° 48' 22.85" 57 m / 24.ix.2016 / Shameem KM

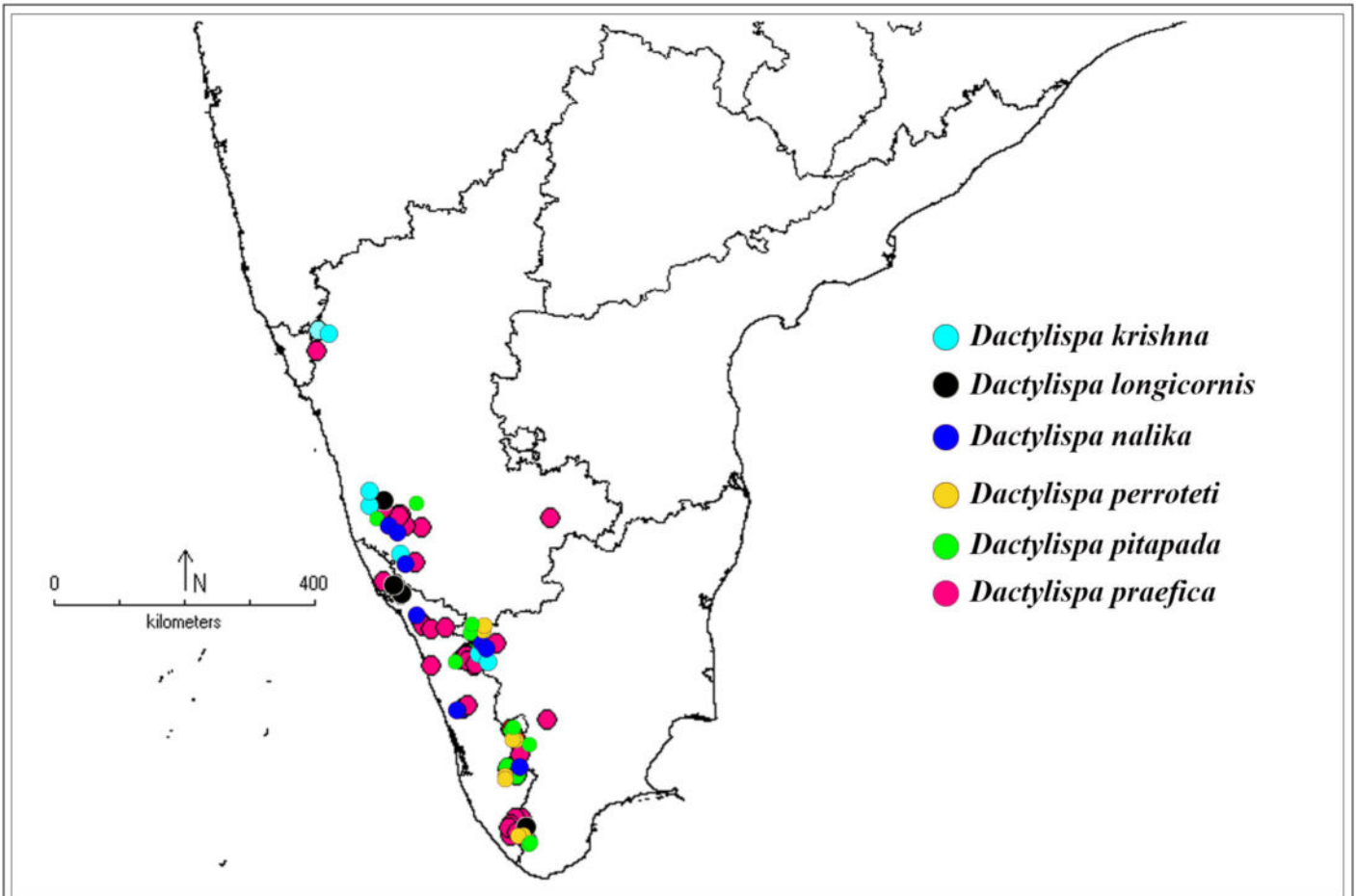
Coll. / Ex Rice; 2 unsexed. India: Kerala / Cherumukku / N 11° 01' 52.99" / E 75° 55' 37.83" 7 m / 2.vii.2017 / Shameem KM Coll. / Ex Grass.



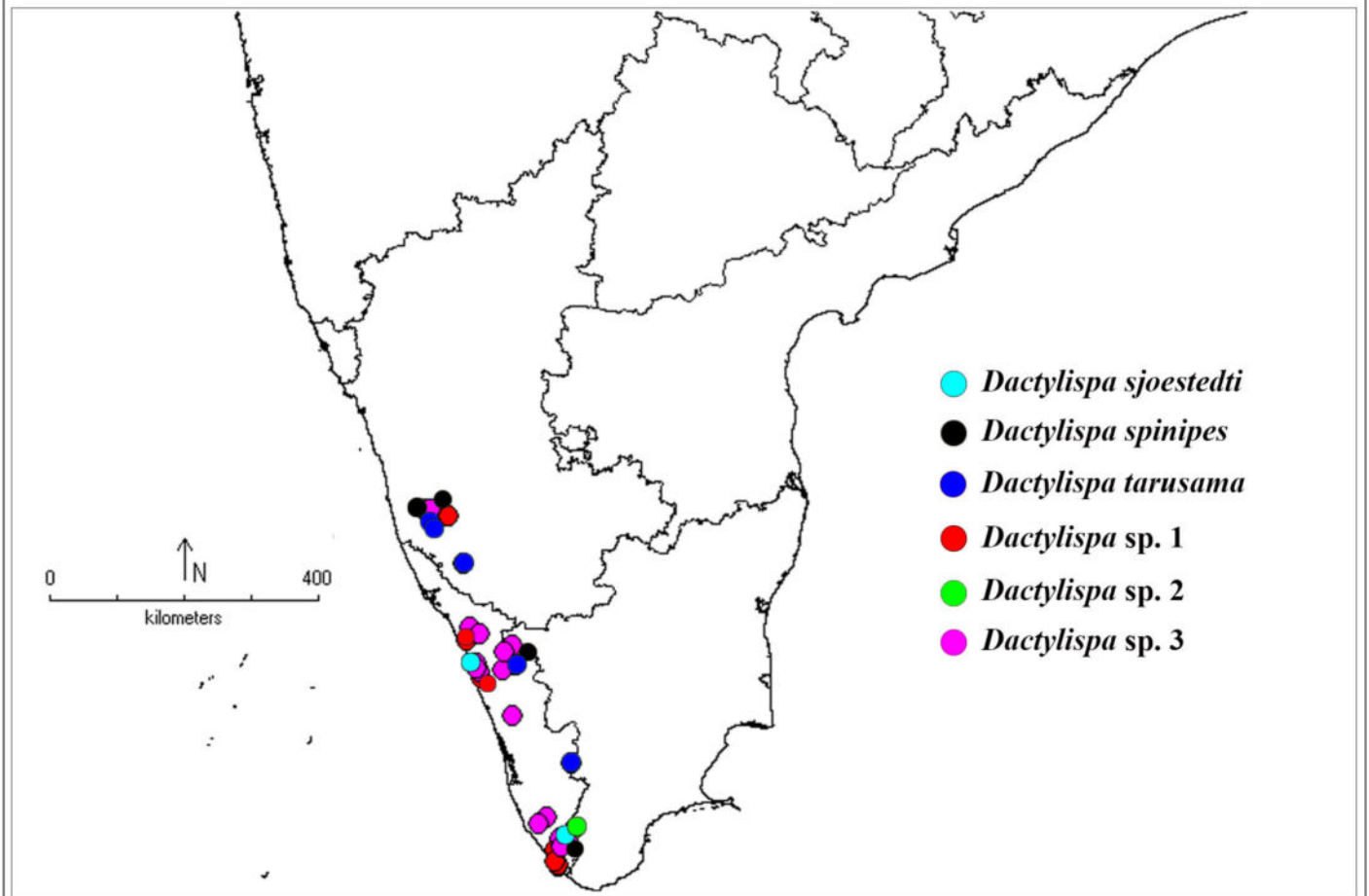
Fig. 101. *Dactylispa pitapada* Maulik.



Map 14. Localities of *Dactylispa* Weise species collected.



Map 15. Localities of *Dactylispa* Weise species studied.



Map 16. Localities of *Dactylispa* Weise species studied.

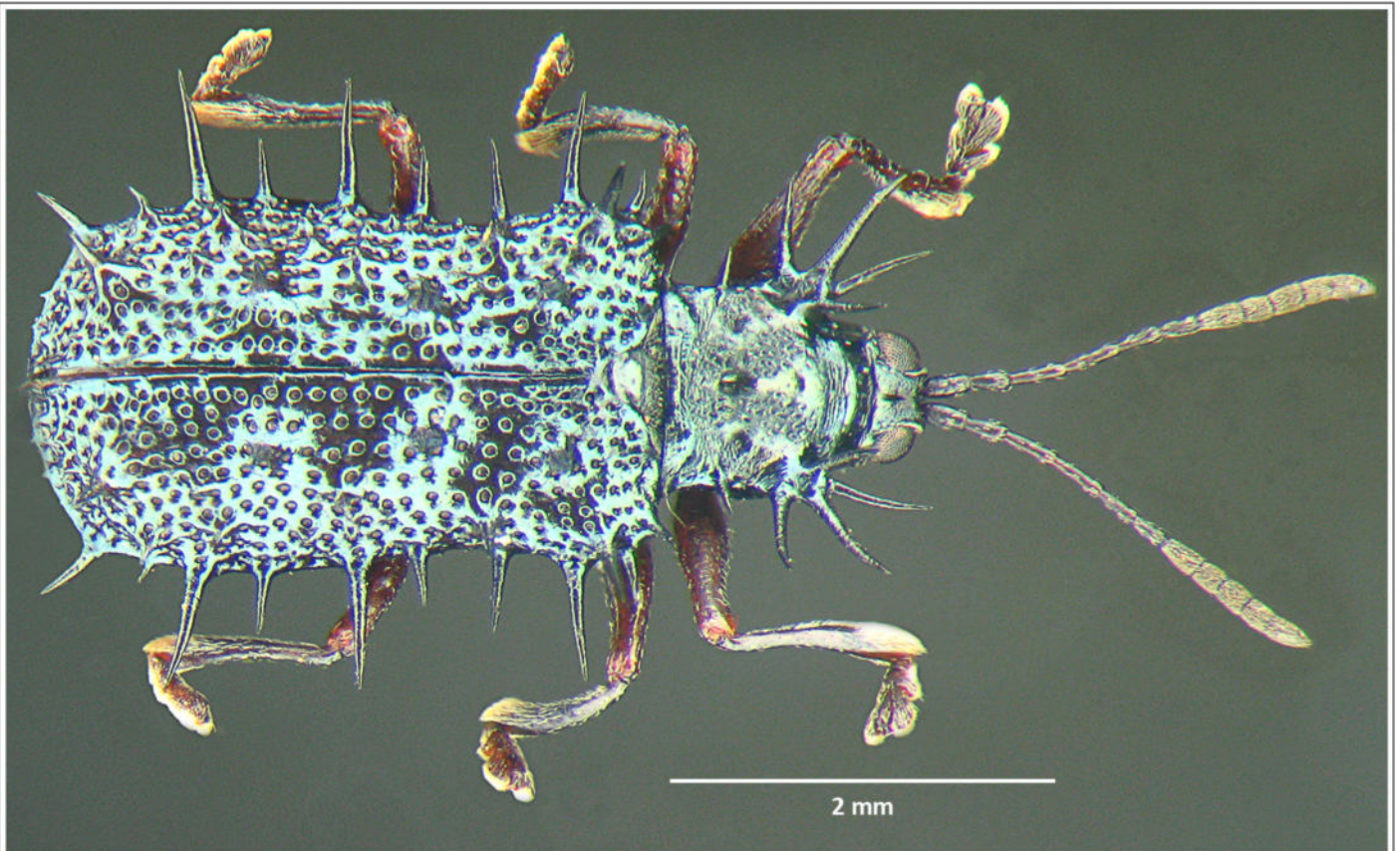
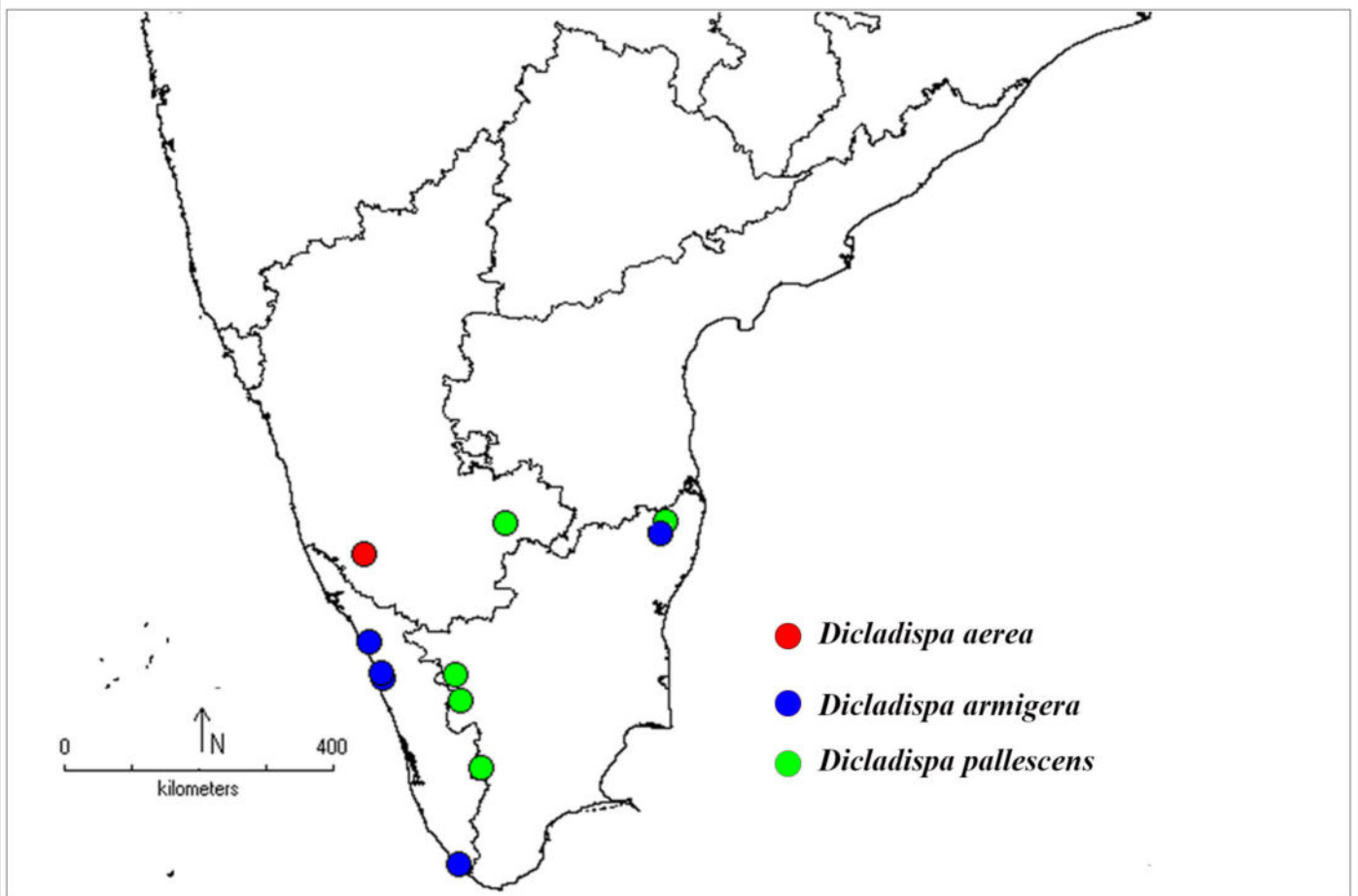


Fig. 102. *Dicladispa armigera* (Olivier).



Map 17. Localities of *Dicladispa* Gestro species studied.

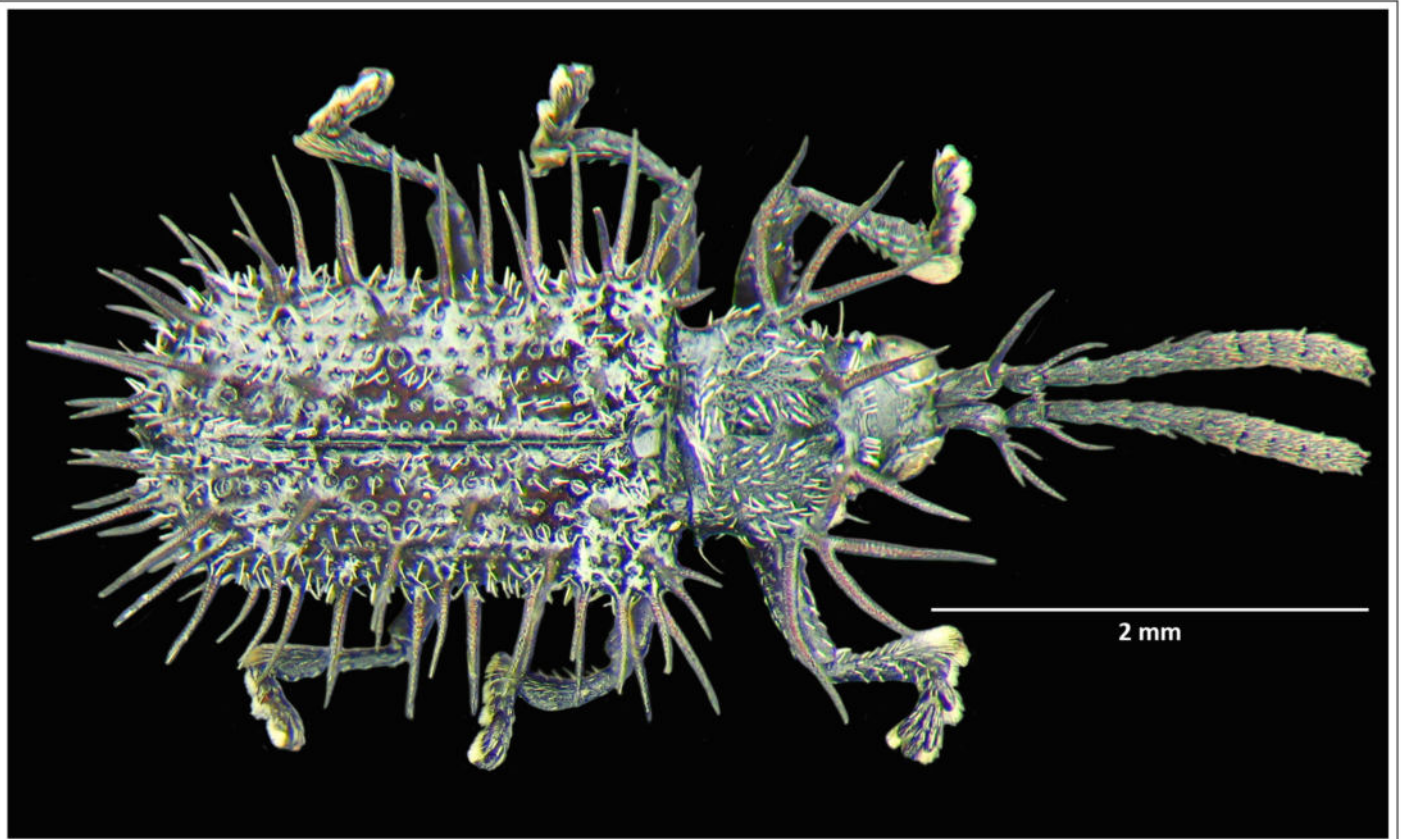
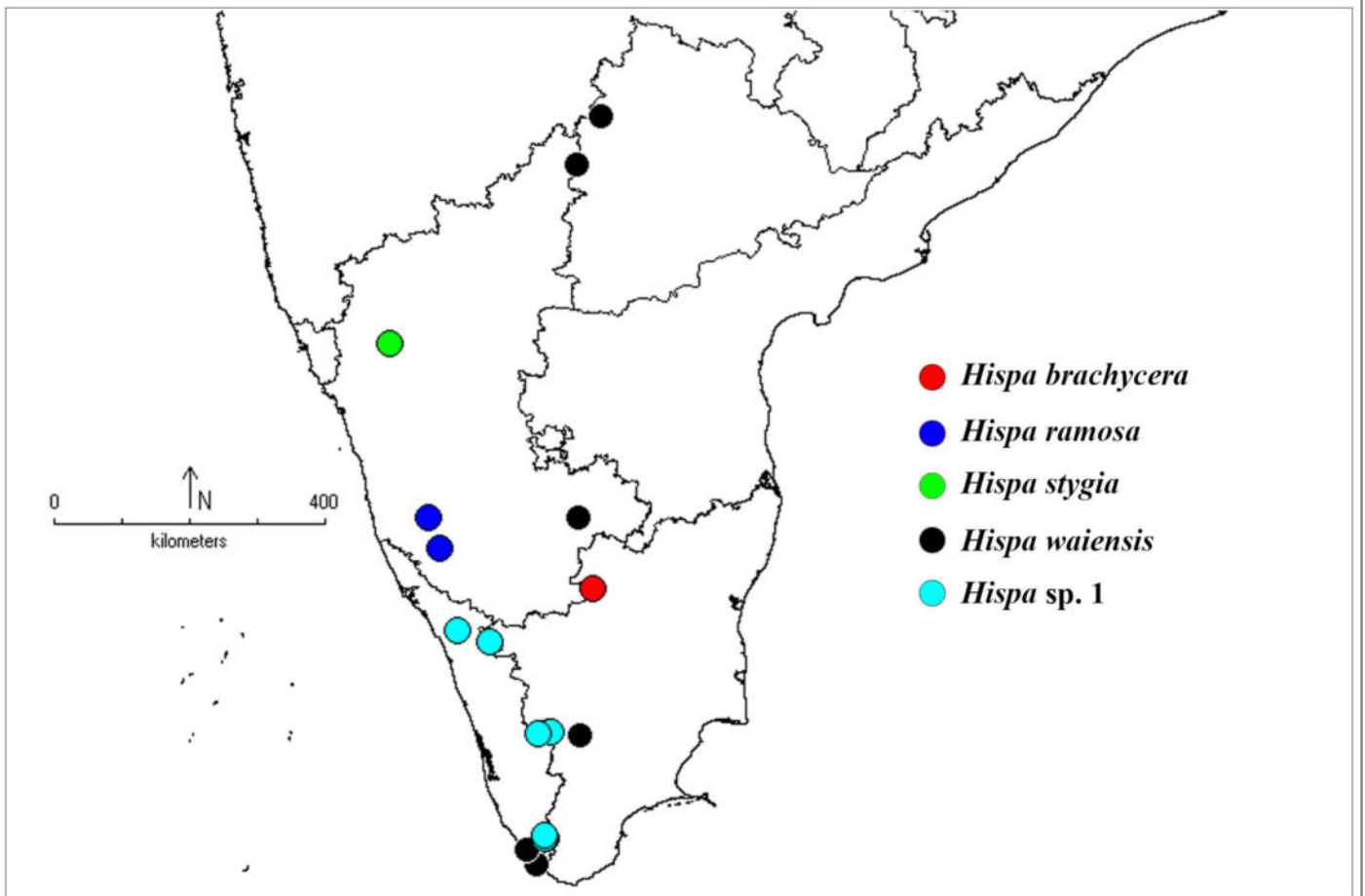


Fig. 103. *Hispa waiensis* Borowiec & Świętojańska.



Map 18. Localities of *Hispa* Linnaeus species studied.

