

OWLET MOTHS (LEPIDOPTERA : NOCTUIDAE) FROM VEERANGANA DURGAVATI WILDLIFE SANCTUARY, MADHYA PRADESH, INDIA

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ABSTRACT : The paper deals with an account of owlet moths (Lepidoptera : Noctuidae) collected from Veerangana Durgavati Wildlife Sanctuary, Madhya Pradesh during 2009-2012, which yielded the identification of 31 species of owlet moths belonging to 27 genera and 8 subfamilies. Of these, 10 species namely *Asota ficus* (Fabricius), *Aegocera bimaculata* Walker, *Sarbanissa transiens* Walker, *Attatha regalis* (Moore), *Grammodes stolidata* (Fabricius), *Remigia frugalis* (Fabricius), *Remigia undata* (Fabricius), *Trigonodes hyppasia* (Cramer), *Episparis variabilis* (Walker), *Callyna costiplaga* Moore, were recorded for the first time from the sanctuary. All the identified specimens are deposited in National Zoological Collection of Zoological Survey of India, Jabalpur.

Key words : Moths, Noctuidae, Lepidoptera, Veerangana Durgavati Wildlife Sanctuary.

INTRODUCTION

The order Lepidoptera comprising moths and butterflies is the second largest order in the class Insecta of the phylum Arthropoda. The family Noctuidae is the most diverse group among the order Lepidoptera, mostly nocturnal in habit are strongly attracted towards the light. Noctua in Latin means "owl" thus the common name of the family is "Owlet moths". Strong proboscis of moths enables them to feed extensively on plant nectar, sap and fermenting fruits. This is the largest macro-lepidopteran family with well over 42,000 described species (Pogue, 2009) globally. Most are heavy bodied moths, wingspans ranging from 20 to 80 mm. Forewings are usually finely mottled in browns and greys and the hind wings are light and more unicolours. Ocelli are present and the antennae thread like, some times saw-toothed or comb like. The proboscis is well developed. Epiphysis also present. Formula of tibial spur is 0-2-4 and some times spines also present in tibiae and tarsi. These moths are with wide geographic distribution. Most of them are of great economic importance as agricultural and forest pest. They damage leaves, stems, flowers and fruits.

The studies on the moth fauna of India is carried out by Hampson (1892, 1894, 1895) and Srivastava (2002), where in the various species of moths were reported from Central India. The checklist of moths from Madhya Pradesh and Chhattisgarh was published by Chandra and Nema (2007) and 313 species were reported, however no species was reported from the VDWS. Recently while working on the collection of moths from the sanctuary, 21 species belonging to 19 genera and 7 subfamilies were listed (Sambath and Chandra, 2012).

The present study deals with the detail account on the 31 species of noctuid moths of the sanctuary, which includes material examined, diagnostic characters and distribution of each species.

MATERIAL AND METHODS

Veerangana Durgavati Wildlife Sanctuary (VDWS) is situated in Damoh district, Madhya Pradesh. The sanctuary was created in the year 1996 vide notification of Government of Madhya Pradesh (Tiwari, 2003). The sanctuary is spread over in 24 sq. kms and lies between 23°30'9" and 24°35'N latitudes and 79°51'0" and 79°51'13"E longitudes. The sanctuary is located in the western part of Vindhya locally known as Kaimur hills. In fact, these hills are like a great wall between 79°45' to 80°00' longitudes. According to Ovary's classification, this sanctuary belongs to Indo Malayan realm. The biotic province is *Deccan peninsula*. It represents mixed dry deciduous forest Biome.

