COMMUNICATION

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Moths of the Family Limacodidae Duponchel, 1845 (Lepidoptera: Zygaenoidae) from Bhutan with Six New Generic and 12 New Species Records

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Abstract: The present paper provides a checklist of 51 species in 37 genera of moths belonging to the family Limacodidae from Bhutan, of which, six genera, Setora Walker, 1855, Tenny Solovyev & Witt, 2009, Irago Matsumura, 1927, Vanlangia Solovyev & Witt 2009, Sansarea Solovyev & Witt, 2009, and Bellipra Walker, 1865 are reported for the first time from Bhutan, and 12 species, Setora postornata (Hampson, 1900), Setora fletcheri Holloway, 1887, Scopelodes testacea Butler, 1866, Thessina magna Hering, 1913, Miresa fulgida Wileman, 1910, Susica himalayana Holloway, 1962, Tenny propolia (Hampson, 1900), Irga rugosa (Wileman, 1911), Chorometta ferruginea (Moore, 1877), Vanlangia uniformis (Hering, 1931), Sansarea circulifera (Hering, 1933) and Bellipra horni Walker, 1865 are new records for Bhutan. The study was conducted at Tsirang, Daga and Sarangtho districts of Bhutan from 2013 to 2015.

Keywords: Bhutan, checklist, Limacodidae, new record.


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Author Contributions: JSI conducted the field work in the study area since 2011 and 2015, identified the moths, wrote the manuscript and prepared the tables, plots and figures. MSC assisted JSI in the field works, took photographs of the materials during the field surveys, help in literature review and reviewed the manuscript. AVS provided his assistance on the identification and confirmation of the materials. He also assisted JSI during the preparation of manuscript and did the corrections on the initial stage of the manuscript.

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INTRODUCTION

The Limacodidae Duponchel, 1845 are mainly a tropical and subtropical family of moths and are very diverse in all continents. There are 1,672 species in 301 genera, currently known globally (Nieuwenhuis et al. 2011). The moths are nocturnal and are attracted to light. They can be easily identified due to their characteristic silky shine on the forewing. They are of different sizes, wing patterns and coloration. The males have bipectinate to filiform antennae, but females always have filiform antennae. While resting, the body is held at an angle to the substrate supported by the extended legs with wings draped laterally (Godfray et al. 1987). The family Limacodidae is placed in the superfamily Zygaenoidea Latreille, 1809 and classified into two subfamilies—Limacodinae and Chrysopolominae (Epstein et al. 1999).

The family remains poorly studied in the Indian sub-region including Bhutan. Sir George F. Hampson (1892, 1895) reports 96 species of this family in this region of which only one species was reported from Bhutan. The primary checklist on the Limacodidae of Bhutan can be found in the catalogue of Heterocera from Sikkim and Bhutan by G.C. Dudgeon (1900), with notes and additions from Sir H.J. Elwes and Sir George F. Hampson. In this catalogue, Dudgeon reported 32 species from Bhutan. The Swiss expedition to Bhutan during 1972 recorded only nine species from the western region of Bhutan (Dierl 1975). Yoshimoto (1993, 1994) also reported 43 species from different locations in Nepal published in different volumes of Moths of Nepal series (Haruta 1993, 1994). A few more species are reported from Bhutan by Inoue (1970), Solovyev & Witt (2009), Solovyev (2009b,c), Solovyev (2014) and Internet references (www.jpmoths.org). Photographs of cryptic species were sent to the third author for identification and confirmation of the species. Only a few individuals were collected as voucher specimens but genitalia were not studied. Thus, the species identifications were based on photographs of individuals and specimens.

RESULT AND OBSERVATIONS

After careful analysis and review of previous records and present collections, the present systematic list includes 51 species of moths belong to family Limacodidae recorded from Bhutan. The systematic list consists of the original records of Hampson (1892, 1895), Dudgeon (1900) and Dierl (1975), as well as species recorded during our surveys.

During the survey, 28 species of Limacodidae moths were encountered, photographed and voucher specimens collected from the study area. Six genera Setora Walker, 1855, Tennyta Solovyev & Witt, 2009, Iraga Matsumura, 1927, Vanlangia Solovyev & Witt 2009, Sansarea Solovyev & Witt, 2009 and Belippa Walker, 1865 are reported for the first time from Bhutan, and 12 species Setora pastornata (Hampson, 1900), Setota fletcheri Holloway, 1987, Scopeleodes testacea Butler, 1886, Thoesea magna Hering, 1931, Miresa fulgida Wileman, 1910, Susica himalayana Holloway, 1982, Tennyta propolia (Hampson, 1900), Iraga rugosa (Wileman, 1911), Chremetella ferruginea (Moore, 1877), Vanlangia uniformis (Hering, 1931), Sansarea circulifera (Hering, 1933) and Belippa horrida Walker, 1865 are new records for Bhutan.

Systematic checklist of the Limacodidae

Genus Phlossa Walker, 1858


The genus Phlossa was erected by Walker in 1858 based on the type species Phlossa fimbrariensis Walker. The genus contains five species in the Oriental and Palearctic region (Wu & Fang 2008b). Male antenna have only one row of short pectinations. Labial palpus

MATERIAL AND METHODS

The authors observed the moths between 2013 and 2015 when conducting a moth survey in five districts (Bumthang, Dagana, Trongs, Tsirang and Sarpang) of Bhutan. Details of the moth trapping sites in these districts with Global Positioning System (GPS) coordinates along with the map are provided in our previous publication (Irungbam et al. 2016). The moths were collected using fluorescent bulbs on a white cloth sheet hanging and mercury vapor (MV) light traps at night (Irungbam et al. 2016).

Identification follows Hampson (1892), Holloway (1986), Solovyev & Witt (2009), Solovyev (2009a,b,c), Solovyev (2014) and Internet references (www.jpmoths.org). Photographs of cryptic species were sent to the third author for identification and confirmation of the species. Only a few individuals were collected as voucher specimens but genitalia were not studied. Thus, the species identifications were based on photographs of individuals and specimens.
short, porrect, terminal joint pendent. Hind tibia with two pairs of spurs. Forewing with veins $R_{2+3}$ stalked, $R_2$ from the same basis, $M_1$ near to $R_2$. Hindwing with veins $R_5$ and $M_1$ stalked, lower angle of cell slightly produced (Wu & Fang 2008b).

i. *Phlossa conjuncta* (Walker, 1855) (Image 1)

*Limacodes conjucta* Walker, 1855, List Specimens lepid. Insects Colln Br. Mus. 5: 1150. Type locality: "North China".


Record: Bhutan: Tsirang District, Mendrelgang, 26°57′0.57″N & 90°06′51.78″E, 1,247m, 7.vi.2013, 1 specimen to MV light, 18.vi.2015, 1 individual to MV light; Tsirang District, Damphu, 27°01′04.60″N & 90°07′18.18″E, 1,469m, 05.vi.2015, 2 specimens at MV light; Dagana district, Dagapela, 26°56′29.56″N & 89°55′22.06″E, 12.vii.2014, 3 specimens to MV light.

Distribution: Bhutan (Mendrelgang, Dagapela), Nepal (Yoshimoto 1994), India, Myanmar, Korea, Japan, China, Taiwan, northern Thailand, Vietnam, Laos (Wu & Fang 2008b; Solovyev & Witt 2009), Hong Kong (Kendrick 2002).