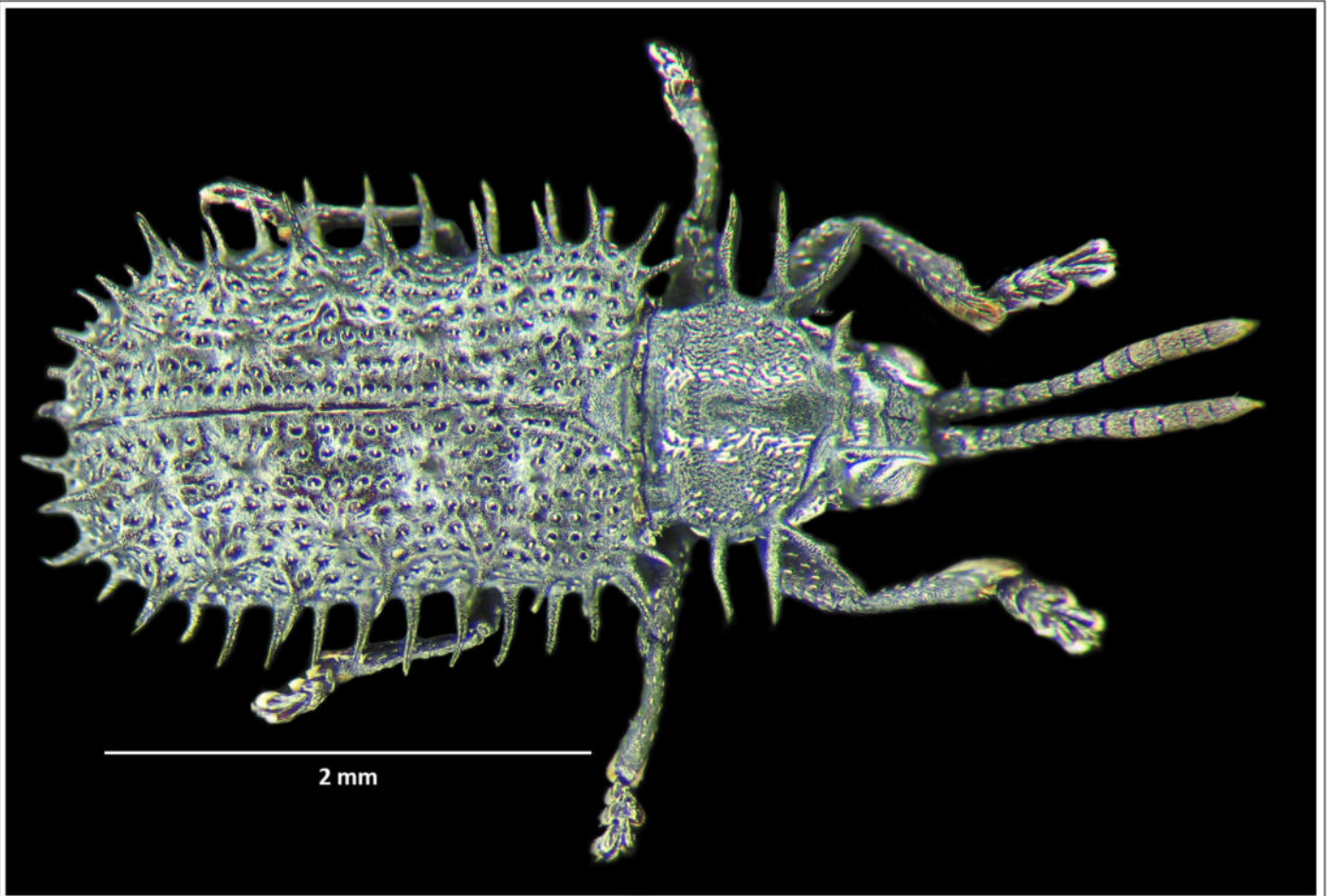
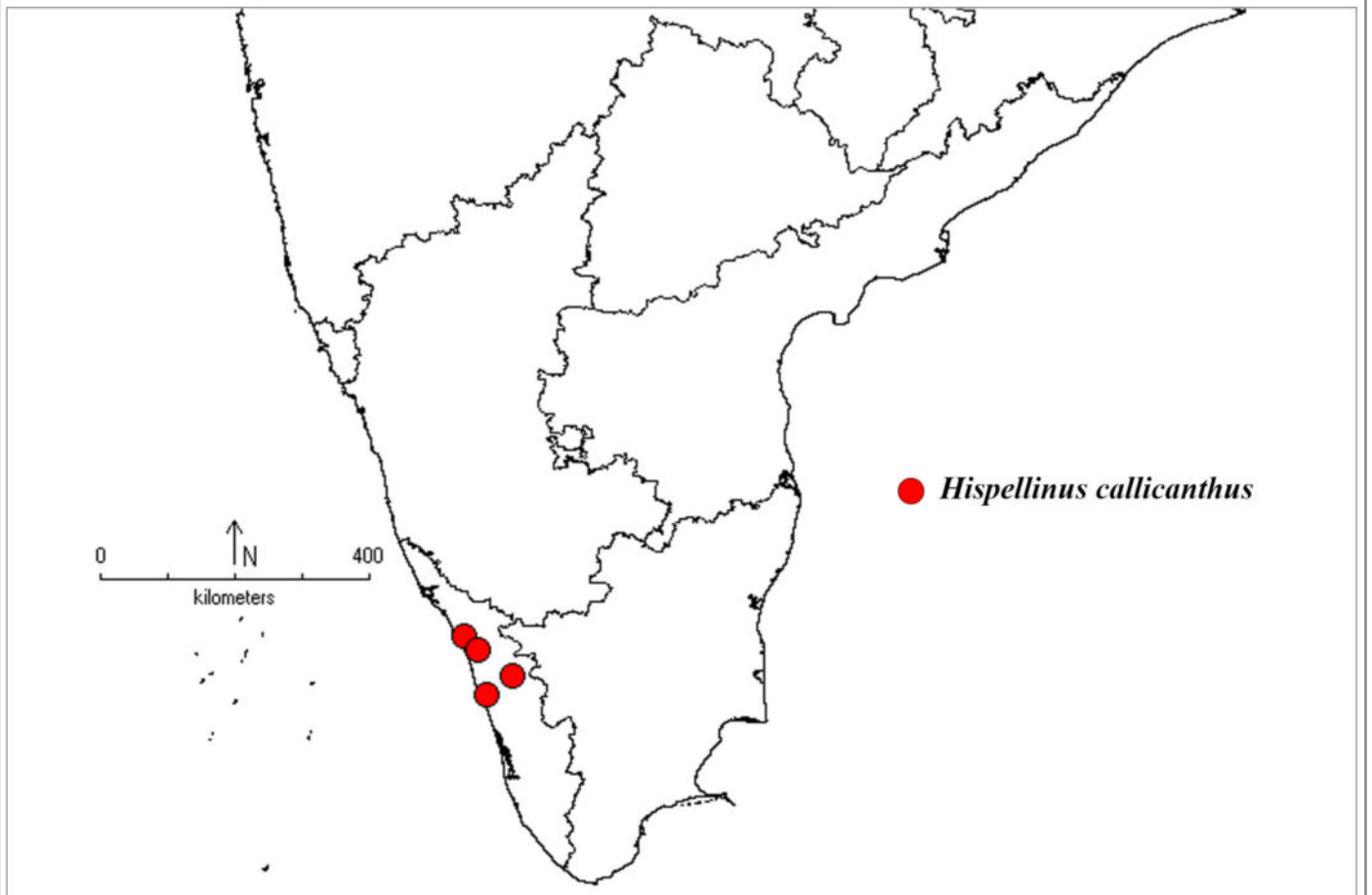


Fig. 104. *Hispellinus callicanthus* (Bates).



Map 19. Localities of *Hispellinus* Weise species studied.

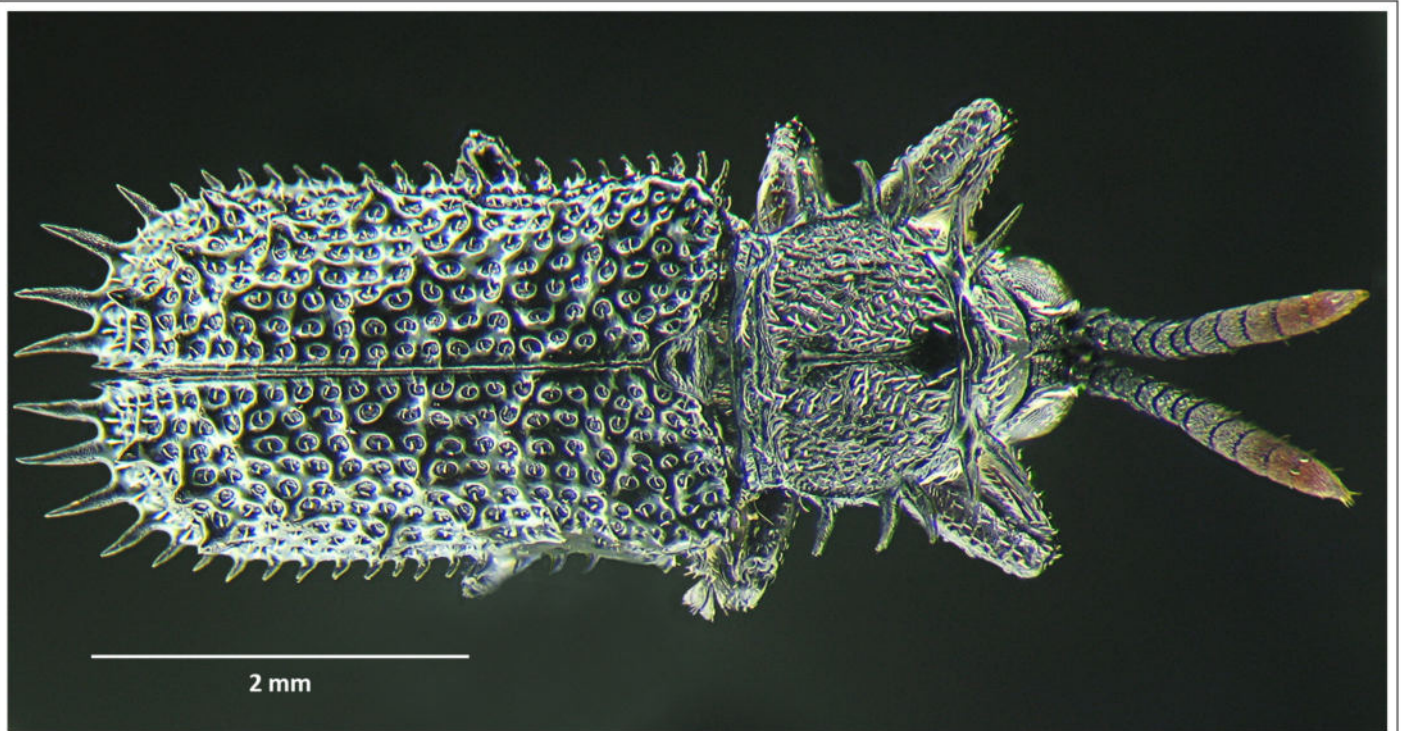
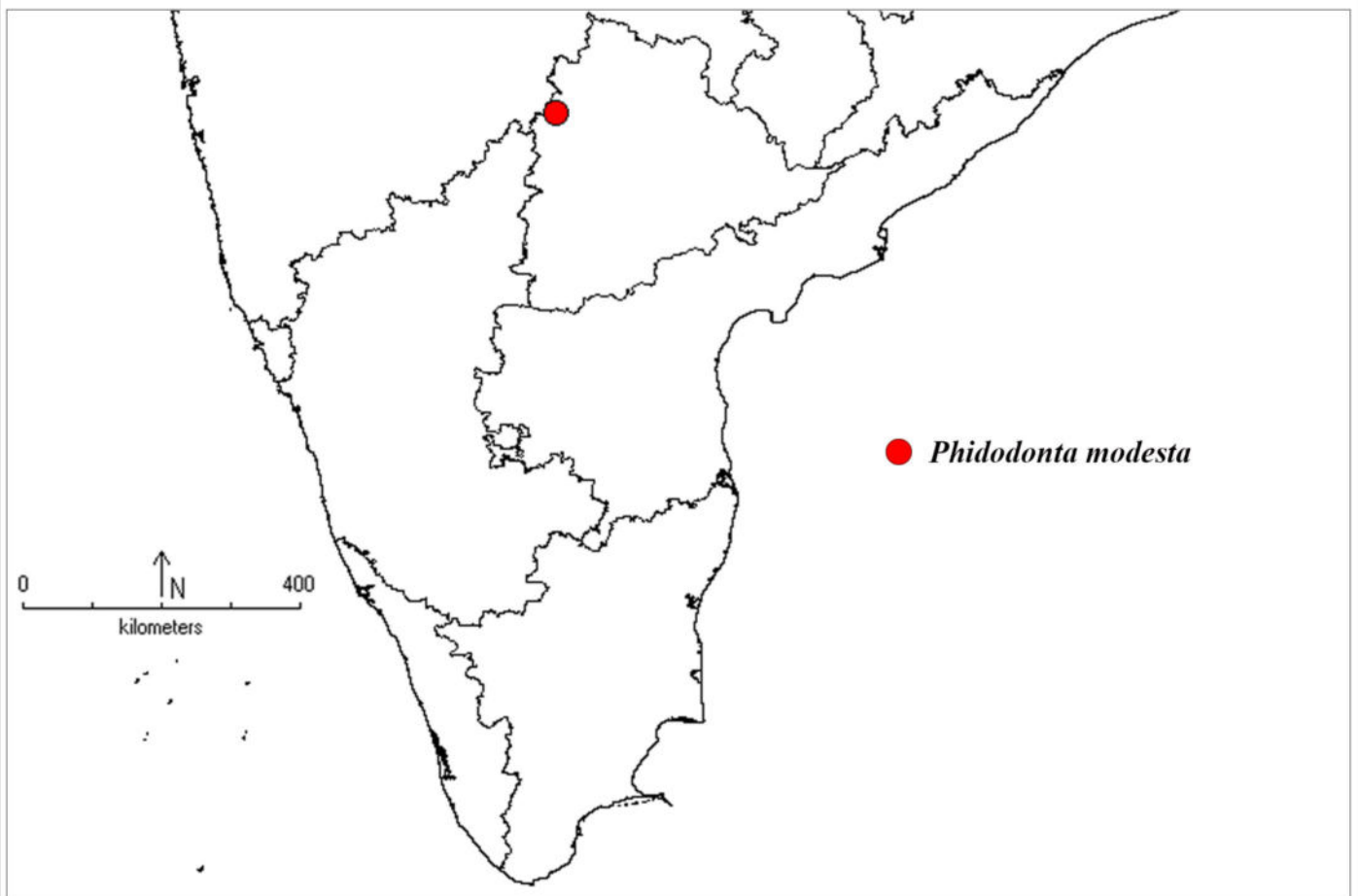


Fig. 105. *Phidodonta modesta* Weise.



Map 20. Localities of *Phidodonta* Weise species studied.

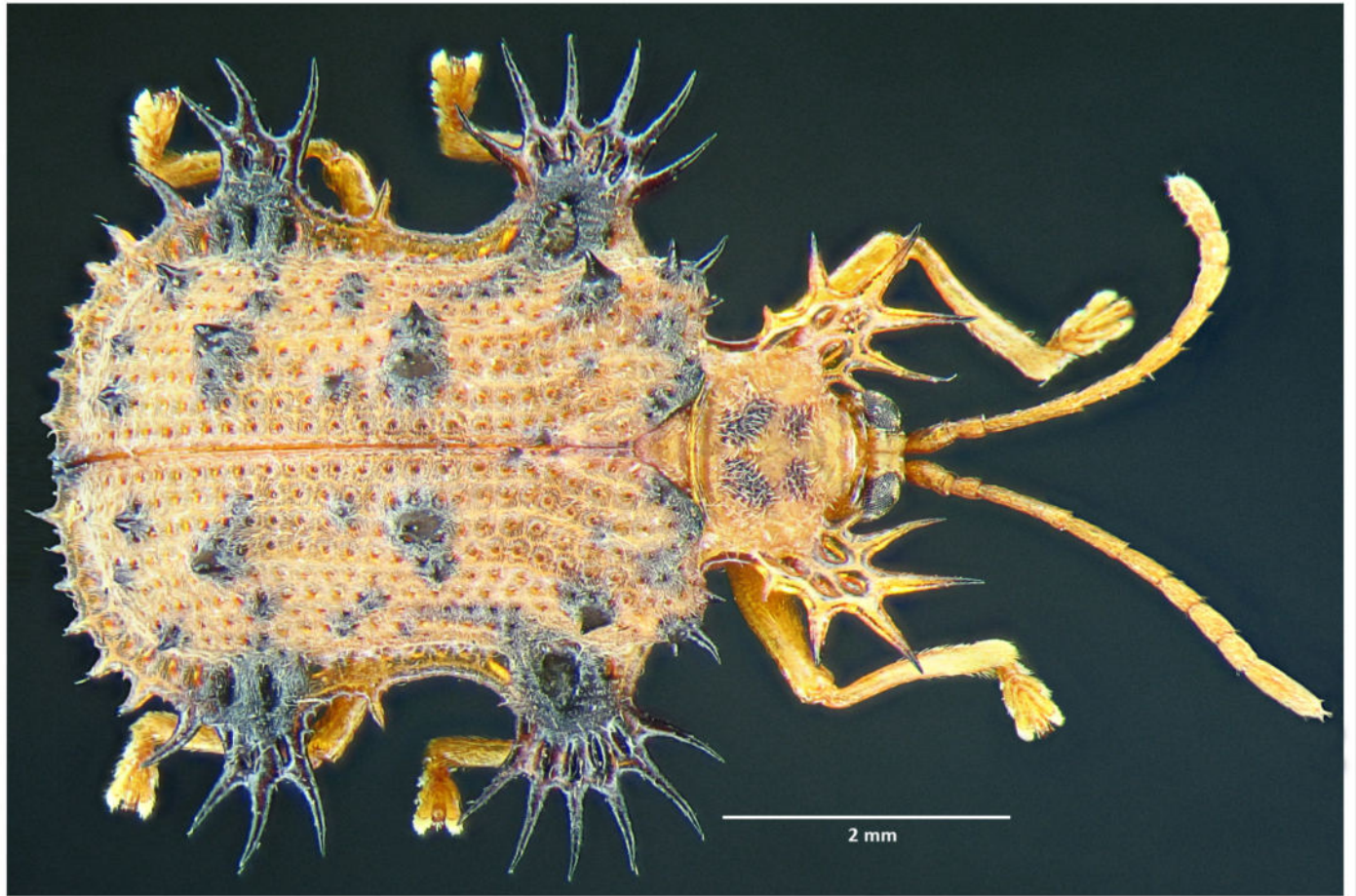
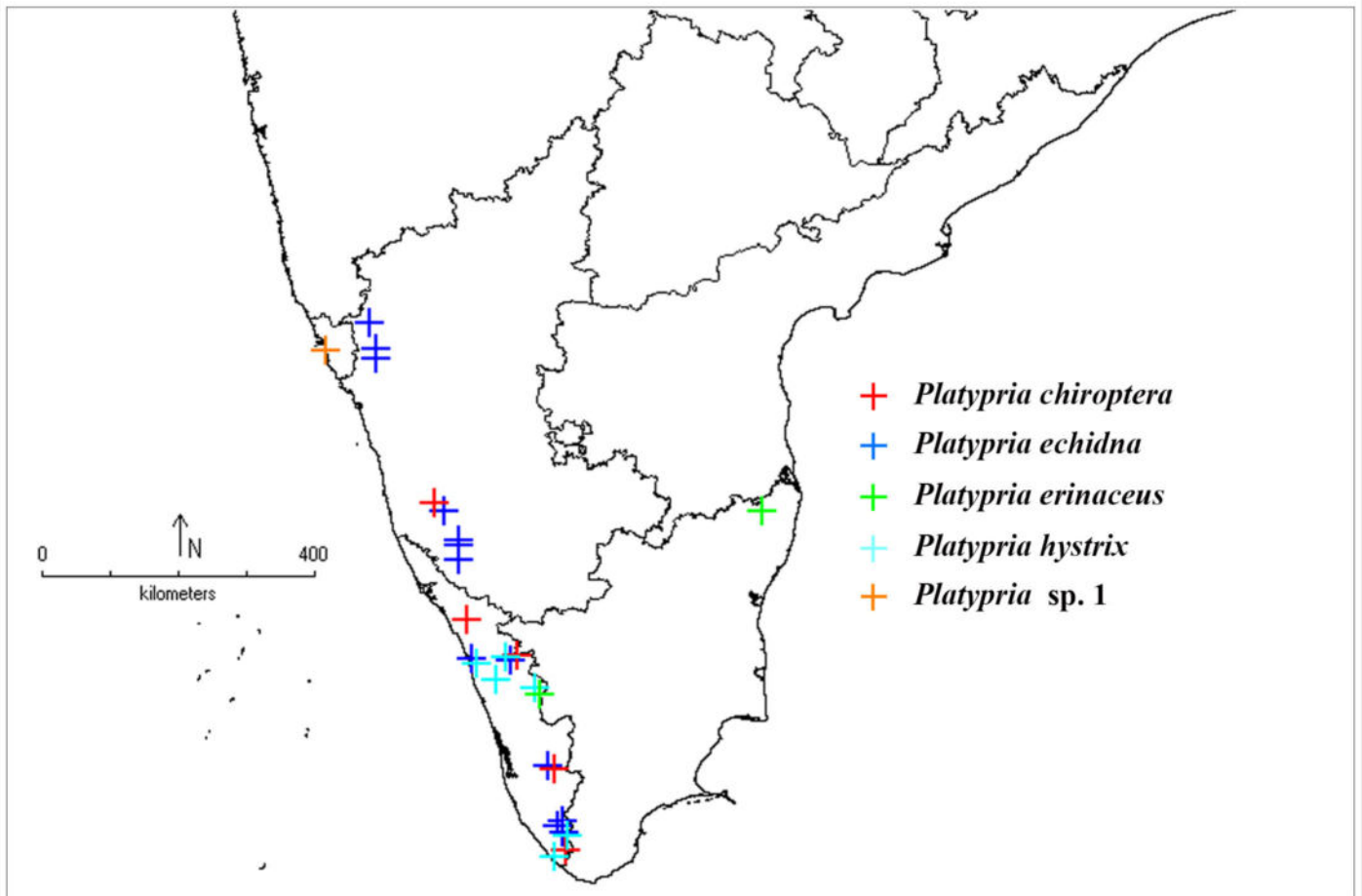
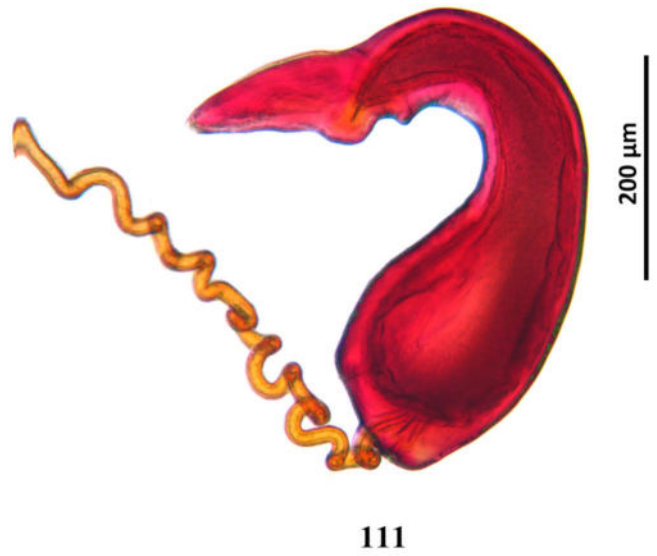
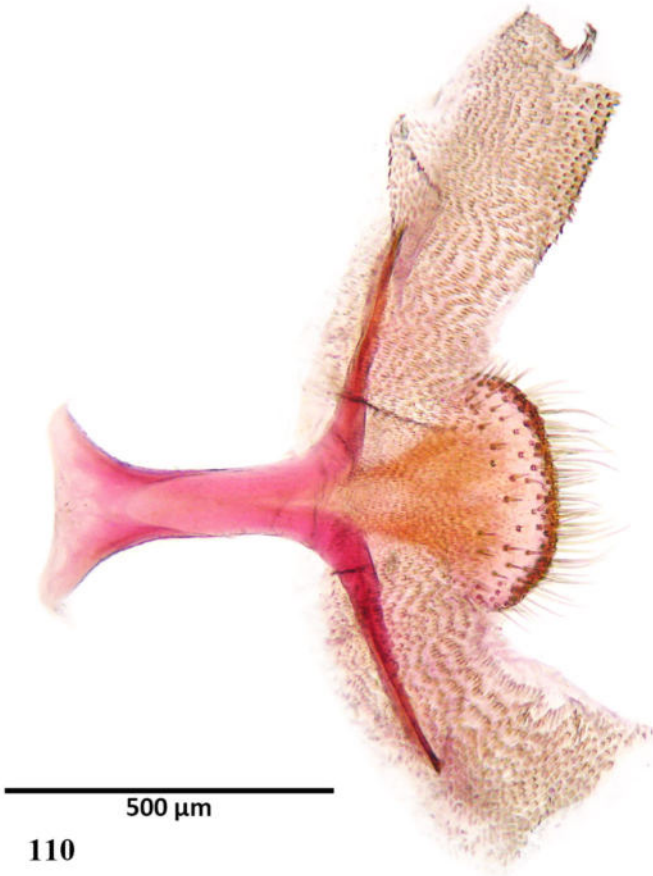
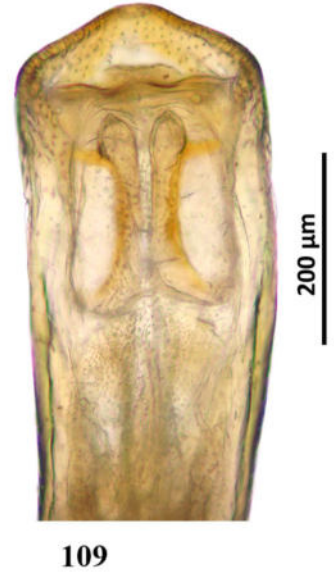