Collection and preservation methods : Generally the moths are nocturnal in habit. To know the host plant relationship, the various stages of moth's were collected from the vegetation, which are reared to the adult stages. However, the collection of adult moths is generally made through the light traps, using 160-watt mercury bulb connected with the light sources. Sheet of white material with a bright light behind it can be set up at dusk near the edge of the bush. Most of moths are attracted towards the light at night. The white cloth sheet may also be hung between two vertical poles in such a way that it touches the surface and extends forwards over the ground for a few feet so that all those moths, which are in the habit of settling on the ground slightly away from the direct source of light are also caught. Only selected specimens were collected in the killing jars and kept dry in the insect envelopes. The specimens then spread and set in setting board. Male genitalia is also be dissected out and kept in 10% KOH solution for 12 hours, rinsed in distilled water for several times and were then will be preserved in 70% alcohol.

Identification : The collected specimens were identified and classified with the help of all available traditional taxonomic

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Received 25.02.2013

Accepted 25.04.2013

characters for the group and all available traditional taxonomic literature (Hampson, 1892-95). The characters of male and female genitalia were also studied to differentiate the species for defining genera and higher categories and species so identified were compared with the reference collection available at the Central Zone Regional Centre, Zoological Survey of India, Jabalpur.

RESULTS AND DISCUSSION

In the sanctuary a total number of 56 specimens of owlet moths were collected by using light traps, which yielded the identification of 31 species, 27 genera and 8 subfamilies. Of these, 10 species were new record for the sanctuary. The following list of the Noctuidae of VDWL is based mainly on the classification taken from Hampson (1892-95). Species marked with single asterisk mark were first record from the sanctuary.

Systematic account

Order : Lepidoptera

Superfamily: Noctuiodea

Family : Noctuidae

1. Subfamily : Aganainae

1. *Asota caricae* (Fabricius)

1775. *Noctua caricae* Fabricius, *Syst. Ent.* : 596.

1892. *Hypsa alciphron* : Hampson, *Fauna Brit. India*, Moths, 1 : 502.

1982. *Asota caricae* : Barlow, *An introduction to the Moths of South East Asia*, 77.

Material examined : VDWS, Bhaisaghat, 23.xi.2009 (1ex.), coll., J. Thilak and party.

Diagnostic characters : Head, thorax and abdomen were orange; palpi with black spots on 1st and 2nd joints. Fore wing brownish fuscous; a basal orange patch with two sub-basal black spots and a series of three on its outer edge; the veins streaked with white. Hind wing orange-yellow, a black spot at the end of cell, one beyond, one below vein 2. Wing expanse : Male 62-67 mm, Female 72-76 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh, Jabalpur, Hoshangabad, Mandla, Raisen, Seoni, Umariya). Elsewhere : Myanmar, Sri Lanka, Penang, Java, Amboina, Ceram, New Guinea, New Hebrides, Solomons, and New Ireland.

2. *Asota ficus* (Fabricius)*

1775. *Noctua ficus* Fabricius, *Syst. Ent.* : 595.

1892. *Hypsa ficus* : Hampson, *Fauna Brit. India*, Moths, 1 : 504.

Material examined : VDWS, Bhaisaghat, 08.ix.2010 (1 ex.), coll., K. Chandra and Party.

Diagnostic characters : Head, thorax and abdomen marked as allied species, except that the third joint of palpi grey tipped

with black; the base of tegulae yellow with a black spot; dorsal spots of abdomen often almost obsolete. Fore wing with a yellow basal patch which extends along costa and in cell to two thirds length of cell, with an orange spot outlined with black on the costa, and streaks in the cell and on inner margin, two black spots on costa, two in cell, one on inner margin, and two lines across intern-median interspaces; the rest of wing pale red-brown. Hind wing bright orange yellow; a black spot at end of cell and a submarginal irregular series. Wingspan : Male, 58 mm; Female, 64 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh). Elsewhere : Sri Lanka.

2. Subfamily : Agaristinae

3. *Aegocera bimacula* Walker*

1854. *Aegocera bimacula* Walker, *List Lep. Br. Mus.*, 1 : 57.

1894. *Aegocera bimacula* : Hampson, *Fauna Brit. India*, Moths, 2 : 158.

