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Lappet moths (Lepidoptera: Lasiocampidae) of Manipur, north east India: an updated checklist

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Abstract

An updated checklist of 35 species of Lasiocampidae from Manipur is presented in this report. The survey has been carried out for assessment of Lasiocampidae fauna of Shirui Mountains and surrounding areas of Manipur during 2016 to 2019. The materials collected during the survey were identified from 15 genera containing 24 species. 17 species were reported for the first time from Manipur. The 5 species viz. *Euthrix improvisa*, *Eteinopla narcissus*, *Kunugia burmensis*, *Kunugia xichangensis*, and *Arguda viettei* are new addition to known Indian Lasiocampidae fauna.

Key words: Lasiocampidae, Moth, Manipur, North East India, New record, Shirui Mountain

Introduction

Manipur lies in the North-East India bounded by Nagaland on the north, Assam on the west, Mizoram on the south and along the east with Myanmar sharing about 352 km long international border. Manipur located between 23°83'–25°68' N and 93°03'–94°78' E and covers a total geographical area of 22,327 km² of which 17,418 km² (78.01%) is under forest cover. Geographically, Manipur is divided into mountain ranges running north to south abridging the Patkai and the Lushai Hill range of the extended Arakan Yoma and a central plain-the valley of Imphal. The altitude of hills ranging from 833 m to 3017 m. Major forest types in the area is tropical semi-evergreen, dry temperate forest, subtropical pine and tropical moist deciduous forests. The Manipur is part of the eastern Himalayan Biodiversity Hotspot, which covers parts of Nepal, Bhutan, the northeast Indian states, southeast Tibet (China), and northern Myanmar. It is the meeting place of the central Asia and Chinese subdivision of the Palearctic Region with the Peninsular India and Malayan subdivision of Oriental Region supporting rich lepidopteran diversity (Wynther-Blyth 1957).

Lasiocampidae Harris is one of the diverse families of moths having nocturnal and crepuscular habit. The Lasiocampidae are commonly known as Lappet moths due to presence of decorative skin flaps on prolegs of their caterpillars. Lasiocampidae are small to large sized insects with wingspan ranges between 20–180 mm (Zolotuhin & Pinratana 2005). The body is stout, remarkably hairy often provided with broad triangular or rounded forewings and almost circular small hind wings, lacking wing-coupling. Adults often sexually dimorphic being females are larger than males; occasionally females are brachypterous. The family Lasiocampidae consists of 1,952 species (224 genera) worldwide (Van Nieukerken *et al.* 2011).

Till date, India best-consolidated account of Lasiocampidae fauna is with 54 species published by Hampson (1892) in his “The Fauna of British India including Ceylon and Burma”. In Indian Himalayas and north east India (Sikkim and Arunachal Pradesh), recent studies conducted by Zoological survey of India reports the presence of 39 species of Lasiocampidae (Sanyal *et al.* 2018). Few records have been found on studies undertaken in different north east Indian states about Lasiocampidae fauna: 20 species in Meghalaya (Mondal & Maulik 1998); 21 species in Manipur (Mondal & Maulik 2004); 3 species in Mizoram (Gupta & Maulik 2007); 2 species in Tawang, Arunachal Pradesh (Chandra & Sambath 2013); and 11 species in Tinsukia, Assam (Arandhara *et al.* 2017).

The first author has undertaken survey between 2016–2019 to sample lepidopteran insects on the different habitats in the different elevations of Shirui Mountains and surrounding areas. The Lasiocampidae constitute a substantial part of all captured lepidopteran specimens. Herewith, reporting the several species not previously recorded from Manipur.

Material and methods

The Lasiocampidae specimens were collected by the first author through intensive light trapping at Shirui Mountains during March–April (spring), June–July (monsoon) and September–October (post-monsoon) between 2016 to 2019. At each sampling sites, 3 traps (a modified Robinson trap with LED+UV lights) and a white sheet (3 X 4 m dimension) with LED+UV lights were used during the night catch. All the sampled target moths were manually collected and killed in the field, dried by silica gel and kept for later identification at laboratory. Genitalia preparations were carried out following the standard methods (Robinson 1976). Unless stated otherwise, all the materials collected are in the possession of first author.

Identification of the materials was based on the morphological characteristics and genitalia descriptions provided in published literatures. Classification follows Zolotuhin *et al.* (2012) and distribution records (for global and local) of each individual species were referred from the following literatures: Hampson (1892), Holloway (1987), Kishida (1992, 1993, 1994, 1995), Zolotuhin & Witt (2000a, 2000b), Zolotuhin (1992, 2002), Zolotuhin *et al.* (1997), Mondal & Maulik (1997, 1998, 2004), Zolotuhin & Pinratana (2005), Gupta & Maulik (2007), Smetacek (2008), Zolotuhin & Ihle (2008), Zolotuhin & Perekrasnov (2009), Prozorov (2010), Sergeev & Zolotuhin (2010), Shubhalaxmi *et al.* (2011), Hauenstein *et al.* (2011), Gurule & Nikam (2013), Sood *et al.* (2015), Sondhi & Sondhi (2016), Arandhara *et al.* (2017), Sanyal *et al.* (2018), Shah *et al.* (2018), Kaleka *et al.* (2018, 2019), Irungbam & Irungbam (2018), Saini *et al.* (2018, 2019) and website of Moths of India (Sondhi *et al.* 2020).

Results

The updated checklist of 35 species of lappet moths from Manipur has been presented in Appendix 1. This updated checklist prepared on the basis of material collected from Shirui Mountains during the 2016 to 2019 and the historical records of Manipur. In the present study, total 24 species of Lasiocampidae identified from 15 genera of which as much as 17 species reported for the first time from Manipur. The 5 species *viz.* *Euthrix improvisa*, *Eteinopla narcissus*, *Kunugia burmensis*, *Kunugia xichangensis*, *Arguda viettei* are new addition to known Indian Lasiocampidae fauna.

Family Lasiocampidae Harris, 1841

Subfamily Lasiocampinae Harris, 1841

Tribe Lasiocampini Harris, 1841

Genus *Amurilla* Aurivillius, 1902

Amurilla rubra (Hampson, 1896)

Metanastria rubra Hampson, 1896; *Fauna Brit. India*, 4: 486. Type-locality: Northern India.

Amurilla rubra rubra (Hampson, 1896)

(Figs 1–2 ♀, 3–4, ♂; Fig. 57)

Metanastria rubra Hampson, 1896; *Fauna Brit. India*, 4: 486. Type-locality: Northern India.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 24.VII.2017, 12–13.IX.2019, 2♂♂, 2♀♀; Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.44560° E,

12.VII.2016, 13.IX.2019, 5♂♂, 1♀, leg. Irungbam J.S. and party. (Genitalia slide: IJ1210 & IJ2300, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 55–62 mm; ♀, 74–78 mm. Length of forewing: ♂, 31–33 mm; ♀, 40–44 mm. Ground color is dark blackish brown. Forewing: reddish costal and anal zones; traces of medial fasciae in the form of yellow strokes. Hindwing: dark rosy basal field. Both pair of wings are semitransparent. Head and thorax bright yellow; tegulae dark brown; abdomen reddish brown with darker dorsal spots.

Distribution. Northern-India (Manipur); Nepal and north western Myanmar.

Comments. First record for Manipur.

Tribe Selenepherini Tutt, 1902

Genus *Euthrix* (Meigen, 1830)

Euthrix decisa (Walker, 1855)

(Figs 5–6, ♂; Fig. 58)

Lasiocampa decisa Walker, 1855; *List Spec. lepid. Insects Colln Br. Mus.*, 6: 1441. N 23.

Type-locality: India, Sylhet.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 13.IX.2019, 2♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ227, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 38–42 mm. Length of forewing: 17–20 mm. ♀ not examined. Bodies with Dark rosy brown to chestnut. Forewing: Dark rosy brown to chestnut; Ternal field often with silver-bluish scales; Shape of dark grey postmedial fascia strongly varies from almost straight diagonal to distinctly curve in anal area. Hindwing: with uniform brownish grey.

Distribution. India (Uttarakhand, West Bengal, Sikkim, Manipur); Nepal and Bangladesh.

Comments. The species was expected to be present in Manipur (Mondal & Maulik 2004). The present record from Shirui Hills confirms the presence of species in Manipur.

Euthrix fox Zolotuhin & Witt, 2000

(Figs 7–8, ♀, 9–10, ♂; Fig. 59)

Euthrix fox Zolotuhin & Witt, 2000; *Entomofauna Suppl.*, 11(3): 34.

