

GEOMETRIDAE (ENNOMINAE) LEPIDOPTERA FROM MIZORAM, INDIA

PART-II

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INTRODUCTION

With reference to the previous report on 30 species of Geometrid moths under subfamily Ennominae from Mizoram (Lalngahpuii *et al.*, 2022) the current study deals with the addition of 20 species referring to 13 genera under Ennominae with their original references, distinctive characters and short remarks for each species. The reported species are enumerated as follows:

I. Genus *Biston* Leach [1815] 1830

Biston Leach, [1815]; in Brewster, *Edinburgh Ency.* 9:134

1. *Biston panterinaria* (Bremer & Grey, 1853)

Biston panterinaria (Bremer & Grey, 1853), *Descr. new Indian Lepid Insects Colln late Mr W.S. Atkinson* (3): 266

Forewing: Male: 74mm

Material examined: 1♂: 13.x.2020, Tamdil, Saitual district, 767m; 1♂:

15.vii.2020, Hmuifang, Aizawl district, 1485m

Distribution: Arunachal Pradesh, Meghalaya

Distinctive features: This species differs from its congeners as it mimics species of the genus *Abraxas* Leach. It is of robust build similar to its congeners. Adult with both wings ground color white irrorated with pale grey markings. Antennae bipectinated, forewing costa speckled with grey, apex slightly produced, base of costa with brown patch, base of forewing grey with a prominent brown patch. Both wings with a grey rounded discal patch. Underside of both wings with grey discal cell patch with a central brown patch.

Remarks: This species is recorded at an elevation above 700m. The current study reports this species for the first time from Mizoram.

II. Genus *Cleora* Curtis, 1825

Curtis, 1825, *Br. Ent.*, 2: 88

2. *Cleora fraterna* (Moore, 1888)

Cleora fraterna (Moore, 1888), *Descr. new Indian Lepid Insects Colln late Mr W.S. Atkinson* (3): 245

Forewing: Male: 40mm

Material examined: 1♂: 29.x.2019, Hmuifang, Aizawl district, 1485m; 1♂: 13.iv.2021, Rahum, Kolasib district, 143m

Distribution: Assam, Uttarakhand, Karnataka, West Bengal, Tripura

Distinctive features: Adult wings ground color pale brown irrorated with grey. Both wings with ante and post medial crenulated lines and a prominent discal cell spot.

Remarks: Lalnghahpuii *et al.*, (2023) reported this species for the first time from Mizoram.

III. Genus *Corymica* Walker, 1860

Walker, 1860, *List Specimens lepid. Insects Colln Br. Mus.*, 20: 230

3. *Corymica vesicularia* Walker, 1866

Caprilia vesicularia Walker, 1866, *List Specimens lepid. Insects Colln Br. Mus.* 35: 1569

Forewing: Male: 36-38mm

Material examined: 1♂: 15.x.2019, Siaha, Siaha district, 1003m; 1♂: 30.x.2019, Hmuifang, Aizawl district, 1485m.

Distribution: Dharamsala, Sikkim, Nilgiris, Ceylon

Distinctive features: Wings ground color yellow, broken an oblique mark on forewing dorsum; a clear and transparent vesicle on base of forewing. Female lacks vesicle on forewing dorsum.

Remarks: This species is recorded only above an altitude of 1000m. Lalnghahpuii *et al.*, (2023) reported this species for the first time from Mizoram.

IV. Genus *Eilicrinia* Hubner, [1823]

Eilicrinia Hubner, [1823]; *Verz.bek. Schmett* (18): 287

4. *Eilicrinia flava* (Moore, 1888)

Noreia flava Moore, 1888; *Descr. Indian lep. Atkinson* (3): 233

Eilicrinia flava (Moore, 1888)

Forewing: Male: 34mm

Material examined: 1♂: 4.viii.2021, West Phaileng, Mamit district, 776m; 2♂: 1.xi.2019, Hmuifang, Aizawl district, 1485m; 1♂: 15.vii.2020, Hmuifang, Aizawl district, 1485m; 1♂: 6.ix.2021, Palak dil, Siaha district, 273m

Distribution: Chekiang, China, Sikkim, Khasis, Nagas.

Distinctive features: Adult with wings ground color yellow with prominent irregular brown spot on forewing discal area. Small dark patch below forewing apex, both wings with single reddish postmedial line.