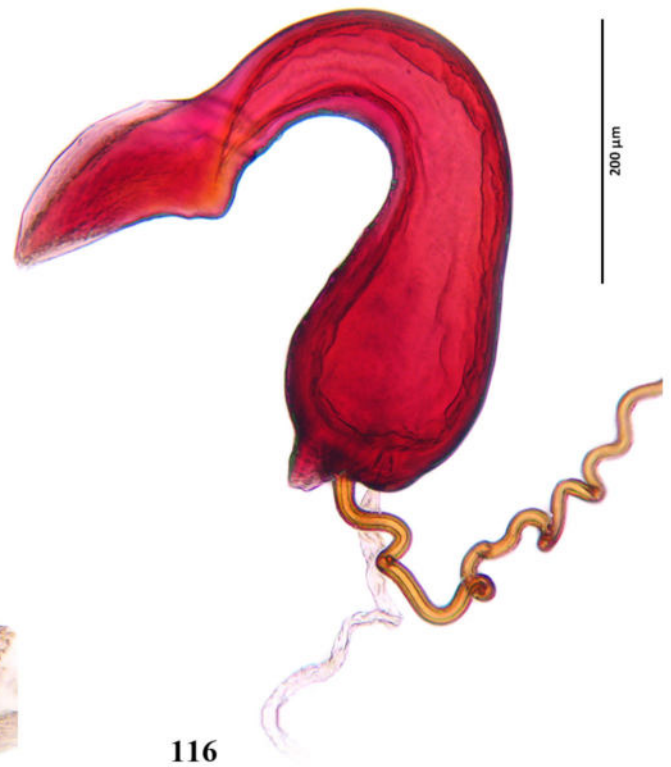
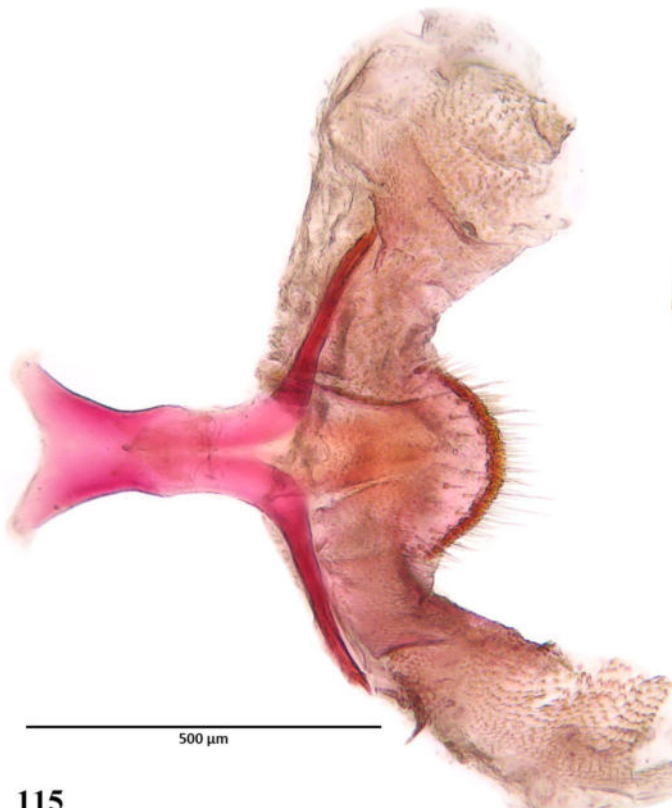
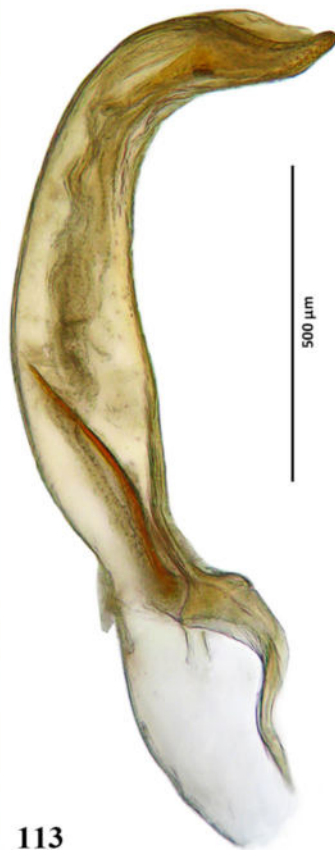
Fig. 106. *Platypria chiroptera* Gestro.



Map 21. Localities of *Platypria* Guérin-Ménéville species studied.



Figs. 107–111. *Platypria echidna* Guérin-Méneville; 107. Dorsal habitus; 108. Aedeagus–lateral view; 109. Aedeagus, apical foramen; 110. Spiculum gastrale; 111. Spermatheca.



Figs. 112–116. *Platypria* sp. 1. 112. Dorsal habitus; 113. Aedeagus–lateral view; 114. Aedeagus, apical foramen; 115. Spiculum gastrale; 116. Spermatheca.

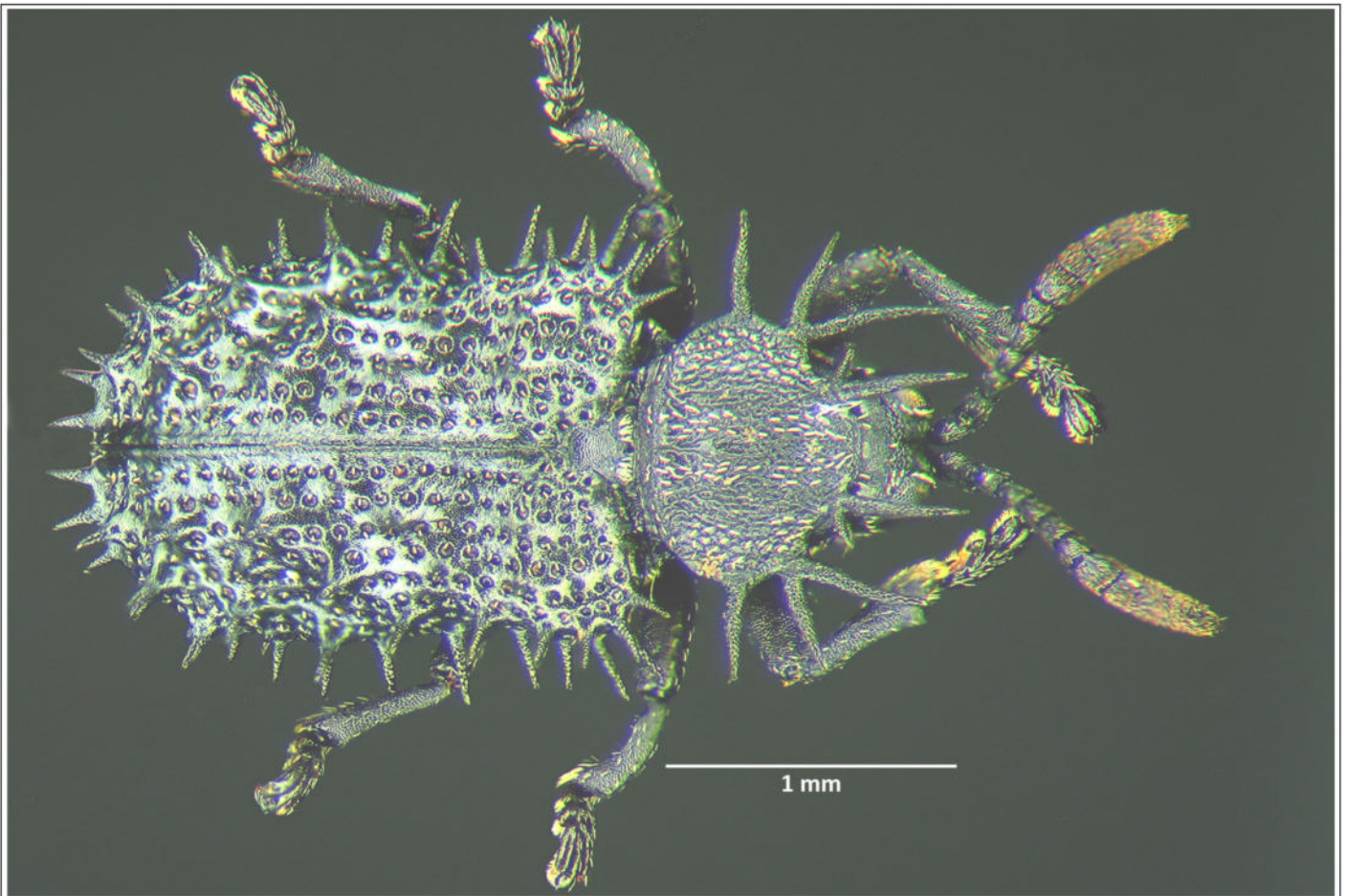
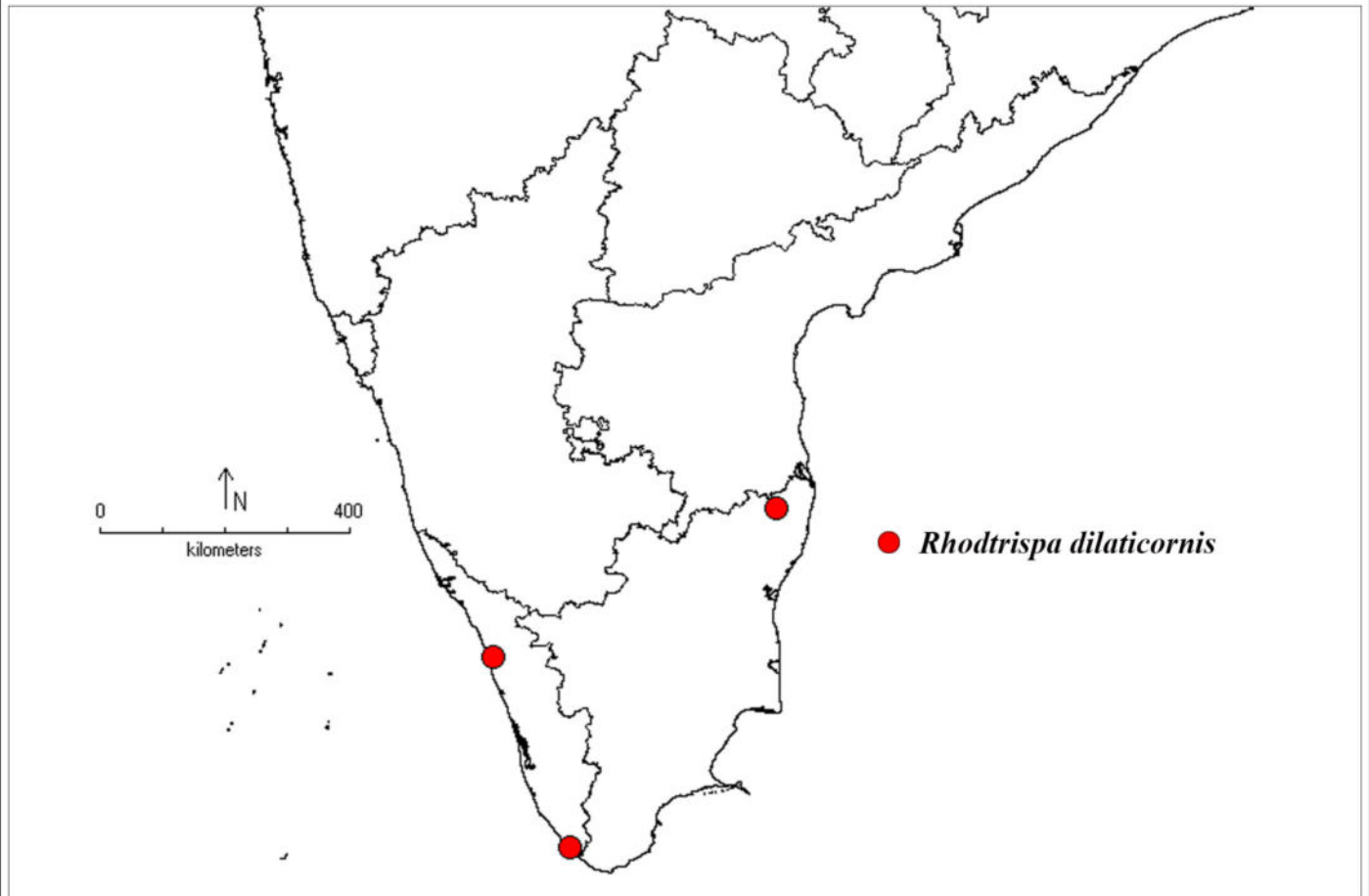


Fig. 117. *Rhodtrispia dilaticornis* (Duvivier).



Map 22. Localities of *Rhodtrispia* Chen & T'an species studied.

4.2.8 Tribe Leptispini Fairmaire, 1868

Body elongate, parallel sided or ovate, neither spiny nor tuberculate (Fig. 118). Head not deeply inserted into pronotum, and distinctly visible behind eyes in dorsal view; vertex not acutely produced between antennae (Fig. 35); antennae 11 segmented; anterior margin of mouth cavity distinctly separated from the base of antennae by a well-developed clypeus (Fig. 36). Angles of pronotum without any setigerous pores (Fig. 35). Elytra punctate-striate, with 11 rows of punctures in middle; scutellar row present except in one species.

This tribe is represented by two genera, and only one is present in India and south India.

Leptispa Baly, 1859

(Figs. 35–36, 118; Map 23)

Leptispa Baly, 1859:1. Type species: *Leptomorpha filiformis* Germar, 1842, by original designation.

Leptomorpha Chevrolat, 1836:390, (*nomen nudum*).

Leptomorpha Germar, 1842:10.

Parallelispa Fairmaire, 1884:238.

Leptispa (*Paradownesia*) Gestro, 1899c:220.

Paradownesia Gestro. Weise 1910b: 502.

Lepthispa Weise, 1911:44.

Leptisma Pic, 1925:16, (*lapsus calami*).

Diagnosis: Length 2.9–10 mm. Body elongated, narrow and parallel sided, flat or convex; colour variable. Vertex anteriorly truncate or rounded in dorsal view. Antennae relatively shorter, reaching base of pronotum, thickened towards apex; antennomere I thickest and largest, dilated apically. Clypeus porrect, flattened in ventral view, more or less triangular and setose (Fig. 36). Mouth cavity distinctly longer than wide; labrum generally large, cup shaped, covering mandibles (Fig. 36). Pronotum generally quadrate, margined laterally, anterior angles rounded, posterior angles acute; surface convex, without basal transverse impression (Fig. 35). Elytra parallel sided, punctate striate with 10 rows of punctures in middle in addition to a short scutellar row basally (Fig. 118) (scutellar row absent in *Leptispa clavareau* Weise, 1901). Legs short, stumpy; femora stout, tibiae generally emarginated at exterior apical angle; claw joint extends beyond bilobed third tarsomere.

Diversity: 71 described species, 10 in India, five from south India.

Number of species studied: Six (two undescribed).

Distribution: Algeria, Angola, Cameroon, Congo, Equatorial Guinea, Gabon, Guinea, Ivory Coast, Kenya, Madagascar, Mozambique, Morocco, Rhodesia, Rwanda, Senegal, South Africa, Tanzania, Uganda, Zimbabwe (Africa); Bhutan, China, India, Indonesia, Israel, Japan, Laos, Myanmar, Nepal, Nigeria, Pakistan, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam (Asia); Greece, Italy, Spain (Europe).

Host plants: Poaceae: Gestro 1905; 1919; Fletcher 1913, 1921; Spaeth 1933; Collart 1934; Maulik 1937; Kimoto 1957; Gressitt 1950; Risbec 1950; Uhmman 1961b, 1968; Medvedev 1983; Dale 1994; Bordoni 1998; Haojie *et al.* 1998; Jolivet 1998; Hua 2002; Shen 2007; Lee & Staines 2010.

Key to South Indian species of *Leptispa* Baly, 1859

1. Dorsum metallic green or blue, ventral side densely pubescent *L. pygmaea* Baly, 1859
- Dorsum not metallic green or blue, ventral side sparsely setose..... 2
2. Anterior margin of vertex rounded, not produced laterally in front of eyes..... 3
- Anterior margin of vertex concave in middle, distinctly produced laterally in front of eyes..... 4
3. Body very slender, length 3.85–4.51 mm, width 1.00–1.13 mm; lateral margin of pronotum slightly widened in middle than base..... *L. anu* Basu, 1999
- Body comparatively broader, length 4.99–5.31 mm, width 1.40–1.50 mm; pronotum parallel sided and narrowed apically, middle of pronotum as wide as base..... *Leptispa* sp. 1
4. Size large, length >7.81–9.50 mm..... *Leptispa distincta* (Gestro, 1906)
- Size smaller, ≤ 6.00 mm..... 5
5. Dorsum black with the prothorax red; length: 6 mm ...*L. rufithorax* Maulik, 1919
- Dorsum entirely dark brown or black; length < 6mm..... 6
6. Sternites black or piceous; ventrites yellow to orange..... *Leptispa* sp. 2
- Venter entirely black or piceous..... *L. nigra* Weise, 1904

***Leptispa anu* Basu, 1999**

(Map 23)

Leptispa anu Basu, 1999:160 (type: India, Tamil Nadu, Palni Hills, Neutral Saddle, ZUIC).

Diagnosis: Length 3.85–4.51 mm, width 1.00–1.13 mm. Body very slender; colour dark brown to black; basal two antennomeres, ventral sides and legs generally paler than dorsum; metasternum darker; coxae paler. Vertex convex in both lateral and dorsal views, anterior margin rounded, angles not projecting in front of eyes laterally; surface densely and coarsely punctate between eyes, finely and sparsely punctate behind eyes; medial sulcus absent. Eyes smaller, less convex, distinctly separated from lateral border of mouth cavity by a narrow punctate area. Clypeus smaller and never flattened in ventral view, convex in lateral view, bear a small protuberance in middle. Pronotum slightly wider in middle than base, strongly narrowed towards apex, more or less uniformly margined laterally; anterior margin concave in dorsal and lateral views; posterior margin sinuate; surface convex, sparsely covered with circular, deep small and large mixed punctures, impunctate on a narrow region near anterior margin. Elytra slightly narrower than pronotum at base, widened and parallel sided behind, again narrowed apically; apical margin rounded and laminate; punctural-striae placed in an impressed line; interstices irregularly reticulate with a row of very sparse minute punctures.

Distribution: India (Kerala, Tamil Nadu). **New record from Kerala.**

Host plant: Poaceae: Unidentified grass. (**New record**).

Remarks: This species can be easily differentiated from all other congeneric members by their slender and narrow body (width 1.00–1.13 mm) and are unique amongst the congeneric members as they feed at the bases of unopened tender leaves on the growing parts of the grass. Adults of all other species collected during the present study remain within the leaf shelter formed as a result of their feeding.

Material examined (n=21): 9 unsexed. India: Kerala / Trivandrum, Kallar / N 08° 42' 30.9" / E 77° 07' 59.7" 160 m / 24.v.2013 / Prathapan & Shameem Coll. / Ex Grass; 4 unsexed. Same data except date 29.xi.2011; 1 unsexed. Same data except date 24.v.2013; 1 unsexed. India: Kerala / Nettukaltheri / Open Prison / 11.i.2013 / D. Prathapan & K. Shameem Coll.; 3 unsexed. India: Kerala / Braemore Estate / N 08° 45' 43.2" / E 77° 05'

41.0" 395 m / 29.xi.2011 / Prathapan & Shameem Coll. / Ex Grass; 3 unsexed. India: Kerala / Bonaccord- Athirumala / 24.iii.2014 / Prathapan D & Shameem K Coll. / Ex Grass.

***Leptispa distincta* (Gestro, 1906)**

(Figs. 35–36, 118; Map 23)

Paradownesia distincta Gestro, 1906b:181 (type: Travancore, MCSN, MNHN).

Downesia (Paradownesia) distincta (Gestro). Weise 1911:55.

Leptispa distincta (Gestro). Maulik 1919a:81.

Diagnosis: Length 7.94–9.5 mm, width 1.94–2.25 mm. Colour highly variable, entirely shiny black to red. In red individuals, at least apex of elytra black, antennomeres III–XI turn darker towards apex; in one specimen, head and antennae entirely black, pronotum, basal part of elytra and venter darker. Head with vertex truncate anteriorly, anterior margin concave in dorsal view; sides distinctly produced in front of eyes; interocular space flat and never convex; minutely and irregularly punctate; medial impression distinct in middle; surface asetose, sparsely covered with small circular punctures, punctures closer towards sides; head behind eyes less punctate. Clypeus porrect, flat in ventral view, densely clothed with dense stiff erect setae. Antennae short and stout, hardly reaching base of pronotum, distinctly thickened towards apex; antennomeres more or less dull and sparsely setose dorsally; ventral sides of I–VI shiny and sparsely setose, VII–XI dull and pubescent; antennomere I truncate apically, external apical angle strongly and acutely produced. Pronotum subquadrate, slightly broader than long, nearly parallel sided, slightly narrowed towards apex; moderately convex, covered with sparse, irregular mixture of large and fine punctures. Scutellum small, sides subparallel, weakly constricted before middle, apex narrowed; surface irregularly and finely reticulate. Each elytron with 10 rows in behind middle and near base, 10th row disappears in middle; punctures embedded in fine impressed lines throughout; epipleura in anterior 1/3rd sparsely clothed with long curved setae.

Distribution: India (Kerala).

Host plant: Poaceae: *Ochlandra* sp. (New record).

Remarks: Gestro (1906b) originally described this species based on reddish specimens with black elytral apex collected from Wallardi, Idukki, Kerala. The present study records

colour morphs, including entirely black and reddish individuals with varying extents of black colour on the dorsum and venters.

Material examined (n=18): 1 unsexed. India: Kerala / JNTBGRI Campus / N 08° 45' 10.1" E 77° 01' 30.8" / 20.v.2013 114 m / Prathapan & Shameem Coll. / Ex *Ochlandra*; 1 unsexed. India: Kerala / Arippa / N 8° 50' 11.0" / E 77° 01' 46.1" 236 m / 13.xi.2014 / Shameem KM Coll. / Ex *Ochlandra*; 1 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 28.ii.2016 / Shameem KM Coll. / Ex Bamboo; 1 unsexed. India: Kerala / Bonaccord-Pandipath / N 08° 41' 01.6" E 77° 11' 24.0" / 2.v.2013 1276 m / Prathapan & Shameem Coll. / Ex *Ochlandra*; 7 unsexed. India: Kerala / Bonacaud-Pandipath / N 08° 41' 01.6" E 77° 11' 24.0" 1276 m / 9.iv.2017 / Shameem KM Coll. / Ex *Ochlandra*; 7 unsexed. Same data except host plant Bamboo.

***Leptispa nigra* Weise, 1904**

(Map 23)

Leptispa nigra Weise, 1904:436 (type: India, Pondicherry, ZMHB).

Leptispa nigra Weise. Maulik 1919a:78.

Diagnosis: Length 4.50–5.51 mm, width 1.36–1.53 mm. Dorsum uniformly curved in lateral view; colour entirely black, tarsomeres slightly brownish. Head anteriorly truncate, anterior margin of vertex concave in dorsal view, sides distinctly produced in front of eyes; inter-ocular space flat, never convex, distinct medial groove present, surface densely and coarsely punctate, punctures often fused; sparsely punctate behind eyes. Clypeus flat in ventral and lateral views. Pronotum widest at base, narrowed towards apex, lateral sides strongly margined, strongly reflexed, slightly narrowed and bent down at apex; anterior margin concave; strongly depressed transversely in front of scutellum; coarsely and densely punctate besides very minute denser punctures. Elytra in lateral view, uniformly curved after middle towards apex; punctural-striae placed in impressed line; 1st and 2nd and sometimes 3rd reach apex; interspaces irregularly reticulated, very minutely punctate.