Type-locality: N. Vietnam, Mt. Fan-si-pan, Cha pa, 2400 m, 22°15' N, 103°46'E.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills, Shirui Guest House (Site 1), 3 km NE of Shirui village, Imphal-Jessami road, 1930 m asl., 25.1264° N, 94.4357° E, 12.VII.2016, 2♀♀; Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 25.VII.2017, 13.IX.2019, 2♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ2313, IJ2879 & IJ2881, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 40–46 mm; ♀, 49–55 mm. Length of forewing: ♂, 20–23 mm; ♀, 26–30 mm. Body rose violet in color. Forewing: with yellowish brown sub-costal and radial zone; large rounded silver-white discal spot. Three transversal lines present: strong, rosy, postmedial, crossing the wings diagonally, almost parallel to costal margin from the top to cubital zone where they break and end up almost perpendicular in anal margin. A weak antemedial line is situated in basal part of the wing sometimes absent. External line toothed, greyish and outlined by silver scales.

The females are more strongly drawn in their reddish-brown basic color, the other drawing systems are also clearer, but they do not differ significantly from the males,

Distribution. India (Himachal Pradesh, Manipur); Vietnam; Laos; northern Thailand and southern China.

Comments. First record for Manipur.

Euthrix improvisa (de Lajonquiere, 1978)

(Figures 11–12, ♂; Figure 60)

Philudoria improvisa de Lajonquiere, 1978; *Annls Soc. ent. France*, 14(3): 390, pl. 1 G, fig. 7.

Type-locality: Cochinchina, Tuyen Quang.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 13.IX.2019, 2♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ2312, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 32 mm; ♀, 50 mm. Length of forewing: ♂, 18 mm; ♀, 22 mm.

Body and wings are dark rosy brown to chestnut color. Forewing: tornal area with silver-bluish scales making the area prominent; Postmedial fascia dark grey and strong, diagonal, slightly curved in the anal area; A very weak discal spot, yellowish, elongated and completely reduced. Hindwing: with uniformly brownish grey.

The females are significantly larger and usually darker brown in color than the males they have a great clear light-yellow discoidal spot on the forewings.

Distribution. India (Manipur); Northern Thailand and northern Vietnam.

Comments. First record for Manipur as well as for India.

Genus *Eteinopla* de Lajonquiere, 1979

Eteinopla narcissus Zolotuhin, 1995

(Figs 13–14, ♂; Fig. 61)

Eteinopla narcissus Zolotuhin, 1995; *Tinea*, 14(3): 160, figs 9, 19.

Type-locality: northern Thailand.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 12.VII.2016, 2♂♂; Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 13.IX.2019, 1♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ228, IJ229 & IJ998, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 43–45 mm. Length of forewing: 23–24 mm. ♀ not examined. Forewing: with brownish grey, semitransparent, forewings with reddish brown, weakly undulated diagonal line. External margin rounded not scalloped. Discal spot divided into two, white, the lower one with brown center. Hindwing: with yellowish tint.

Distribution. India (Manipur); North-eastern Myanmar; northern Vietnam; northern Thailand and southern China.

Comments. First record for Manipur as well as for India.

Eteinopla signata (Moore, 1879)

(Figs 15–16, ♂; Fig. 62)

Odonestis signata Moore, 1879; In: Hewitson and Moore, *Descr. new Indian lepid. Insects Colln late Mr W.S. Atkinson*, (1): 76.

Type-locality: India, Darjeeling.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills, Shirui Guest House (Site 1), 3 km NE of Shirui village, Imphal-Jessami road, 1930 m asl., 25.1264° N, 94.4357° E, 12.VII.2016, 1♂; Manipur, Ukhrul district, Shirui Hills (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 12.VII.2016, 1♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ1178, coll. Irungbam J.S.).

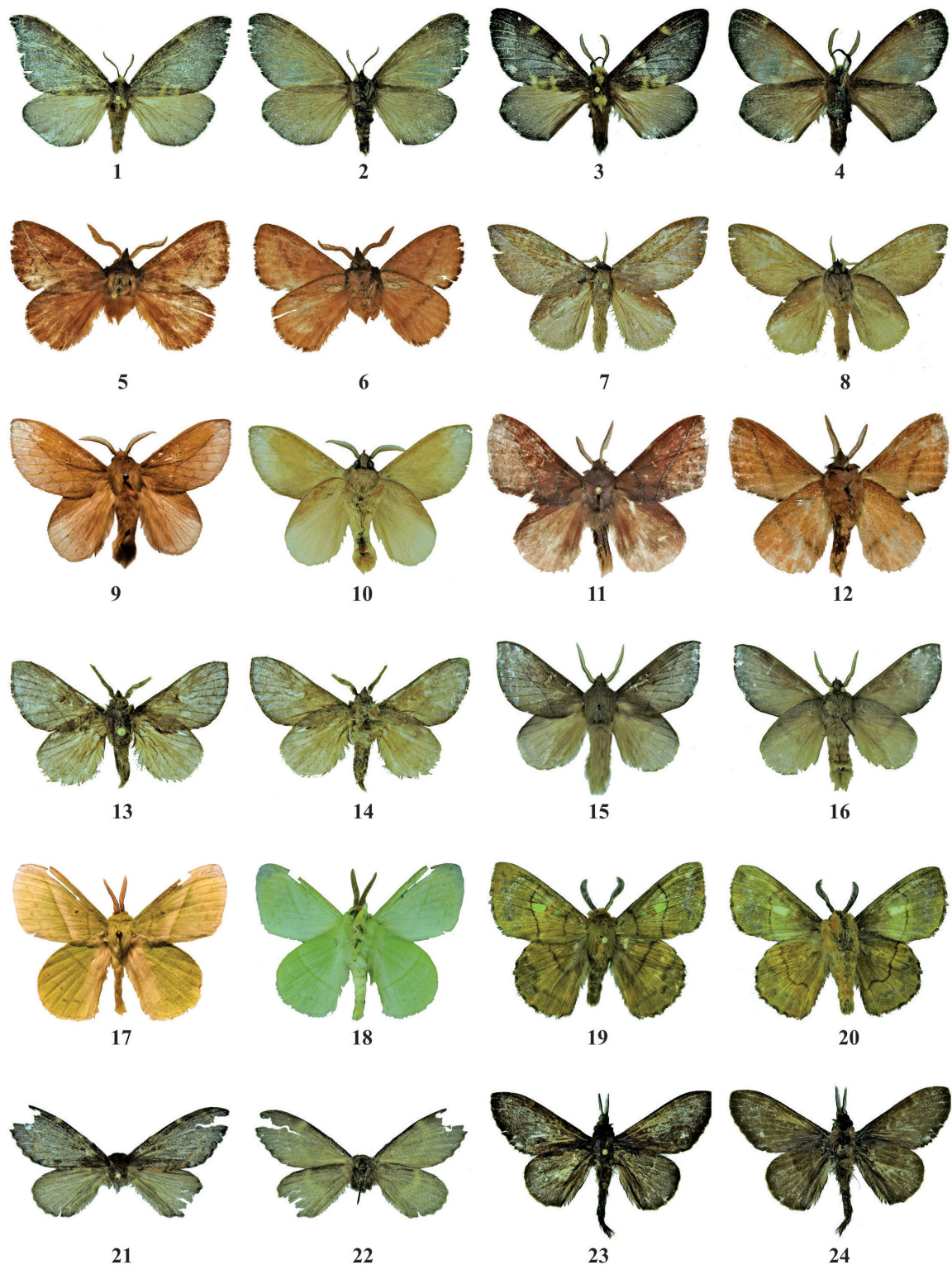
Diagnosis. Expanse: ♂, 30–38 mm. Length of forewing: 17–22 mm. ♀ not examined. Bodies and wings covered with grey and brownish scales. Forewing: with acute apex and slightly scalloped outer margin. Pattern on the forewing consists of undulate to dentate dark grey postmedia, distinctly curved in cubital zone to the basis of the wing. External line weak, not typical for all specimens, formed by a few grey scales. External field grey, often semitransparent. Discal spot white usually divided into two, the lower part sometimes with reddish inner scales. Hindwing: light brownish-rosy.

Distribution. India (West Bengal, Sikkim, Manipur); Nepal; Bhutan; southern China; Laos; Thailand; Vietnam and Peninsular Malaysia.

Comments. The species was expected to be present in Manipur (Mondal & Maulik 2004). The present record from Shirui Hills confirms the presence of species in Manipur.