Remarks: This is the first report of this species from Mizoram.

V. Genus *Hypomecis* Hubner, 1821

Hubner, 1821, *Index exot. Lepid.*, 1821: 7

5. *Hypomecis cineracea* (Moore, 1888)

Astacuda cineracea Moore, 1888; *Descr. Indian lep. Atkinson* (3): 244

Forewing: Male: 54-58 mm

Material examined: 1♂: 25.xi.2020, Hmuifang, Aizawl district, 1485m; 2♂: 5.xii.2019, MZU Campus, Aizawl district, 804 m

Distribution: Sikkim, Khasis (Meghalaya).

Distinctive features: Adult wings ground color pale brown with uniform warm grey, both wings with dark brown fasciation and discal marks.

Remarks: Lalnghahpuii *et al.*, (2023) reported this species for the first time from Mizoram.

6. *Hypomecis lioptilaria* Swinhoe, 1903

Boarmia lioptilaria Swinhoe, 1903; in Annandale & Robinson, *Fasc. Malay Zool.* 1: 91

Forewing: Male: 37-38 mm

Material examined: 1♂: 15.vii.2022, North Hlimen, Kolasib district, 671m; 1♂: 2.viii.2021, West Phaileng, Mamit district, 776m

Distribution: NE Himalaya, Thailand, Sundaland.

Distinctive features: Adult scales uniformly darkish brown on both wings

which is diagnostic feature of this species from its congeners. Forewing with discal spot below costa; postmedial line crenulated. Hindwing with prominent discal spot.

Remarks: The study reported this species for the first time from Mizoram

7. *Hypomecis separata* Walker, 1860

Boarmia separata Walker, 1860, *List Specimens lepid. Insects Colln. Br. Mus.*, 21: 381

Forewing: Male: 46-48 mm

Material examined: 2♂: 15.x.2020, MZU Campus, Aizawl district, 804m; 2♂: 5.x.2022, Tamdil, Saitual district, 767m

Distribution: Sikkim, Khasis, Ceylon, Java, Borneo

Distinctive features: Adult ground color dark brown with pale broad brown zones along forewing costa, marginal area of both wings wavy, discal spots on pale brown area of forewing. Hindwing brown groundcolour irrorated with black, two small discal spots near inner margin.

Remarks: This species is reported here for the first time from Mizoram

8. *Hypomecis transcissa* (Walker, 1860)

Boarmia transcissa Walker, 1860 *List Specimens lepid. Insects Colln Br. Mus.*, 21: 380

Forewing: Male: 36-38 mm

Material examined: 1♂: 14.x.2020, Tamdil, Saitual district, 767m; 1♂: 5.xii.2019, MZU Campus, Aizawl district, 804m

Distribution: Sikkim, Dharamsala, Bhutan, Assam, Nilgiris, Ceylon, Burma, Java, Mumbai, N.E. Himalaya to Taiwan and Sundaland.

Distinctive features: Ground colour cineraceous, tinged with fawn, thickly and minutely speckled with brown spots. Wings moderately broad, subbasal, medial, postmedial and submarginal lines brown, submarginal line shaded with pale brown.

Remarks: Ghosh (2007) reported a single male specimen from Aibawk, Mizoram under the name *Boarmia transcissa*.

VI. Genus *Hypochrosis* Guenee in Boisduval & Guenee, 1857

Hypochrosis Guenee, 1857; *Hist. nat. Ins., Spec. gen. Lepid.* 10: 536

9. *Hypochrosis iris* (Butler, 1880)

Phoenix iris Butler, 1880; *Ann. Mag. nat. Hist.* (5) 6 (32): 122

Forewing: Male 33-34mm

Material examined: 1♂: 25.viii.2022, Serchhip, Serchhip district, 546m; 1♂: 13.x.2020, Tamdil, Saitual district, 767m

Distribution: Assam, Uttarakhand, Sumatra.

Distinctive features: Adult wings dark grey traverse by green bands medially, that of the forewing bounded distally by an

oblique postmedial, extending at the dorsum to antemedial but narrowing anteriorly. A prominent discal mark on forewing.

Remarks: This species is reported here for the first time from Mizoram.