Remarks: Recorded in Bhutan by Dudgeon (1900). A minor pest on the plants of the family Poaceae and causes major damage on rice crops, sugarcane (defoliator) and bamboos (Solovyev et al. 2009).

**Genus Nephelimorpha** (Solovyev, 2014)


The genus *Nephelimorpha* was erected by Solovyev in 2014 based on type species *Parasa argentilinea* Hampson, 1892. The genus is characterized by male antennae bipectinate proximally. Forewing 11–14 mm length in males and 15–17 mm in females. Thorax green dorsally and rounded; third segment of labial palps small. Forewing colour brown with large medial, triangular, green area, angles of which located near the wing base apex of the lower margin. Outer margin of this triangular area bordered by silver fascia; lower margin bordered by yellow fascia containing outer dark brown border. Forewing venation with medial stem not branched; vein $R_3$ sinuose; vein $R_5$ branched from $R_5+R_4$ (Solovyev 2014).

i. *Nephelimorpha argentilinea* (Hampson, 1892) (Image 3)

*Parasa argentilinea* Hampson, 1892, *Fauna. Br. Ind.* Moths 1: 389. Type locality: “Margharita, Assam” [India].

Record: Bhutan: Tsirang District, Mendrelgang, 26°57′0.57″N & 90°06′51.78″E, 1,247m, 8.vi.2013, 1 specimen to MV light; Sarpang District, Sarpang Tar, 26°52′0.23″N & 90°16′3.71″E, 345m, 12.vi.2014, 2 specimens to MV light.

Distribution: Bhutan (Mendrelgang, Sarpang Tar, Phuentsholing), northeastern India, Nepal, Myanmar, China, Thailand, Laos, Vietnam (Solovyev 2014).

Remarks: Recorded in Bhutan by Dudgeon (1900) and later by W. Diehl (1975) as *Parasa bicolor* and D.B. Chhetri (2014) from Phuentsholing. The species is a minor pest on the plants of the family Poaceae and causes major damage on rice crops, sugarcane (defoliator) and bamboos (Solovyev et al. 2009).

**Genus Thespea** Solovyev, 2014


The genus *Thespea* was erected by Solovyev in 2014 based on *Neaea bicolor* Walker. Medium sized with green thorax. Labial palpus with small, rounded terminal segment. Male with antennae broadly bipectinate basally and shortly unpectinate distally; female antennae filiform. Hind tibia with two spurs. Forewing length 11–17.5 mm in males and 14–22 mm in females. Hindwings uniformly yellowish in both male and females (Solovyev 2014). The genus is very common and reported from Indian subregion to Sumatra and Java (Solovyev 2014).

i. *Thespea bicolor bicolor* (Walker, 1855) (Image 2)


Record: Bhutan: Tsirang District, Mendrelgang, 26°57′0.57″N & 90°06′51.78″E, 1,247m, 8.vi.2013, 1 specimen to MV light; Sarpang District, Sarpang Tar, 26°52′0.23″N & 90°16′3.71″E, 345m, 12.vi.2014, 2 specimens to MV light.

Distribution: Bhutan (Mendrelgang, Sarpang Tar, Phuentsholing), northeastern India, Nepal, Myanmar, China, Thailand, Laos, Vietnam (Solovyev 2014).

Remarks: Recorded in Bhutan by Dudgeon (1900) and later by W. Diehl (1975) as *Parasa bicolor* and D.B. Chhetri (2014) from Phuentsholing. The species is a minor pest on the plants of the family Poaceae and causes major damage on rice crops, sugarcane (defoliator) and bamboos (Solovyev et al. 2009).
Genus Melinaria Solovyev, 2014


The genus Melinaria was erected by Solovyev in 2014 based on type series Neaera repanda Walker, 1855. The genus is characterised by male antennae broadly bipectinate basally and unipincticate distally. Thorax green dorsally, with a wide, brown dorsal band; third segment of labial palps short and rounded. Hind tibia bears two spurs. Forewing length 16–21 mm in males and 17–24 mm in females. Forewings green with distal and basal brown areas. Distal area separated from the medial green area by a silver band running almost from wing apex to 1/4 lower margin, nearly parallel to outer and lower wing margins. Basal area dark brown, expanding along costa and not reaching lower margin. Forewing venation with medial stem unbranched; vein R_5 branched from R_3+R_4. Hindwings yellowish-brown. Abdomen yellowish-brown (Solovyev 2014).

i. Melinaria repanda (Walker, 1855) (Image 4)

Neaera repanda Walker, 1855, List Specimens lepid. Insects Colln Br. Mus. 5: 1141. Type locality: "North India".

Record: Bhutan: Tsirang District, Mendrelgang, 26°57.032’N & 90°06’51.78”E, altitude 1,247 m, 21.v.2013, 6 specimens to light; Dagana District, Dagapela, 26°56’29.56”N & 89°55’22.06”E, 1,597 m, 12.vii.2014, 1 specimen to MV light.

Distribution: Bhutan (Mendrelgang, Dagapela), northeastern India (Hampson 1892), Nepal, southern China, Taiwan, Vietnam (Solovyev & Witt 2009).

Remarks: The species is a new record for Bhutan. It is a minor pest on the plants of Fagaceae, Platanaceae and Rutaceae (Solovyev et al. 2009). Pest status in Bhutan is unknown and needs further investigation.

ii. Setora Fletcheri Holloway, 1987 (Image 6)

Setora fletcheri Holloway, 1987, Slug and Nettle Caterpillars: 82, pl. 21, 13. Type locality: "Rangoon".

Record: Bhutan: Tsirang District, Mendrelgang, 26°57’0.57”N & 90°06’51.78”E, 1,247 m, 13.v.2014, 3 specimens to MV light. 02.vi.2015, 1 specimen to MV light.

Distribution: Bhutan (Mendrelgang, Dagapela), Nepal (Yoshimoto 1994), northeastern India, Myanmar (Solovyev 2014).

Remarks: The species is a new record for Bhutan.

Genus Praesetora Hering, 1931


The genus Praesetora was erected by Hering in 1931 based on type series Setora divergens Moore. The genera is characterised by medium sized body with reddish-brown coloration. The forewings having two fine, straight fasciae darker reddish-brown, a sub marginal arising from the tornus that converges with or meets an oblique post medial at the costa. The post-medial arise sub basally on the dorsum. The fore tibia and coxa have an apical white patch (Holloway 1986).

i. Praesetora (cf) divergens (Moore, 1879) (Image 7)


Record: Bhutan: Tsirang District, Mendrelgang, 26°57’0.57”N & 90°06’51.78”E, 1,247 m, 06.v.2013, 2 specimens, 13.v.2014, 2 specimens to light. 10.v.2015, 1 specimen to MV light; Tsirang District, Damphu, 27°01’04.60”N & 90°07’18.18”E, 1,469 m, 05.vi.2015, 2 specimens to MV light; Dagana district, Dagapela, 26°56’29.56”N & 89°55’22.06”E, 1,597 m, 12.vi.2014, 1
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Image 1. Phlossa conjucta (Walker, 1855)

Image 2. Thespea bicolor bicolor (Walker, 1855)

Image 3. Nephelimorpha argentilinea Hampson, 1893

Image 4. Melinaria repanda (Walker, 1855)

Image 5. Setora postornata (Hampson, 1900) (female)


Image 7. Praesetora divergens Moore, 1879

Image 8. Scopelodes vulpina Moore, 1879

Image 9. Scopelodes testacea Butler, 1886

Image 10. Squamosa ocellata (Moore, 1879)

Image 11. Chalcoscelides castaneipars (Moore, 1865)

Image 12. Altha nivea Walker, 1862
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Wu & Fang 2009b; Solovyev & Witt 2009.