Material examined : VDWS, Bhaisaghat, 26.vi.2010 (1ex.); Tilgula patrolling, 28.vi.2010 (1ex.), coll., K. Chandra and Party.

Diagnostic characters : The fore wing of the adult moth not so much irrorated with grey; a yellowish white streak from the base expanding into a large spot in cell and inter-space below, and connected by a bar with a medial band from below the costa to the interno-median interspace; a post medial band from the costa to vein 3. Hind wing with a spot at each angle of the cell; the lower spot sometimes joined to the marginal band at anal angle. Wingspan : 45 mm.

Distribution : India - Madhya Pradesh (Damoh), The plains of India and Sikkim. Elsewhere : Sri Lanka.

4. *Sarbanissa transiens* Walker*

1856. *Eusemia transiens* Walker, *List. Het. Br. Mus.*, 7 : 1588.

1894. *Zalissa transiens* : Hampson, *Fauna Brit. India*, Moths, 2 : 155.

Material examined : VDWS, Singorgarh, 21.vii.2009 (1 ex.), coll. K. Chandra and Party; Bhaisaghat, 23.xi.2009 (1 ex.), coll., J. Thilak and Party.

Diagnostic character : Male - The head and thorax dark chestnut-brown, abdomen golden yellow with series of dorsal black spots. Fore wing dark chestnut marbled with grey, this colour forming an oblique band from costa to outer angle; orbicular and reniform outlined in grey. Hind wing yellow, with a broad irregular black margin. Wingspan : 50 mm.

Distribution : India-Madhya Pradesh (Damoh, Seoni), Chhattisgarh, Maharashtra, Meghalaya, Nagaland and Sikkim. Elsewhere: Indonesia and Myanmar.

3. Subfamily : Plusiinae

5. *Chrysodeixis eriosoma* (Doubleday)

1843. *Plusia eriosoma* Doubleday, *Dieffenbach's New Zealand*, 2 : 285.

1894. *Plusia eriosoma*, Hampson, *Fauna Brit. India*, Moths, **2**: 569-570.

Material examined : VDWS, Bhaisaghat, 23.xi.2009 (1ex.), coll., J. Thilak and Party; Sangrampur FRH, 21.vii.2011 (1ex.), coll., S. S. Talmale and Party.

Diagnostic characters : The head, thorax and fore wing having a reddish tinge. Fore wing with much more gilding on the basal, medial and outer areas, the antemedial line more oblique, the postmedial more oblique and sinuous, the Y-mark large prominent and golden, the arms often filled in with golden and occasionally joined to the tail. Wing expanse : 42 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh, Jabalpur, Raisen, Seoni, Umaria). Elsewhere : Australian regions, China, Japan North and South America.

4. Subfamily : Catocalinae

6. *Acanthodelta janata* (Linnaeus)

1758. *Geometra janata* Linnaeus, *Syst. Nat.*, **10** : 527.

1894. *Ophiusa melicerta*, Hampson, *Fauna Brit. India*, Moths, **2** : 494

1985. *Achaea janata*, Kobes, *Heterocera Sumatrana*, *Band*, **4** : 39.

Material examined : VDWS, Bhaisaghat, 23.xi.2009(1ex.), coll., J. Thilak and party.

Diagnostic characters : Head, thorax and legs pale buff-grey, paler beneath. Abdomen pale greyish buff. Fore wing with the markings usually prominent, but sometimes almost obsolete; a short subbasal waved line; obliquely waved antemedial and excised postmedial lines; a speck at end of cell. Hind wing black, with medial white band; three large white spots on outer margin. The cilia whitish. Wing expanse : 60-70 mm.

Distribution : Widely distributed including Madhya Pradesh (Damoh, Jabalpur, Raisen, Seoni, Sidhi, Mandla) and Chhattisgarh (Bilaspur). Elsewhere : Ethiopian, Oriental, and Australian regions.