VII. Genus *Hyposidra* Guenee in Boisduval & Guenee, 1857

Hyposidra Guenee, 1857; *Hist. nat. Ins., Spec. gen. Lepid.* 10: 150

10. *Hyposidra infixaria* (Walker, 1860)

Lagyra infixaria Walker, 1860; *List Spec. Lepid. Insects Colln Br. Mus.* 20: 60

Forewing: Male: 34mm

Material examined: 1♂: 23.viii.2022, Serchhip, Serchhip district, 546m; 1♂: 1.iv.2021, MZU Campus, Aizawl district, 804m; 1♂: 13.x.2020, Tamdil, Saitual district, 767 m

Distribution: Khasis, Moulmein, Rangoon, Sumatra, Java, Borneo.

Distinctive features: Adult with wings ground color ochreous irrorated densely with black specks, wings slightly falcate. Antennae bipectinate, head and frons brown. Forewing with fuscous fasciae on basal costal area, a distinctive oblique rufous streak from apex often appearing to join costal area. A postmedial rufous line angled below costa, with indistinct sinuous line beyond it. A submarginal sinuous line with white lunules on it towards costa. Hindwing with small speck at end of cell; an indistinct medial and postmedial line, subapical areas with white specks.

Underside with prominent postmedial line on both wings.

Remarks: Ghosh (2007) reported a single male specimen from Aibawk, reporting it for the first time from Mizoram.

VIII. Genus *Krananda* Moore, 1868

Krananda Moore, [1868]; *Proc. zool. Soc. Lond.* 1867: 648

11. *Krananda lucidaria* Leech, 1897

Krananda lucidaria Leech, 1897; *Ann. Mag. Nat. Hist.* (6) 19: 305

Forewing: Male: 48mm

Material examined: 1♂: 28.x.2019, Hmuifang, Aizawl district, 1485m; 1♂: 1.xi.2022, Reiek, Mamit district, 1220m

Distribution: W. and S China, N. Thailand, Peninsular Malaysia, Sumatra, Borneo, Nagaland, Meghalaya

Distinctive features: Adult with forewing antemedial pale; delineated with black on either side, a complex blackish zone on the forewing dorsum just interior to brown border; hindwing has small discal spot and an entire antemedial band.

Remarks: Lalnghahpuii *et al.*, (2023) reported this species for the first time from Mizoram.

12. *Krananda semihyalina* Moore, 1868

Krananda semihyalina Moore, [1868]; *Proc. zool. Soc. Lond.* 1867: 648

Forewing: Male: 52-54 mm

Material examined: 1♂: 2.xii.2022, Reiek, Mamit district, 1220 m; 3♂: 28.x.2019, Hmuifang, Aizawl district, 1485 m; 1♂: 23.vii.2019, Champhai, Champhai district, 1458 m

Distribution: Uttarakhand, Sikkim, Meghalaya, Arunachal Pradesh.

Distinctive features: Adult brownish grey, both wings crenulated, hyaline; veins, costa and outer third of wings grey brown, irrorated with black.

Remarks: Ghosh (2007) reported both male and female specimens from Aibawk, while the current study reported only the male specimen.

IX. Genus *Plutodes* Guenee, 1857

Plutodes Guenee, 1857; *Hist. nat. Ins., Spec. gen. Lepid.* 10: 117

13. *Plutodes costatus* (Butler, 1886)

Garaeus costatus Butler, 1886; *Ill. typical Spec. Lep. Het. Colln Br. Mus.* 6: 53

Forewing: Male: 24-26 mm

Material examined: 1♂: 15.x.2020, MZU Campus, Aizawl district, 825m; 2♂♂: 29.x.2019, 1485 m, Aizawl district.

Distribution: Arunachal Pradesh, Sikkim, Himachal Pradesh, Meghalaya.

Distinctive features: Wings almost entirely covered with rufous suffusion. Forewing with costal margin yellow with three irregular spurs, yellow patch on tornus. Hindwing fasciae similar to forewing but

rufous patch covering entire surface with a small yellowish patch on costa.

Remarks: Lalnghahpuii *et al.*, (2023) reported this species for the first time from Mizoram.

14. *Plutodes discigera* Butler, 1880

Plutodes discigera Butler, 1880; *Ann. Mag. nat. Hist.* (5) 6 (33): 223

Forewing: Female: 15-17mm

Material examined: 2♀♀: 3.x.2019, Hmuifang, Aizawl district, 1485m; 1♀: 9.iv.2019, Ngopa, Saitual district, 1195m.