Distribution: Bhutan (Mendrelgang, Damphu, Dagapela), Nepal (Yoshimoto 1994), northeastern India (Hampson 1892), northern Thailand (Nakao 2014), central Vietnam (Solovyev & Witt 2009), Hong Kong (Kendrick 2002).

Remarks: The species was recorded earlier from Bhutan by Dudgen (1900). Species identification is to be confirmed through genitalia study in order to separate the species reliably from Setora species.

Genus Scopelodes Westwood, 1841

Scopelodes Westwood, 1841, in Jardine, Naturalist’s Libr. (Ed. 1) 33: 222. Type species: Scopelodes unicolor Westwood, 1841.


The genus Scopelodes was erected by Westwood in 1841 based on the type species Scopelodes unicolor Westwood. The genera is characterised by medium to large sized moths. Antennae of the male bipectinate in basal half. Externally, they are distinguished from other genera by long second and third segment of labial palps with tufts of scales at the end. Wingspan about 40–78 mm length in males and 30–34 mm in females. The forewing is unicoloured with longitudinal or transverse shadows; the abdomen usually is yellow with transverse brown or black stripes. Strong sexual dimorphism in size, pattern and coloration is typical for most species.

Distribution: Bhutan, India, Nepal, Sri Lanka, China (Wu & Fang 2009c). Remarks: Recorded in Bhutan by Dudgeon (1900), but misidentified, and confused with forms Ursina Butler, 1866 and testacea Butler, 1866. The species was not recorded during our study.

iv. Scopelodes contracta Walker, 1855

Record: Bhutan: Tsirang District, Mendrelgang, 26°57'0.57"N & 90°06'51.78"E, 1,247m, 05.vi.2013, 1 specimen, 09.vi.2013, 2 specimens, 15.vi.2013, 1 specimen to light, 23.vii.2013, 2 specimens to light, 02.vi.2015, 2 specimens to MV Light; Dagana District, Dagapela, 26°56’29.56"N & 89°55’22.06"E, 1,597m, 12.vii.2014, 2 specimens to MV Light.

Distribution: Bhutan (Mendrelgang), Nepal (Yoshimoto 1994), India, China, northern Thailand, Cambodia, central and southern Vietnam (Solovyev & Witt 2009).

Remarks: The species is a new record for Bhutan. It is a minor pest on the plants of family: Anacardiaceae, Ebenaceae, Lythraceae, Musaceae and Sapindaceae (Solovyev et al. 2009).

v. Scopelodes unicolor Westwood, 1841
Scopelodes unicolor Westwood, 1841, in Jardine, Nat. Lib. 31: 222, Pl. 28, fig. 2.Type locality: “Java”.

SpecimensLepid.Insects Colln Br. Mus. 5: 1, 105.

Record: Bhutan: Tsirang District, Mendrelgang, 26°57’0.57"N & 90°06’51.78"E, 1,247m, 05.vi.2013, 1 specimen, 09.vi.2013, 2 specimens, 15.vi.2013, 1 specimen to light, 23.vii.2013, 2 specimens to light, 02.vi.2015, 2 specimens to MV Light; Dagana District, Dagapela, 26°56’29.56"N & 89°55’22.06"E, 1,597m, 12.vii.2014, 1 specimen at MV light.

Distribution: Bhutan (Mendrelgang), Dagana (Yoshimoto 1994), northeastern India, northern Thailand, northern Vietnam (Solovyev & Witt 2009).

Remarks: Recorded in Bhutan by Dudgen (1900), but misidentified. The species is a minor pest on the plants of family: Anacardiaceae, Ebenaceae, Lythraceae, Musaceae and Sapindaceae (Solovyev et al. 2009).

Dalcera palpiger Walker, 1865, List Specimens.lepid.Insects Colln Br. Mus. 5: 1, 105.Type locality: “Java”.

Record: Bhutan: Tsirang District, Mendrelgang, 26°57’0.57"N & 90°06’51.78"E, 1,247m, 05.vi.2013, 1 specimen, 09.vi.2013, 2 specimens, 15.vi.2013, 1 specimen to light, 23.vii.2013, 2 specimens to light, 02.vi.2015, 2 specimens to MV Light; Dagana District, Dagapela, 26°56’29.56"N & 89°55’22.06"E, 1,597m, 12.vii.2014, 2 specimens to MV Light.

Distribution: Bhutan (Mendrelgang, Damphu, Dagapela), Nepal (Yoshimoto 1994), India, China, northern Thailand, Cambodia, central and southern Vietnam (Solovyev & Witt 2009).

Remarks: The species was recorded earlier from Bhutan by Dudgen (1900). The species identification is to be confirmed through genitalia study in order to separate the species reliably from Setora species.

Scopelodes unicolor Westwood, 1841, in Jardine, Naturalist’s Libr. (Ed. 1) 33: 222. Type locality: “Java”.

Type species: Scopelodes unicolor Westwood, 1841.


The genus Scopelodes was erected by Westwood in 1841 based on the type species Scopelodes unicolor Westwood. The genera is characterised by medium to large sized moths. Antennae of the male bipectinate in basal half. Externally, they are distinguished from other genera by long second and third segment of labial palps with tufts of scales at the end. Wingspan about 40–78 mm length in males and 30–34 mm in females. The forewing is unicoloured with longitudinal or transverse shadows; the abdomen usually is yellow with transverse brown or black stripes. Strong sexual dimorphism in size, pattern and coloration is typical for most species.

Distribution: Bhutan, India, Nepal, Sri Lanka, China (Wu & Fang 2009c). Remarks: Recorded in Bhutan by Dudgeon (1900), but misidentified, and confused with forms ursina Butler, 1866 and testacea Butler, 1866. The species was not recorded during our study.

iv. Scopelodes contracta Walker, 1855

Record: None.

Distribution: Bhutan, India, Nepal, Sri Lanka, China (Wu & Fang 2009c).

Remarks: Recorded in Bhutan by Dudgen (1900), but misidentified. The species was not recorded during our study.

v. Scopelodes unicolor Westwood, 1841
Scopelodes unicolor Westwood, 1841, in Jardine, Nat. Lib. 31: 222, Pl. 28, fig. 2.Type locality: “Java”.

Scopelodes palpalis Walker, 1855, List Specimens.Lepid.Insects Colln Br. Mus. 5: 1, 105. Type locality: “Java”.

Dalcera palpiger Walker, 1865, List Specimens.lepid.Insects Colln Br. Mus. 5: 1, 105. Type locality: “Java”.

Nyssia micacea Walker, 1865, List Specimens.lepid.Insects Colln Br. Mus. 32: 481. Type locality: “Java”.

Scopelodes lutea Hering, 1931, in Seitz, Gross-Schmett. Erde 10: 690. Type locality: “Java”.

Distribution: Bhutan (Mendrelgang, Damphu, Dagapela), Nepal (Yoshimoto 1994), northeastern India, northern Thailand, northern Vietnam (Solovyev & Witt 2009).