Distribution: India (Kerala, Pondicherry). **New record from Kerala.**

Host plant: Poaceae: *Dendrocalamus strictus* (Roxb.) Nees (**New record**).

Remarks: This species resembles *Leptispa* sp. 1 due to their similar body size and form. However, *L. nigra* can be distinguished by their anteriorly truncate, dorsally flat vertex with its sides slightly projecting laterally in front of eyes (In *Leptispa* sp. 1, anterior

margin of vertex nearly rounded and dorsally convex, and the vertex with its sides not projecting laterally in front of the eyes). Additionally, the clypeus of *Leptispa* sp. 1 is smaller, not flattened in ventral view, and convex in lateral view, resembling that of *L. anu*. However, in *L. nigra*, the clypeus is flattened, as in most members of the genus.

Material examined (n=10): 4 unsexed. India: Kerala / Tirurangadi / 10.vii.2016 / Shameem KM Coll. / Ex Bamboo; 1 unsexed. Same data except date 31.vii.2016; 5 unsexed. India: Kerala / Tirurangadi / N 11° 02' 21.80" / E 75° 55' 18.91" 14 m / 24.ii.2017 / Ex Bamboo

***Leptispa pygmaea* Baly, 1859**

(Map 23)

Leptispa pygmaea Baly, 1859:2 (type: Ceylon, BMNH).

Lepthispa pygmaea Baly. Weise 1911:45.

Lepthispa pygmoea Baly (sic). Usman 1947:54.

Diagnosis: Length 3.90–5.00 mm, width 1.17–1.43 mm. Body oblong, narrow, cylindrical; dorsum metallic green, head, pronotum and scutellum darker than elytra; antenna, mouthparts except palps and undersides dark brown to black; palpi and legs paler than venter; setae silvery. Vertex antero-laterally projecting in front of eyes and weakly notched anteriorly in the middle; surface convex, interocular space coarsely punctate with distinct medial sulcus; vertex behind eyes granulate and finely punctate; antenna pubescent. Pronotum covered with sparse coarse and fine punctures. Elytra slightly constricted behind anterior 1/3rd, weakly expanding after middle, apical margin serrate. Ventral half of gena, gula, hypomeron, all sternites, epimera and episterna, all ventrites, all coxae, ventral side of all trochanters, proximal femora, tibiae pubescent; small triangular area in middle of metasternum asetose.

Sexual dimorphism: External apical end of antennomere I explanate and angulate in males, more or less cylindrical in females.

Distribution: India (Assam, Kerala, Karnataka, Maharashtra, Meghalaya, West Bengal). *Elsewhere:* China, Nepal, Pakistan, Sri Lanka, Vietnam (Asia).

Host plants: Poaceae: *Arundinella metzii* Hochst. ex Miq., *Chrysopogon zizanioides* (L.) Roberty (Dale 1994); *Dendrocalamus strictus* (Roxb.) Nees (**New record**); *Ischaemum travancorensis* Stapf ex C.E.C.Fisch. (Dale 1994); *Oryza sativa* L. (Fletcher 1913);

Paspalum scrobiculatum L., *Pennisetum purpureotyphoides* (Schum.) (= ?*Cenchrus purpureus* (Schumach.) Morrone) (Dale 1994); *Saccharum officinarum* L. (Fletcher 1913).

Remarks: *Leptispa pygmaea* is one of the well-known and widely reported pests of rice plant. In the present study, a single specimen of this species was collected from inside the leaf shelter formed due to the feeding of the adults on *Dendrocalamus strictus* (Roxb.) Nees. The available host records indicate that the species is limited to members of the family Poaceae. Therefore, the report of *L. pygmaea* on *Solanum tuberosum* L. (Solanaceae) by Anand (1989) is not included in the list of host plants provided here. This species differs from all other south Indian members of *Leptispa* by their metallic green or blue-green dorsum, distinctly serrated apical margin of elytra and presence of densely clothed setae covering the entire ventral surface of the body.

Material examined (n=48): 5♂, 6♀, 3 unsexed. INDIA: Kerala / Vellayani / 2.ii.2011 / Shameem Coll.; 4♂, 4♀. Same data except date 8.ii.2011; 1♀. Same data except date 11.ii.2011; 4♂, 2♀. Same data except date 5.vii.2011; 2♂. Same data except date 20.vii.2011; 1♂. India: Kerala / Perinthalmanna / 13.x.2012 / Prathapan & Shameem Coll.; 1♂, 3 ♀. (i) INDIA: Kerala / Trivandrum Karamana / 20.ii.2007 / Prathapan Coll., (print) (ii) *Leptispa pygmaea* Baly / Prathapan K. D. det. 2007 (print) (three out of four specimens); 1♂. India: Kerala / Tirurangadi / N 11° 02' 21.80" / E 75° 55' 18.91" 14 m / 24.ii.2017 / Shameem KM Coll. / Ex Bamboo; 1♀. India: Kerala / Palakkad, Thenoor / 28.viii.2013 / Ranjith R. Coll. / Ex Rice; 3♂, 5♀. India: Kerala / Kannur, Ezhome / 5.viii.2015 / Rajesh KM Coll.; 1♂, 1♀. India: Kerala / Kannur, Keezhara / 5.viii.2015 / Rajesh KM Coll.

***Leptispa rufithorax* Maulik, 1919**

Leptispa rufithorax Maulik, 1919a:78 (type: India, Madras, Nilgiri Hills, BMNH, ZUIC).

Distribution: India (Tamil Nadu).

Host plant: Poaceae: *Saccharum* sp. (Fletcher 1921).

Material examined: Nil.

***Leptispa* sp. 1**

(Map 23)

Diagnosis: Length 4.99–5.31 mm, width 1.40–1.50. Oblong; entirely black, lateral margins of pronotum and apical margin of elytra with brownish tinge, palps, hypomeron, prosternum, epipleuron, all coxae dark brown. Vertex not produced laterally in front of eyes, anterior margin slightly depressed in middle, with a distinct medial sulcus proximally; surface convex, interocular space deeply, sparsely and minutely punctate behind. Clypeus smaller, rugose, scarcely setose, never flattened in ventral view, convex in lateral view. Labrum transversely ridged near apex with a medial carina connecting ridge and posterior margin of labrum. Pronotum covered with mixture of smaller and larger punctures; a narrow region anteriorly and another near posterior margin impunctate. Scutellum smaller, apex rounded, surface convex and granulate. Elytra parallel sided, slightly narrowed towards apex, apical margin laminate; surface finely reticulate, punctural rows form impressed lines except for a few rows basally; punctures circular, smaller and shallower than those on pronotum; interstices flattened and more or less uniform in height, with a row of very sparse minute punctures. Hypomeron punctate in dorsal half, denser anteriorly, sparser posteriorly; prosternum rugulose, sparsely setose; mesosternum striate in middle, scarcely punctate laterally; mesepisternum and mesepimeron densely punctate; punctures subequal to those on hypomeron; metasternum coarsely and densely punctate laterally, rest of surface sparsely and minutely punctate; metepisternum densely punctate, punctures merged to form uneven groove in middle. Ventrites sparsely punctate, punctures smaller medially, larger laterally, turn smaller towards distal ventrites; sparsely and indistinctly setose; posterior margin of last ventrite densely clothed with long setae and without pubescent band apically.

Distribution: India (Kerala). **New record.**

Host plant: Poaceae: Bamboo (**New record**).

Remarks: See the “Remarks” section under *Leptispa nigra*.

Material examined (n=2): 1 unsexed. India: Kerala / Neyyar W. L. San. / 8. II. 2012 / Prathapan Coll., 1 unsexed. India: Kerala / Ponmudi / 8°45'58.5"N, 77°6'38.9"E / 01.ix.2017 / Amritha Kumari S Coll.

***Leptispa* sp. 2**

(Map 23)

Diagnosis: Length 4.92–5.57 mm, width 1.44–1.51 mm. Dorsum and antennae black, ventrites yellow to orange, rest of undersides and all legs dark brown to black; gula, anterior part of prosterna yellowish in some; proximal part of femora generally yellowish; one specimen with irregular reddish brown patches on elytra. Head truncate anteriorly; anterior margin of vertex evenly concave in dorsal view, laterally produced in front of eyes; inter-ocular space flat and never convex in both lateral and dorsal views; medial sulcus distinct; surface coarsely and densely punctate, punctures fused and rugulose on either side. Pronotum wider at base, slightly narrowed towards apex; lateral sides distinctly margined, weakly reflexed upwards; anterior margin more or less straight in dorsal view; posterior margin sinuate; surface coarsely punctate, mixture of small and large punctures. Elytra parallel sided, apical 1/3rd narrowed, apical margin explanate, minutely serrated towards sutural angle; punctural rows placed in impressed lines, impression weaker proximally; interspaces indistinctly reticulated and minutely punctate.

Distribution: India (Kerala). **New record.**

Host plant: Poaceae: *Dendrocalamus strictus* (Roxb.) Nees. (**New record**).

Remarks: This species closely resembles *L. nigra* due to similarities in the dorsum, body form and size, and both of them are often collected together on *Dendrocalamus strictus* (Roxb.) Nees. *Leptispa* sp. 2 distinctly differs from *L. nigra* by its yellowish abdomen (in *L. nigra*, the entire body is black).

Material examined (n=29): 8 unsexed. India: Kerala / Tirurangadi / 14.vii.2013 / Shameem K. Coll. / Ex Bamboo; 1 unsexed. Same data except date 15.vii.2013; 5 unsexed. Same data except date 9.viii.2013; 1 unsexed. Same data except date 11.viii.2013; 9 unsexed. India: Kerala / Tirurangadi / 6.ix.2014 / Shameem K.M. Coll. / Ex Bamboo; 2 unsexed. Same data except collector Shameem KM; 3 unsexed. India: Kerala / Tirurangadi / N 11° 02' 21.80" / E 75° 55' 18.91" 14 m / 24.ii.2017 / Shameem KM Coll. / Ex Bamboo.

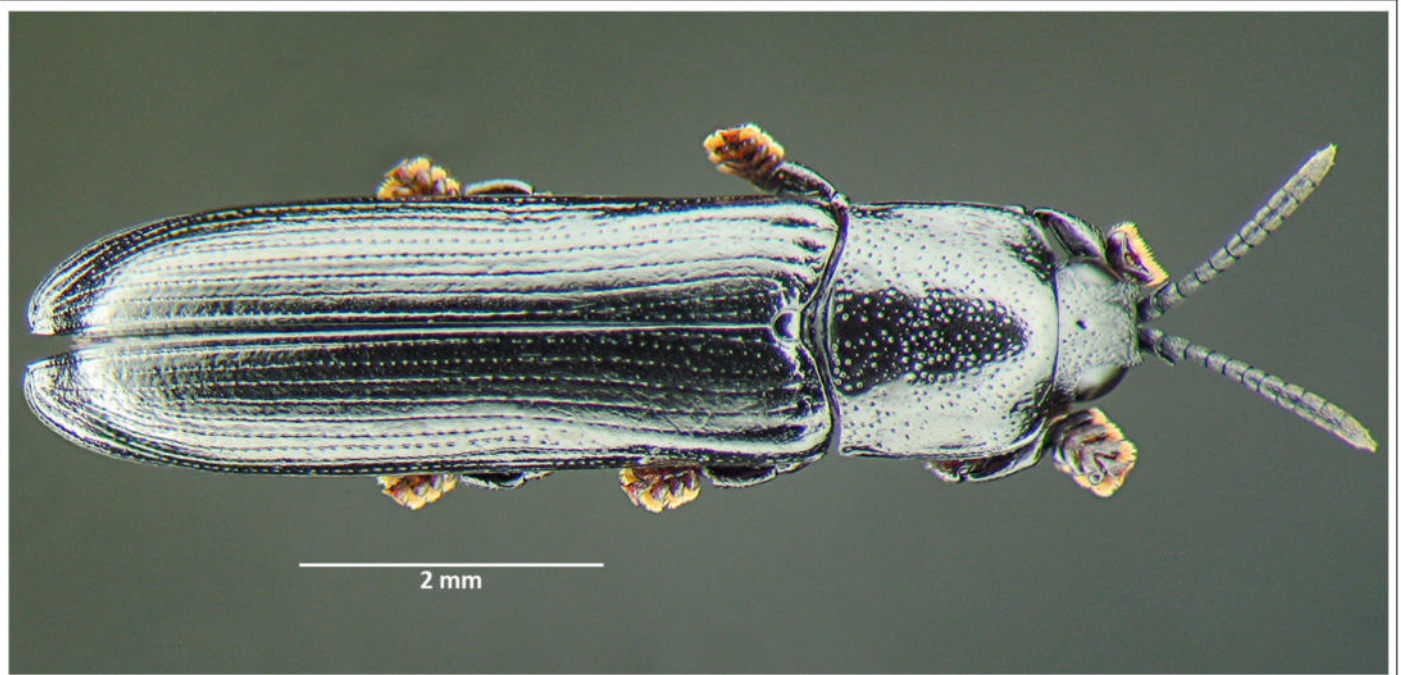
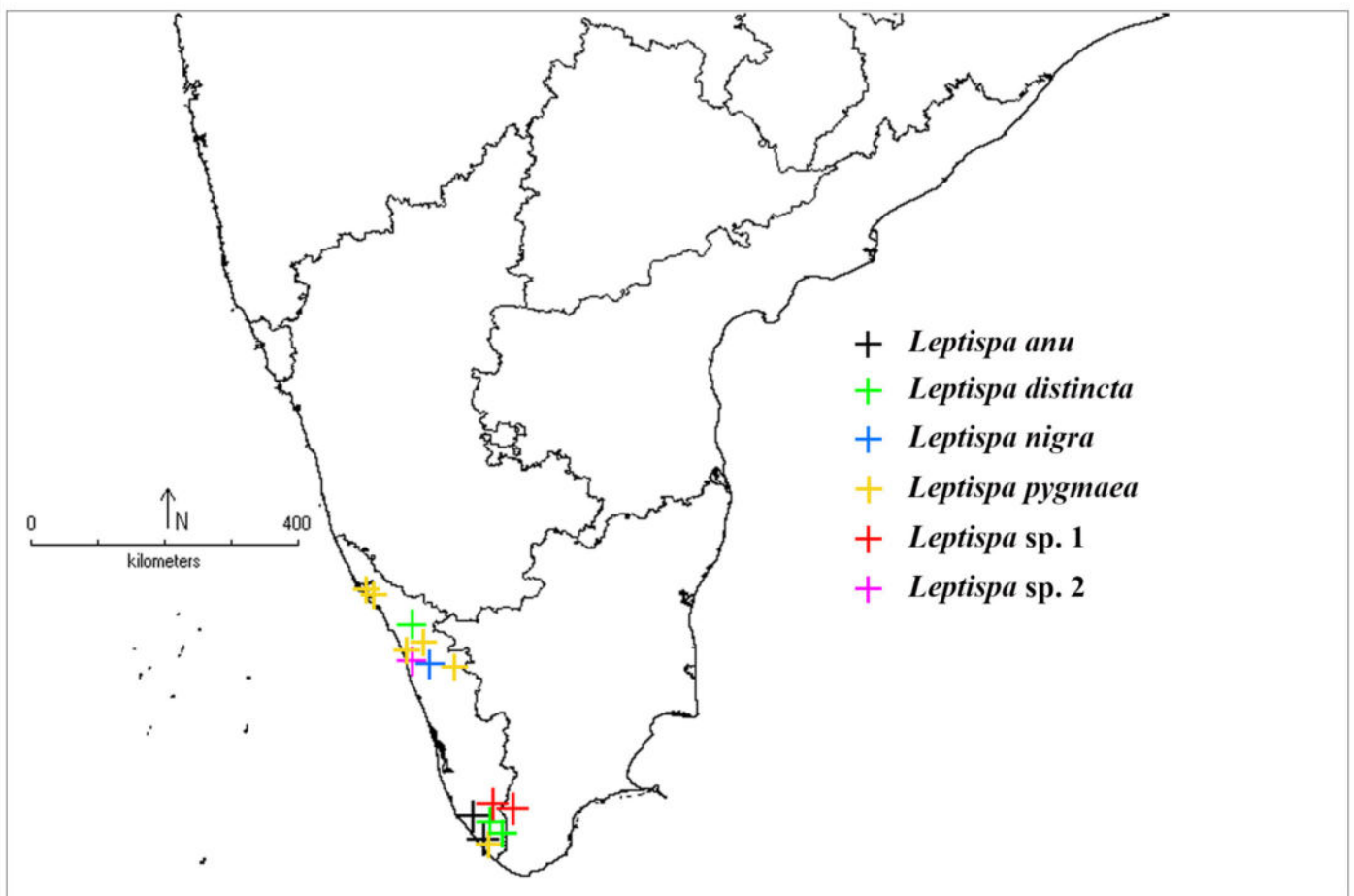


Fig. 118. *Leptispa distincta* (Gestro).



Map 23. Localities of *Leptispa* Baly species collected.

4.2.9 Tribe Oncocephalini Chapuis, 1875

Body wedge shaped, aspinose, with or without tubercles on pronotum and elytra (Figs. 26, 119–121, 123). Anterior margin of mouth cavity widely separated from antennal sockets by a distinct triangular or trapezoidal clypeus; antennae 11 segmented. Pronotum subcylindrical; strongly convex; distinctly narrower than base of elytra (Figs. 28, 30); anterolateral angles with trichobothria, often lost in dried specimens; antero-lateral angles acutely toothed (Figs. 28, 30). Elytra distinctly widened towards apex (Figs. 26, 119–121, 123); punctate-striate; scutellar row present; alternate interstices costate, smooth (Fig. 26) or tuberculated (Figs. 30, 119–121, 123).

Three described genera, three in India and two from south India.

***Chaeridiona* Baly, 1869**

(Figs. 26, 28, 32, 34, 119–122; Map 24)

Chaeridiona Baly, 1869: 380. Type species: *Chaeridiona metallica* Baly, 1869, designated by Maulik 1919a.

Choeridiona Gemminger & Harold, 1876: 3609 (*lapsus*).

Diagnosis: Length 3.2–5.9 mm. Colour variable, brown to reddish brown (Figs. 119–121), or with metallic green dorsum (Fig. 26). Head produced anteriorly between antennae, angulate in front; vertex coarsely punctate (Fig. 28); labial palps absent (Fig. 34); clypeus more or less conically raised in middle. Antennae nearly reaching middle of body, apical four antennomeres densely setose. Pronotum subcylindrical; narrowly margined laterally; anterolateral angle acutely toothed; surface coarsely punctate (Figs. 28, 32). Elytra wider than base of pronotum (Fig. 28); widened towards apex; exterior apical angle rounded or angulate (Figs. 26, 119–121); humerus pronounced; punctural rows regular, with 10 rows in middle; alternate interstices costate, tuberculated in some. Inner margin of protibia with an obtuse tooth beyond middle, followed by excavation with a row of stiff bristles.

Diversity: 10 described species; five in India and south India.

Number of species studied: Five.

Distribution: China, India, Laos, Myanmar, Thailand, Vietnam (Asia).

Host plants: **Commelinaceae** (Świętojańska *et al.* 2006; Kalaichelvan & Verma 2005); **Costaceae** (Staines 2007; Shameem & Prathapan 2014); **Zingiberaceae** (Maulik 1937;

Staines 2007; Świątojańska & Kovac 2007; Chaboo *et al.* 2010; Shameem & Prathapan 2014).

Key to South Indian species of *Chaeridiona* Baly 1869

1. Dorsum metallic emerald green at least in middle..... 2
Dorsum dark brown with purplish tinge..... 3
2. Exterior apical angle of elytra rounded..... *C. metallica* Baly, 1869
Exterior apical angle of elytra angulate...*C. mayuri* Shameem & Prathapan, 2014
3. Exterior apical angle of elytra rounded; legs brown and concolorous with venter..... *C. tuberculata* Uhmman, 1961
Exterior apical angle of elytra angulate or denticulate; legs yellowish, venter dark brown..... 4
4. Exterior apical angle of elytra denticulate and shorter than antennomere XI (Body length: 3.80–4.00 mm)..... *C. picea* Baly, 1869
Exterior apical angle of elytra strongly angulate, angle acute and distinctly longer than antennomere XI (Body length: 3.95–4.80 mm).....
.....*C. crassicornis* (Gestro, 1909) new comb.

Chaeridiona crassicornis (Gestro, 1909) new combination

(Figs. 120–122; Map 24)

Prionispa crassicornis Gestro, 1909a: 556 (type: India, Nilgiri, MCSN, BMNH).

Diagnosis: Length 3.95–4.80 mm; width 1.95–2.35. Yellowish brown to dark brown with bronzy reflections; head, elytral costae and tubercles, exterior apical angle darker; irregular patches on elytra, anterior and posterior margin of pronotum in some fulvous. Venter, coxae, trochanters yellow brown to dark brown; ventrites generally paler than sternites in several specimens; legs fulvous; tibio-femoral articulations and tarsi darker. Head densely and coarsely punctate. Antennae shorter, 0.44–0.48X longer than body; antennomeres I–VII striated and scarcely setose, distal VIII–XI pubescent; distal four shorter, thickened to form a weak club. Pronotum subquadrate, 0.80–0.86X longer than wide; sides subparallel or weakly sinuate; surface densely and coarsely punctate with a more or less circular impunctate area in middle. Elytra punctate-striate; interstices 2, 4, 6 and 8 costate and tuberculated, with 9–10 distinct tubercles near base, middle and apex;

external apical angle strongly angulated into an acute tooth (Figs. 120–121), longer than antennomere XI; lateral and apical margin strongly crenulated.

Distribution: India (Kerala, Tamil Nadu). **New record from Kerala.**

Host plants: Commelinaceae: *Dictyospermum montanum* Wight. (**New record**).

Remarks: This species was originally described in *Prionispa* Chapuis (Gestro 1909a). In the present study, it was found that the species lacks labial palps, which is a key character of the genus *Chaeridiona*. Therefore, the species must be formally transferred to the latter genus. The identity of the species was ascertained by comparing it with the photographs of the ‘Co-type’ obtained from BMNH (Figs. 120–122).

Chaeridiona crassicornis resembles *C. picea* Baly and *C. tuberculata* Uhmann in having a non-metallic dorsum, tuberculated elytra, and similar short and robust antennae. *Chaeridiona tuberculata* differs from *C. crassicornis* and *C. picea* by the rounded exterior apical angle of the elytra (exterior apical angle is angulate in others), scarcely striated proximal antennomeres (distinctly striated in others), rounded humeral angle of the elytra (acutely produced in others), and the suture, which is not distinctly depressed behind the scutellum (depressed in others). *Chaeridiona crassicornis* differs from *C. picea* in body size and degree of the angulation at the exterior apical angle of the elytra. *Chaeridiona crassicornis* has a relatively larger size (3.95–4.80 mm), and the apical angulation is longer and more pronounced, while *C. picea* is relatively smaller (3.80–4.00 mm), and the angulation is less pronounced and resembles a short denticle. In addition to the contrasting characters mentioned above, all three species also differ in the disposition and number of tubercles present on the elytra.

Material examined (n=49): 2 unsexed. India: Karnataka / Kottigehara, Malaya Marutha / 13°07' 06.2"N 75°30'17.9"E / 1.x.2017 / Shameem KM Coll. / Ex Commelinaceae; 1 unsexed India: Karnataka / Attigere / Somanakkadu Estate / 13°05' 46.58"N 75°28'58.49"E / 2.x.2017 641 m / Shameem KM Coll. / Ex Commelinaceae; 4 unsexed. INDIA: Kerala / Pampadumpara / 30.iv.2010 / Prathapan Coll.; 10 unsexed. India: Kerala / Nadukani Pass / N 11° 23' 35.8" E 76° 21' 45.0" / 13.x.2012 259 m / Prathapan & Shameem Coll.; 1 unsexed. India: Kerala / Arippa / N 08° 50' 11" / E 77° 01' 46.1" 236 m / 31.viii.2013 / Prathapan D & Shameem K Coll. / Ex Commelinaceae; 5 unsexed. India: Kerala / Sankily Forest / 12.i.2014 / Prathapan & Shameem Coll. / Ex Commelinaceae; 1♂, 13 unsexed. (1) India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 15.ix.2014 /

Shameem K.M. Coll. / Ex Commelinaceae, (2) Ex *Dictyospermum montanum*; 3 unsexed. India: Kerala / Arippa / N 08° 50' 11.0" / E 77° 01' 46.1" 236 m / 13.xi.2014 / Shameem KM Coll. / Ex Commelinaceae; 9 unsexed. India: Kerala / Vagamon / 23.x.2015 / Prathapan KD Coll. / Ex Commelinaceae.