Tribe *Trabaliini* Tutt, 1902

Genus *Trabala* Walker, 1856



Figures 1–24. Adults of Lasiocampidae (odd numbers dorsal view; even numbers ventral view). 1–2, female of *Amurilla rubra rubra* (Hampson, 1896); 3–4, male of *A. rubra rubra* (Hampson, 1896); 5–6, *Euthrix decisa* (Walker, 1855); 7–8, female of *E. fox* Zolotuhin & Witt, 2000; 9–10, male of *E. fox* Zolotuhin & Witt, 2000; 11–12, male of *E. improvisa* (de Lajonquiere, 1978); 13–14, male of *Eteinopla narcissus* Zolotuhin, 1995; 15–16, male of *E. signata* (Moore, 1879); 17–18, male of *Trabala vishnou* (Lefebvre, 1827); 19–20, male of *Crinocraspeda torrida* (Moore, 1879); 21–22, female of *Kunugia burmensis* (Gaede, 1932); 23–24, male of *K. burmensis* (Gaede, 1932)

***Trabala vishnou* (Lefebvre, 1827)**

(Figs 17–18, ♂; Fig. 63)

Gastropacha vishnou Lefebvre, 1827; *Zool. J.*, (3): 207.

Type-locality: [India] Madras.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 24.VII.2019, 12.IX.2019, 4♂♂; Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 12.VII.2016, 4♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ2100 & IJ2102, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 40–57 mm; ♀, 68–82 mm. Length of forewing: ♂, 21–29 mm; ♀, 38–46 mm. Forewing: ground color is light apple-green in males; medial lines darker, prominent, straight, the postmedial line bordered on the medial facing side by lighter scales. Discal spot very small or absent in some specimens, point like, blackish. External line smooth, toothed, greyish.

The females are significantly larger, their basic color varies from light green to yellow in all shades. The forewings have a large, brown field with a typical discal spot. A partly interrupted dark line runs through the median area and continues into the disc region of the hind wings. Irregular dark, crescent-shaped drawings stand on the outer edge of the front and hind wings. The light-yellow abdomen bears a strong anal bush with the hair stuck to the female's eggs.

Distribution. India (Himachal Pradesh, Punjab, Uttarakhand, Karnataka, Maharashtra, West Bengal, Meghalaya, Arunachal Pradesh, Assam, Manipur); north-eastern Pakistan; Nepal; Bhutan; Sri Lanka; Myanmar, China; Cambodia; Laos; Thailand; Vietnam and Malaysia.

Comments. The species was expected to be present in Manipur (Mondal & Maulik 2004). The present record from Shirui Hills confirms the presence of species in Manipur. Hampson

Genus *Crinocraspeda* Hampson, 1893

***Crinocraspeda torrida* (Moore, 1879)**

(Figs 19–20, ♂; Fig. 64)

Gastropacha torrida Moore, 1879; In: Hewitson and Moore, *Descr. new Indian lepid. Insects Colln late Mr. W. S. Atkinson*, (1): 76, pl. 3, fig. 19.

Type-locality: India, Darjeeling.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 24.VII.2019, 12.IX.2019, 5♂♂; Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 13.IX.2019, 1♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ2311, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 35–39 mm; ♀, 51–62 mm. Length of forewing: ♂, 20–22 mm; ♀, 28–34 mm. Ground color of the wings is dark yellow brown to brown, medial lines darker, concave, non-serrate. Discal spot dark brownish, accompanied distally by an apple-green, semicircular spot or patch which is diagnostic. External line smooth, spotted grey, sometimes flecked with silver-bluish scales. Cilia blackish.

The females are much larger than the males, possess an apple-green ground colour with a distinctive brown discoidal patch. The sub median area is brown, adjoining the inner margin of the forewing, bordered on both sides by a brown line. The hindwing bears a slightly smaller brown patch at the discoidal vein. In the postdiscal area rows of small dots form irregularly shaped bands which extend up to the apical area of the forewing. The abdomen is tipped with a black brush of hair scales, which cover the freshly laid eggs.

Generally, the females look very similar to those of *Trabala vishnou*.

Distribution. India: (Uttarakhand, West Bengal, Sikkim, Meghalaya, Arunachal Pradesh, Assam, Manipur); Nepal; Bhutan; Myanmar; southern northern China; Laos; Thailand and northern Vietnam.

Comments. Recorded earlier from Manipur by Hampson (1892) and Mondal & Maulik (2004).

Tribe Pinarini Kirby, 1892

Genus *Kunugia* Nagano, 1917

***Kunugia burmensis* (Gaede, 1932)**

(Figs 21–22, ♀, 23–24, ♂; Fig. 65)

Dendrolimus burmensis Gaede, 1932; In: Seitz, *Großschmett. Erde, vol. II, suppl.*: 123.

Type-locality: Myanmar (Karen Hills).

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 12.VII.2016, 24.VII.2019, 10♂♂ 2♀♀; Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 24.VII.2019, 3♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ208 & IJ212, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 53–58 mm; ♀, 62–65 mm. Length of forewing: ♂, 26–28 mm; ♀, 32–34 mm. Forewing: with very dark chocolate-brown ground colour making dark wing pattern invisible, dark yellowish-brown transverse fasciae are typical, all more prominent on costal and dorsal edge. External line spotted, blackish; external margin dark, with blackish scales. Hindwing: dark brown with vague yellowish band; discal spot white, very small but prominent, on proximal third of the wing.

Distribution. India (Manipur); Myanmar; south-western China and northern Vietnam.

Comments. First record for Manipur as well as for India.

***Kunugia fulgens* (Moore, 1879)**

(Figs 25–26, ♂; Fig. 66)

Lebeda fulgens Moore, 1879; In: Hewitson and Moore, *Descr. new Indian lepid. Insects colln late Mr Atkinson*, (1): 81.

Type-locality: Darjiling.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills, Shirui Guest House (Site 1), 3 km NE of Shirui village, Imphal-Jessami road, 1930 m asl., 25.1264° N, 94.4357° E, 12.IV.2019, 2♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ996, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 60–63 mm. Length of forewing: 29–33 mm. ♀ not examined. Forewing: narrow, elongate with protruding apex; dark yellow brown, darker in costal and external fields. There are several serrated, dark brown or dark grey, transverse fasciae and solitary dots and spots between all these fasciae. Apical field often covered with dark grey scales. Discal spot very small to reduced, white, rounded or point-like. Hindwing: rounded, brownish-yellow, without pattern.

Distribution. India (Himachal Pradesh, Uttarakhand, West Bengal, Sikkim, Arunachal Pradesh, Manipur); Nepal; Myanmar; southern China; north and north-eastern Thailand and Vietnam.

Comments. First record for Manipur.

***Kunugia latipennis* (Walker, 1855)**

(Figs 27–28, ♂; Fig. 67)

Lebeda latipennis Walker, 1855; *List spec. Lepid. Insects Colln Brit. Mus.* 6: 1457.