Remarks: Recorded in Bhutan by Dudgen (1900), but misidentified. The species was also recorded by D.B. Chettri (2014) from Donchu-la, Thimphu and Wangduephodrang.

ii. Scopelodes testacea Butler, 1886 (Image 9)

Record: Bhutan: Tsirang District, Mendrelgang, 26°57’0.57"N & 90°06’51.78"E, 1,247m, 05.vi.2013, 1 specimen, 09.vi.2013, 2 specimens, 15.vi.2013, 1 specimen to light, 23.vii.2013, 2 specimens to light, 02.vi.2015, 2 specimens to MV Light; Dagana District, Dagapela, 26°56’29.56"N & 89°55’22.06"E, 1,597m, 12.vii.2014, 2 specimens to MV Light.

Distribution: Bhutan (Mendrelgang), Dagana (Yoshimoto 1994), northeastern India, northern Thailand, northern Vietnam (Solovyev & Witt 2009).

Remarks: Recorded in Bhutan by Dudgen (1900), but misidentified. The species was also recorded by D.B. Chettri (2014) from Donchu-la, Thimphu and Wangduephodrang.
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Genus Squamosa Bethune-Baker, 1908


The genus Squamosa was erected by Bethune-Baker in 1904 based on the type species Squamosa ferruginea Bethune-Baker. The genera is characterised by medium to large size of adults with yellow ground colour. Male antennae bipectinate to middle and then serrate. Wingspan 31–42 mm length in males but female are 20–32 mm length; in male, the antennae are strongly bipectinate in basal third (Solovyev & Witt 2009). The male antennae are bipectinate to the apex, the palps upcurved. The forewing faces over the distal half with a fine dark brown line; the veins also grade dark brown towards the margin and the hindwing is similar. The genus is characterized in facies by the rectangular dark brown zone, set obliquely in the wing, the basal corner of which is pale purple (Holloway, 1986). The genus is known from northeastern India to Sundaland (Solovyev & Witt, 2009).

i. Squamosa ocellata (Moore, 1879) (Image 10)

Monema ocellata Moore, 1879, Lep. Atkins.: 74. Type locality: “Darjiling”.

Record: Bhutan: Tsirang District, Mendrelgang, 26°57′0.57″N & 90°06′51.78″E, 1,247m, 31.v.2014, 1 specimen to MV light; Tsirang District, Damphu, 27°01′04.60″N & 90°07′18.18″E, 1,469m, 05.vi.2015, 2 specimens to MV light; Dagana District, Dagapela, 26°56′29.56″N & 89°55′22.06″E, 1,597m, 05.vi.2015, 4 specimens to MV light.

Distribution: Bhutan (Mendrelgang, Damphu, Dagapela, Chukha, Phuentsholing, Wangdraphorang), Nepal (Yoshimoto 1994), northeastern India, Myanmar (Hampson 1892).

Remarks: Recorded in Bhutan by Dudgeon (1900). The larva of the species feed on Citrus sp. (Rutaceae), Cinnamomum sp. (Lauraceae), Cassia sp. (Fabaceae), Spondias sp. (Anacardiaceae), Theobroma sp. (Sterculiaceae), Trevesia sp. (Araliaceae) (Holloway 1986).

Genus Altha Walker, 1862


The genus Altha was erected by Walker in 1862 based on type species Altha nivea Walker 1862. The genus is characterized by small sized moth with wingspan 20–32 mm length; in male, the antennae are strongly bipectinate in basal third (Solovyev & Witt 2009). The moths have a white ground colour, shaded with orange or brown on the forewing. There are prominent dark dots at one third from the apex on the margin of both wings (Holloway 1986).

i. Altha (Altha) nivea Walker, 1862 (Image 12)

Altha nivea Walker, 1862, J. Proc. Linn. Soc. 6: 173. Type locality: [Sarawak].

Record: Bhutan: Tsirang District, Mendrelgang, 26°57′0.57″N & 90°06′51.78″E, 1,247m, 26.vii.2013, 1 specimen to MV light; Sarpang District, Sarpang,
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26°52′0.23″N & 90°16′3.71″E, 345m, 27.iv.2015, 2 specimens to MV light.

Distribution: Bhutan (Mendrelgang, Sar pang), India to Sundaland and Palawan, southern China, Taiwan (Solovyev & Witt 2009).

Remarks: Recorded in Bhutan by Dudgeon (1900). The species is a minor pest on the plants of family: Theaceae, Bombaceae, Lauraceae, Rutaceae, Annonaceae, Euphorbiaceae, Dipterocarpaceae, Combretaceae and Menispermaceae (Solovyev et al. 2009). Their pest status in Bhutan needs further investigation.

Genus *Thosea* Walker, 1855


The genus was erected by Walker in 1855 based on the type species *Thosea unifascia* Walker, 1855. The genus is characterized by mid-sized moths, male about 34mm wingspan length and female 20–41 mm length. Males usually have bipectinate antennae. Usually having grey forewings with a black discal spot with an oblique, dark, straight post medial distal to which the ground colour is darker (Holloway 1986; Solovyev & Witt 2009).

i. *Thosea magna* Hering, 1931 (Image 13)

*Thosea magna* Hering, 1931, in Seitz, Gross-Schmett. Erde 10: 711. Type locality: “Khasis” [India].

Record: Bhutan: Tsirang District, Mendrelgang, 26°57′0.57″N & 90°06′51.78″E, 1,247m, 13.v.2014, 1 specimen to light; 20.v.2015 1 specimen to MV light, 02.vi.2015 1 specimen to MV light; Tsirang District, Damphu, 27°01′04.60″N & 90°07′18.18″E, 1,469m, 05.vi.2015, 5 specimens to MV light; Dagana district, Dagapela, 26°56′29.56″N & 89°55′22.06″E, 1,597m, 05.vi.2015, 4 specimens to MV light. Distribution: Bhutan (Mendrelgang, Damphu, Dagapela), Nepal (Yoshimoto 1994), India, China (Wei & Wu 2008).

Remarks: The species is a new record for Bhutan.

ii. *Thosea sinensis* (Walker, 1855)

*Anzabe sinensis* Walker, 1855, List. Specimens lepid. Insects Colln Br. Mus. 5: 1093. Type locality: “Hong Kong”.

*Susica taiwana* Shiraki, 1913, Spec. Rep. Formosa Agric. Sta. 8: 401. Type locality: “Formosa (Taihoku)”.

Record: None.

Distribution: Bhutan (Samtse), China, Taiwan, Korea, northern Thailand, Cambodia, northern and central Vietnam (Holloway et al. 1987; Solovyev & Witt 2009), Hong Kong (Kendrew 2002).

Remarks: Recorded in Bhutan from Samchi (Samtse) at 300m by W. Dierl (1975). Not recorded during the present study.

Genus *Hindothosea* Holloway, 1987


The genus was erected by Holloway in 1987 based on the type species *Thosea cervina* Moore, 1877. The moth of the genus resembles *Thosea* in facies but has the post-medial less oblique, edged paler on the exterior rather than on the interior. In the male genitalia the valve is simple, lacking even the vestige of a furca, and the uncus apex has a ventral spur. The female genitalia are of the crescent-signum type but the eighth segment is weak, not expanded as in *Thosea* (Holloway et al. 1987).

i. *Hindothosea cervina* (Moore, 1877)


*Thosea duplexa* Moore, 1883, Lepidoptera of Ceylon 2: 130. Type locality: “Ceylon”.