Distribution: Sikkim, Arunachal Pradesh, Assam.

Distinctive features: Wings ground color yellow. Forewing with costa yellow with a small rufous patch with silvery outline. A large rounded rufous patch with a brown zig-zag line in the centre. Hindwing with basal rufous patch more triangular than rounded with crenulated zig-zag line in the centre.

Remarks: Lalnghahpuii *et al.*, (2023) reported this species for the first time from Mizoram.

15. *Plutodes exquisita* Butler, 1880

Plutodes exquisita Butler, 1880, *Ann. Mag.nat.Hist.* (5) 6: 223

Forewing: Female: 24-25mm

Material examined: 1♀: 13.x.2020, Tamdil, Saitual district, 767m; 1♀:

23.vii.2019, Champhai, Champhai district, 1458m

Distribution: Sikkim, Assam

Distinctive features: Forewing with rufous triangular basal patch except at costal area, an oval rufous patch on marginal area with silvery boundaries having a zig-zag line on it. Hindwing having a rufous band from base to tornus. Female genitalia with corpus bursae oval, traces of weak sclerotization, ductus bursae long.

Remarks: The current study reported only female specimen while Ghosh (2007) reported a single male specimen from Aibawk, Aizawl district, Mizoram.

16. *Plutodes subcaudata* Butler, 1880

Plutodes subcaudata Butler, 1880, *Ann. Mag. nat. Hist.*, (5) 6: 224

Forewing: Male: 17 mm

Material examined: 1♂: 30.x.2019, Hmuifang, Aizawl district, 1485 m.

Distribution: Sikkim, Assam.

Distinctive features: Wings ground color yellowish. Forewing costa slightly arched with a broad rufous patch at base extending as rufous band on inner margin. Hindwing with fasciae similar to forewing with a basal rufous patch forming narrow band along inner area. Underside of wings white.

Remarks: Saxena (2014) reported two females from Hmuifang, Aizawl district while the current study reported only male specimen.

X. Genus *Psilalcis* Warren, 1893

Psilalcis Warren, 1893; *Proc. zool. Soc. Lond.* 1893 (2): 430

17. *Psilalcis pallidaria* (Moore, 1888)

Boarmia pallidaria Moore, 1888; *Descr. Indian lep. Atkinson* (3): 237

Forewing: Female: 40 mm; Male: 38 mm

Material examined: 1♂: 15.x.2019, Siaha, Siaha district, 1003 m; 1♀: 18.x.2019, Lawngtlai, Lawngtlai district, 930 m; 1♀: 16.iv.2019, Ngopa, Saitual district, 1195 m

Distribution: Sikkim, Khasis (Meghalaya).

Distinctive features: Adult wings dark fawn color with a clear patch on forewing, antemedial and medial area lined with two prominent crenulated lines, post medial band broad.

Remarks: The current study reported this species for the first time from Mizoram.

XI. Genus: *Phthonandria* Warren, 1894

Phthonandria Warren, 1894; *Novit. zool.* 1 (2): 434

18. *Phthonandria atrilineata* Butler, 1881

Hemerophila atrilineata Butler, 1881; *Trans. Ent. Soc. London* 1881 (3): 405

Forewing: Male: 52 mm

Material examined: 1♂: 15.x.2020, MZU Campus, Aizawl district, 804 m

Distribution: Dharamsala, Sikkim, Japan.

Distinctive features: Ground color darkish brown on dorsal but lighter on thoracic region. A medial black line dentate from costa to lower angle of cell and slightly sinuous to inner margin. Hindwing with fuscous striations.

Remarks: The species is reported here for the first time from Mizoram.

XII. Genus *Ruttellerona* Swinhoe, 1894

Ruttellerona Swinhoe, 1894; *Trans. ent. Soc. Lond.* 1894 (1): 220

19. *Ruttellerona pallicostaria* (Moore, 1868)

Angerona pallicostaria Moore, [1868]; *Proc. zool. Soc. Lond.* 1867: 620

Forewing: Male: 52 mm

Material examined: 1♂: 15.x.2020, MZU Campus, Aizawl district, 804 m

Distribution: NE Himalaya, Peninsular Malaysia.