***Chaeridiona mayuri* Shameem & Prathapan, 2014**

(Figs. 26, 28, 32; Map 24)

Chaeridiona mayuri Shameem & Prathapan 2014:576 (type: India, Kerala, Tirurangadi, BMNH).

Diagnosis: Length 3.84–4.61mm, width 1.80–2.24 mm. Dorsum metallic emerald green to dull green except coppery brown laterally and preapically, elytral apex yellow; colour of head dorsally varies from metallic emerald green to dark coppery; antennomeres I–VII reddish yellow, proximal ones darker, VIII–XI black, apex of XI brown; frontoclypeus, gena, gula, mouth parts concolorous with basal antennomeres, labrum and mandibles often darker; pro- and mesothoracic sterna and pleurites rufous brown, metathoracic sterna darker; all abdominal ventrites brown, distal ones lighter; all trochanters red brown; all femora and tibiae yellow; all tarsi darker than respective tibia. Vertex proximally with medial sulcus, deeply punctate except basally and apically; sulci present near eyes; frons coarsely granulate, without deep punctures; clypeus strongly punctate in middle, with rows of widely placed weak setae. Antennae longer, reaching beyond middle of body; antennomeres I–VII sparsely setose; VIII–XI thickly pubescent; I–II punctate; III–VII distinctly striate. Pronotum subquadrate; lateral margin bisinuate, weakly convex in middle; deeply coarsely punctate; with fine medial sulcus, reaching neither anterior nor posterior margin, visible only when viewed at certain angle. Elytra with lateral and apical margin laminate and crenulated, exterior apical angle acute and laminate; lateral margin anterior to exterior apical angle weakly concave; apical angle rounded, distinctly concave near apical angle. Elytra with 10 regular rows of punctures and a scutellar row; punctures rather circular; interspaces 2, 4, 6 and 8 costate; costa 2 with distinct, nearly triangular elevation near apex; costa 3 interrupted in middle; costa 4 strongly elevated throughout.

Distribution: India (Karnataka, Kerala, Tamil Nadu).

Host plants: Costaceae: *Cheilocostus speciosus* (J. Koenig) C. D. Specht, *Curcuma longa* L.; **Zingiberaceae:** *Globba sessiliflora* Sims, *Zingiber officinale* Roscoe and *Zingiber zerumbet* (L.) Smith. (Shameem & Prathapan 2014).

Remarks: This species resembles *C. metallica* Baly due to its metallic dorsum, non-tuberculated elytra, similar antennae, head, pronotum, venter, and legs. However, *C. mayuri* can be easily differentiated from *C. metallica* by the angulate exterior apical angle of elytra, while in *C. metallica*, the exterior apical angle of elytra is rounded.

Material examined (n=135): **Type specimens:** Holotype, ♀, with labels as follows: “(1) India: Kerala / Tirurangadi / 30.ix.2012 / Shameem K. Coll. / Ex *Costus* (white label). (2) HOLOTYPE / *Chaeridiona mayuri* n. sp. / des. Shameem & Prathapan, 2013 (red label)”. Paratypes (83 specimens, all specimens with a white locality label as given below, besides a second pink label: “PARATYPE / *Chaeridiona mayuri* n. sp. / des. Shameem & Prathapan, 2013”): 1♂, 30 unsexed, the same labels as for holotype; 4 unsexed, same data except host is Turmeric, instead of *Costus*; 2♀, 19 unsexed, same data except date 1.xi.2012; 1♀, 5 unsexed, same data as for holotype, without host plant information; 2 unsexed, same data except date 27.x.2012, without host plant information; 4 unsexed, India: Kerala / Perinthalmanna / N 11°03' 05.6" E76°13'55.6"/ 13.x.2012 81.9 m / Prathapan & Shameem Coll. / Ex *Costus*; 1 unsexed, same data except host *Zingiber officinale*; 1♀, 1 unsexed, same data except host *Curcuma longa*; 1 unsexed, same data, without host plant information; 1♀, 1♂, 4 unsexed, India: Kerala / Arippa / N 08°50' 11.0" / E77°01'46.1" 236 m / 20.viii.2013 / Prathapan D & Shameem K Coll.; 1♀, India: Karnataka / Jamboti / 11.xi.2012 / Prathapan KD Coll.; 1 unsexed, India: Karnataka / Castle Rock / 12.xi.2012 / Prathapan KD Coll.; 2 unsexed, same data except date 14.xi.2012; 1♀, India: Nilgiris South / Naduvattam / N 11°29' 48.4" E76° 31' 01.5"/ 5.x.2012 1222 m / Prathapan & Shameem Coll. **Non-type specimens:** 9 unsexed. India: Karnataka / Kollur (10 km towards Hassan) / 13° 46' 34.79" N, 74° 47' 44.9" E / 13.viii.2017 / Prathapan KD Coll.; 6 unsexed. India: Karnataka / Jog Falls / N14° 13.962' / E 74° 48.793' 515 m / 31.x.2013 / Prathapan KD Coll. / Ex Zingiberaceae; 13 unsexed. India: Kerala / Janakikkadu / 27.xi.2013 / Shameem K Coll. / Ex Zingiberaceae; 1 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 28.ii.2014 / Shameem KM Coll. / Ex Zingiberaceae; 2 unsexed. India: Kerala / Thiruvambady, Vellarimala / 13.ix.2014 / Shameem K.M. Coll. / Ex Zingiberaceae; 2 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 15.ix.2014 / Shameem K.M. Coll. / Ex Zingiberaceae; 1

unsexed. India: Kerala / Kavilumpara / Chappathottam / 4.VIII.2017 / Prathapan KD Coll.; 8 unsexed. India: Kerala / Tvm-Kallar / 1.ix.2017 / Prathapan KD Coll.; 7 unsexed. India: Kerala / Calicut Univ. Campus / 11.ix.2017 / Shameem KM Coll.; 1 unsexed. India: Kerala, Idukki / Vellappara / 9° 50' 58.02" N, 76° 57' 33.48" E / 7.X.2019 / K.D. Prathapan Coll.; 1 unsexed. India: Kerala / Kizhuparamba / 11° 14' 03.2" N, 76° 01' 09.8" E / 26.xi.2017 / Shameem K.M. Coll.

***Chaeridiona metallica* Baly, 1869**

(Map 24)

Chaeridiona metallica Baly, 1869:381 (type: India, BMNH).

Choeridiona metallica Baly. Gemminger & Harold 1876:3609.

Diagnosis: Length 4.30–5.1 mm, width 1.85–2.15 mm. Dorsum metallic emerald green medially, coppery brown laterally and preapically; vertex varies from metallic green to coppery brown, elytral apex reddish brown; antennomeres I–VII reddish brown, basal two being more darker, VIII–XI black; fronto-clypeus, gena, gula reddish brown; sternites dark brown to piceous; ventrites reddish brown in middle, turns darker towards sides; all coxae yellowish brown, all trochanters dark brown, all femora and tibia yellow; all tarsomeres darker than their respective tibia. Vertex coarsely and densely punctate. Antennae longer, reaching beyond middle of body; antennomeres I–VII sparsely setose; VIII–XI thickly pubescent; I–II punctate; III–VII distinctly striate. Pronotum subquadrate, densely covered with coarse punctures. Elytra with exterior apical angle rounded; both lateral and apical margin distinctly crenulated; apical margin convex; each elytron with 10 rows of punctures in middle; disc convex, abruptly depressed apically; interstices 2, 4, 6 and 8 costate; costa 1 entire, sometimes interrupted near apex, costa 2 strongly produced in middle but interrupted behind middle, costa 3 interrupted in middle and near apex, costa 4 entire and strongly produced throughout.

Remarks: *Chaeridiona metallica* resembles *C. mayuri* in having a similar metallic dorsum, non-tuberculated elytra, similar head, antennae, pronotum, venter, and legs. However, *C. metallica* can be easily distinguished by its rounded exterior apical angle of elytra, as mentioned in the key (exterior apical angle is angulate and laterally projecting in *C. mayuri*). *Chaeridiona metallica* is also characterized by a more reflective dorsum, more convex elytra with strong and sharply raised costae 1 and 2, distinct and well-developed crenulations on both the lateral and apical margins, and less laminated lateral sides. In

contrast, in *C. mayuri*, the dorsum is less reflective under light, the elytra are convex but more or less flattened on the top, costae 1 and 2 are weakly flattened and never sharply produced, the crenulations are minute and distinct only at the apical margin, and both the apical and lateral margins (near the apex) are more laminated.

Distribution: India (Goa, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu). **New record from Goa.**

Host plants: Zingiberaceae: *Curcuma* sp. (Maulik 1937); *Globba sessiliflora* Sims (**New record**).

Material examined (n=19). 2 unsexed. INDIA: Karnataka / Coorg, Mandalpatti / 12° 32' N 75° 42' E / 27.ix.2009 / Yeshwanth, H.M; 2♂, 1♀, 9 unsexed. India: Kerala / Silent Valley Nat. Park / Mukkali / N11° 03' 53.3" E 76° 32' 10.5" / 14.xi.2011 557 m / Prathapan & Shameem Coll.; 2 unsexed. India: Kerala / Silent Valley Nat. Park / Sairendhri / 20.xii.2011 / Prathapan & Shameem Coll.; 3 unsexed. India: Goa / Poinguinim / N14° 58' 37.72" E 74° 06' 07.26" / 27.viii.2016 / Shameem KM Coll. / Ex *Curcuma* sp.

***Chaeridiona picea* Baly, 1869**

(Map 24)

Chaeridiona picea Baly 1869:382 (types: India, BMNH, OXUM).

Choeridiona picea Baly. Gemminger & Harold 1876:3609.

Diagnosis: Length 3.80–4.00 mm, width 1.85 mm (length 5 mm in Maulik 1919). Yellow brown to red brown; head, antennae, pronotum slightly darker, distal four antennomeres more darker in some individuals; palps paler; ventral sides, coxae; trochanters concolorous with dorsum; femora and tibiae yellow; femoro-tibial articulations and tarsi darker than their respective tibiae. Vertex as punctate as pronotum; punctures denser and coarser; medially carinated towards apex. Antennae shorter, 0.42–0.44X longer than body; proximal I–VII antennomeres striated and scarcely setose, distal VIII–XI pubescent; distal four shorter, thickened to form a weak club. Pronotum subquadrate; 0.81–0.89X longer than wide; parallel sided, slightly widened towards apex in some; surface densely and coarsely punctate, slightly elevated on either side before middle. Elytra widest at distal 1/3rd, in front of exterior apical angle; rows more regular; interstices 2, 4, 6 and 8 costate and tuberculated, with several strong elevations at base, middle and apex; exterior apical

angle shortly angulated, shorter than antennomere XI; lateral margin distinctly concave in front of angulation; lateral and apical margin weakly crenulated.

Distribution: India (Kerala, Madhya Pradesh; Maharashtra, Odisha, West Bengal). **New record from Kerala.**

Host plants: Commelinaceae: *Commelina benghalensis* L. (Kalaichelvan & Verma 2005); *Commelina* sp. (Świętojańska *et al.* 2006); *Murdannia nudiflora* (L.) Brenan (Kalaichelvan & Verma 2005).

Remarks: See the 'Remarks' section under *Chaeridiona crassicornis*.

Material examined (n=6): 1 unsexed. INDIA: Karnataka / Thirthahalli: Agumbe / 7.xi.2010, Sweep net / Nayana. E.D; 4 unsexed. India: Kerala / Tirurangadi / N 11°02' 14.3" / E 75° 55' 27.8" / 10.vii.2016 / Shameem KM Coll. / Ex *Commelina*; 1 unsexed. India: Kerala / Tirurangadi / -.viii.2016 / Shameem KM Coll. / Ex Commelinaceae.

***Chaeridiona tuberculata* Uhmman, 1961**

(Fig. 119; Map 24)

Chaeridiona tuberculata Uhmman, 1961a:45 (type: India, Anamali Hills, Cinchona, MGFT).

Diagnosis: Length 5.12–6.06 mm, width 2.37–2.94 mm. Yellow brown to dark reddish brown with or without bronzy reflections; elytral tubercles and antennae darker; venter sides and legs concolorous with dorsum. Vertex densely punctate; antennae short, 0.35–0.44X longer than body; antennomeres I–VII more granulate, without distinct striae; VIII–XI pubescent, shorter and thickened to form a weak club. Pronotum 0.81–1.00X longer than wide; lateral sides weakly curved, lateral sides weakly produced near middle; disc coarsely and densely punctate; narrow region near anterior margin and narrow medial line in middle impunctate. Elytra regularly punctate; interstices 2, 4, 6 and 8 costate; first three costae bear single tubercles and disposed near apex, at middle and at apical 1/3rd on 1st, 2nd and 3rd costae respectively; tubercles on 2nd and 3rd costae more pronounced; exterior apical angle rounded; lateral and apical margin strongly crenulated.

Distribution: India (Kerala, Tamil Nadu). **New record from Kerala.**

Host plants: Unidentified species of Commelinaceae (**New record**).

Remarks: See the 'Remarks' section under *Chaeridiona crassicornis*.

Material examined (n=14): 4 unsexed. INDIA: Kerala / Udumbanchola / 9.ii.2010 / Prathapan Coll.; 1♂, 9 unsexed. India: Kerala / Malabar Wildlife Sanctuary / Kakkayam / 15.ix.2014 / Shameem K.M. Coll. / Ex Zingiberaceae.

***Oncocephala* Agassiz, 1846**

(Figs. 30–31, 33, 123; Map 25)

Oncocephala Agassiz, 1846: 259. Type species: *Oncocephala quadrilobata* Guérin-Méneville 1844, by monotypy.

Onchocephala Chevrolat, 1836: 390, (*nomen nudum*).

Onchocephala Chevrolat, 1847: 110 (*lapsus*).

Oncocephala Chevrolat. Chapuis 1875: 308

Nepius Thomson 1858: 225.

Onchocephala Weise 1911:50

Diagnosis: Size: 4.0–6.5 mm. Colour variable; dorsum brown to dark brown or combinations of yellow brown to dark brown with darker, piceous or black markings; vertex dorsally with a crown, generally covering the base of antennae in dorsal view (Figs. 30–31, 123). Antennae short and stout, subfiliform; antennomeres I and II subglobose; III–X cylindrical, XI pointed at apex; III–XI finely striate. Pronotum distinctly margined; coarsely punctate, rugose with prominent tubercles (Figs. 30–31). Elytra rugose; alternate interstices costate and strongly carinated; margins distinctly laminated, sparsely and minutely toothed; exterior apical angles generally angulate (Fig. 123).

Diversity: 42 described species, five in India which also occur in south India.

Number of species studied: Five.

Distribution: Angola, Cameroon, Congo, Equatorial Guinea, Ethiopia, Gabon, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Madagascar, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Tanzania, Togo, Uganda, Zimbabwe (Africa); China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam (Asia); New Guinea (Oceania).

Host plants: Commelinaceae (Hua 2002), Convolvulaceae (Fletcher 1914; Hargreaves 1937; Cherian & Menon 1940; Uhmman 1938, 1950, 1956b, 1957b; Takizawa 1985;

Anand 1989; Hua 2002; Świętojańska *et al.* 2006; Mohamedsaid 2008; Chaboo *et al.* 2010), Dioscoreaceae (Świętojańska & Kovac 2007), Orchidaceae (Gestro 1919; Blunck 1954), Poaceae (Grist & Lever 1969; Hargreaves 1937), Solanaceae (Miller 1932), Zingiberaceae (Świętojańska & Kovac 2007).

Key to south Indian species of *Oncocephala* Agassiz, 1846

1. Cephalic crown without dorsal protuberances in middle..... 2
 - Cephalic protuberance with distinct dorsal protuberances, one on either side in middle 3
2. Cephalic crown four lobed, lobes more or less equidistant from each other, sides sinuate; elytra weakly narrowed in middle, exterior apical angles form nearly right angle and not distinctly projecting postero-laterally; costae I without strong elevations..... ***O. depressa* Maulik, 1919**
 - Cephalic crown pentagonal, little narrowed posteriorly, weakly constricted in middle; elytra distinctly narrowed in middle and strongly widened behind, exterior apical angle acutely produced and projecting postero-laterally; costae I with strong elevations before middle..... ***O. dorsalis* Weise, 1897**
3. Dorsum ferruginous, less reflecting; elytra less rugose, apical angle acutely produced and projecting postero-laterally; elevations on costa I weak ***O. angulata* Gestro, 1885**
 - Dorsum variable, generally yellow brown to reddish brown suffused with dark brown or black at least on elytra; elytra more rugose; angulations of apical angle variable; costa I strongly elevated..... 4
4. Size slightly large (5.31–6.19 mm); dorsum more suffused with black; both pronotum and elytra more rugose; first elevation on costae I distinctly larger than third elevation on costa II; endophallic sclerite strongly sclerotized..... ***O. quadrilobata* Guérin-Ménéville, 1844**
 - Size smaller (4.87–5.75 mm); dorsum comparatively less suffused with black; both pronotum and elytra comparatively less rugose; first elevation on costa I subequal to third elevation on costa II; endophallic sclerite weakly sclerotized..... ***O. tuberculata* (Olivier, 1792)**

***Oncocephala angulata* Gestro, 1885**

(Map 25)

Oncocephala angulata Gestro, 1885: 172 (type: Indonesia, Sumatra, MCSN, ISNB).

Oncocephala anulata Gestro (sic). Uhmann 1964a: 466 (*lapsus*, catalog).

Oncocephala bicristata Baly (not Chapuis). Gestro 1897a: 73.

Oncocephala weisei Gestro, 1899a: 324 (type: Indonesia, Sumatra, MCSN).

Oncocephala jeanvoinei Pic, 1935: 19 (type: Vietnam, Tonkin, Than-Moi, MNHN).

Oncocephala weisei yunnanica Chen & Yu, 1962: 137 (type: China, Yunnan, Gin-ping, IZAS).

Oncocephala siamensis yunnanica Chen & Yu. Uhmann 1963b: 476.

Diagnosis: Length 4.50–5.06 mm, width 2.94–3.44 mm (4–5 mm in Maulik 1919). Colour yellow brown to ferruginous, subnitid; antennae, scutellum red brown; apices of elytral elevations, exterior apical angle, a transverse band, weak in some individuals dark brown to black. Cephalic crown two lobed, strongly constricted between them; anterior lobe smaller and bears two dorso-lateral protuberances; posterior lobe larger with two upwardly directed protuberances, generally smaller than anterior protuberances; distal margin pronounced in middle; disc longitudinally deepened throughout. Elytra with lateral sides distinctly concave in middle; exterior apical angle acutely produced, posterolaterally projecting; lateral margins as laminate as apical margins; lateral margins strongly serrated; disc less rugose; rows more regular with interspaces not strongly elevated as in other species; costal elevations weak; elevation behind middle of costa 1 prominent; basal elevation on costa 1 only slightly higher than elevation behind middle of costa 2.

Distribution: India (Andhra Pradesh, Kerala, Punjab). *Elsewhere:* China, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam (Asia). **New record from Kerala.**

Host plants: **Convolvulaceae:** *Ipomoea* sp. (Hua 2002), *Merremia* sp. (**New record**); **Dioscoreaceae** (Świętojańska & Kovac 2007); **Zingiberaceae** (Świętojańska & Kovac 2007); **Orchidaceae:** Orchid (Gestro 1919); **Solanaceae:** *Solanum melongena* L. (Miller 1932).

Remarks: *Oncocephala angulata* resembles *O. quadrilobata* and *O. tuberculata* in having a similar cephalic crown with dorsally projecting protuberances in the middle, however can be easily distinguished by the following characters: 1) distinctly ferruginous dorsum

with a transverse dark band on the elytra connecting the two exterior apical angles (dorsum is yellow to reddish brown suffused with dark brown or black in others); 2) exterior apical angles of the elytra are sharply pointed, longer and distinctly projecting outwards (they are bluntly pointed, comparatively less projecting and mostly nearly right-angled in others); and 3) less tuberculated elytra (more tuberculated in others). Furthermore, *Oncocephala angulata* was collected on the members of *Merremia* in south India.

Material examined (n=14): 2 unsexed. India: Kerala / Tirurangadi / 30.ix.2012 / Shameem K. Coll.; 1 unsexed. INDIA: Kerala / Tirurangadi / 30.ii.2013 / Shameem Coll.; 1 male, 1 female. India: Kerala / Tirurangadi / 14.vii.2013 / Shameem K. Coll.; 1 male, 2 unsexed. India: Kerala / Tirurangadi / 9.viii.2013 / Shameem K. Coll.; 1 unsexed. India: Kerala / Tirurangadi / 29.xi.2013 / Shameem K Coll.; 3 unsexed. India: Kerala / Tirurangadi / -.iv.2015 / Shameem KM Coll.; 2 unsexed. India: Kerala / Kasaragod / 28.viii.2016 / Shameem KM Coll.

***Oncocephala depressa* Maulik, 1919**

(Map 25)

Oncocephala depressa Maulik, 1919a: 103 (type: India, Madras, Nilgiri Hills, BMNH).

Diagnosis: Length 6.39 mm, width 3.62 mm (Length 6 mm in Maulik 1919). Colour yellow brown; pronotal depressions, scutellum, apices of elevations on elytra, parts of costae and punctures, exterior apical angle dark brown to piceous; antennae reddish brown. Cephalic crown laterally and dorsally constricted, four lobed; anterior lobes smaller; distal margin weakly pronounced in middle. Elytra narrowed in middle, gently widened behind; exterior apical angle form nearly right angle; lateral margins weakly serrated; disc less rugose without strong elevations; basal and middle elevations of costa 1 subequal in height.

Distribution. India (Tamil Nadu).

Host plant: Unidentified species of Convolvulaceae (**New record**).

Remarks: This species is similar to *O. dorsalis* due to the absence of dorsal protuberances on the cephalic crown. However, *O. depressa* can be distinguished from *O. dorsalis* by its four lobed cephalic crown, weakly narrowed elytra at the middle of the lateral margin,

smaller and weakly projecting exterior apical angles that are nearly obtuse, and the absence of strong elevations on costa 1. In *O. dorsalis*, the cephalic crown is pentagonal, the middle of the lateral margin of the elytra is distinctly narrowed, exterior apical angles are larger and strongly outwardly projecting with sharply pointed apices, and the costa 1 with strong elevations.

Material examined (n=1): 1 unsexed. India: Tamil Nadu / Marappalam / Nilgiri Hills / 11° 27' 22.87"N 76° 27' 55.76E" / 13.x.2010 892 m / Prathapan KD Coll.

***Oncocephala dorsalis* Weise, 1897**

Oncocephala dorsalis Weise, 1897: 123 (type: India, Belgaum, ZMHB, BMNH).

Distribution: India (Karnataka, Maharashtra).

Host plant: Convolvulaceae: *Ipomoea* sp. (Anand 1989).

Material examined: Nil.

***Oncocephala quadrilobata* Guérin-Méneville, 1844**

(Map 25)

Onchocephala quadrilobata Guérin-Méneville, 1844: 281 (type: India, Pondicherry, MNHN?).

Diagnosis: Length 5.31–6.19 mm, width 3.5–3.72 mm (Length 5.00 mm in Maulik 1919). Colour yellow brown; lateral sides and depression of pronotum, scutellum, punctures of elytra, elevations of elytra except apices dark shining brown; apices of elevations, parts of costae, exterior apical angle piceous; antennae reddish brown with distal two antennomeres generally paler; ventral sides dark brown; prosternum yellowish; ventrites laterally paler. Cephalic crown with smaller anterior lobe bearing two smaller and closely placed protuberances; posterior lobe larger, bears two dorsal protuberances, larger than those of anterior lobe; distal margin with a downwardly curved rounded prominence in middle. Elytra distinctly concave in middle, widened behind; exterior apical angle variable; angle generally acute, bluntly pointed and projects posterolaterally in most individuals, nearly right angled and not projecting in some others; lateral margins distinctly serrated; disc more rugose; elevations of costa I more pronounced, middle one largest, basal elevation of costa I distinctly larger than third elevation of costa II near apex.