Record: None.

Distribution: Bhutan, India, Bangladesh, Sri Lanka, Myanmar (Holloway et al. 1987)

Remarks: Recorded for the first time in Bhutan by Dudgeon (1900). The species was not recorded during our study. The larva feeds on *Albizia* sp. and tea (Holloway et al. 1987).

Genus *Griseotheosea* Holloway, 1986


Medium-sized moths with greyish-brown ground colour. The forewing patterns are characteristic, with a black discal spot and three darker diffuse fasciae at right angle to dorsum of forewing; the external fascia is entire, zig-zag; usually forewing is darker basally.

i. *Griseotheosea fasciata* (Moore, 1888)


Record: None.
Distribution: Bhutan, India, Nepal, southern and western China, Taiwan, Thailand, northern Vietnam (Solovyev & Witt 2009), Hong Kong (Kendrick 2002).

Remarks: Recorded in Bhutan by Dudgeon (1900). The species was not recorded during our study.

Genus Phocoderma Butler, 1886


The genus Phocoderma was erected by Butler in 1886 based on the type individual Gastropacha velutina Kollar. The genus includes large moths with wingspan of 51–72 mm length; silky-brown ground colour. Antennae bipectinate in males and filiform in females. The forewing fascia is characteristic, with a darker sub marginal curved round parallel to the margin, and the area basal to this divided by an oblique line with an angle sub apically (Solovyev 2008).

i. Phocoderma velutina (Kollar, 1844) (Image 14)

Gastropacha velutina Kollar, 1844, in Hügel, Kaschmir und das Reich der Siek 4 (part 2), Aufzählung und Beschreibung der von Freiherrn Carl v. Hügel auf seiner Reise durch Kaschmir und das Himalayagebirge gesammelten Insecten: 473. Type locality: [north India] “Himal, Massuri”.

Natada rugosa Walker, 1855: 1109. Type locality: “Sinde?”.

Natada velutina Kollar; Hampson 1892: 382; Hering 1933: 343.

Phocoderma velutina Kollar; Butler 1886: 4; Leech 1899: 103; van Eecke 1925: 27; Holloway 1982: 40, pl. 2 fi g. 24; Holloway 1986: 100, pl. 7 fi gs 163, 164, 168; Holloway 1990: 49, pl. 2 fi g. 25; Yoshimoto 1994: 86.

Phocoderma velutinum Kollar; Hering 1931: 720.

Record: Bhutan: Tsirang District, Mendrelgang, 26°57’S 90°06’51.78”E, 1,247m, 26 vi.2013, 1 specimen to light; Sarpang District, Sarpang Tar, 26°52’0.23”N & 90°16’3.71”E, 345m, 12 vi.2014, 2 specimens to MV light.

Distribution: Bhutan (Mendrelgang, Sarpang Tar), Nepal (Yoshimoto 1994), India, Myanmar, Thailand, Malaysia, Borneo, Sumatra (Solovyev 2008).

Remarks: The larvae of this species feed on the plants of Anacardiaceae, Bombacaceae, Combretaceae, Euphorbiaceae, Fabaceae, Sapindaceae and Theaceae but they are not considered as important pest species (Solovyev et al. 2009). The pest status in Bhutan is unknown and needs further investigation.

Genus Miresa Walker, 1855


The genus Miresa was erected by Walker in 1855 based on the type species Nyssia albipuncta Herrich-Schäffer. The moths are medium-sized with yellowish brown and pale ground colour. The forewings with S-shaped post-medial fascia, the medial spot, post-medial and external fasciae are silver coloured (Solovyev & Witt 2009; Solovyev & Wu 2011). The antennae are bipectinate up to basal half and the palps are somewhat curving upward with the third segment inconspicuous. The genus is found from India to Sundaland (Holloway 1986).

i. Miresa bracteata Butler, 1880 (Image 15)


Record: Bhutan: Tsrang District, Mendrelgang, 26°57’S 90°06’51.78”E, 1,247m, 29 vi.2013, 2 specimens, 30 v.2013, 3 specimens to light; Tsrang District, Damphu, 27°01’04.60”N & 90°07’18.18”E, 1,469m, 05.vi.2015, 3 specimens to MV light; Dagana District, Dagapela, 26°56’29.56”N & 89°55’22.06”E, 1,597m, 05.vi.2015, 4 specimens to MV light.

Distribution: Bhutan (Mendrelgang, Damphu, Dagapela, Phuentsholing, Thimphu, Wangduephodrang), India, Nepal, southwestern China, Thailand, Malaysia, Sundaland (Wu & Solovyev 2011).

Remarks: The species was very common in all the study areas. Recorded in Bhutan between Thimphu to Phuentsholing (1,680m) and Wangduephodrang (1,700–2,000 m) by W. Dierl (1975).

ii. Miresa fulgida Wileman, 1910 (Image 16)

Miresa fulgida Wileman, 1910, Entomol. 43: 192. Type locality: “Kanshirei (1000 ft.)” [Taiwan].

Record: Bhutan: Tsrang District, Mendrelgang, 26°57’S 90°06’51.78”E, 1,247m, 03 vi.2013, 3 specimens to light; Tsrang District, Damphu, 27°01’04.60”N & 90°07’18.18”E, 1,469m, 05.vi.2015, 5 specimens to MV light; Dagana District, Dagapela, 26°56’29.56”N & 89°55’22.06”E, 1,597m, 05.vi.2015, 4 specimens to MV light.

Distribution: Bhutan (Mendrelgang, Damphu, Dagapela), China, southern Japan, Vietnam (Wu & Solovyev 2011).

Remarks: The species is a new record for Bhutan.

iii. Miresa decedens Walker, 1855


Record: None.
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Irungbam et al.

Distribution: Bhutan (Dudgeon 1900).
Remarks: Recorded in Bhutan by Dudgeon (1900).
The species was not recorded during our study.

Genus Susica Walker, 1855


The genus Susica was erected by Walker in 1855 based on the type species Susica pallida Walker, 1855. The genus includes medium-sized moths. The ground colour of the wing is greyish-brown. The male antennae are broadly bipectinate and simple in females. The forewings are short, broad and rounded, with dark curved transverse medial fascia and sinusoidal external fascia near apex, usually with sparse dark scales and curved transverse medial fascia and sinusoidal external veins (Solovyev & Witt 2009). The genus is a new record for Bhutan.

i. Susica himalayana (Holloway, 1982) (Image 17)

Susica himalayana Holloway, 1982, in Barlow, Introd. moths SE Asia; 186. Type locality: “Sikkim”.
Record: Bhutan: Tsirang District, Mendrelgang, 26°57’0.57"N & 90°06’51.78"E, 1,247m, 08.v.2013, 1 specimen to light; 26°57’0.57"N & 90°06’51.78"E, 1,247m, 26.viii.2014, 1 specimen to light; 26°57’0.57"N & 90°06’51.78"E, 1,247m, 05.vi.2015, 4 specimens to MV light; Dagana District, Dagapela, 26°56’29.56"N & 89°55’22.06"E, 1,597m, 05.vi.2015, 4 specimens to MV light.
Distribution: Bhutan (Mendrelgang, Damphu, Dagapela), India, Nepal, China, Vietnam (Solovyev & Witt 2009).
Remarks: The species is a new record for Bhutan.