Distinctive features: Forewing discal spot amidst the pale rufous zone along the costa in males. Hindwing medial line crenulated, a light fawn patch on submarginal and marginal area. Underside with distinct black spots on forewing antemedial, a dark band on medial and postmedial.

Remarks: Only a single individual of this species was encountered during the study period. The current record is the first for Mizoram.

XIII. Genus *Xenoplia* Warren, 1894

Xenoplia Warren, 1894; *Novit. zool.* 1 (2): 415

20. *Xenoplia foraria* (Guenee, 1857)

Percnia foraria Guenee, 1857; *Hist. nat. Ins., Spec. gen. Lepid.* 10: 217

Forewing: Male: 44 mm

Material examined: 1♂: 13.x.2020, Tamdil, Saitual district, 767 m

Distribution: Uttarakhand, Arunachal Pradesh

Distinctive features: Adult with ground color white speckled with black dots entirely. Head and frons white, dorsal part of abdomen white with black spots, antennae pectinated. Forewing with costa white irrorated with black, six spots at regular intervals. Antemedial, medial, postmedial, submarginal lines replaced with dots. Marginal area white, crenulated. Hindwing with similar fasciae, a single prominent spot near inner area.

Remarks: This species is reported for the first time from Mizoram

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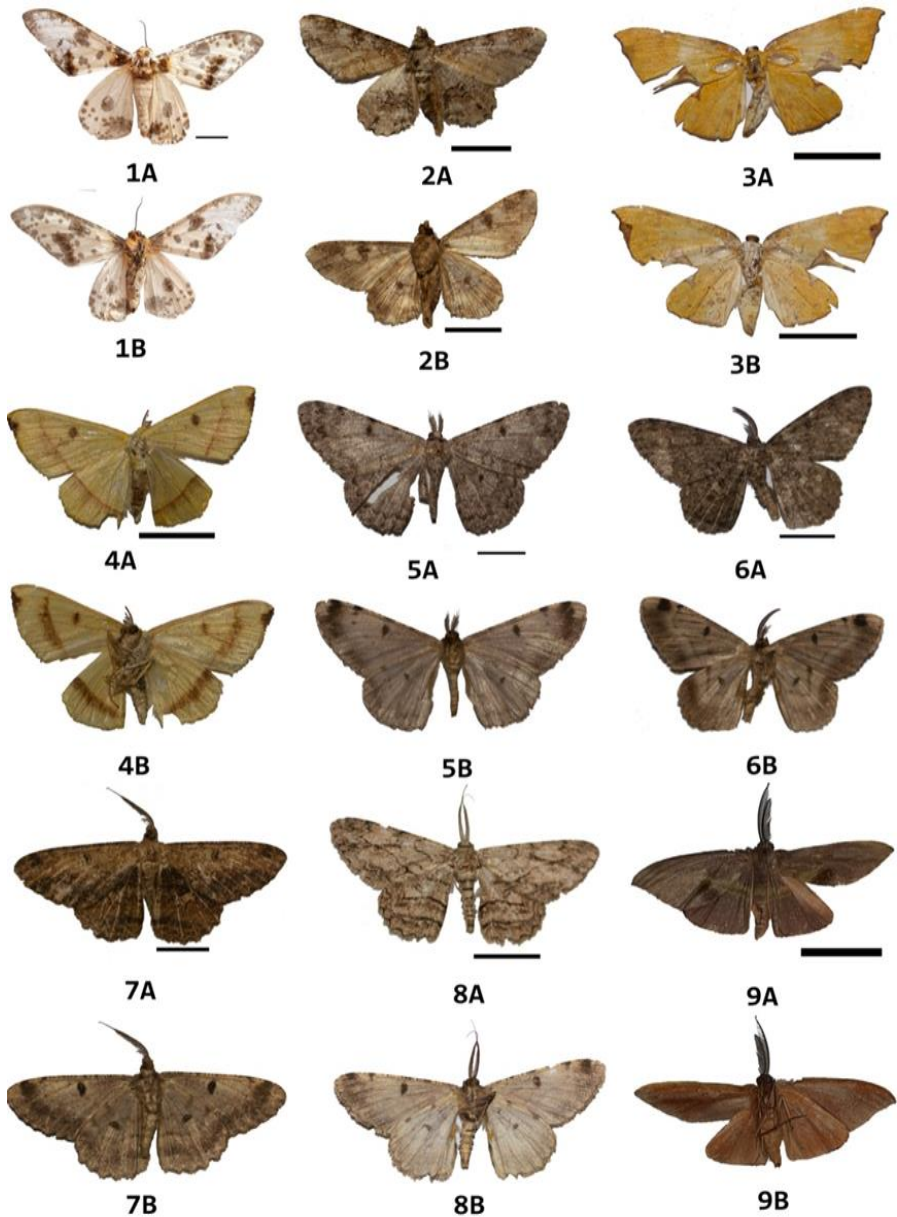