7. *Anomis flava* (Fabricius)

1775. *Noctua flava* Fabricius, *Syst. Ent.*, : 607

1991. *Cosmophila erosa* : Mandal and Maulik, *Fauna of Orissa, Zool. Surv. India*, **3** : 221.

Material examined : VDWS, Bhaisaghat, 23.xi.2009 (1 ex.), coll., J. Thilak and Party.

Diagnostic characters : The head and thorax of adult male orange yellow, irrorated with brown; abdomen brown above. Fore wing fuscous, suffused with purple-grey; a large yellow patch irrorated with red occupying the whole basal half of wing except the inner margin; irregular ante- and postmedial red lines meeting at inner margin. Hind wing dark fuscous; the cilia white at tips. Wing expanse : 38 mm.

Distribution : India - Madhya Pradesh (Damoh) Himachal Pradesh, Jammu & Kashmir, Maharashtra, Orissa, Punjab and

Tamil Nadu. Elsewhere : Australia, Madagascar, Mauritius, throughout Oriental Region, South Africa, United States and West Indies.

8. *Anomis fulvida* Guen'ee

1852. *Anomis fulvida* Guen'ee, *Noct.*, **ii**: 397.

1894. *Cosmophila fulvida* : Hampson, *Fauna Brit. India*, Moths, **2** : 409-410.

Material examined : VDWS, Bhaisaghat, 23.xi.2009 (1 ex.), coll., J. Thilak and party.

Diagnostic characters : Head and thorax bright or dark ferruginous red-brown, abdomen reddish fuscous. Fore wing bright or dark ferruginous or yellowish red-brown, a short subbasal line, an antemedial line oblique, from costa to below cell, then waved to inner margin, the orbicular a white speck, the reniform indistinct and often reduced to two spots at lower angle of cell. Hind wing varies in colour from red to dark brown, sometimes pale at base. Wing expanse : 54 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh, Hoshangabad, Seoni). Elsewhere : Australia, China, Indonesia, Japan, Myanmar and Sri Lanka.

9. *Anua coronata* Fabricius

1775. *Noctua coronata* Fabricius, *Syst. Ent.* : 596.

1894. *Ophiusa coronata* : Hampson, *Fauna Brit. India*, Moths, **2** : 502.

Material examined : VDWS, Bhaisaghat, 23.xi.2009(2 exs.), coll., J. Thilak and party.

Diagnostic characters : The adult moth is pale reddish-brown; abdomen orange, the segments fringed with black. Fore wing irrorated with dark specks; a short subbasal dark line. Hind wing orange, with broad and submarginal fuscous black bands not reaching inner margin, the latter widest towards costa. Underside orange; the costal and outer areas of both wings dark-speckled and with a slight reddish suffusion; a black patch near outer angle of fore wing. Wing expanse : 82-96 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh, Jabalpur, Raisen, Seoni, Sidhi). Elsewhere : Australia, Java, Myanmar and Sri Lanka.

10. *Anua triphaenoides* (Walker)

1858. *Ophiusa triphaenoides* Walker, *Cat. Lep. Het. Br. M.*, **xiv** : 1358

1894. *Ophiusa triphaenoides* : Hampson, *Fauna Brit. India*, Moths, **2** : 505.

Material examined : VDWS, Bhaisaghat, 19.xi.2009(2 exs.); 23.xi.2009 (1 ex.), coll., J. Thilak and Party.

Diagnostic characters : The head and thorax grey, abdomen fuscous; forewing violaceous grey irrorated with dark scales; the costa ochreous; an antemedial outwardly oblique, slightly curved, pale and rufous line; the orbicular a black speck; reniform brown with dark outline. Hind wing with the basal area brownish ochreous, the outer area fuscous black.

Underside with the basal area ochreous white, the outer fuscous. Wing expanse : 60 mm.

Distribution : India - Madhya Pradesh (Balaghat, Damoh, Indore, Umariya), Jharkhand, Maharashtra, North West and East Himalayas and Sikkim. Elsewhere : Nepal.