Genus Aphendala Walker, 1865

The genus Aphendala was erected by Walker in 1865, based on the type species Aphendala transversata Walker. At present, the genus contains more than 20 species in the Oriental region (Holloway 1986, 1987; Yoshimoto 1994). The genus can be easily distinguished by male antenna bipectinate and filiform in female. Forewing with R1 separate and R3+5 stalked. Hindwing with M1 and R3 stalked (Solovyev & Witt 2009).

i. Aphendala imitabilis (Hering, 1931) (Image 20)

Thosea imitabilis Hering, 1931, in Seitz, Gross-Schmett. Erde 10: 713. Type-locality: [northern India] “Pedong (Sikkim)”.
Record: Bhutan: Tsirang District, Mendrelgang, 26°57’0.57"N & 90°06’51.78"E, 1,247m, 26.vii.2014, 1 specimen to light; Dagana District, Dagapela, 26°56’29.56"N & 89°55’22.06"E, 1,597m, 2 specimens to MV light.
Distribution: Bhutan (Mendrelgang, Dagapela, Thimphu, Paro), eastern Afghanistan, Pakistan, northern India, Nepal, China, Myanmar, Sri Lanka (Wu & Fang 2008; Solovyev 2010).
Remarks: The species was recorded from Thimphu and Paro (2,300m) by W. Dierl (1975). The specimens were collected in late April, early May, mid June, July,
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Image 13. *Thosea magna* Hering, 1931

Image 14. *Phocoderma velutina* (Kollar, 1844)

Image 15. *Miresa bracteata* Butler, 1880


Image 17. *Susica himalayana* Holloway, 1982

Image 18. *Susica* sp. A

Image 19. *Tennya propolia* (Hampson, 1900)

Image 20. *Aphendala imitabilis* (Hering, 1931)

Image 21. *Iraga rugosa* (Wileman, 1911)

Image 22. *Monema corallina* Dudgeon, 1895

Image 23. *Cheromettia ferruginea* (Moore, 1877)

Image 24. *Cheromettia apicata* (Moore, 1879)
and early November at altitudes of 1,500–2,700 m in all its distribution range (Solovyev & Witt 2009).

ii. **Aphendala cana** (Walker, 1865)


Record: None.

Distribution: Bhutan (Dudgeon 1900), Nepal (Yoshimoto 1994), Sri Lanka (Light 1927), eastern Afghanistan, Pakistan, India (Solovyev 2010), Taiwan (Inoue 1992).

Remarks: Recorded in Bhutan by Dudgeon (1900). The species was not recorded during our study. A pest on tea plants (Solovyev 2010).

iii. **Aphendala unicolor** (Moore, 1859)


Record: None.

Distribution: Bhutan (Dudgeon 1900), Nepal (Yoshimoto 1994), India (Solovyev 2010).

Remarks: Recorded in Bhutan by Dudgeon (1900).

The species was not recorded during our study.

**Genus Iraga Matsumura, 1927**


The genus *Iraga* was erected by Matsumura in 1927 based on type species *Tetraphleps (?) rugosa* Wileman. The genus is represented by only one species. The moths are brown; broad, smooth yellowish dorsal band at head, thorax and abdomen; antennae filiform in males (Solovyev & Witt 2009).

i. **Iraga rugosa** (Wileman, 1911) (Image 21)

*Tetraphleps (?) rugosa* Wileman, 1911, *Entomol. 44*: 205. Type-locality: “Kanshirei (1000 ft.)” [Taiwan].

Record: Bhutan: Tsirang District, Mendrelgang, 26°57’0.57"N & 90°06’51.78"E, 1,247m, 13.vi.2013, 1 specimens to light, 23.vi.2015, 2 specimens to light; Dagana District, Dagapela, 26°56’29.56"N & 89°55’22.06"E, 1,597m, 12.vii.2014, 2 specimens to MV light.

Distribution: Bhutan (Mendrelgang, Dagapela), Southern China, Taiwan, Cambodia, northern Laos, northern Vietnam (Solovyev & Witt 2009).

Remarks: The species is a new record for Bhutan.

**Genus Monema Walker, 1855**


The genus *Monema* was erected by Walker in 1855, based on the type species, *Monema flavescens* Walker. The moths have a yellowish body and are medium-sized. Male have filiform antennae and thicker than in female. Labial palpi extremely long. Forewings with R3 + R stalked; R3 stalked from R1 and R2 stalked with their stem. Hindwings with M4 + Rs stalked. Forewings with two narrow brown fasciae running from apex to 3/4 and 1/3 of inner margin respectively; basal part of forewing bordered by proximal fascia yellow, rest brown. Hind tibiae with two pairs of spurs (Pan et al.2013).

i. **Monema coralinia** Dudgeon, 1895 (Image 22)


Record: Bhutan: Tsirang District, Mendrelgang, 26°57’0.57"N & 90°06’51.78"E, 1,247m, 22.viii.2013, 1 specimen to light; Sarpang District, Sarpang Tar, 26°52’0.23"N & 90°16’3.71"E, 345m, 12.vii.2014, 2 specimens to MV light.

Distribution: Bhutan (Mendrelgang, Sarpang Tar), Nepal (Inoue 1970), China (Pan et al. 2013).

Remarks: Recorded in Bhutan by Dudgeon (1900).

**Genus Cherometttia Moore, 1883**


The genus *Cherometttia* was erected by Moore in 1883, based on the type species *Belippa ferruginea* Moore. The species of genus are sexually dimorphic in forewing pattern and coloration. The males are rufous brown or blackish with broadly bipectinate antennae.
only in the basal quarter. The male forewings are narrow, elongate, with black apex; the hind wings are medially transparent in some taxa. The females are paler, rufous yellow; the forewings are broader than in males, also with black apex (Solovyev & Witt 2009). Moreover, there are no strong characters to separate the species using females. Thus, the identification of *Cheromettia* sp. is very difficult without genitalia dissection of voucher specimens. The genus is known from India subregion (Holloway 1986), southern China, Vietnam, northern Thailand, peninsular Malaysia and Sundaland (Solovyev & Witt 2009).

i. *Cheromettia ferruginea* (Moore, 1877) (Image 23)
Record: Bhutan: Tsirang District, Damphu, 27°14.56’N & 90°718.18’E, 1,469m, 30.v.2014, 2 specimens to light.
Distribution: Bhutan (Damphu), India, Myanmar and Sri Lanka (Hampson 1892; Holloway 1986).
Remarks: The species is a new record for Bhutan.

ii. *Cheromettia apicata* (Moore, 1879) (Image 24)
*Belippa apicata* Moore, 1879, Lep. Atkins.: 75. Type locality: “Darjeeling”.

Record: Bhutan: Tsirang District, Mendrelgang, 26°57’0.57”N & 90°06’51.78”E, 1,247m, 20.v.2013, 1 specimen to MV light; Tsirang District, Damphu, 27°01’04.60”N & 90°07’18.18”E, 1,469m, 05.vi.2015, 5 specimens to MV light; Dagana District, Dagapela, 26°56’29.56”N & 89°55’22.06”E, 1,597m, 05.vi.2015, 4 specimens to MV light.

Distribution: Bhutan (Mendrelgang, Damphu, Dagapela), China, northern Vietnam (Solovyev & Witt 2009).
Remarks: The species is a new record for Bhutan. The recorded individual is near to *V. uniformis* but we could not confirm the species identity based on photographs alone. Voucher specimen for genitalia dissection is not available.