Fig: 1-9: Geometridae (Ennominae), A- Upperside; B- Underside. 1. *Biston panterinaria* 2. *Cleora fraterna* 3. *Corymica vesicularia* 4. *Eilicrinia flava* 5. *Hypomecis cineracea* 6. *Hypomecis lioptilaria* 7. *Hypomecis separata* 8. *Hypomecis transcissa* 9. *Hypochrosis iris*.

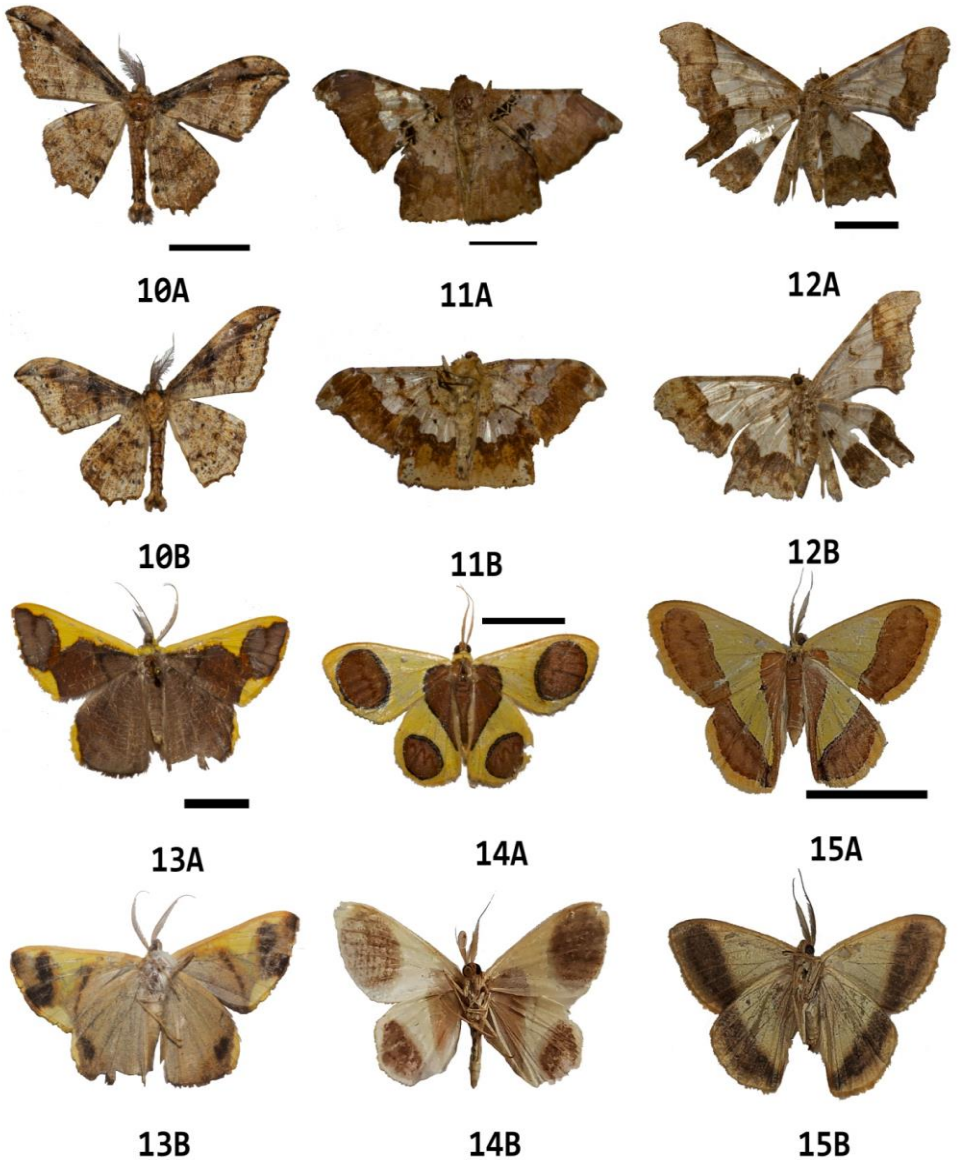


Fig: 10-15: Geometridae (Ennominae), A- Upperside; B- Underside. 