11. *Attatha regalis* (Moore)*

1872. *Hypercompa regalis* Moore, *Proc. Zool. Soc.* : 575, pl. 33.f.7.

1878. *Attatha regalis* : Moore, *Proc. Zool. Soc.* : 848.

1894. *Trigonodes regalis* : Hampson, *Fauna Brit. India, Moths*, 2 : 529.

Material examined : VDWS, Bhaisaghat, 26.vi.2010 (2exs.), coll., J. Thilak and Party.

Diagnostic characters : Head and thorax whitish; the frons, a band on thorax, and stripe on metathorax black brown; abdomen, palpi, pectus, and legs crimson, the legs striped with black. Fore wing white; a black-brown stripe below the cell from base; a narrower stripe on inner margin; an oblique medial band from middle of costa to near outer angle, widest at costa; a large triangular patch from costa at apex to above outer angle. Hind wing crimson, with a submarginal series of black spots. Wingspan : 48 mm.

Distribution : India - Madhya Pradesh (Damoh), Karnataka and North India. Elsewhere : Myanmar and Sri Lanka.

12. *Artena dotata* (Fabricius)

1794. *Artena dotata* Fabricius, *Ent. Syst.* III, 2 : 55.

1894. *Ophiusa dotata* : Hampson, *Fauna Brit. India, Moths*, 2 : 496-497.

Material examined : VDWS, Bhaisaghat, 23.xi.2009 (1ex.), coll., J. Thilak and Party.

Diagnostic characters : The adults are bronze-brown. Fore wing with antemedial and postmedial line very oblique, the former not waved; the reniform broken up into two spots; a prominent marginal grey band with a waved line on it. Hind wing with prominent medial incomplete white band; the margin and cilia whitish. Wingspan : 45-48 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh, Raisen). Elsewhere: Indonesia, Japan, Myanmar and Taiwan.

13. *Chalciope mygdon* (Cramer)

1777. *Noctua mygdon* Cramer, *Pap. Exot.*, 2 : 94, pl.154.f.G.

1894. *Grammodes mygdon* : Hampson, *Fauna Brit. India, Moths*, 2 : 531.

Material examined : VDWS, Bhaisaghat, 19.xi.2009(2 exs.); 23.xi.2009 (3 exs.), coll., J. Thilak and Party.

Diagnostic characters : Head and thorax dark red-brown; abdomen greyish fuscous. Fore wing purplish grey; the costa ochreous; a large red-brown patch occupying the whole wing except the costal and outer areas and crossed by an oblique ochreous band, its costal and outer edges bordered by reddish

ochreous, their angle almost joined by a red-brown streak from the apex; a submarginal series of speck. Hind wing fuscous; the cilia grey below apex and at outer angle. Wingspan : 36 - 40 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh, Hoshangabad, Seoni). Elsewhere : China, Indonesia, Myanmar and Sri Lanka.

14. *Dysgonia algira* (Linnaeus)

1767. *Noctua algira* Linnaeus, *Syst. Nat. ed.*, 12 : 836.

1894. *Ophiusa algira* : Hampson, *Fauna Brit. India, Moths*, 2 : 500.

Material examined : VDWS, Danital, 08.ix.2010 (1 ex.), coll., K. Chandra and Party.

Diagnostic characters : The adult moth differ from allied species in the antemedial line of fore wing being erect and having a broad, white, slightly suffused band beyond it, which varies in width; the post medial line angled also between vein 3 and 4 and sinuous towards inner margin; the apical streak broken up into two spots. Hind wing with a white medial band; the outer margin grey at centre. Wingspan : 42-46 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh, Seoni). Elsewhere: Africa, China, Europe, Japan, Mauritius, Myanmar and Sri Lanka.

15. *Grammodes stolidia* (Fabricius)*

1777. *Noctua stolidia* Fabricius, *Syst. Ent.* : 599.

1894. *Grammodes stolidia* : Hampson, *Fauna Brit. India, Moths*, 2 : 532.