Genus *Sansarea* Solovyev & Witt, 2009


The genus *Sansarea* was erected by Solovyev & Witt in 2009 based on the type species *Trichogyia circulifera* Hering. The genus is characterised by middle-sized moths with forewing 22–28 mm length wingspan in males, 14–30 mm in females. The ground colour is brownish-ochre. The male antennae are filiform. The forewing with large post medial dark brown rounded spot with post medial, ante medial and not well-defined external zigzag fasciae. The outer marginal area of forewing bears small dark spots on the veins. The hindwing is dark with bright fringe and dorsal margin (Solovyev & Witt 2009). The genus is a new record for Bhutan.

i. *Sansarea cf. circulifera* (Hering, 1933) (Image 26)
*Trichogyia circulifera* Hering, 1933, in Seitz, Gross-Schmett. Erde, Suppl. 2: 207. Type locality: “Kwanshien, China”.
Record: Bhutan: Tsirang District, Damphu, 27°14.56’N & 90°718.18’E, altitude 1,469m, 30.v.2014, 2 specimens to light.
Distribution: Bhutan (Damphu), Nepal, Taiwan, Japan (Yoshimoto 1993).
Remarks: The species is a new record for Bhutan. The recorded individual is near to *S. circulifera* but we could not confirm the species identity from the photograph alone. Voucher specimen for genitalia dissection is not available.
available.

**Genus Belippa Walker 1865**


The genus *Belippa* was erected by Walker based on the type species *Belippa horrida* Walker. The moths of the genus are characterised by medium-sized moths with wingspan 28–35 mm. The congeners differ from each other externally, but are associated together by the similar male genitalia in which the juxta is divided in two flattened lateral parts with dorsal row of large spurs and cranial finger-shaped process (Solovyev & Witt 2009).

1. *Belippa horrida* Walker, 1865 (Image 27)


Record: Bhutan: Tsirang District, Mendrelgang, 26°57'0.57"N & 90°06'51.78"E, 1,247m, 10.v.2015, 3 specimens to MV light; Damphu, 27°01'04.60"N & 90°07'18.18"E, 1,469m, 14.v.2015, 1 specimen to light.

Distribution: Bhutan (Mendrelgang, Damphu), India, Japan, China, Taiwan, Thailand, Laos, northern Vietnam (Solovyev & Witt 2009).

Remarks: The species is a new record for Bhutan.

**Genus Caissa Hering, 1931**


The genus *Caissa* was erected by Hering based on the type species *Caissa caissa* Hering. The moths of the genus are characterised by medium-sized moths with forewing length of 10–15 mm in males and 13–15
mm in females. Male antennae filiform, dark discal spot in forewing and dark tornal spot in hindwing. The hindwings always have a dark brown, slightly fuzzy, spot near the tornus (Solovyev & Saldaïtis 2013). The genus ranges across Southeast Asia, India, Nepal, Myanmar, China, Thailand and Vietnam (Solovyev & Witt 2009; Solovyev & Saldaïtis 2013).

i. *Caissa fasciata* (Hampson, 1893) (Image 28)
* Ceratomena fasciata* Hampson, 1893, Fauna Br. India (Moths) 1: 394. Type locality: “Nágas, 6000 feet” [India].

Record: Bhutan: Tsirang District, Mendrelgang, 26°57.032′N & 90° 06.874′E, 1,247m, 02.vi.2015, 1 specimen to MV light.

Distribution: Bhutan (Dudgeon 1900), Pakistan, India, Myanmar, southern China, Taiwan, Thailand, Vietnam, Borneo, Sumatra, Java, Bali (Solovyev & Witt 2009), Hong Kong (Kendrick 2002).

Remarks: Recorded in Bhutan by Dudgeon (1900). The species was not recorded during our study.

ii. *Parasa pastoralis* Butler, 1885
* Parasa pastoralis* Butler, 1885, Ann.Mag.nat.Hist. 6(5): 63. Type locality: [Bhutan].


Record: None.

Distribution: Bhutan (Dudgeon 1900), Nepal (Inoue 1970), Pakistan, India, Myanmar, southern China, Taiwan, Thailand, Vietnam, Borneo, Sumatra, Java, Bali (Solovyev & Witt 2009), Hong Kong (Kendrick 2002).

Remarks: Recorded in Bhutan by Dudgeon (1900). The species was not recorded during our study.

**Genus Aergina Solovyev, 2014**

The genus includes medium-sized moths. Before 2014 the members of the genus were placed in *Parasa* Moore, 1859. The head, thorax and forewings are green (however, the green pattern on the forewing can be lost in some species); the moths have highly diagnostic basal pentagon-shaped brown spot on the forewings.

i. *Aergina hilaris* (Westwood, 1848)
* Limacodes hilaris* Westwood, 1848, Cab. Orient. Ent. 50, t. 24: fig. 3. Type locality: “central India”.


Record: None.

Distribution: Bhutan (Dudgeon 1900), Pakistan, India, Nepal.

Remarks: Recorded in Bhutan by Dudgeon (1900). The species was not recorded during our study.

**Genus Birthamiodes Hering, 1931**

The genus was erected by Hering based on the type species *Hyblaea junctura* Walker. The genus is externally characterized by medium sized, reddish-brown moths. The forewing pattern is characteristic, includes transverse ante-medial fascia from 1/2 costa to 1/3 dorsum; the basal area bordered by this fascia is darker than the rest of the forewing; the external fascia is shaded, and borders the lighter apical part of the forewing; the medial fascia is shaded, perpendicular to dorsum (Solovyev & Witt 2009). The genitalia have an asymmetrically armed juxta or furca (Holloway et al. 1987).
i. *Birthamiodes junctura* (Walker, 1865)


Record: None.

Distribution: Bhutan (Wangduephodrang), India, Andaman Islands, Myanmar, Cambodia, Thailand, central and southern Vietnam, Bali, Borneo, Sumatra, Java (Dierl 1975; Solovyev & Witt 2009).

Remarks: Recorded in Bhutan from Wangduephodrang (1,300m) by Dierl (1975). The species was not recorded during our study.

Genus *Prapata* Holloway, 1990


The genus is well defined externally by obscure blackish-brown coloration; the hindwings are pale, grayish-brown. The forewings with characteristic black discal streak. The male antennae are broadly bipectinate over the basal third. All species extremely similar to each other in appearance, therefore the morphology of male genitalia are diagnostic (Solovyev & Witt 2009).

i. *Prapata scotopepla* (Hampson, 1900)

*Miresa scotopepla* Hampson, 1900, Journ. Bom. Soc. 13: 231. Type locality: “Sikhim, 5,000’”.

Record: None.

Distribution: Bhutan (Thimphu), Nepal (Yoshimoto 1994).

Remarks: Recorded in Bhutan from Thimphu as *Miresa scotopepla* by Dierl (1975). The species was not recorded during our study.

Genus *Cania* Walker, 1855


The genus includes medium-sized moths with yellowish ground colour. Usually, the species of the genus are characterized by slightly curved, shaded darkish post-medial and medial fasciae of the forewings. The antennae are bipectinate in males. The larvae are of the nettle-type, semiovoid with long lateral and short subdorsal scoli. The genus is similar to *Rhamnosa* Fixsen, 1887 but differs by the absence of the tornal incision of the forewings (Solovyev & Witt 2009).

i. *Cania bilinea* (Walker, 1855)

*Nearea bilineata* Walker, 1855, List Specimens lepid. Insects Colln Br. Mus. 5: 1142. Type locality: “China”.