10. *Hyposidra infixaria* 11. *Krananda lucidaria* 12. *Krananda semihyalina* 13. *Plutodes costatus* 14. *Plutodes discigera* 15. *Plutodes exquisita*.

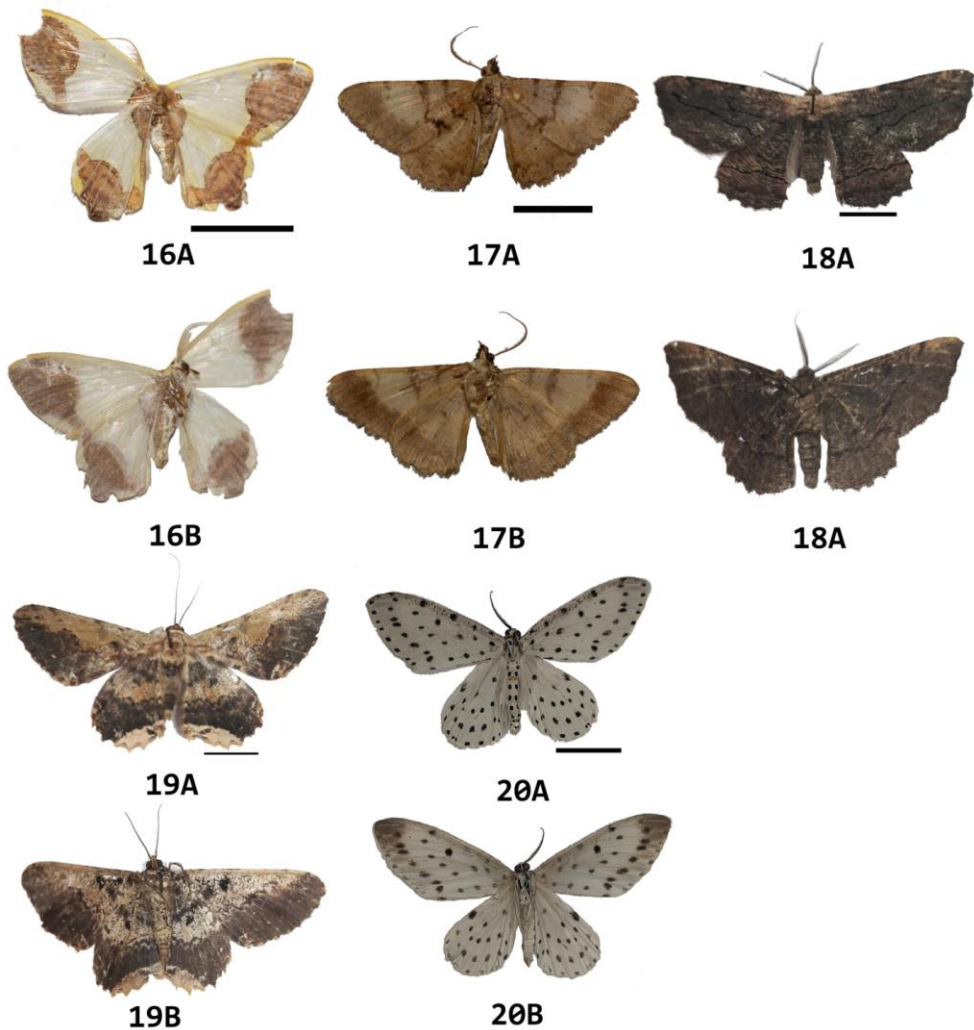


Fig: 16-20: Geometridae (Ennominae), A- Upperside; B- Underside. 16. *Plutodes subcaudata* 17. *Psilalcis pallidaria* 18. *Phthonandria atrilineata* 19. *Ruttellerona pallicostaria* 20. *Xenoplia foraria*