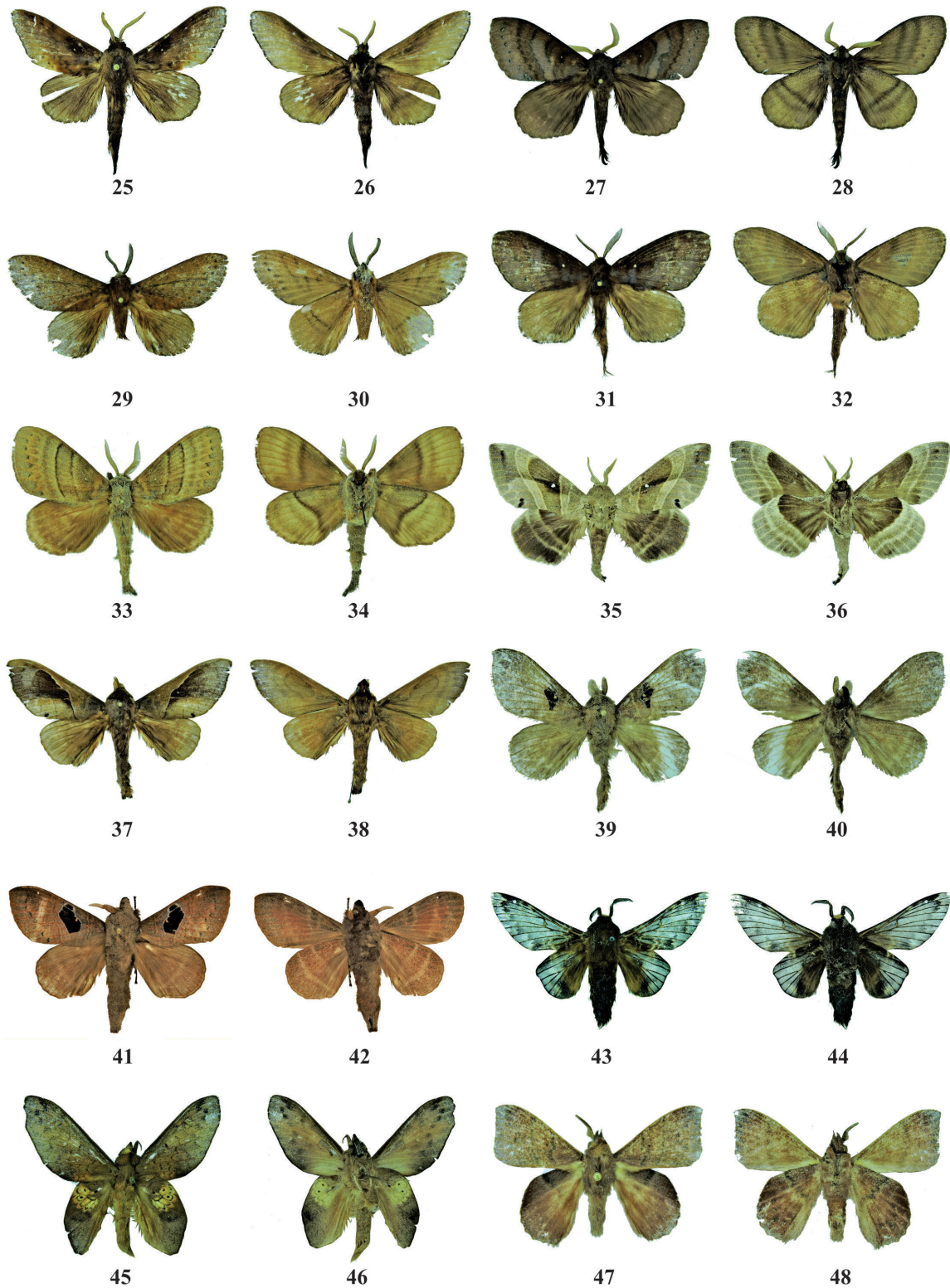
Type-locality: Northern India.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 24.VII.2019, 3♂♂; Imphal West district, Langol Reserve Forest near Shiv Temple, 24.8449° N, 93.9195° E, 949 m asl., 24.IX.2017, 13♂♂; Imphal East district, Matai village, Kameng-Luwangsangbam bypass, 24.8571° N, 93.9021° E, 797 m asl., 24.IX.2017, 5♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ941, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 72–89 mm. Length of forewing: 34–43 mm. ♀ not examined. Bodies and both pairs of wings reddish-brown to violet-brown, abdomen sometimes lighter. Forewing: with dark brown, toothed, curved transverse medial lines, serrated fuscous markings; antemedial, medial postmedial lines present; a sub marginal dotted line; cilia brown; underside brown, medial and postmedial lines paler. Hindwing: with ground color reddish-brown; antemedial line indistinct; medial and postmedial lines paler; sub marginal line indistinct; underside brown, medial and postmedial lines paler.

Distribution. India (Uttarakhand, Chhattisgarh, West Bengal, Sikkim, Assam, Meghalaya, Mizoram, Manipur); Nepal; Bhutan; Myanmar; southern China; Thailand; Sumatra; Borneo and Palawan.

Comments. First record for Manipur.



Figures 25–48. Adults of Lasiocampidae (odd numbers dorsal view; even numbers ventral view). 25–26, male of *Kunugia fulgens* Moore, 1879; 27–28, male of *K. latipennis* (Walker, 1855); 29–30, male of *K. lineata* (Moore, 1879); 31–32, male of *K. vulpina* (Moore, 1879); 33–34, male of *K. xichangensis* (Tsai and Liu, 1962); 35–36, male of *Lebeda nobilis* Walker, 1855; 37–38, male of *Paralebeda femorata* (Ménétriés, 1858); 39–40, male of *Metanastria aconyta* (Cramer, 1777); 41–42, male of *M. gemella* de Lajonquiere, 1979; 43–44, male of *Pyrosis fulviplaga* (de Joannis, 1929); 45–46, male of *Estigena philippinensis swanni* Tams, 1973; 47–48, male of *Arguda viettei* de Lajonquiere, 1977.

***Kunugia lineata* (Moore, 1879)**

(Figs 29–30, ♂; Fig. 68)

Lebeda lineata Moore, 1879; In: Hewitson and Moore. *Descr. new Indian lepid. Ins. Colln late Atkinson*, (1): 81.

Type-locality: India, Darjeeling.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 12.VII.2016, 2♂♂; Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 24.VII.2019, 1♂; Manipur, Ukhrul district, Shirui Hills (Site 4), Imphal-Jessami road, 2425 m asl., 25.1112° N and 94.4534° E, 25.VII.2019, 3♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ230 & IJ241, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 48–58 mm; ♀, 80 mm. Length of forewing: ♂, 22–27 mm; ♀, 34 mm. Forewing: with ground color reddish-brown, crossed by four grey, irregular toothed curved indistinct lines; a distinct streak from base to sub marginal area; a series of black sub marginal spots; cilia brown; underside reddish-brown, longitudinal line indistinct.; Hindwing: with ground color reddish-brown; antemedial line obsolete; medial line paler; cilia brown; underside reddish-brown. Females are usually larger than males.

Distribution. India (Himachal Pradesh, Jammu and Kashmir, Uttarakhand, Sikkim, Arunachal Pradesh, Manipur); Nepal; Bhutan; Myanmar; southern China; northern Thailand; Laos and northern Vietnam.

Comments. First record for Manipur.

***Kunugia vulpina* (Moore, 1879)**

(Figs 31–32, ♂; Fig. 69)

Lebeda vulpina Moore, 1879; In: Hewitson and Moore. *Descr. new Indian lepid. Ins. Colln late Atkinson*, (1): 81.

Type-locality: India, Darjeeling.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills, Shirui Guest House (Site 1), 3 km NE of Shirui village, Imphal-Jessami road, 1930 m asl., 25.1264° N, 94.4357° E, 12.VII.2016, 1♂; Manipur, Ukhrul district, Shirui Hills (Site 4), Imphal-Jessami road, 2425 m asl., 25.1112° N, 94.4534° E, 12.VII.2016, 5♂♂; Imphal East district, Matai village, Kameng-Luwangsangbam bypass, 24.8571° N, 93.9021° E, 797 m asl., 24.IX.2017, 1♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ699, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 64–70 mm. Length of forewing: 27–29 mm. ♀ not examined. Forewing: dark reddish-brown to blackish brown with blackish; vague, stepped basal, medial and external lines, the latter often with blackish and whitish or greyish dots. Clear diagnostic characters are silky shine of transversal fields situated between basal and antemedial lines as well as postmedial line and its shadow. Zone between postmedial shadow and external line is bright orange brown in dark forms or of the same coloration as ground colour in light forms. Discal spot white, small but prominent, on proximal quarter of the wing. Hindwing: lighter, rosy-brown.

Distribution. India (West Bengal, Manipur); Bhutan; southern China; northern Vietnam and north Thailand.

Comments. First record for Manipur.

***Kunugia xichangensis* (Tsai & Liu, 1962)**

(Figs 33–34, ♂; Fig. 70)

Dendrolimus xichangensis Tsai & Liu, 1962; *Act. Ent. Sinica*, 11: 248, 252 figs.

Type-locality: China, Szechuan, Xichang.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 12.VII.2016, 9♂♂; Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 24.VII.2019, 1♂; Manipur, Ukhrul district, Shirui Hills (Site 4), Imphal-Jessami road, 2425 m asl., 25.1112° N, 94.4534° E, 12.VII.2016, 1♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ218, IJ221, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 55–60 mm. Length of forewing: 27–29 mm. ♀ not examined. Forewing: Light brown; basal, curved transverse medial lines, with blackish and greyish dots. Discal spot white, small but prominent, on proximal quarter of the wing. Hindwing: lighter with ground color reddish-brown; medial and postmedial lines paler; sub marginal line indistinct; underside brown, medial lines paler.

Distribution. India (Manipur); Myanmar and China.

Comments. First record for Manipur as well as for India.