Record: None.

Distribution: Bhutan (Dudgeon 1900), India, Malacca, Sumatra Java, Formosa (Inoue 1970), southern China, northern and central Vietnam (Solovyev & Witt 2009).

Remarks: Recorded in Bhutan by Dudgeon (1900) and could be misidentified as *Cania himalayana* Holloway, 1987. The species was not recorded during our study.

Genus *Ceratonema* Hampson, 1893

*Ceratonema* Hampson, 1893, Fauna Br. India Moths 1: 373 (key), 393.

Type species: *Limacodes retractata* Walker, 1865.

The genus includes medium-sized yellow moths. The forewings have 3 characteristic dark fasciae: 1 - from 1/3 dorsum to 1/2 costa, the second from tornus to 3/4 costa, and the third short, from 3/4 dorsum to centre of wing, parallel to outer margin. The male genitalia are slightly modified, with well-developed uncus and gnathos, valvae without saccular processes, but the aedeagus is tube-shaped, curved with characteristic apical zone of small denticles (Solovyev & Witt 2009).

i. *Ceratonema retractata* (Walker, 1865)


Record: None.

Distribution: Bhutan (Dudgeon 1900), northeastern India (Sikkim, Darjeeling) (Hampson 1892).

Remarks: Recorded for the first time for Bhutan by Dudgeon (1900). The species was not recorded during our study.

Genus *Euphlyctinides* Hering, 1931


The male antennae is filiform. The ground colour is yellowish-brown. The forewings are elongate, covered with sparse dark scales, with two dark smooth fasciae. The genus is known from India, northern and western Thailand and northern Vietnam (Solovyev & Witt 2009).

i. *Euphlyctinides albifusum* (Hampson, 1892)

*Ceratonema albifusum* Hampson, 1892, Faun. Brit. Ind. Moths 1: 394. Type locality: “Nágas, 6000 feet”.

Record: None.

Distribution: Bhutan (Dudgeon 1900), India, Nepal (Yoshimoto 1993; Solovyev 2009a).

Remarks: Recorded for the first time for Bhutan by Dudgeon (1900). The species was not recorded during our study.
Genus *Tetraphleba* Strand, 1920


= *Tetraphlebs* Strand, 1920, *Int. ent. Z.* **14**: 174 [incorrect subsequent spelling of *Tetraphleba*].

The genus is monotypical, known from the Indian region. The moths are medium-sized, with forewing length about 12 mm. The male antennae are broadly bipectinate, with very long rami. The head, thorax and forewings are uniform brown; the hindwings and the abdomen are ochre.

i. *Tetraphleba brevilinea* (Walker, 1865)


Record: None.

Distribution: Bhutan (Dudgeon 1900), Nepal (Inoue 1970).

Remarks: Recorded for the first time for Bhutan by Dudgeon (1900). The species was not recorded during our study.

Genus *Trichogyia* Hampson, 1894


The genus was erected by Hampson in 1894 based on the type species *Trichogyia semifascia* Hampson. The male of the genus has palpi upturned, the second joint reaching above vertex of head, and third short. The antennae are minutely ciliated and tibia hairy. Forewing short and broad and the apex nearly rectangular, inner margin much arched. Veins 2 and 3 from near angle of cell and much bent at base; 4 and 5 from the angle; 6 and 7 from close to upper angle; 8, 9, 10 stalked from the before the angle. Hindwing ample; veins 3 and 4 stalked; 5 from above angle of cell; 6 and 7 from cell (Hampson 1894).

i. *Trichogyia semifascia* Hampson, 1894

*Trichogyia semifascia* Hampson, 1894, *Cat. Lep.Mus. E.I.C.* **2**: 416, t.11a, fig. 10. Type locality: “Java”.

Record: None.

Distribution: Bhutan (Dudgeon 1900), Nepal (Inoue 1970).

Remarks: Recorded in Bhutan by Dudgeon (1900). The species was not recorded during our study.

Genus *Atosia* Snellen, 1900


The genus is well distinguished externally by the hook-like pattern in forewing; its curvation contains a white mark. The apex of forewing is dark brown. The male genitalia are simple; the aedeagus with a terminal spine or a scobinate lobe. The larvae are of the smooth-type. The cocoon is spherical, dark brown (Holloway 1986). It ranges from India to Sundaland (Solovyev & Witt 2009).

i. *Atosia doenia* (Moore, 1859)


Record: None.

Distribution: Bhutan (Dudgeon 1900), southern Myanmar, Java, Sumatra, Borneo.

Remarks: Recorded in Bhutan by Dudgeon (1900) and probably misidentified (probable correct name is *Atosia himalayana* Holloway, 1986). The species was not recorded during our study.

Genus *Narosa* Walker, 1855


The genus *Narosa* was erected by Walker based on type species *Narosa conspersa* Walker. It includes small-sized moths with forewing length 8–9 mm and wingspan 14–18 mm in male. The species are without strong sexual dimorphism; the females are just slightly larger than males (forewing length 9–10 mm and wingspan 19–20 mm). The forewings are yellowish with dark spots and fasciae. The presence of apical small streaks and narrow post-medial transverse fasciae is diagnostic. The outer margin of forewing bears dark spots ornamented by white colour between veins (Solovyev & Witt 2009).

i. *Narosa conspersa* Walker, 1855

*Narosa conspersa* Walker, 1855 *List Specimens lepid. Insects Colln Br. Mus.* **5**: 1151, Type locality: “Ceylon”.

Record: None.

Distribution: Bhutan (Dudgeon 1900), Sri Lanka (Walker 1855).

Remarks: Recorded in Bhutan by Dudgeon (1900). The species was not recorded during our study and probably mistakenly identified by Dudgeon (1900).
Genus **Ploneta** Snellen, 1900

*Ploneta* Snellen, 1900, Tijdschr. Ent. 43: 52 (key), 105. Type species: **Ploneta diducta** Snellen, 1900.

The genus contains medium-sized limacodid moths. The male antennae are broadly bipectinate up to the apex. The ground colour is brown, and the moths are almost uniformly coloured; the males are usually paler than the females, with well-developed submarginal fascia. The male genitalia are mostly diagnostic (Holloway 1986). The genus is sometimes considered as a subgenus within *Darra* Walker, 1862 sensu lato (Holloway 1986).

i. **Ploneta cotesi** (Swinhoe, 1893)


Record: None.

Distribution: Bhutan (Dudgeon 1900), northeastern India.

Remarks: Recorded in Bhutan by Dudgeon (1900). Not recorded during the present study.

**CONCLUSION**

The studies on Lepidoptera fauna in Bhutan are in the initial stages, thus data deficient. The present study provides a preliminary checklist on the family Limacodidae of Bhutan, which reports the presence of six genera and twelve species as new records for Bhutan. This family is also a very important pest and defoliators of many plant species. As an agricultural based country, it becomes a necessity to understand the ecology and pest status of this family of moths in Bhutan. The lack of available literature on Lepidoptera fauna particularly of Bhutan creates a gap in understanding the diversity, ecology and their importance in Bhutan. Research initiatives and funding from public and private initiatives on Lepidoptera studies is advisable to encourage the study on this magnificent group of insects.

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