Distribution: India (Andaman Islands, Andhra Pradesh, Karnataka, Kerala, Maharashtra, Pondicherry, Tamil Nadu). *Elsewhere:* China, Myanmar, Pakistan, Sri Lanka, Vietnam (Asia). **New record from Karnataka and Kerala.**

Host plants: Convolvulaceae: *Argyreia nervosa* (Burm.) Bojer (Takizawa 1985); *Ipomoea* sp. (Takizawa 1985; Świętojańska *et al.* 2006); **Polygonaceae:** *Rumex* sp. (Hua 2002).

Remarks: *Oncocephala quadrilobata* closely resembles *O. tuberculata* due to similarity in the shape of cephalic crown, pronotum and elytra. However, *O. quadrilobata* can be distinguished from *O. tuberculata* due to slightly larger body size (length 5.31–6.19 mm, width 3.5–3.72 mm), a darkly suffused dorsum, dark venter often piceous towards the middle of sternites and ventrites, and strongly sclerotized endophallic sclerites. While, *O. tuberculata* is comparatively smaller (length 4.87–5.75 mm, width 2.69–3.50 mm) and paler in colour with reddish brown to dark brown venter that never turns piceous in the middle, and a less sclerotized endophallic sclerite compared to *O. tuberculata*. Moreover, *O. quadrilobata* is found to occur in high-altitude regions of the Western Ghats and is associated with members of *Argyreia*, whereas *O. tuberculata* is collected from lowland areas of south India on various species of *Ipomea*.

Material examined (n=12): 3 unsexed. India: Karnataka / Kottigehara / N 13° 07' 7.7" E 75° 30' 37.9" / 8.v.2011 938 m / D. Prathapan & K. Shameem Coll.; 1♂, 4 unsexed. (1) India: Karnataka / Bisle Forest / 10.v.2011 / D. Prathapan & K. Shameem Coll. (2) Ex *Argyreia*; 3 unsexed. (1) India: Karnataka / Pushpagiri / 17.v.2011 / D. Prathapan & K. Shameem Coll. (2) Ex *Argyreia*; 1 unsexed. INDIA: Karnataka / Magaribetta / 17.v.2011 / Shameem K. Coll.

***Oncocephala tuberculata* (Olivier, 1792)**

(Figs. 30–31, 33, 123; Map 25)

Hispa tuberculata Olivier, 1792: 99 (type: Jamaica, MNHN?).

Onchocephala tuberculata (Olivier). Nayar *et al.* 1976: 353.

Oncocephala formosana Chûjô, 1933: 312 (type: Taiwan, Shinkwa, TARI).

Oncocephala bicristata Gestro, 1885: 172 (not Chapuis).

Diagnosis: Length 4.87–5.75 mm, width 2.69–3.50 mm (length 4.50–6.00 mm in Maulik 1919). Colour variable, ferruginous to yellow; elytra generally suffused with dark brown

or black; exterior apical angle, apices of elevations darker or piceous; antennae reddish brown with distal two antennomeres generally paler; ventrites generally concolorous with ground colour of dorsum; sides of metasterna and middle of ventrites darker in some. Cephalic crown and elytra as in *O. quadrilobata*. Basal elevation of costa I subequal to third elevation near the apex of costae II; middle elevation of costa I more prominent.

Distribution: India (Goa, Kerala, Telangana). *Elsewhere:* China, Indonesia, Laos, Nepal, Taiwan (Asia).

Host plants: Convolvulaceae: *Argyreia* sp. (**New record**); *Ipomoea sagittifolia* Burm.f. (Cherian & Menon 1940); *Ipomoea batatas* (L.) Lam. (Uhmann 1956b); *Ipomoea* sp. (Fletcher 1914).

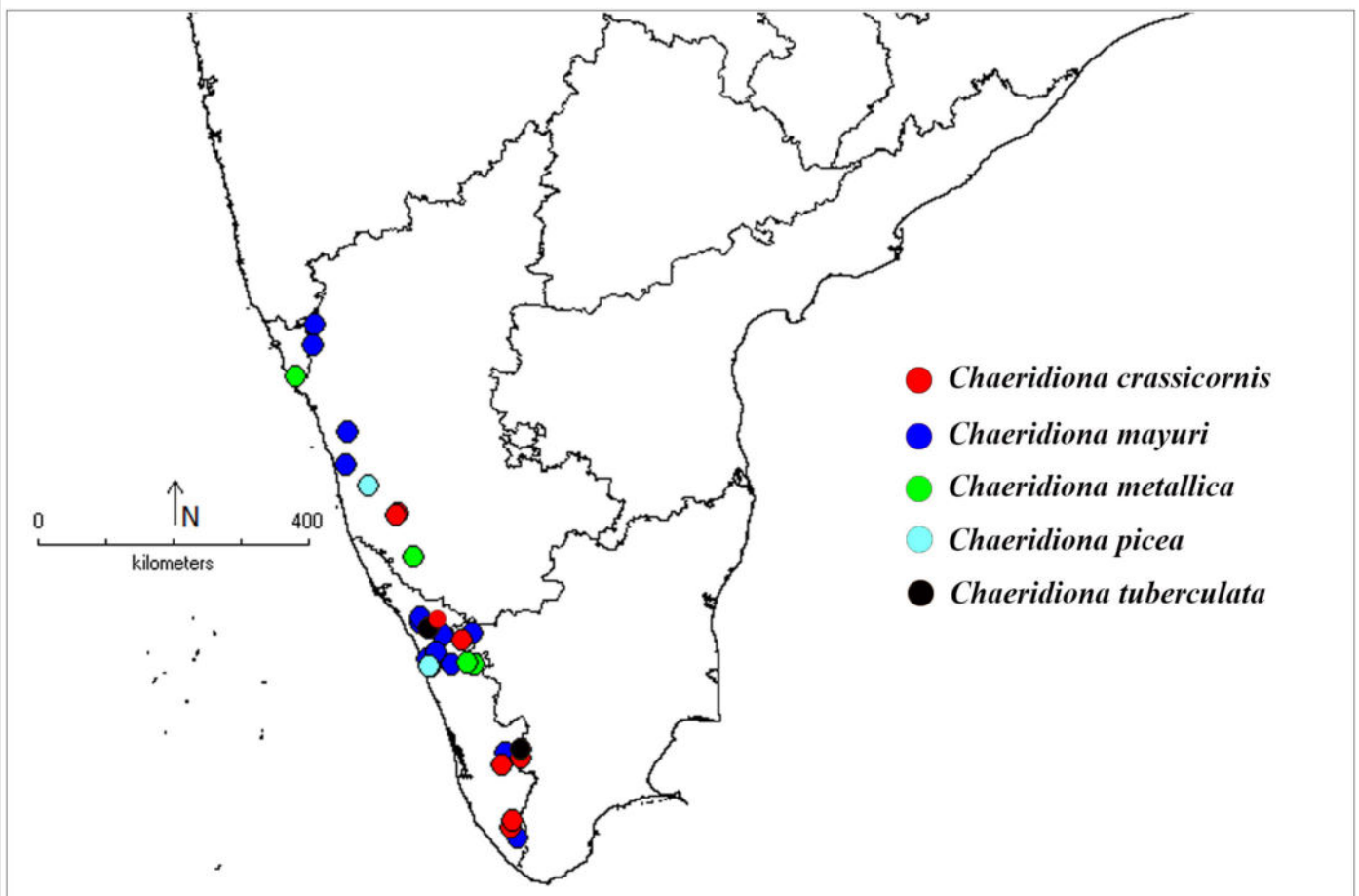
Remarks: This is an economically important pest species as both larvae and adults feed on leaves of sweet potato, *Ipomoea batatas* (L.) Lam.

This species is closely allied to *O. quadrilobata*. See the 'Remarks' section under *O. tuberculata* for the comparative notes.

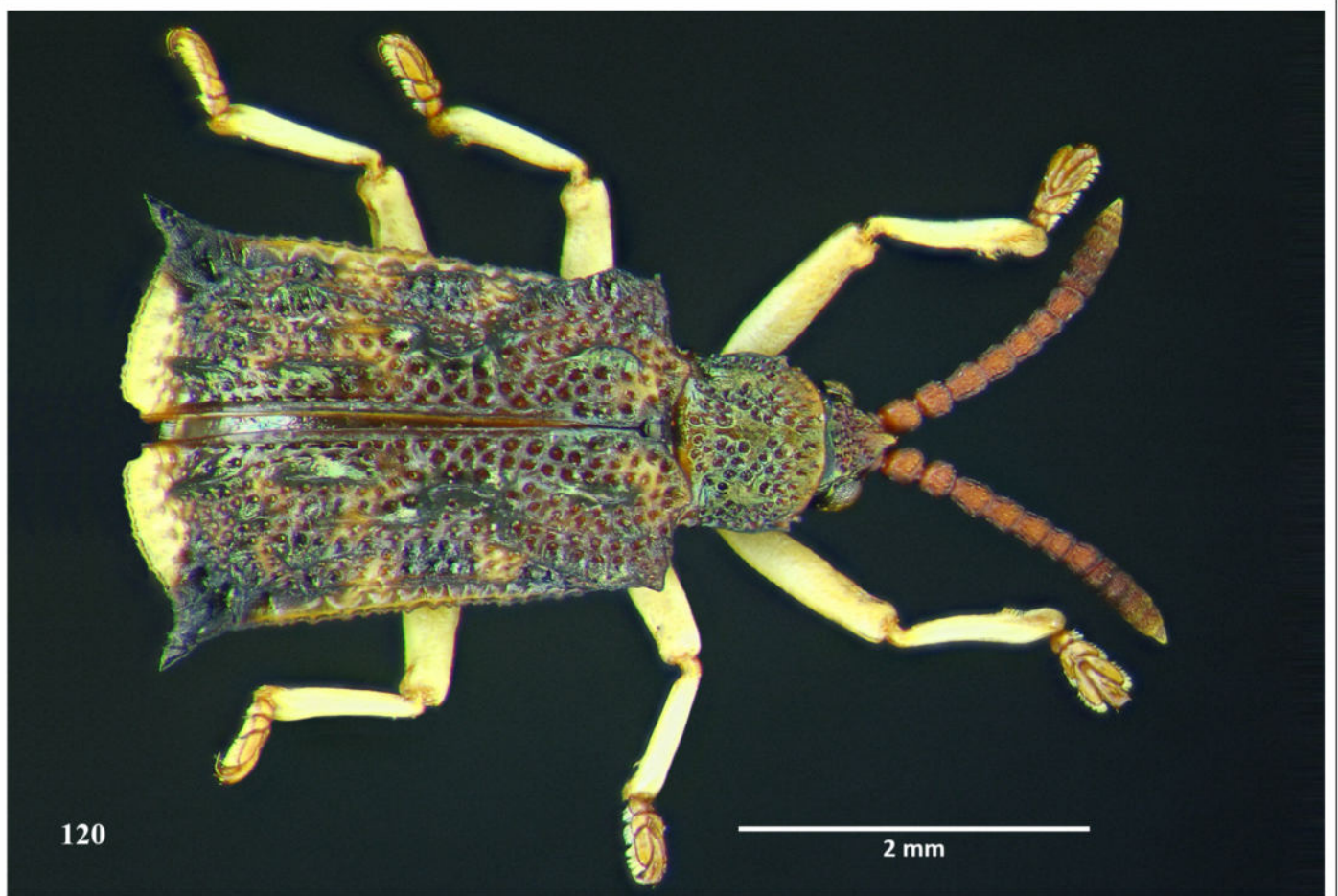
Material examined (n=46): 2 unsexed. India: Andhra Pradesh / Rudrur / N 18° 33.977' E 77° 52.706' / 14.ix.2012 383 m / Prathapan KD Coll.; 1 unsexed. India: Goa / Madgaon / 20.viii.2012 / Prathapan KD Coll.; 1♂, 1♀, 1 unsexed. INDIA: Kerala / Vellayani / 2.v.2011 / Shameem Coll.; 1♂, 1♀, 9 unsexed. Same data except date 4.ii.2011; 2♂, 3♀, 10 unsexed. Same data except date 10.ii.2011; 3 unsexed. Same data except date 2.vii.2011; 1 unsexed. India: Kerala / Vellayani / 25.vi.2014 / Shameem KM Coll. / Ex *Ipomoea* sp.; 2 unsexed. India: Kerala / Vellayani / N 08° 25' 47.5" E 76° 59' 8.3" / 2.viii.2016 / Amritha Kumari Coll. / Ex *Ipomoea batatas*; 1 unsexed. India: Kerala / Tirurangadi / 1.iii.2013 / Shameem K Coll. / Ex *Ipomoea* sp.; 5 unsexed. India: Kerala / Tirurangadi / 10.vii.2016 / Shameem KM Coll. / Ex *Ipomoea* sp.; 1 unsexed. India: Kerala / Vembayam / 6.ix.2014 / Prathapan KD Coll.; 1 unsexed. India: Kerala / Trivandrum: Kollayil / N 08° 47' 20.5" / E 77° 0' 54.3" 119 m / 31.viii. 2014 / Prathapan D & Shameem K Coll.



Fig. 119. *Chaeridiona tuberculata* Uhmman.



Map 24. Localities of *Chaeridiona* Baly species collected.



Figs. 120–122. 120. *Chaeridiona crassicornis* (Gestro) New Comb., Dorsal habitus; 121–122. *Prionispa crassicornis* Gestro, Co-type; 121. Dorsal habitus; 122. Type labels.

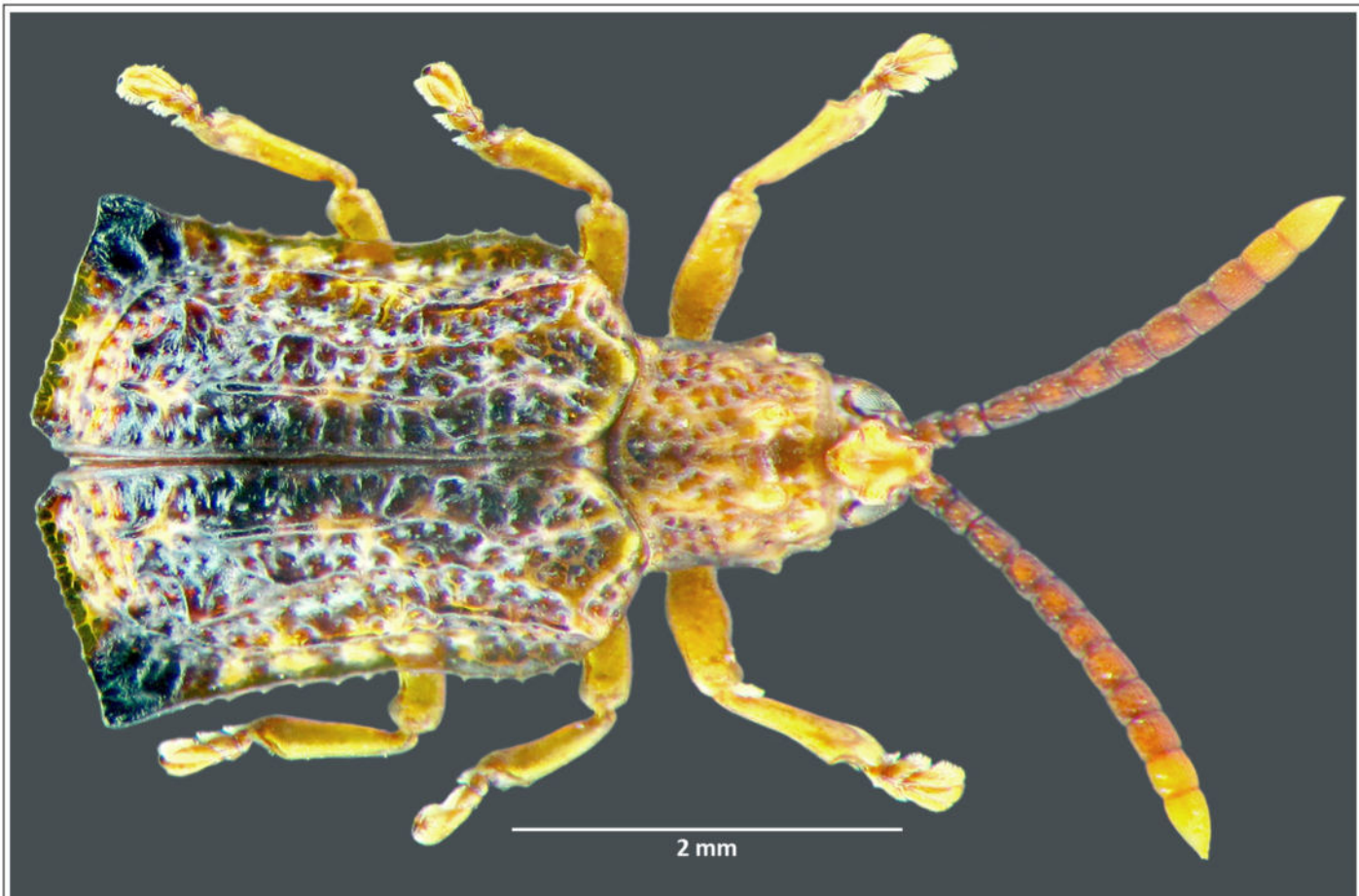
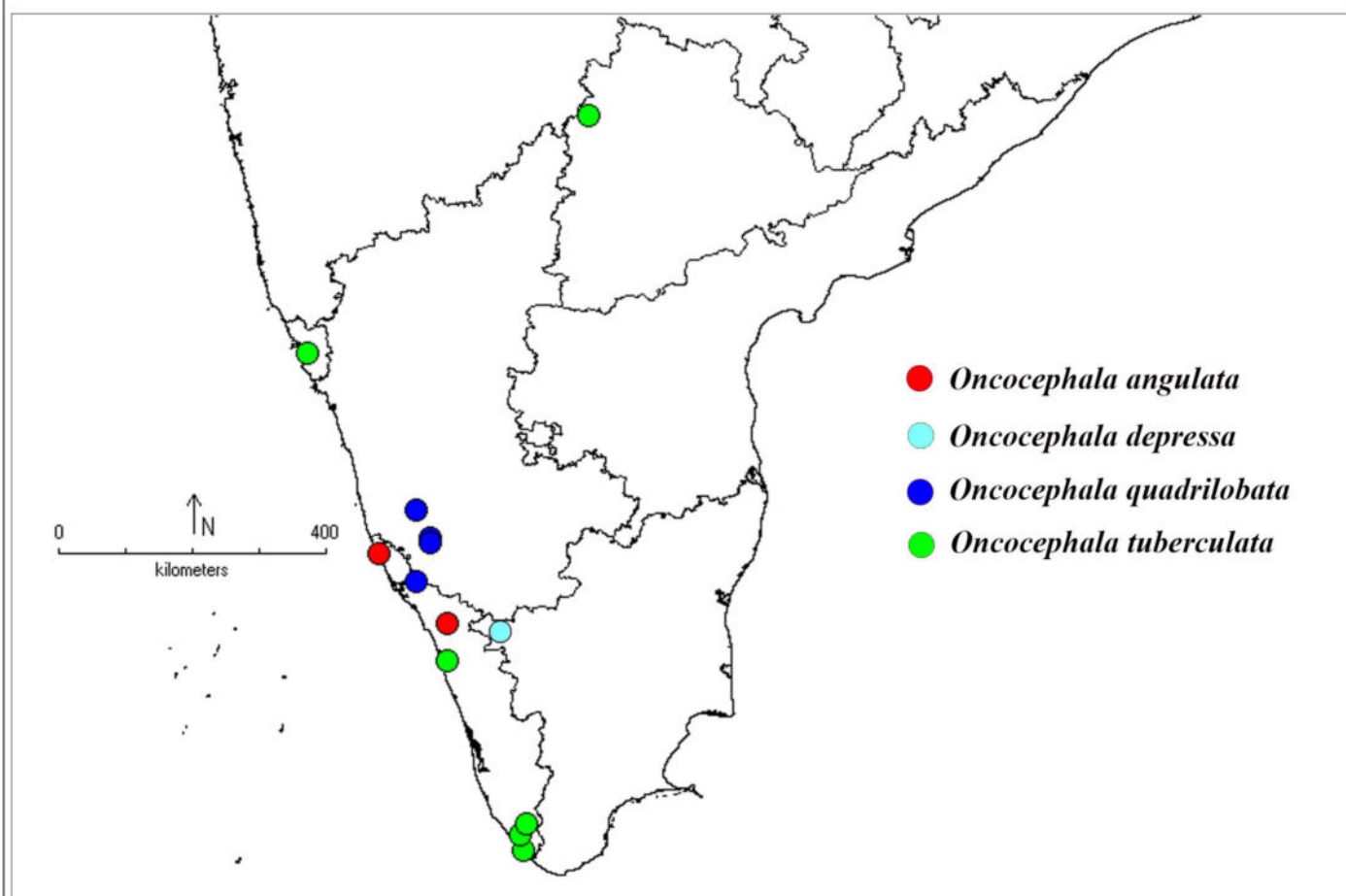


Fig. 123. *Oncocephala tuberculata* (Olivier).



Map 25. Localities of *Oncocephala* Agassiz species studied.

5. DISCUSSION

A faunistic study of the hispine Cassidinae of south India is presented in this thesis. Most of the discussion relating to individual taxa is provided as “remarks” under each taxon in the preceding chapter. In this chapter, an attempt is being made to discuss the information generated as a result of the present investigation under four heads *viz.* i) intergeneric relationships, ii) trophic relationships, ii) zoogeographic affinities, v) taxonomic importance of endophallic sclerites and female genitalia, and vi) economic importance.

5.1 Intergeneric relationships

The present study is a review of the systematics of 102 species belonging to 22 genera and nine tribes from southern India. Borowiec & Świątojańska (2014) recognized three distinct life strategies among Cassidinae. The first category has exophagous larvae; with both larvae and adults active on the surface of leaves. Almost all Cassidinae *s. str.*, except the tribe Notosacanthini, most species of *Callispa* (e.g., *Callispa keram* Shameem & Prathapan) and probably *Amblispa* (Callispini) follow this strategy. The second category has true leaf mining larvae that feed on the mesophyll tissues of leaves, while their adults are active on the surface of leaves. The tribe Notosacanthini of Cassidinae *s. str.* and the tribes Coelaenomenoderini, Hispini, Oncocephalini and Gonophorini exhibit this strategy. In the third category, both the larvae and adults are cryptic feeders. The genus *Wallacea* (Bothryonopini) and some species of *Callispa* (e.g., *Callispa vittata* Baly and *Callispa* sp. 1) (Callispini) follow this strategy by living within the unfurled leaves, leaflets or fronds, or even in the scraped rolled leaves as in the case of *Leptispa* (Leptispini) (Voronova & Zaitsev 1982, Prathapan *et al.* 2009). These three life strategies, proposed by Borowiec & Świątojańska (2014), do not encompass all the tribes or genera of hispine Cassidinae, and at least two more categories can be added to accommodate the life strategies of all the south Indian genera. In one category, the larvae are true leaf miners, while their adults lead a cryptic mode of life, living within the unopened leaves or plant crowns, as in *Agonita suturellamima* (Gonophorini). In the other category, larvae are cryptic feeders, while their adults are active on leaf surfaces. This strategy is found in all the three genera of the tribe Anisoderini, where the larvae are culm or pseudostem borers, and probably in *Bothryonopa* of the tribe Bothryonopini, where the larvae live within unopened fronds of palms (Stebbing 1914; Beeson 1941; Mathur 1944; Kalshoven 1957;

Macdonald 1962; Roonwal 1977; Haojie *et al.* 1998; Varma & Sajeev 2015; Singh & Singh 2018; Shameem & Prathapan 2019).

Chaboo (2007) found that all three Anisoderine genera were resolved as sister to *Promecotheca* and proposed the tribal phylogeny of Anisoderini as (*Lasiochila* + (*Anisodera* + *Estigmaena*)). She treated *Lasiochila gestroi* as leaf miners, citing the incorrect report by Kimoto & Takizawa (1997) and overlooked the reports of *L. goryi* as stem borers of bamboo (Macdonald 1962). Contrary to Chaboo's conclusion, the present study proposes that *Estigmaena* and *Lasiochila* are more closely related to each other than they are to *Anisodera*. In addition to their identical trophic selections and larval mode of life (Macdonald 1962), both *Estigmaena* and *Lasiochila* have untoothed mandibles, similar structure of labium, and mouth cavity.

Among the group of true leaf miners, the ability of the larvae to exit the mine, as well as to start a fresh one, varies across the genera. The larvae of Oncocephalini (*Chaeridiona* and *Oncocephala*) and *Platypria* (Hispiini), leave their mines upon exhaustion of mesophyll tissue, to start new mines on a fresh leaf. They always make separate pupal mine for pupation. The larvae of *Javeta* (Coelaenomenoderini) and *Agonita* (Gonophorini) make only a single mine during their entire larval period and pupate within the same mine. They are unable to start a fresh mine or even re-enter into their mines if they come out by accidental rupturing of the mine (Nair 1957; Shameem *et al.* 2016).