Genus *Lebeda* Walker, 1855

Lebeda nobilis Walker, 1855

Lebeda nobilis Walker, 1855; *List. Spec. lepid. Insects Colln Br. Mus.*, 6: 1456.

Type-locality: Nepal and Silhet.

Lebeda nobilis nobilis Walker, 1855

(Figs 35–36, ♂; Fig. 71)

Lebeda nobilis Walker, 1855; *List. Spec. lepid. Insects Colln Br. Mus.*, 6: 1456.

Type-locality: Nepal and Silhet.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 24.VII.2019, 7♂♂; Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 24.VII.2019, 1♂; Manipur, Ukhrul district, Shirui Hills (Site 4), Imphal-Jessami road, 2425 m asl., 25.1112° N, 94.4534° E, 25.VII.2019, 5♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ2098, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 79–98 mm. Length of forewing: 39–46 mm. ♀ not examined. Body reddish brown-grey without pattern. Abdominal tuft often with dark brown apex. Forewing: brownish grey with four concave, cream-brownish, transversal lines and stepped externa, outlined dorsally by greyish scales. Dark brown to blackish longitudinal stroke in R-Cu cellular reaching M-branch and widening in the external area into a dark triangle. Hindwing: darker, greyish brown, with two lighter transversal bands and lighted costal field.

Distribution. India (Jammu and Kashmir, Uttarakhand; Maharashtra, Goa, West Bengal, Sikkim, Assam, Meghalaya, Nagaland, Manipur); Nepal; Bhutan; Bangladesh and northern Thailand.

Comments. The species was expected to be present in Manipur (Mondal & Maulik 2004). The present record from Shirui Hills confirms the presence of species in Manipur.

Genus *Paralebeda* Aurivillius, 1894

Paralebeda femorata (Ménétriés, 1858)

Lasiocampa femorata Ménétriés, 1858; *Bull. Acad. Imp. Sci. St. Petersburg*, 17(24): 218, d.

Type-locality: [Russia] Amur region.

Paralebeda femorata karmata Zolotuhin, 1996

(Figs 37–38, ♂; Fig. 72)

Paralebeda femorata karmata Zolotuhin, 1996; *Entomofauna*, 17(13): 249, fig. 6.

Type-locality: north-western Pakistan, Hazara, Nathiagali, 2400–2600 m.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills, Shirui Guest House (Site 1), 3 km NE of Shirui village, Imphal-Jessami road, 1930 m asl., 25.1264° N, 94.4357° E, 12.VII.2016, 2♂♂; Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 12.VII.2016, 24.VII.2019, 10♂♂ 8♀♀; Manipur, Ukhrul district, Shirui Hills (Site 4), Imphal-Jessami road, 2425 m asl., 25.1112° N, 94.4534° E, 12.VII.2016, 24.VII.2019, 3♂♂ 6♀♀; Manipur, Ukhrul district, Shirui Hills (Site 5), Imphal-Jessami road, 2835 m asl., 25.1069° N, 94.4456° E, 13.IX.2019, 1♀, leg. Irungbam J.S. and party. (Genitalia slide: IJ770, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 79–98 mm. Length of forewing: 39–46 mm. ♀ not examined. Forewing: with ground colour fuscous, females brown; markings black; antemedial line distinct; medial loop broader, medial portion prominent with hump starting from inner margin, reaching below costa, upper zone of loop darker and reddish-brown; a prominent dark black spot on tornus; postmedial line indistinct; submarginal dotted line present; underside fuscous, loop and tornal spot distinct. Hindwing: with ground colour fuscous without any distinct pattern; antemedial and postmedial lines obsolete; medial line paler; underside fuscous.

Distribution. India (Jammu and Kashmir, Himachal Pradesh, Punjab, Uttarakhand, Manipur); north western Pakistan; Nepal; Bhutan; northeastern and eastern China; northern Vietnam and Russia.

Comments. First record from Manipur.

Genus *Metanastria* Hübner, 1820

Metanastria aconyta (Cramer, 1777)

(Figs 39–40, ♂; Fig. 73)

Phalaena-Bombyx acontia Cramer, 1777; *Pap. Exot.*, 2: 51, pl. 131, fig. A.

Type-locality. Sikkim, Bengalen, Canara (Nordindien).

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 24.VII.2019, 1♂; INDIA, Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 24.VII.2019, 2♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ2568, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 48–60 mm. Length of forewing: 24–30 mm. ♀ not examined. Forewing: short and broad, reddish brown, not semitransparent, with large dark chocolate-brown medial speck strongly outlined with whitish scales. Discal spot distinct, whitish, semilunar; external greyish, stepped. Hindwing: reddish brown, with vague darker transversal bands. Anal tuft with very dark coloured scales.

Distribution. India (Karnataka, Kerala, Sikkim, Manipur); Nepal and eastern Thailand.

Comments. The species was expected to be present in Manipur (Mondal & Maulik, 2004). The present record from Shirui Hills confirms the presence of species in Manipur.

Metanastria gemella de Lajonquiere, 1979

(Figs 41–42, ♂; Fig. 74)

Metanastria gemella de Lajonquiere, 1979; *Ann. Soc. entomol. France, N.S.*, 15: 686 - 688, pi. 1, D, E, figs. 4-6, 8.

Type-locality: North-eastern Sumatra.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills, Shirui Guest House (Site 1), 3 km NE of Shirui village, Imphal-Jessami road, 1930 m asl., 25.1264° N, 94.4357° E, 10.VII.2016, 23.VII.2019, 13♂♂; Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 24.VII.2019, 7♂♂; Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 12.VII.2016, 13.IX.2019, 24.VII.2019, 2♂♂; Imphal East district, Matai village, Kameng-Luwangsangbam bypass, 24.8571° N, 93.9021° E, 797 m asl., 24.IX.2017, 3♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ2568, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 41–48 mm. Length of forewing: 23–25 mm. ♀ not examined. Forewing: narrow and elongated, reddish brown with four vague concave, bluish, transversal lines and stepped reddish externa; median zone is almost completely dark, chocolate brown; discal spot small, yellowish, round or semilunar. Hindwing: greyish brown without distinct pattern.

Distribution. India (Arunachal Pradesh, Tripura, Manipur); Nepal; southern and south eastern China; Vietnam; northern and western Thailand; Malaysia; Sumatra and Borneo.

Comments. First record for Manipur.

Genus *Pyrosis* Oberthür, 1880

Pyrosis fulviplaga (de Joannis, 1929)

(Figs 43–44, ♂; Fig. 75)

Bhima fulviplaga de Joannis, 1929; *Ann. Soc. ent. France*, 48: 563.

Type-locality: [Vietnam] Hoang su phi.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 13.IX.2019, 5♂♂; Manipur, Ukhrul district, Shirui Hills (Site 4), Imphal-Jessami road, 2425 m asl., 25.1112° N, 94.4534° E, 13.IX.2019, 2♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ2317, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 39–45 mm; ♀, 75 mm. Length of forewing: ♂, 23–25 mm; ♀, 38 mm. Forewing: semitransparent, blackish, with indistinct whitish transversal fasciae. External band present as a vague blackish fascia bordered on both sides by semitransparent fields. Discal spot indistinct, narrow, yellowish to dark yellow. Hindwings reddish brown with semitransparent outer field, blackish anal spot and narrow citron yellow transverse bands. Body dark red-brown, front with cream colored hairs.

Distribution. Northern India (Manipur); Nepal; Myanmar; Northern Vietnam and northern Thailand.

Comments. First record for Manipur.

Tribe Gastropachini Neumoegen and Dyar, 1893

Genus *Estigena* Moore, [1860] 1858–1859

Estigena philippinensis (Tams, 1935)

Gastropacha pardale philippinensis Tams, 1935; *Mem. Mus. Royal Hist. Nat. Belgique*, 4(12): 51, pl. III, fig. 9.

Type-locality: Philippines, Luzon, subprov. Benguet, Klondyke.

Estigena philippinensis swanni (Tams, 1935)

(Figs 45–46, ♂; Fig. 76)

Gastropacha pardale swanni Tams, 1935, *Mem. Mus. Royal Hist. Nat. Belgique*, 4(12): 52, text fig. 3.

Type-locality: Upper Burma, Htawgaw.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 4), Imphal-Jessami road, 2425 m asl., 25.1112° N, 94.4534° E, 25.VII.2019, 1♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ2868, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 39–45 mm. Length of forewing: 23–25 mm. ♀ not examined. The species is very close to *E. pardale*. *E. philippinensis* can be differentiated from *E. pardale* by having valvar position at distal position, hook shaped with serrate outer margin.