Material examined : VDWS, Danital, 21.vi.2009 (1 ex.), coll., J. Thilak and Party.

Diagnostic characters : The adult moth is differing from *G. geometrica* in being greyer. Fore wing with inner edge of the postmedial line bent inwards at middle; a white marginal line; cilia white at apex. Hind wing with the band white; a round white submarginal spot near anal angle. Wingspan : 30 - 40 mm.

Distribution : India - Madhya Pradesh (Damoh), throughout N. W. and Peninsular India. Elsewhere : Africa, Europe and Yemen.

16. *Ophiusa tirhaca* Cramer

1780. *Noctua tirhaca* Cramer, *Pap. Exot.*, 2 : 116.

1894. *Ophiusa tirhaca* : Hampson, *Fauna Brit. India, Moths*, 2 : 503.

Material examined : VDWS, Giridharshan, 27.vi.2010 (1 ex.), coll., J. Thilak and Party.

Diagnostic characters : Head and thorax greenish yellow; abdomen orange; Fore wing greenish yellow, with slightly darker striae; the orbicular dark speck; reniform brown; an irregularly dentate submarginal line, with two black subapical lunule on it. Hind wing orange, with broad submarginal black band not reaching the costa or inner margin. Wing expanse : 64-80 mm.

Distribution : India - Madhya Pradesh (Damoh, Mandla, Sidhi, Seoni), Assam, Himachal Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere : Philippines and Sri Lanka.

17. *Remigia frugalis* (Fabricius)**

1775. *Noctua frugalis* Fabricius, *Syst. Ent.* : 601.

1894. *Remigia frugalis* : Hampson, *Fauna Brit. India*, Moths, 2 : 527.

Material examined : VDWS, Bhaisaghat, 23.xi.2009 (1 ex.), coll., J. Thilak and Party.

Diagnostic characters : The adult is grey brown. Fore wing with diffused dark mark above the centre of vein 1; an oblique postmedial line pale inwardly, red-brown outwardly; a submarginal series of black specks. Hind wing with postmedial and diffused submarginal lines. Wing expanse : 36-50 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh) as well as throughout the Oriental regions. Elsewhere : Australian regions and West Africa.

18. *Remigia undata* (Fabricius)*

1775. *Noctua undata* Fabricius, *Syst. Ent.* : 600.

1913. *Mocis undata*, Hampson, *Cat. Lep. Phal. Brit. Mus.*, 13 : 91.

1991. *Mocis undata*, Mandal and Maulik, *Fauna of Orissa, Zool. Surv. India*, 3 : 220.

Material examined : VDWS, Bhaisaghat, 23.xi.2009 (1ex.), coll., J. Thilak; Sangrampur FRH, 21.vii.2011 (1 ex.), coll., S. S. Talmale and Party.

Diagnostic characters : A pale red-brown moth. Fore wing with a short subbasal red-brown line mostly straight, sometimes indistinct. The antemedial line oblique, pale or ochreous, with diffused red-brown band on its outer edge. Medial line sinuous angled on median nervure. Reniform large and indistinct, postmedial band red-brown with a dark line slightly excurved the cell. Wing expanse : 50 mm.

Distribution : India - Madhya Pradesh (Damoh, Seoni), Andaman & Nicobar Islands, Assam, Bihar, Himachal Pradesh, Kerala, Maharashtra, Meghalaya, Orissa, Punjab, Tamil Nadu, Tripura and West Bengal. Elsewhere : Bangladesh, Malaysia, Myanmar, Sri Lanka, Taiwan

19. *Trigonodes hyppasia* (Cramer)*

1779. *Phalaena (Noctua) hyppasia* Cramer, *Pap. Exot.*, 3 : 99, pl.f.E 250.

1888. *Trigonodes hyppasia* : Cotes & Swinhoe, *Cat. Moths of India* : 413.

1894. *Trigonodes hyppasia* : Hampson, *Fauna Brit. India*, Moths, 2 : 527.