The larvae of most tortoise beetles and some other chrysomelids carry their excrementitious matter on their back to use it as a means of defense (Jolivet 1988, Jolivet & Hawkeswood 1995; Vencl *et al.* 2004) which is very rare among the hispine Cassidinae. In the present study, we observed that both the larvae and pupae of *Callispa keram* carry fecal and exuvial shields at the apex of their abdomen (Pers. Observation). Jolivet & Hawkeswood (1995) discussed the same behavior in *Oediopalpa* (Oediopalpini), an American hispine genus. As an exophagous feeder, the larvae of *Callispa* and *Oediopalpa* resemble those of Cassidinae s. str. (Bruch 1906, Gressitt & Kimoto 1963) and the retention of fecal shields could be developed as a protective mechanism to deter their natural enemies.

The present study recorded a unique type of leaf mining behaviour in *Chaeridiona mayuri* Shameem & Prathapan (Shameem & Prathapan 2014). The larva of *C. mayuri* keeps their mines clean, free from faeces and deposits thread-like faeces outside their

mines on the adaxial surface of the leaf. It pierces the epidermis near the margin of the leaf mine, more or less at regular intervals, with its needle like posterior end, which is extended towards the exterior to extrude fecal threads. Świątojańska & Kovac (2007) observed similar behaviour in *C. thailandica* Kimoto. The larva of *Rhodtripsa dilaticornis* also is known to maintain cleaner mines. However, unlike *C. mayuri* and *C. thailandica*, the larva of *R. dilaticornis* achieves this by pushing the frass towards the base of the mines (Khan & Kadapa 1957).

5.2 Host-plant preferences

Hispine Cassidinae generally prefer monocot plants (Kalshoven 1957; Crowson 1981; Jolivet & Hawkeswood 1995). Jolivet & Hawkeswood (1995) found that the food plants of 86 out of the 110 species of hispines belong to 19 monocot families and the rest 24 species are associated with 44 of dicot families. Of the nine tribes recorded from the study area, seven (Anisoderini, Bothryonopini, Callispini, Coelaenomenoderini, Eurispini, Gonophorini and Leptispini) are exclusively restricted to monocotyledons. Of the 22 genera studied, *Platypria* (Hispini) is the only one that is exclusively confined to dicotyledons, either Fabaceae or Rhamnaceae (Ranade *et al.* 2021). Additionally, members of *Dactylispa*, *Dicladispa* (Hispini), and *Oncocephala* (Oncocephalini) are recorded on various species of eudicots (Kalshoven 1957, Staines 2015).

Members of the subfamily are highly specific in their food choices and none of them are generalists (Kalshoven 1957, Jolivet & Hawkeswood 1995). As a monophagous or oligophagous group, most of the hispine genera are usually restricted to a single plant family, while some others feed on two or more related plant families. Only very few are polyphagous at least at the genus level (Jolivet & Hawkeswood 1995). The genus *Anisodera* (Anisoderini) feeds on Costaceae, Musaceae and Zingiberaceae (Kalshoven 1951, 1957; Maulik 1919a; Reid 1998; Hua 2002), while the other two members of the tribe, *Estigmene* and *Lasiochila* are restricted to a single plant family Poaceae (Kalshoven 1957; Macdonald 1962; Haojie *et al.* 1998; Varma & Sajeev 2015; Singh & Singh 2018). A few species are confined to a single plant genus as in the case of *Javeta pallida* Baly (Coelaenomenoderini), which feeds on several species of *Phoenix* L. (Shameem *et al.* 2016, 2017).

The megadiversity of the ‘‘Phytophaga’’ has been attributed to their co-radiation with flowering plants (Gómez-Zurita *et al.* 2007). Most of the leaf beetles are specifically

associated with particular plant taxa; therefore, knowledge of their relationship with the plant taxa often aids in preliminary identification of the insect and helps in solving complex evolutionary relationships of both insects and plants. There have been several reviews of the host plants of hispine Cassidinae (Maulik 1937, Jolivet 1988, Jolivet & Hawkeswood 1995, Santiago-Blay 2004). According to Jolivet (1988), food plants of chrysomelids have been recorded for only around 10,000 out of 35,000 species, which forms 28.57% of the total described species, while those of at least two out of every three species still remain unknown. The present study has helped to bridge this gap to a considerable extent by newly recording the food plants of 49 hispine species belonging to 16 genera and eight tribes (*Estigmene* (1), *Lasiochila* (2), *Bothryonopa* (1), *Callispa* (7), *Javeta* (1), *Squamispa* (1), *Agonita* (6), *Downesia* (5), *Gonophora* (1), *Dactylispa* (11), *Dicladispa* (1), *Hispa* (2), *Platypria* (1), *Leptispa* (5), *Chaeridiona* (3) and *Oncocephala* (1)). This includes the first report of food plants of *Squamispa*, an endemic and monotypic genus from south India, as well as the lone representative of the tribe Eurispini from the Oriental Region. A single adult of *S. fasciata* was collected on unidentified grass (Poaceae) from Nandi Hills near Bengaluru, Karnataka. Information on the host plants of the tribe was available only for *Eurispia vittata* Baly, which feeds on members of Cyperaceae (Hawkeswood 1991, Hawkeswood & Takizawa 1997, Forster 2008). The present work also recorded additional host plants for 13 species belonging to ten genera and five tribes (*Anisodera* (1), *Estigmene* (1), *Wallacea* (1), *Callispa* (1), *Dactylispa* (2), *Dicladispa* (1), *Platypria* (2), *Rhodtrispia* (1), *Chaeridiona* (1), and *Oncocephala* (2)). Three plant families namely, Commelinaceae and Pandanaceae for *Callispa* as well as its tribe Callispini and Poaceae for Eurispini are recorded for the first time in the present study.

5.3 Zoogeographic affinities

The subfamily Cassidinae is one of the well-studied taxa among the Chrysomelidae (Jolivet & Hawkeswood 1995). The cassidine fauna of both Old World and New World are equally diverse and distinct. Of the 34 tribes of the hispine clade, 24 (86 genera) are restricted to the Old World and rest of the ten (68 genera) are from the New World (Würmli 1975a, Chaboo 2007, Staines 2015). The present work dealt with nine tribes and 22 genera present in southern India. Of these nine tribes, only one tribe, Hispini has wider range of distribution throughout the Old World, while others have only restricted distributions. Among them, Coelaenomenoderini, Gonophorini and

Oncocephalini are distributed in Afrotropical, Australian and Oriental Regions; Leptispini has Afrotropical, Oriental and Palearctic distribution; Callispini has both Afrotropical and Oriental distribution; Eurispini is restricted to Australian Region and south India and only the two tribes, Anisoderini and Bothryonopini, are endemic to the Oriental Region (Würmli 1975a; Staines 2002, 2015; Chaboo 2007).

Among the 22 genera studied, ten (*Anisodera*, *Estigmena*, *Lasiochila*, *Bothryonopa*, *Wallacea*, *Amblispa*, *Javeta*, *Squamispa*, *Gonophora* and *Chaeridiona*) are restricted to the Oriental region, of these *Amblispa* (Callispini), represented by two named species, is limited to the Indian subcontinent while *Squamispa*, a monotypic genus (Eurispini), is endemic to southern India (Karnataka). Seven genera (*Callispa*, *Agonita*, *Downesia*, *Platypria*, *Philodonta*, *Rhodtrispa* and *Leptispa*) have both Afrotropical and Oriental distributions. Two genera, *Hispellinus* and *Oncocephala*, are distributed in Oriental, Afrotropical and Australian Regions. Two genera – *Dicladispa* and *Hispa* – are distributed in Oriental, Afrotropical and Palearctic Regions. Of the 22 genera, only *Dactylispa* is represented throughout the Old World. The present study has recorded the genus, *Bothryonopa* for the first time in south India. All the studied genera, except *Phidodonta* and *Squamispa*, occur in Kerala. The study also discovered that there is no *Prionispa* species in south India. *Prionispa crassicornis*, described by Gestro (1909a) from the Nilgiri Hills, lacks labial palps, a unique key character that distinguishes *Chaeridiona* from *Prionispa*. This necessitated formal transfer of *P. crassicornis* to *Chaeridiona*.

The present study reviewed a total of 102 species, of which 66 species under 16 genera are restricted to India. Fifty-seven species under 15 genera are likely to be endemic to the study area. During the study period, 79 species and 22 genera were collected, and out of these, 69 species and 20 genera were found in Kerala. The reason for the higher number of genera and species in this area could be attributed to the intensive collection efforts.

5.4 Taxonomic importance of endophallic sclerites and female genitalia in selected genera

The use of male and female genitalia as taxonomic characters is not a common practice in the subfamily (Chaboo 2007) and almost all the taxonomic works rely only on external morphology. The colour and striking patterns on their body often provide

contrasting interspecific variations in most genera. Prathapan & Shameem (2017) was the first who recognized the importance of endophallic sclerites in the subfamily while studying the Indian species of *Wallacea*. This genus is moderately speciose, with 30 named species. They are characterized by only little interspecific variation, remaining uniform in terms of other external features such as size, colour, punctuation and elytral costae. They are found in hues of brown, or red or yellow in combination with black. The general pattern of dark elytral markings is useful in differentiating species to a certain extent. Species with a lateral elytral stripe usually are distinct from those with dark distal half of elytra. However, a series of specimens is required to figure out the elytral pattern as these markings vary in extent and clarity. Moreover, these characters vary within species, and overlap considerably between species, making species differentiation confusing and unreliable. Prathapan & Shameem (2017) used the endophallic sclerites as a key character to describe *W. jarawa* from the Andaman Islands and illustrated the structures of both *W. jarawa* and *W. dactyliferae*, a previously described species from main land India. Following the works of Prathapan & Shameem (2017), based on the endophallic sclerites alone, Lee & Sekerka (2018a) described *W. yuae* from Taiwan, which had long been misidentified as *W. dactyliferae*. Similar to *Wallacea*, the genus *Oncocephala* also shows very little interspecific variation. Although the differences in the shape of cephalic crown and angulation of exterior apical angle of the elytra help in species delimitation to some extent, the intraspecific variations and overlapping nature of characters, as well as the similarity in external morphology of the aedeagus, often compound the problem. The present study also used the characters of endophallic sclerites in three species of *Oncocephala* (*O. angulata*, *O. tuberculata* and *O. quadrilobata*) to distinguish them at species level. Unlike the endophallus of *Wallacea*, the members of *Oncocephala* have a single needle like sclerite with a pair of minute flap like structures basally. The species of *Oncocephala* differ in the structure of endophallus such as relative length, degree of sclerotization and crenulations present medially towards the base.

The eversion of endophallus out of the aedeagus is a significant challenge to its examination, especially in smaller insects such as leaf beetles. The method described by Tishechkin *et al.* (2011) to pull out the structures using hooked minuten pin inserted through the apical foramen often results in rupture of the median lobe, making it impossible for further study. The techniques described by Yamasako & Ohbayashi (2011) and its modification (Hiremath 2018) use hypodermic needles and transparent gel to evert

and inflate the entire endophallus in lamiine longhorn beetles (Cerambycidae: Lamiinae). This method seems to be easier and can be adopted in leaf beetles to avoid the damage of aedeagus and the complete eversion of the endophallus.

Among leaf beetles, especially alticine Galerucinae, components of the female genitalia, *viz.* vaginal palpi, spermatheca, and spiculum ventrale provide important taxonomic characters for species diagnosis. However, in Cassidinae, like the characters of male genitalia, the female reproductive organs are also not typically used, likely due to lack of variation across most genera (Chaboo 2007). In this study, a new species of *Platypria* was identified primarily based on variation in the spiculum gastrale, a component of the female genitalia.

5.5 Economic importance

Being a phytophagous group combined with the “leaf-mining” habit of larvae makes the hispine Cassidinae a significant threat to some of the major economically important plants. Mariau (2004) reviewed the biology of leaf beetles infesting the oil palm, *Elaeis guineensis* Jacq. and the coconut palm, documenting 79 species of Chrysomelidae on these two palms. The hispine Cassidinae with 59 species in 37 genera are the most numerous leaf beetles on oil and coconut palms worldwide. He divided the hispine pests into two ecological groups: leaf-browsing and leaf-mining. The present study collected seven species of hispines infesting a total of at least 11 species of palms in south India (Table 1). Of these, two species *Javeta pallida* on members of *Phoenix* palms and *Agonita* sp. 2 on *Calamus* spp., fall in the first group, whereas the other five species *viz.* *Callispa keram* on *Cocos nucifera* L., *Livistona chinensis* R.Br., *Syagrus romanzoffiana* (Cham.) Glassman and *Corypha umbraculifera* L.; *Callispa* sp. 1 and *Wallacea dactyliferae* on members of *Phoenix* L., and *Callispa* sp. 2 on *Arenga wightii* Griff. and *Calamus* spp. form the second group of leaf browsing hispines.

Infestation of *Javeta pallida* in epidemic proportion on two species of *Phoenix*, *P. sylvestris* (L.) Roxb. and *P. roebelenii* O’Brien, widely used as ornamental palms in Kerala has been observed throughout Karnataka and Kerala. Shameem *et al.* (2016, 2017) discussed the potential of *J. pallida*, to become a serious pest of *P. dactylifera* L., an expanding crop in India.

The leaf browsing larvae can be either exophagous feeders or cryptic feeders (Mariau 2004). The larvae and adults of most species of *Callispa* are generally exophagous. Shameem & Prathapan (2013) gave a brief account of the biology and pest status of *C. keram*. Unlike *Callispa*, both the larvae and adults of *Wallacea* lead a cryptic mode of life by feeding and living within the unopened fronds of palms. Life of most palms is reliant on the single growing bud within the spindle leaves. Hence, any insect pest or disease that affects the spindle could be fatal. The specialized mode of life of *Wallacea* species within the tender spindle leaves makes them potential pests of palms. During a field visit to Manavur, Tamil Nadu, it was observed that the attack of *W. dactyliferae* on saplings of *P. sylvestris* caused death of the palm. Corbett (1927, 1929) and Dammerman (1929) also reported death of areca palms, *Areca catechu* L. due to severe infestation of *W. apicalis* in Malaysia.

At least 14 cassidine tribes are known to feed on members of the Zingiberales (Staines (2004). Several species of Hispini were also recorded on cereals (Staines 2015). Shameem & Prathapan (2014) recorded infestation of *C. mayuri* on ginger and turmeric in India. Their larvae mine the leaves, while the adults are leaf scrapers. *Estigmene chinensis* on bamboo; *Agonita suturellamima* and *Callispa vittata* on screwpines; *Di cladispa armigera*, *Leptispa pygmaea* and *Hispellinus callicanthus* on rice plants and *Phidodonta modesta* on sugarcane are some other hispine Cassidinae observed infesting crop plants during the present study. The species identity of *Agonita fuscipes*, reported as a pest of screw pine (Pandanaeae) in Kerala by Nair (1957), is questionable and this could be due to the misidentification of another closely related species, *A. suturellamima* known from south India. Intensive collection efforts at the site of incidence of this pest on *Pandanus* failed to get specimens of either species, necessitating re-examination of the voucher specimens collected by Nair (1957) to ascertain its species identity.

6. SUMMARY

The present study is the first taxonomic review of the hispine Cassidinae (Chrysomelidae: Cassidinae) of south India comprising five states – Goa, Karnataka, Kerala, Tamil Nadu and Telangana. Specimens of 79 species in 22 genera were studied and the systematics of 102 species, including all the known species from the study area, are reviewed. The study also provides illustrated keys to all the south Indian tribes, genera and species as well as diagnosis, distribution and the known host plants.

Of the 79 species collected, 18 species in nine genera (*Bothryonopa* (1), *Callispa* (3), *Agonita* (3), *Downesia* (3), *Dactylispa* (3), *Hispa* (1), *Platypria* (1), *Leptispa* (2), *Chaeridiona* (1)) have been identified as putative new species. Of these, three species viz. *Bothryonopa sahyadrica*, *Callispa keram* and *Chaeridiona mayuri*, have already been described and published in reputed journals.

The genus *Bothryonopa*, along with two other species, *Downesia insignis* Baly, 1859 and *Dactylispa anula* Maulik, 1919, were recorded for the first time in south India. The study also proved the absence of *Prionispa* in south India.

The following nomenclatural changes are proposed: *Callispa violaceicornis* Pic, 1937 **n. syn.** = *Amblispa laevigata* (Guérin-Méneville, 1844); *Callispa maindroni* (Pic, 1943) **n. syn.** = *Callispa nigronotata* (Pic, 1943) **n. syn.** = *Callispa octopunctata sexmaculata* Weise, 1905 = *Callispa sexmaculata* Weise, 1905 **n. stat.**; *Agonita nigricornis* Gestro, 1911 **n. syn.** = *Agonita fallax* Gestro, 1911; *Downesia linkei* Uhmman, 1963 **n. syn.** = *Downesia kanarensis* Weise, 1897; and *Gonophora donckieri* Pic, 1930 **n. syn.** = *Gonophora brevicornis* Weise, 1905. The study also proposed the resurrection of the species status of *Dactylispa filiola* Weise, 1897 **status restored**, from the synonymy of *Dactylispa feae* (Gestro, 1888); *Dactylispa krishna* Maulik, 1919 **status restored**, from the synonymy of *Dactylispa spinipes* Weise, 1905, and of *Hispa andrewesi* (Weise, 1897) **status restored** from the synonymy of *Hispa ramosa* Gyllenhal, 1817. A new combination, *Chaeridiona crassicornis* (Gestro, 1909) **new comb.**, is proposed for *Prionispa crassicornis* Gestro, 1909.

Structure of endophallic sclerites in the genera, *Oncocephala* and *Wallacea*, and that of tignum, a component of the female genitalia, in members of *Platypria* are used in

species delimitation. This is the first study to utilize these structures for taxonomic purpose in the subfamily.

The present study newly recorded the host plants of 49 species belonging to 16 genera, as well as additional host plants for 13 species in ten genera. This includes the first record of the host plants of the monotypic genus *Squamispa* Maulik, the sole representative of the tribe Eurispini in the Oriental region, as well as those of *Javeta pallida* Baly, the only representative of the genus from India. Two plant families, namely Commelinaceae and Pandanaceae, are recorded for the first time as the food plants of Callispini.

The study has also resulted in the creation of a well-curated and authentically identified collection of south Indian hispine Cassidinae, which would form the basis of further taxonomic and ecological studies on hispine Cassidinae. This collection comprises more than 3,000 specimens of nearly all the Indian genera, making it the largest collection of this group in the country.

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Table 1. Host plants of species of hispine Cassidinae of south India. Known questionable records are indicated by “(?)”. Plant names follow POWO (2023).

SL. No.	Hispine Species	Host Plant Family	Plant Species	References
Tribe Anisoderini Chapuis, 1875				
<i>Anisodera</i> Chevrolat, 1836				
1.	<i>Anisodera guerini</i> Baly, 1858	Costaceae	<i>Hellenia speciosa</i> (J.Koenig) S.R.Dutta.	Maulik 1919a
		Zingiberaceae	<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.	Present study
<i>Estigmena</i> Hope, 1840				
2.	<i>Estigmena chinensis</i> Hope, 1840	Poaceae	Bamboos	Maulik 1919a
			<i>Bambusa bambos</i> (L.) Voss	Beeson 1941; Mathur 1944; Haojie <i>et al.</i> 1998
			<i>Bambusa burmanica</i> Gamble	Beeson 1941; Mathur 1944
			<i>Bambusa multiplex</i> (Lour.) Raeusch. ex Schult	Gestro 1919
			<i>Bambusa nutans</i> Wall. ex Munro	Haojie <i>et al.</i> 1998
			<i>Cephalostachyum</i> sp.	Maulik 1932
			<i>Dendrocalamus strictus</i> (Roxb.) Nees	Stebbing 1914
			<i>Dendrocalamus</i> sp.	Maulik 1919a
			<i>Gigantochloa scortechinii</i> Gamble	Haojie <i>et al.</i> 1998
<i>Ochlandra</i> sp.	Present study			

SL. No.	Hispine Species	Host Plant Family	Plant Species	References
			<i>Schizostachyum pergracile</i> (Munro) R.B.Majumdar	Maulik 1919a; Beeson 1941; Mathur 1944
3.	<i>Estigmene cribricollis</i> Waterhouse, 1881	Poaceae	<i>Ochlandra</i> sp.	Present study
<i>Lasiochila</i> Weise, 1916				
4.	<i>Lasiochila macilenta</i> (Gestro, 1906)	Poaceae	<i>Ochlandra</i> sp.	Present study
5.	<i>Lasiochila nigra</i> (Maulik, 1919)	Poaceae	<i>Ochlandra</i> sp.	Present study
Tribe Bothryonopini Chapuis, 1875				
<i>Bothryonopa</i> Guerin-Meneville, 1840				
6.	<i>Bothryonopa sahyadrica</i> Shameem & Prathapan, 2019	Areaceae	<i>Calamus gamblei</i> Becc. ex. Becc. & Hook. f.	Shameem & Prathapan 2019
<i>Wallacea</i> Baly, 1859				
7.	<i>Wallacea dactyliferae</i> Maulik, 1919	Areaceae	<i>Arenga tremula</i> (Blanco) Becc.	Lee & Cheng 2010
			<i>Arenga wightii</i> Griff.	Present study
			<i>Bentinckia condapanna</i> Berry ex Roxb.	Present study
			<i>Borassus flabellifer</i> L.	Present study
			<i>Calamus rheedei</i> Griff.	Present study
			<i>Calamus</i> sp.	Zaitsev 2006
			<i>Chamaerops humilis</i> L.	Drescher & Martinez 2005
			<i>Corypha umbraculifera</i> L.	Present study
			<i>Metroxylon</i> sp.	Gestro 1919
<i>Phoenix canariensis</i> H.Wildpret	Drescher & Martinez 2005			

SL. No.	Hispine Species	Host Plant Family	Plant Species	References
			<i>Phoenix loureiroi</i> var. <i>pedunculata</i> (Griff.) Govaerts	Present study
			<i>Phoenix roebelenii</i> O'Brien	Present study
			<i>Phoenix</i> sp.	Maulik 1919a
			<i>Phoenix sylvestris</i> (L.) Roxb.	Present study
			<i>Washingtonia filifera</i> (Rafarin) H.Wendl. ex de Bary	Drescher & Martinez 2005
8.	<i>Wallacea limbata</i> Gestro, 1906	Arecaceae	Palm	Gestro 1919
Tribe Callispini Chapuis, 1875				
<i>Amblispa</i> Baly, 1859				
9.	<i>Amblispa laevigata</i> (Guerin-Meneville, 1844)	Poaceae	Grass	Maxwell-Lefroy 1909
<i>Callispa</i> Baly, 1859				
10.	<i>Callispa duodecimaculata</i> Chapuis, 1876	Orchidaceae	<i>Spathoglottis plicata</i> Blume	Leefmans 1918
11.	<i>Callispa keram</i> Shameem & Prathapan, 2013	Arecaceae	<i>Calamus</i> sp.	Present study
			<i>Cocos nucifera</i> L.	Shameem & Prathapan 2013
			<i>Corypha umbraculifera</i> L.	Present study
			<i>Livistona chinensis</i> R.Br.	Shameem & Prathapan 2013
			<i>Syagrus romanzoffiana</i> (Cham.) Glassman	Shameem & Prathapan 2013
12.	<i>Callispa maculipennis</i> Gestro, 1911	Poaceae	Unidentified Grass	Present study
13.	<i>Callispa minima</i> Gestro, 1902	Poaceae	<i>Zea mays</i> L. (?)	Anand 1989
14.	<i>Callispa nigricornis</i> Baly, 1859	Poaceae	Bamboo	Present study