Distribution. India (Manipur); Pakistan; Nepal; Bhutan; Andaman Islands, Southern China; Thailand; Laos; Vietnam; Myanmar; Borneo; Sumatra; and the Philippines.

Comments. First record for Manipur. Tams (1935) reviewed the genera *Estigena* Moore, *Stenophylloides* Hampson, and *Tauscheria* Bryk and listed under *Gastropacha* Ochseneheimer. Later, the status of genus *Estigena* was re-established based on the DNA analysis and morphological characters (Prozorov 2010).

Tribe Odonestini Tutt, 1902

Genus *Odonestis* Germar, 1812

Odonestis pruni (Linnaeus, 1758)

Phalaena pruni Linnaeus, 1758, *Syst. Nat.* (Ed. 10) 1: 498.

Type-locality: Germania.

Odonestis pruni oberthueri Tams, 1935

(Figs 51–52, ♀, 53–54, ♂; Fig. 79)

Odonestis pruni oberthueri Tams, 1935; *Mem. Mus. Royal Hist. nat. Belg.*, 4(12): 57, pl. 6: 8, 9; pl. 8: 5.

Type-locality: [China, Sichuan] “frontiere orientale du Tibet”.

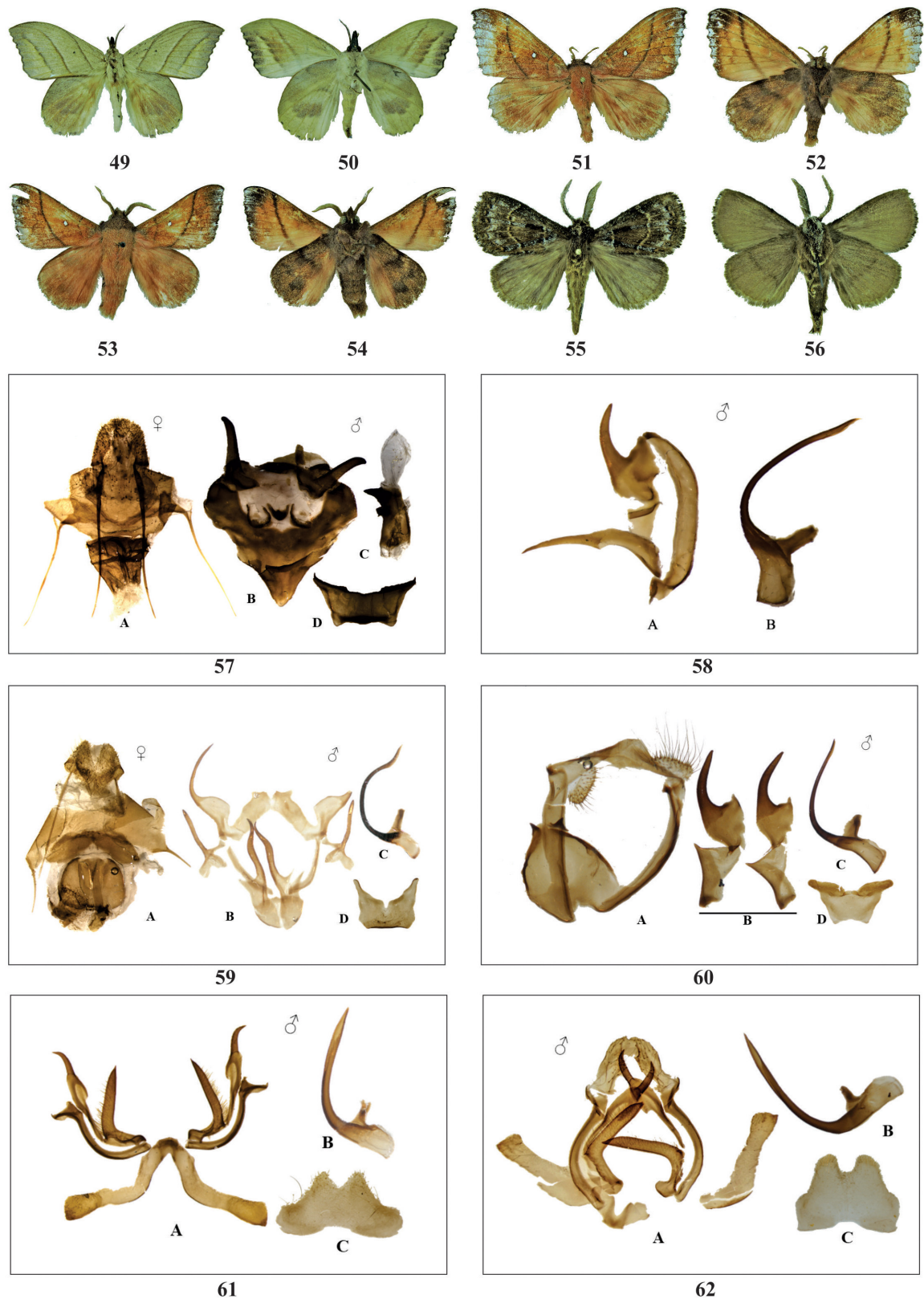
Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 24.VII.2019, 2♂♂, 2♀♀, leg. Irungbam J.S. and party. (Genitalia slide: IJ2307, IJ2308, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 44–46 mm; ♀, 55–58 mm. Length of forewing: ♂, 24–27 mm; ♀, 27–30 mm. Wing ground colour reddish orange, with a brown pattern. Sub marginal fasciae are distinct, obviously darker than the rest of the wing. Outer margin of both wings is dentate. White round discal spot is typical for the forewing. Postmedial fascia is fine but distinct, strongly concave; antemedial fascia is weak, concave and external is fine dentate.

Females are generally larger than males.

Distribution. India (Assam, Manipur); Nepal; Bhutan and southern China.

Comments. First record for Manipur.



Figures 49–62. 49–56. Adults of Lasiocampidae (odd numbers dorsal view; even numbers ventral view). 49–50, female of *Arguda vinata nepalina* Kishida, 1992; 51–52, male of *Odonestis pruni oberthueri* Tams, 1935; 53–54, male of *O. pruni oberthueri* Tams, 1935; 55–56. Male of *Baodera khasiana* (Moore, 1879); 57–62. Genitalia of Lasiocampidae. 57, female (A) and male (B–D) genitalia of *Amurilla rubra rubra* (Hampson, 1896); 58, male genitalia (A–B) of *Euthrix decisa* (Walker, 1855); 59, female (A) and male (B–D) genitalia of *E. fox* Zolotuhin & Witt, 2000; 60, male (A–D) genitalia of *E. improvisa* (de Lajonquiere, 1978); 61, male (A–C) genitalia of *Eteinopla narcissus* Zolotuhin, 1995; 62, male (A–C) genitalia of *E. signata* (Moore, 1879).

Tribe Argudini Zolotuhin, 2010

Genus *Arguda* Moore, 1879

Arguda viettei de Lajonquiere, 1977

(Figs 47–48, ♂; Fig. 77)

Arguda viettei de Lajonquiere, 1977; *Bull. Soc. Ent. France*, 82: 178, pl. 1C, fig. 5.

Type-locality: North-eastern Sumatra, Dairi, 1,600m.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 12.VII.2016, 1♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ949, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 32–37 mm. Length of forewing: 16–18 mm. ♀ not examined. Bodies and wings reddish brown, both medias light, outlined from both sides with greyish scales. Hindwings without any pattern, with costal color same as in the forewings but the rest part of the wings is dark reddish brown.

Distribution. India (Manipur); Myanmar; southern China; northern Thailand; northern Vietnam; Borneo and Sumatra.

Comments. First record for Manipur as well as for India.

Arguda vinata Moore, 1865

Arguda vinata Moore, 1865; *Proc. Zool. Soc. London*: 820.

Type-locality: Sikkim, Darjeeling.

Arguda vinata nepalina Kishida, 1992

(Figs 49–50, ♀; Fig. 78)

Arguda nepalina Kishida, 1992; *Moths Nepal 1* (Tinea 13 Suppl. 2): 77, fig. 55; pi. 20:3.

Type-locality: Nepal, Godavari.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 12.VII.2016, 13.IX.2019, 2♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ646, coll. Irungbam J.S.).

Diagnosis. Expanse: ♂, 47–53 mm; ♀, 51–72 mm. Length of forewing: ♂, 24–27 mm; ♀, 27–37 mm. Forewing: rosy cream with three diagonal, almost greyish-brown lines, both medias have a yellowish outline; Discal spot small but distinct, black, point like. Hindwing: without pattern; the costal field the same colour with the forewing but the rest of the wing dark reddish-brown.