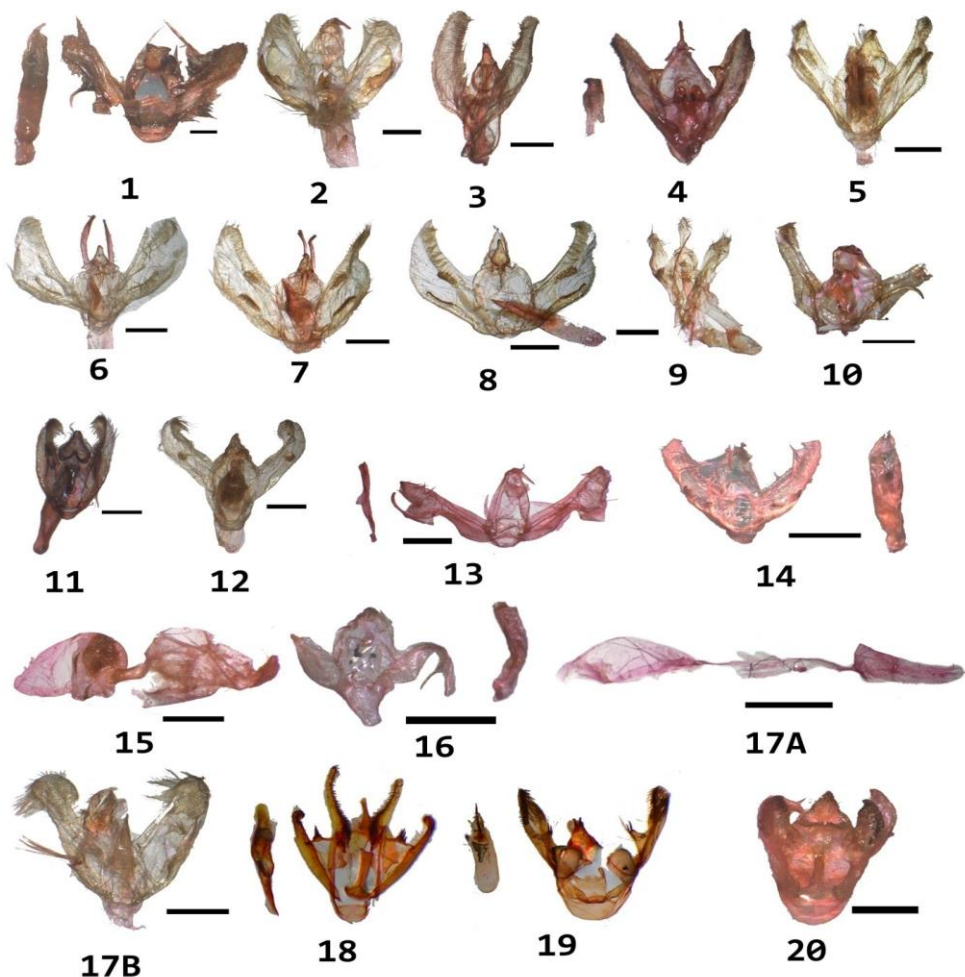


Fig: Genitalia of reported specimens, one scale bar=0.1mm:

1. *Biston panterinaria* (♂) 2. *Cleora fraterna* (♂) 3. *Corymica vesicularia* (♂) 4. *Eilicrinia flava* (♂) 5. *Hypomecis cineracea* (♂) 6. *Hypomecis lioptilaria* (♂) 7. *Hypomecis separata* (♂)
8. *Hypomecis transcissa* (♂) 9. *Hypochrosis iris* (♂) 10. *Hyposidra infixaria* (♂)
11. *Krananda lucidaria* (♂) 12. *Krananda semihyalina* (♂) 13. *Plutodes costatus* (♂)
14. *Plutodes discigera* (♂) 15. *Plutodes exquisita* (♂) 16. *Plutodes subcaudata* (♂)
- 17 (A). *Psilalcis pallidaria* (♂) 17 (B). *Psilalcis pallidaria* (♀) 18. *Phthonandria atrilineata* (♂) 19. *Ruttellerona pallicostaria* (♂) 20. *Xenoplia foraria* (♂).