SL. No.	Hispine Species	Host Plant Family	Plant Species	References
			<i>Dendrocalamus strictus</i> (Roxb.) Nees	Present study
15.	<i>Callispa septemmaculata</i> Weise, 1908	Commelinaceae	Unidentified species	Present study
16.	<i>Callispa sexmaculata</i> Weise, 1905	Commelinaceae	<i>Cyanotis</i> sp.	Present study
17.	<i>Callispa vittata</i> Baly, 1859	Cyperaceae	Unidentified species	Present study
		Pandanaceae	<i>Pandanus</i> spp.	Present study
		Poaceae	<i>Erianthus</i> spp.	Mukunthan & Nirmala 2002
			<i>Saccharum x sinense</i> Roxb.	Mukunthan & Nirmala 2002
			<i>Saccharum officinarum</i> L.	Mukunthan & Nirmala 2002
		<i>Saccharum robustum</i> E.W.Brandes & Jeswiet ex Grassl	Mukunthan & Nirmala 2002	
18.	<i>Callispa</i> sp. 1	Arecaceae	<i>Phoenix loureiroi</i> var. <i>pedunculata</i> (Griff.) Govaerts	Present study
			<i>Phoenix sylvestris</i> (L.) Roxb.	Present study
19.	<i>Callispa</i> sp. 2	Arecaceae	<i>Arenga wightii</i> Griff.	Present study
			<i>Calamus rheedei</i> Griff.	Present study
			<i>Calamus</i> sp.	Present study
		Pandanaceae	<i>Pandanus</i> spp.	Present study
Tribe Coelaenomenoderini Weise, 1911				
<i>Javeta</i> Baly, 1859				
20.	<i>Javeta pallida</i> Baly, 1859	Arecaceae	<i>Phoenix dactylifera</i> L.	Shameem & Prathapan 2015
			<i>Phoenix loureiroi</i> var. <i>pedunculata</i> (Griff.) Govaerts	Present study

SL. No.	Hispine Species	Host Plant Family	Plant Species	References
			<i>Phoenix roebelenii</i> O'Brien	Shameem & Prathapan 2017
			<i>Phoenix sylvestris</i> (L.) Roxb.	Shameem & Prathapan 2015
Tribe Eurispini Chapuis, 1875				
<i>Squamispa</i> Maulik, 1928				
21.	<i>Squamispa fasciata</i> Maulik, 1928	Poaceae	Unidentified grass	Present study (Pers. Comm. PKD)
Tribe Gonophorini Chapuis, 1875				
<i>Agonita</i> Strand, 1942				
22.	<i>Agonita andrewesi</i> (Weise, 1897)	Poaceae	Bamboo	Present study
			<i>Dendrocalamus strictus</i> (Roxb.) Nees	Present study
23.	<i>Agonita fallax</i> (Gestro, 1911)	Poaceae	<i>Ochlandra</i> sp.	Present study
24.	<i>Agonita suturella</i> (Baly, 1859)	Pandanaceae	<i>Pandanus</i> sp.	Kalshoven 1957
25.	<i>Agonita suturellamima</i> (Maulik, 1919)	Pandanaceae	<i>Pandanus</i> sp.	Present study
26.	<i>Agonita</i> sp. 1	Arecaceae	<i>Calamus</i> sp.	Present study
27.	<i>Agonita</i> sp. 2	Arecaceae	<i>Calamus</i> sp.	Present study
28.	<i>Agonita</i> sp. 3	Poaceae	<i>Ochlandra</i> sp.	Present study
<i>Downesia</i> Baly, 1859				
29.	<i>Downesia insignis</i> Baly, 1859	Poaceae	<i>Chrysopogon hackelii</i> (Hook.f.) C.E.C. Fisch.	Present study
30.	<i>Downesia kanarensis</i> Weise, 1897	Poaceae	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Present study
			<i>Ochlandra</i> sp.	Present study

SL. No.	Hispine Species	Host Plant Family	Plant Species	References
31.	<i>Downesia</i> sp. 1	Poaceae	<i>Ochlandra</i> sp.	Present study
32.	<i>Downesia</i> sp. 2	Poaceae	<i>Ochlandra</i> sp.	Present study
33.	<i>Downesia</i> sp. 3	Poaceae	<i>Ochlandra</i> sp.	Present study
<i>Gonophora</i> Chevrolat, 1836				
34.	<i>Gonophora brevicornis</i> Weise, 1905	Costaceae	<i>Hellenia speciosa</i> (J.Koenig) S.R.Dutta	Present study
		Zingiberaceae	<i>Amomum</i> sp.	Present study
			<i>Elettaria cardamomum</i> (L.) Maton	Present study
			<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.	Present study
Tribe Hispini Gyllenhal, 1813				
<i>Dactylispa</i> Weise, 1897				
35.	<i>Dactylispa albopilosa</i> (Gestro, 1888)	Poaceae	Bamboo	Present study
			<i>Coix lacryma-jobi</i> L.	Present study
			<i>Megathyrus maximus</i> (Jacq.) B.K.Simon & S.W.L.Jacobs	Present study
			<i>Sorghum bicolor</i> (L.) Moench	De & Konar 1954; Zaka-Ur-Rab 1991
			<i>Zea mays</i> L.	Risbec 1950
		Rosaceae	Plum tree (= <i>Prunus domestica</i> L.)	Maulik 1919a
		Zygophyllaceae	<i>Guaiacum</i> sp.	Maulik 1919a
36.	<i>Dactylispa chaturanga</i> Maulik, 1919	Rosaceae	<i>Malus sylvestris</i> (L.) Mill.	Hua 2002
			<i>Rubus</i> sp.	Zaitsev 2012

SL. No.	Hispine Species	Host Plant Family	Plant Species	References
37.	<i>Dactylispa corpulenta</i> , Weise 1897	Malvaceae	<i>Helicteres isora</i> L.	Present study
			<i>Sterculia guttata</i> Roxb.	Present study
38.	<i>Dactylispa filiola</i> Weise, 1897	Poaceae	<i>Oryza sativa</i> L.	Present study
			Unidentified grass	Present study
39.	<i>Dactylispa higoniae</i> (Lewis, 1896)	Verbenaceae	<i>Callicarpa acuminata</i> Kunth	ChGj6 & Kimoto 1961
40.	<i>Dactylispa krishna</i> Maulik, 1919	Poaceae	Unidentified grasses	Present study
41.	<i>Dactylispa kunala</i> Maulik, 1919	Acanthaceae	<i>Strobilanthes</i> spp.	Present study
42.	<i>Dactylispa longicornis</i> (Motschulsky, 1861)	--	Unidentified dicotyledon	Present study
43.	<i>Dactylispa nalika</i> Maulik, 1919	Acanthaceae	<i>Strobilanthes</i> spp.	Present study
44.	<i>Dactylispa parbatya</i> Maulik, 1919	Rosaceae	<i>Rubus</i> sp.	Maulik 1937
45.	<i>Dactylispa perroteti</i> (Guerin-Meneville, 1841)	Poaceae	Grass	Uhmann 1955b
46.	<i>Dactylispa pitapada</i> Maulik, 1919	Poaceae	Unidentified grass	Present study
47.	<i>Dactylispa praefica</i> Weise, 1897	Poaceae	Unidentified grass	Present study
48.	<i>Dactylispa sjoestedti</i> Uhmann, 1928	Poaceae	<i>Bambusa cerosissima</i> McClure	Gressitt 1950
			<i>Bambusa chungii</i> McClure	Gressitt 1950
			<i>Bambusa multiplex</i> (Lour.) Raeusch. ex Schult.f.	Gressitt 1950; Maddison 1993
			<i>Bambusa sinospinosa</i> McClure	Gressitt 1950
			<i>Bambusa tuldoidea</i> Munro	Gressitt 1950
			<i>Dendrocalamus strictus</i> (Roxb.) Nees	Present study

SL. No.	Hispine Species	Host Plant Family	Plant Species	References
			<i>Sinobambusa tootsik</i> (Makino) Makino ex Nakai	Gressitt 1950
49.	<i>Dactylispa spinipes</i> Weise, 1905	Poaceae	Unidentified grasses	Present study
50.	<i>Dactylispa</i> sp. 1	Poaceae	Unidentified grasses	Present study
			<i>Oryza sativa</i> L.	Present study
51.	<i>Dactylispa</i> sp. 3 nr. <i>filiola</i>	Poaceae	Unidentified grasses	Present study
<i>Dicladispa</i> Gestro, 1897				
52.	<i>Dicladispa aerea</i> (Gestro, 1897)		Unidentified grass	Present study
53.	<i>Dicladispa armigera</i> (Olivier, 1808)	Cyperaceae	<i>Carex</i> sp. (?)	Choudhary <i>et al.</i> 2002
			<i>Cyperus rotundus</i> L. (?)	Choudhary <i>et al.</i> 2002
		Lamiaceae	<i>Tectona grandis</i> L.f. (?)	Beeson 1941
		Poaceae	<i>Andropogon gayanus</i> Kunth.	Lee & Cheng 2010
			<i>Chrysopogon</i> sp.	Lee & Cheng 2010
			<i>Chrysopogon zizanioides</i> (L.) Roberty	Dale 1994
			<i>Cynodon dactylon</i> (L.) Pers.	Dhaliwal 1979
			<i>Digitaria sanguinalis</i> (L.) Scop	Rao <i>et al.</i> 1971
			<i>Echinochloa colonum</i> (L.) Link	Dhaliwal 1979
			<i>Echinochloa crus-galli</i> (L.) P.Beauv.	Dhaliwal 1979
			<i>Echinochloa stagnina</i> (Retz.) P.Beauv.	Hazarika & Sattar 1955
<i>Hygroryza aristata</i> (Retz.) Nees ex Wight & Arn.	Lee & Cheng 2010			

SL. No.	Hispine Species	Host Plant Family	Plant Species	References
			<i>Imperata cylindrica</i> (L.) Raeusch	Lee & Cheng 2010
			<i>Leersia hexandra</i> Sw.	Hazarika & Sattar 1955
			<i>Megathyrus maximus</i> (Jacq.) B.K.Simon & S.W.L.Jacobs	Gressitt 1950
			<i>Mnesithea laevis</i> (Retz.) Kunth	Rao <i>et al.</i> 1971
			<i>Oryza sativa</i> L.	Gestro 1919
			<i>Panicum repens</i> L.	Dale 1994
			<i>Paspalum distichum</i> L.	Dhaliwal 1979; Dale 1994
			<i>Saccharum x sinense</i> Roxb.	Hua 2002
			<i>Saccharum officinarum</i> L.	Zehntner 1894
			<i>Saccharum</i> sp.	Gressitt 1950
			<i>Saccharum spontaneum</i> L.	Lee & Cheng 2010
			<i>Sorghum halepense</i> (L.) Pers.	Lee & Cheng 2010
			<i>Themeda anathera</i> (Nees ex Steud.) Hack.	Lee & Cheng 2010
			<i>Triticum aestivum</i> L.	Hua 2002
			Wild grasses	Rao <i>et al.</i> 1971
			<i>Zea mays</i> L.	Anand 1989
			<i>Zizania aquatica</i> L.	Hazarika & Sattar 1955
			<i>Zizania latifolia</i> (Griseb.) Hance ex F.Muell.	Risbec 1950
54.	<i>Dicladispa pallescens</i> (Guerin-Meneville, 1841)	Malvaceae	<i>Abutilon indicum</i> (L.) Sweet	Present study
			<i>Abutilon</i> sp.	Kadapa 1959

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			<i>Triumfetta rotundifolia</i> Lam.	Kadapa 1959
<i>Hispa</i> Linnaeus, 1767				
55.	<i>Hispa andrewesi</i> (Weise, 1897)	Poaceae	'Narrow-leaved' grass	Santiago-Blay 2004
56.	<i>Hispa brachycera</i> (Gestro, 1897)	Poaceae	Grasses	Maulik 1919a
		Verbenaceae	<i>Lantana camara</i> L. (?)	Maulik 1919a
57.	<i>Hispa ramosa</i> Gyllenhal, 1817	Poaceae	<i>Centotheca</i> sp.	Hua 2002
			Grass	Fletcher 1914
			<i>Imperata cylindrica</i> (L.) Raeusch.	Hua 2002
			Narrow leaved grass	Gressitt 1950
58.	<i>Hispa stygia</i> (Chapuis, 1877)	Poaceae	<i>Coix lacryma-jobi</i> L.	Thobbi 1959
			<i>Dichanthium annulatum</i> (Forssk.) Stapf	Thobbi 1959
			<i>Dichanthium caricosum</i> (L.) A.Camus	Thobbi 1959
			<i>Ischaemum polystachyum</i> J.Presl	Thobbi 1959
			<i>Megathyrsus maximus</i> (Jacq.) B.K.Simon & S.W.L.Jacobs	Thobbi 1959
			<i>Oryza sativa</i> L.	Thobbi 1959
			<i>Panicum antidotale</i> Retz.	Thobbi 1959
			<i>Polytoca gigantea</i> (J.Koenig) Mabb.	Thobbi 1959
<i>Sorghum</i> sp.	Maulik 1919a			

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			<i>Themeda</i> spp.	Thobbi 1959
59.	<i>Hispa waiensis</i> Borowiec & Świętojańska, 2007	Poaceae	<i>Eleusine indica</i> (L.) Gaertn.	Present study
			<i>Megathyrus maximus</i> (Jacq.) B.K.Simon & S.W.L.Jacobs	Present study
			<i>Setaria homonyma</i> (Steud.) Chiov.	Present study
60.	<i>Hispa</i> sp. 1 (nr <i>H. andrewesi</i>)	Poaceae	Unidentified grasses	Present study
<i>Hispellinus</i> Weise, 1897				
61.	<i>Hispellinus callicanthus</i> (Bates, 1866)	Poaceae	<i>Bambusa blumeana</i> Schult.f.	Schultze 1916
			<i>Centotheca</i> sp.	Hua 2002
			<i>Imperata cylindrica</i> (L.) Raeusch.	Hua 2002
			<i>Miscanthus floridulus</i> (Labill.) Warb. ex K.Schum. & Lauterb.	Lee & Cheng 2007
			<i>Miscanthus</i> sp.	Takizawa 1978
			<i>Oryza sativa</i> L.	Uichanco 1929
			<i>Saccharum x sinense</i> Roxb.	Hua 2002
			<i>Saccharum officinarum</i> L.	Corbett 1924
			<i>Saccharum</i> sp.	Uichanco 1929
<i>Zizania latifolia</i> (Griseb.) Hance ex F.Muell.	Hua 2002			
<i>Phidodonta</i> Weise, 1906				
62.	<i>Phidodonta modesta</i> Weise, 1906	Poaceae	<i>Avena sativa</i> L.	Zaka-Ur-Rab 1991
			<i>Oryza sativa</i> L.	Zaka-Ur-Rab 1991
			<i>Saccharum officinarum</i> L.	Maxwell-Lefroy 1909

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			<i>Sorghum bicolor</i> (L.) Moench	Fletcher 1921, Zaka-Ur-Rab 1991
			Wild grasses	Maxwell-Lefroy 1909
63.	<i>Platypria chiroptera</i> Gestro, 1899	Rhamnaceae	<i>Gouania microcarpa</i> DC.	Present study
			<i>Ziziphus incurva</i> Roxb.	Bhasin 1942
64.	<i>Platypria echidna</i> Guerin-Meneville, 1840	Euphorbiaceae	<i>Mallotus</i> sp.	Hua 2002
		Fabaceae	<i>Erythrina</i> sp.	Beeson 1941
			<i>Erythrina subumbrans</i> (Hassk.) Merr.	Fletcher 1921
			<i>Erythrina variegata</i> L.	Fletcher 1914, Hua 2002, Zaka-Ur-Rab 1991
			<i>Pleurolobus gangeticus</i> (L.) J.St.-Hil. ex H.Ohashi & K.Ohashi	Beeson 1941
			<i>Pueraria tuberosa</i> (Roxb. ex Willd.) DC.	Beeson 1941
			Rhamnaceae	<i>Ziziphus</i> spp.
		<i>Ziziphus mauritiana</i> Lam.		Ranade <i>et al.</i> 2021
		<i>Ziziphus nummularia</i> (Burm.f.) Wight & Arn.		Ranade <i>et al.</i> 2021
		<i>Ziziphus oenopolia</i> (L.) Mill.		Chatterjee & Bhasin 1936
			<i>Ziziphus rugosa</i> Lam.	Ranade <i>et al.</i> 2021
			<i>Ziziphus xylopyrus</i> (Retz.) Willd.	Ranade <i>et al.</i> 2021
65.	<i>Platypria erinaceus</i> (Fabricius, 1801)	Fabaceae	<i>Erythrina</i> sp.	Maulik 1919a

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			<i>Pleurolobus gangeticus</i> (L.) J.St.-Hil. ex H.Ohashi & K.Ohashi	Maxwell-Lefroy 1909
			<i>Pueraria tuberosa</i> (Roxb. ex Willd.) DC.	Maxwell-Lefroy 1909
		Poaceae (?)	<i>Oryza sativa</i> L. (?)	Anand 1989
		Rhamnaceae	<i>Ziziphus jujuba</i> Mill.	Maxwell-Lefroy 1909, Zaka-Ur-Rab 1991
			<i>Ziziphus nummularia</i> (Burm.f.) Wight & Arn..	Ranade <i>et al.</i> 2021
			<i>Ziziphus</i> spp.	Maulik 1919a, Beeson 1941
66.	<i>Platypria hystrix</i> (Fabricius, 1798)	Fabaceae	<i>Abrus precatorius</i> L.	Present study
			<i>Cajanus cajan</i> (L.) Huth	Uhmann 1954f, Kalshoven 1957
			<i>Centrosema</i> sp.	Present study
			<i>Erythrina</i> sp.	Fletcher 1914
			<i>Erythrina stricta</i> Roxb.	Ranade <i>et al.</i> 2021
			<i>Erythrina subumbrans</i> (Hassk.) Merr.	Zaka-Ur-Rab 1991
			<i>Erythrina variegata</i> L.	Maulik 1919a, Gressitt 1950, Zaka-Ur-Rab 1991, Hua 2002
			<i>Glycine max</i> (L.) Merr.	Kezhen 1992
			<i>Lablab purpureus</i> (L.) Sweet	Fletcher 1921
<i>Mucuna pruriens</i> (L.) DC.	Rani & Sridhar 2004			

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			<i>Neustanthus phaseoloides</i> (Roxb.) Benth.	Ranade <i>et al.</i> 2021
			<i>Phaseolus</i> spp.	Kezhen 1992
			<i>Pleurolobus gangeticus</i> (L.) J.St.-Hil. ex H.Ohashi & K.Ohashi	Beeson 1941
			<i>Pueraria montana</i> var. <i>lobata</i> (Willd.) Maesen & S.M.Almeida ex Sanjappa & Predeep	Ranade <i>et al.</i> 2021
			<i>Pueraria tuberosa</i> (Roxb. ex Willd.) DC.	Beeson 1941
			<i>Sesbania bispinosa</i> (Jacq.) W.Wight	Zaka-Ur-Rab 1991
			<i>Sesbania grandiflora</i> (L.) Poir.	Maulik 1919a
			<i>Sesbania</i> sp. (“Agathi”)	Maulik 1919a, Fletcher 1921; Chatterjee & Bhasin 1936; Nair 1986
			<i>Tephrosia candida</i> (Roxb.) DC.	Kalshoven 1957
		Myricaceae	<i>Myrica rubra</i> (Lour.) Siebold & Zucc.	Hua 2002
			<i>Myrica</i> sp.	Maulik 1936
		Rhamnaceae	<i>Ziziphus</i> spp.	Beeson 1941
		Rosaceae	<i>Rubus ellipticus</i> Sm.	Maulik 1936
			<i>Rubus</i> sp.	Hua 2002
		Rubiaceae	<i>Uncaria gambir</i> (W.Hunter) Roxb.	Kalshoven 1957

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67.	<i>Platypria</i> sp.1	Rhamnaceae	<i>Ziziphus</i> spp.	Present study
<i>Rhodtrisa</i> Chen & T'an, 1964				
68.	<i>Rhodtrisa dilaticornis</i> (Duvivier, 1891)	Poaceae	<i>Arthraxon hispidus</i> (Thunb.) Makino	Gressitt 1950
			Dabi grass	Maulik 1919a
			<i>Megathyrsus maximus</i> (Jacq.) B.K.Simon & S.W.L.Jacobs	Present study
			<i>Oryza sativa</i> L.	Khan & Kadapa 1957
			<i>Panicum</i> sp.	Maulik 1919a
			<i>Setaria homonyma</i> (Steud.) Chiov.	Present study
Tribe Leptispini Fairmaire, 1868				
<i>Leptispa</i> Baly, 1859				
69.	<i>Leptispa anu</i> Basu, 1999	Poaceae	Unidentified grass	Present study
70.	<i>Leptispa distincta</i> (Gestro, 1906)	Poaceae	<i>Ochlandra</i> sp.	Present study
71.	<i>Leptispa nigra</i> Weise, 1904	Poaceae	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Present study
72.	<i>Leptispa pygmaea</i> Baly, 1859	Poaceae	<i>Arundinella metzii</i> Hochst. ex Miq.	Dale 1994
			<i>Chrysopogon zizanioides</i> (L.) Roberty	Dale 1994
			<i>Dendrocalamus strictus</i> (Roxb.) Nees	Present study
			<i>Ischaemum travancorensense</i> Stapf ex C.E.C.Fisch.	Dale 1994
			<i>Oryza sativa</i> L.	Fletcher 1913

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			<i>Paspalum scrobiculatum</i> L.	Dale 1994
			<i>Pennisetum purpureotyphoides</i> (Schum.) (= ? <i>Cenchrus purpureus</i> (Schumach.) Morrone)	Dale 1994
			<i>Saccharum officinarum</i> L.	Fletcher 1913
73.	<i>Leptispa rufithorax</i> Maulik, 1919	Poaceae	<i>Saccharum</i> sp.	Fletcher 1921
74.	<i>Leptispa</i> sp. 1	Poaceae	Bamboo	Present study
75.	<i>Leptispa</i> sp. 2	Poaceae	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Present study
Tribe Oncocephalini Chapuis, 1875				
<i>Chaeridiona</i> Baly, 1869				
76.	<i>Chaeridiona crassicornis</i> (Gestro, 1909)	Commelinaceae	<i>Dictyospermum montanum</i> Wight	Present study
77.	<i>Chaeridiona mayuri</i> Shameem & Prathapan, 2014	Costaceae	<i>Hellenia speciosa</i> (J.Koenig) S.R.Dutta	Shameem & Prathapan 2014
		Zingiberaceae	<i>Curcuma longa</i> L.	Shameem & Prathapan 2014
			<i>Globba sessiliflora</i> Sims	Shameem & Prathapan 2014
			<i>Zingiber officinale</i> Roscoe	Shameem & Prathapan 2014
			<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.	Shameem & Prathapan 2014
78.	<i>Chaeridiona metallica</i> Baly, 1869	Zingiberaceae	<i>Curcuma</i> sp. <i>Globba sessiliflora</i> Sims	Maulik 1937 Present study
79.	<i>Chaeridiona picea</i> Baly, 1869	Commelinaceae	<i>Commelina benghalensis</i> L.	Kalaichelvan & Verma 2005
			<i>Commelina</i> sp.	Świętojańska <i>et al.</i> 2006

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			<i>Murdannia nudiflora</i> (L.) Brenan	Kalaichelvan & Verma 2005
80.	<i>Chaeridiona tuberculata</i> Uhmman, 1961	Commelinaceae	Unidentified species	Present study
<i>Oncocephala</i> Agassiz, 1846				
81.	<i>Oncocephala angulata</i> Gestro, 1885	Convolvulaceae	<i>Ipomoea</i> sp.	Hua 2002
			<i>Merremia</i> sp.	Present study
		Dioscoreaceae	--	Świętojańska & Kovac 2007
		Zingiberaceae	--	Świętojańska & Kovac 2007
		Orchidaceae	Orchid	Gestro 1919
		Solanaceae	<i>Solanum melongena</i> L.	Miller 1932
82.	<i>Oncocephala depressa</i> Maulik, 1919	Convolvulaceae	--	Present study
83.	<i>Oncocephala dorsalis</i> Weise, 1897	Convolvulaceae	<i>Ipomoea</i> sp.	Anand 1989
84.	<i>Oncocephala quadrilobata</i> Guerin-Meneville, 1844	Convolvulaceae	<i>Argyreia nervosa</i> (Burm.f.) Bojer	Takizawa 1985
			<i>Ipomoea</i> sp.	Takizawa 1985; Świętojańska <i>et al.</i> 2006
		Polygonaceae	<i>Rumex</i> sp.	Hua 2002
85.	<i>Oncocephala tuberculata</i> (Olivier, 1792)	Convolvulaceae	<i>Argyreia</i> sp.	Present study
			<i>Ipomoea sagittifolia</i> Burm.f.	Cherian & Menon 1940
			<i>Ipomoea batatas</i> (L.) Lam.	Uhmman 1956b
			<i>Ipomoea</i> sp.	Fletcher 1914