Females larger and lighter in color.

Distribution. India (West Bengal, Sikkim, Arunachal Pradesh, Manipur); Nepal; southern China; northern Thailand and northern Vietnam.

Comments. First record for Manipur.

Systematic position uncertain

Genus *Baodera* Zolotuhin, 1992

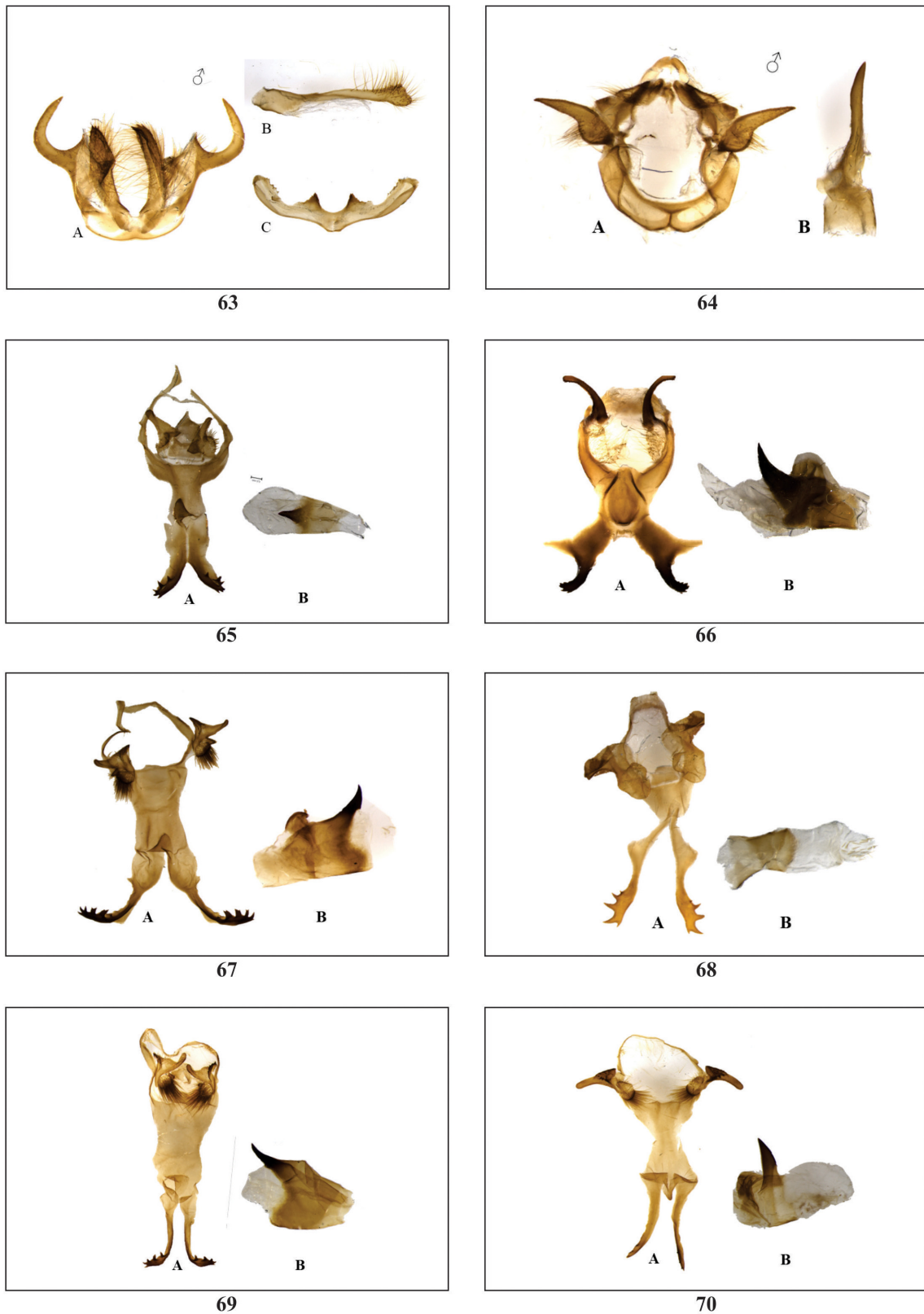
Baodera khasiana (Moore, 1879)

(Figs 55–56, ♂; Fig. 80)

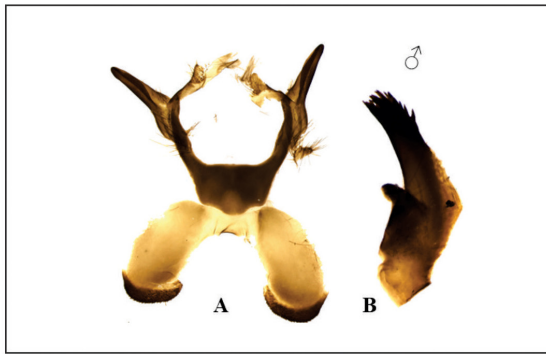
Trichiura khasiana Moore, 1879; In: Hewitson and Moore, *Desc. New Indian lipid. Insects Colln late Mr. Atkinson*, 1: 82.

Type-locality: Khasia Hills.

Diagnosis. Expanse: ♂, 38–48 mm. Length of forewing: 19 mm. ♀ not examined. Upper side dark vinous-brown: Fore wing with ferruginous-brown veins and black longitudinal interspaces speckled with grey; crossed by three black pale bordered lines - the first sub basal, second discal, and third marginal, the middle band wavy, the outer zigzag and ochreous-speckled; hind wing with very indistinct darker sub basal band. Underside uniform brown: fore wing with a few grey speckles at the apex; hind wing with indistinct sub basal darker band. Antennae, head, palpi, thorax, and legs dark brown; abdomen paler.



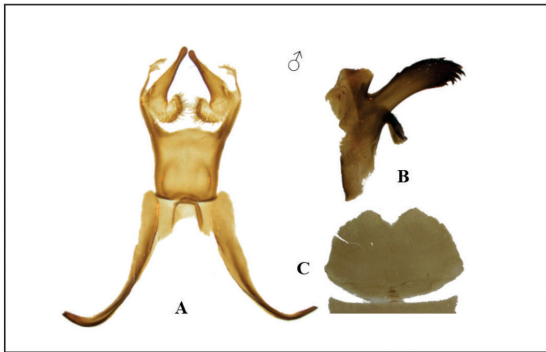
Figures 63–70. Genitalia of Lasiocampidae. **63**, male (A–C) genitalia of *Trabala vishnou* (Lefebvre, 1827); **64**, male (A–B) genitalia of *Crinocraspeda torrida* (Moore, 1879); **65**, male (A–B) genitalia of *Kunugia burmensis* (Gaede, 1932); **66**, male (A–B) genitalia of *K. fulgens* Moore, 1879; **67**, male (A–B) genitalia of *K. latipennis* (Walker, 1855); **68**, male (A–B) genitalia of *K. lineata* (Moore, 1879); **69**, male (A–B) genitalia of *K. vulpina* (Moore, 1879); **70**, male (A–B) genitalia of *K. xichangensis* (Tsai and Liu, 1962).



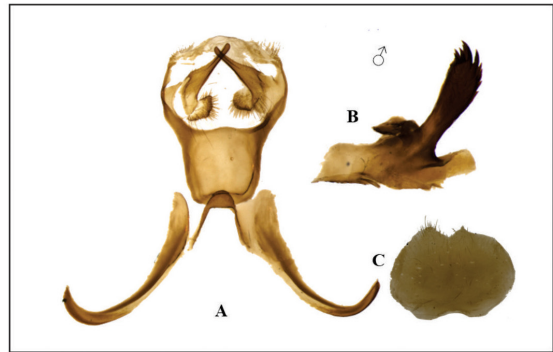
71



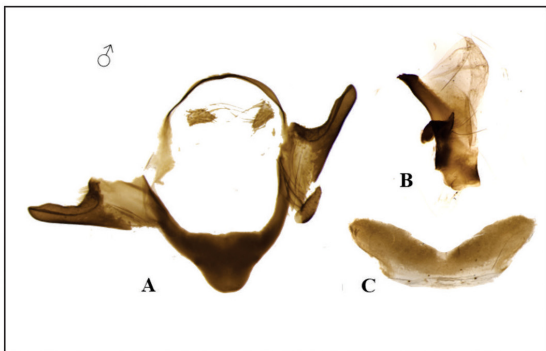
72



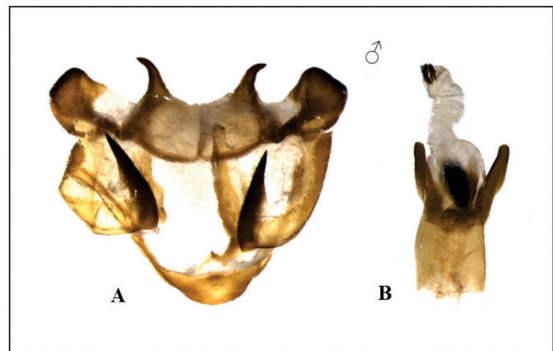
73



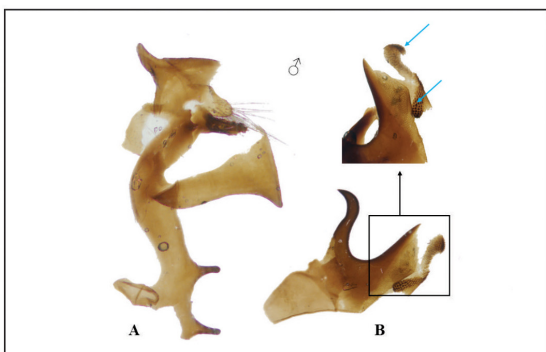
74



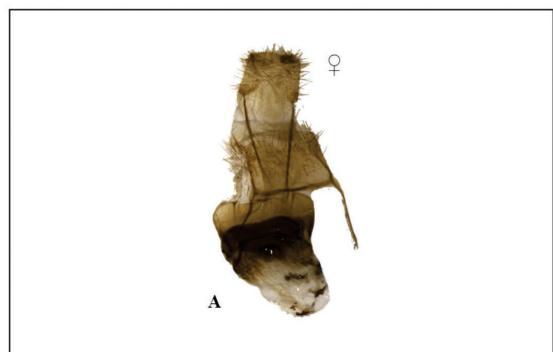
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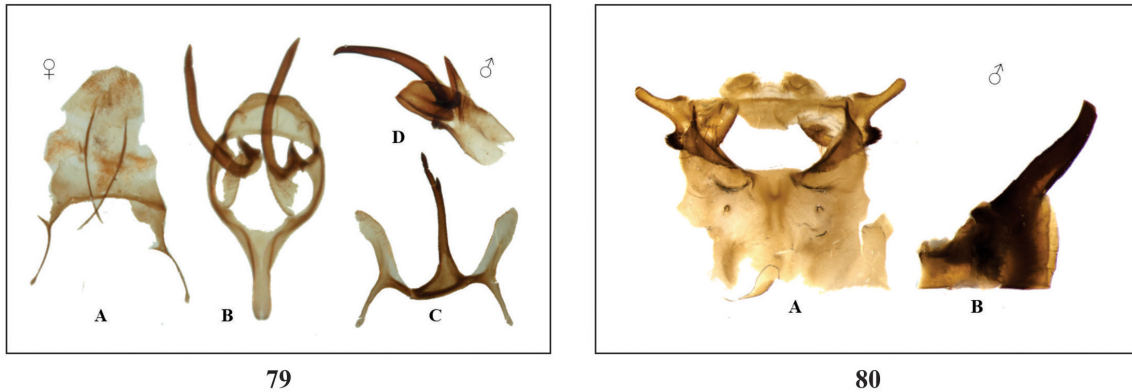
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Figures 71–78. Genitalia of Lasiocampidae. 71, male (A–B) genitalia of *Lebeda nobilis* Walker, 1855; 72, male (A–B) genitalia of *Paralebeda femorata* (Ménétriés, 1858); 73, male (A–C) genitalia of *Metanastria aconyta* (Cramer, 1777); 74, male (A–C) genitalia of *M. gemella* de Lajonquiere, 1979; 75, male (A–C) genitalia of *Pyrosis fulviplaga* (de Joannis, 1929); 76, male (A–B) genitalia of *Estigena philippinensis swanni* Tams, 1973; 77, male (A–B) genitalia of *Arguda viettei* de Lajonquiere, 1977; 78, female (A) genitalia of *Arguda vinata nepalina* Kishida, 1992.

Material examined. INDIA, Manipur, Ukhrul district, Shirui Hills, Shirui Guest House (Site 1), 3 km NE of Shirui village, Imphal-Jessami road, 1930 m asl., 25.1264° N, 94.4357° E, 12.VII.2016, 24.VII.2019, 3♂♂; Manipur, Ukhrul district, Shirui Hills (Site 2), 3 km NE of Shirui village, Imphal-Jessami road, 2036 m asl., 25.1235° N, 94.4407° E, 12.VII.2016, 1♂; Manipur, Ukhrul district, Shirui Hills mid-point (Site 3), 3 km NE of Shirui village, Imphal-Jessami road, 2198 m asl., 25.1171° N, 94.4456° E, 12.VII.2016, 13.III.2019, 23.VII.2019, 9♂♂, leg. Irungbam J.S. and party. (Genitalia slide: IJ244, IJ246, coll. Irungbam J.S.).

Distribution. India (Sikkim, Meghalaya, Assam, Manipur); Nepal; Bhutan; Myanmar and southern China.

Comments. First record for Manipur.



Figures 79–80. Genitalia of Lasiocampidae. **79**, female (A) and male (B–C) genitalia of *Odonestis pruni oberthueri* Tams, 1935; **80**, male (A–B) genitalia of *Baodera khasiana* (Moore, 1879).

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Appendix I: Updated checklist of Lasiocampidae from Manipur, North East India.

* Previously recorded from Manipur but not found in present survey

New records for Manipur.

† New records for India.

Family: Lasiocampidae Harris, 1841

Subfamily: Malacosominae Tutt, 1902

Tribe: Malacosomini Tutt, 1902

1. *Malacosoma indica* (Walker, 1855) *

Subfamily: Lasiocampinae Harris, 1841

Tribe: Lasiocampini Harris, 1841

2. *Amurilla rubra rubra* (Hampson, 1896) #

3. *Amurilla subpurpurea* (Butler, 1881) *

Tribe: Selenepherini Tutt, 1902

4. *Euthrix decisa* (Walker, 1855)

5. *Euthrix fox* Zolotuhin and Witt, 2000 #

6. *Euthrix improvisa* (de Lajonquiere, 1978) # †

7. *Euthrix laeta* (Walker, 1855) *

8. *Eteinopla narcissus* Zolotuhin, 1995 # †

9. *Eteinopla signata* (Moore, 1879)

Tribe: Trabaliini Tutt, 1902

10. *Trabala vishnou* (Lefebvre, 1827)

11. *Crinocraspeda torrida* (Moore, 1879)

Tribe: Pinarini Kirby, 1892

12. *Kunugia burmensis* (Gaede, 1932) # †

13. *Kunugia fulgens* Moore, 1879 #

14. *Kunugia latipennis* (Walker, 1855) #

15. *Kunugia lineata* (Moore, 1879) #

16. *Kunugia vulpina* (Moore, 1879) #

17. *Kunugia xichangensis* (Tsai and Liu, 1962) # †

18. *Lebeda nobilis nobilis* Walker, 1855

19. *Paralebeda femorata* (Ménétriés, 1858) #

20. *Streblote dorsalis* (Walker, 1866) *

21. *Streblote siva* (Lefebvre, 1827) *

22. *Metanastria aconyta* (Cramer, 1777)

23. *Metanastria gamella* de Lajonquiere, 1979 #

24. *Metanastria hyrtaca* (Cramer, 1779) *

25. *Pyrosis fulviplaga* (de Joannis, 1929) #

26. *Pyrosis undulosa* (Walker, 1855) *

Tribe: Gastropachini Newmoegen and Dyar, 1893

27. *Estigena pardale* (Walker, 1855)

28. *Estigena philippinensis swanni* Tams, 1973 #

Tribe: Odonestini Tutt, 1902

29. *Radhica flavovittata* Moore, 1879*

30. *Odonestis bheroba* (Moore, 1858) *

31. *Odonestis pruni oberthueri* Tams, 1935 #

Tribe: Argudini Zolotuhin, 2012

32. *Arguda viettei* de Lajonquiere, 1977 # †

33. *Arguda vinata nepalina* Kishida, 1992 #

Systematic position uncertain

34. *Baodera khasiana* (Moore, 1879)

35. *Argonestis flammans* (Hampson, 1892) *