Material examined : VDWS, Bhaisaghat, 23.xi.2009 (1ex.), coll., J. Thilak and Party.

Diagnostic characters : An ochreous brown moth, slightly suffused with fuscous or dark grey-brown. Fore wing with large black white-edged triangular patch below the cell from near base to towards outer angle, a similar smaller patch beyond the cell on vein 5 with some pale fulvous beyond it, a slightly sinuous submarginal pale line, with patches of black suffusion inside it and a series of black specks beyond it, a dark marginal line. Hind wing with indistinct medial line, the outer area suffused with fuscous. Wing expanse : 46 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh, Chhinwara, Jabalpur, Mandla, Raisen, Seoni, Shivpuri, Umaria) and Chhattisgarh. Elsewhere : Australia, Africa, China, Myanmar and Sri Lanka.

20. *Pericyma crueqeri* Butler

1886. *Pericyma crueqeri* Butler, *Trans. ent. Soc. Lond.* : 411.

1985. *Pericyma crueqeri*, Lutz and Kobes, *Heterocera Sumatrana*, Band, 4 : 78.

2012. *Pericyma cruegri* : Sambath and Chandra, *Biological Forum - An International Journal spl.iss.*, 4(1) : 18-19

Diagnostic characters : Forewing reddish-light brown, basal band broad, dark reddish brown, sometimes blackish, antemedial line blackish brown to black, oblique inwards, middle area with 4 fine double reddish-brown lines with white scales, reniform incomplete, postmedial line blackish, sub marginal line indistinct pale bordered with light brown. Hind wing greyish-ed several double lines, postmedial line always very distinct blackish brown. Wing expanse : 40-45 mm.

Distribution : Widely distributed in India including Madhya Pradesh (Damoh, Seoni). Elsewhere : Sumatra.

21. *Spirama retorta* Cramer

1779-83. *Spirama retorta* Cramer, *Pap. Exot.*, 2 : 116.

1894. *Spirama retorta*, Hampson, *Fauna Brit. India*, Moths, 2 : 553.

2012. *Spirama retorta* : Sambath and Chandra, *Biological Forum - An International Journal spl.iss.*, 4(1) : 18-19

Diagnostic characters : Male - Head and collar dark chestnut-brown; thorax paler with dark bands; abdomen crimson with triangular black dorsal patches. Wings fuscous brown. Fore wing with purplish and sometimes olive tinge; a large "inverted-comma" mark beyond end of cell, with ochreous and black edges and some white on inner edge of "tail", the centre fuscous-black. Female : Forewing with the stigma larger. Hind wing with the markings prominent. Underside orange-scarlet; each wing with cell-spot, medial, postmedial and submarginal lines, and series of lunules inside the margin. Wing expanse : Male - 64-76 mm., Female - 66-88 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh, Raisen, Seoni, Umaria). Elsewhere : Sri Lanka, Myanmar, China, Japan and Java.

5. Subfamily : Calpinae

22. *Episparis varialis* (Walker)*

1858. *Neviasca varialis* Walker, *Cat. Lep. Het. B. M.* xvi : 7.

1894. *Episparis varialis* : Hampson, *Fauna Brit. India*, Moths, **2** : 543.

Material examined : VDWS, Sangrampur, 19.vii.2011 (1 ex.), coll., S. S. Talmale and Party.

Diagnostic characters : A pale dull reddish brown moth. Fore wing with subbasal and antemedial white lines, the later with the part below the cell displaced outwards, a yellow patch at lower angle of cell and an irregular white spot on the discocellulars, an indistinct medial dark line excurved round cell, a pale sinuous postmedial line arising from a white spot on costa. Hind wing with dark mark on discocellulars, indistinct angled fuscous medial line, a white postmedial line highly angled beyond cell, a chocolate lunule on the margin below apex, with a series of spots from it to anal angle. Wing expanse : 50 mm.

Distribution : India - Peninsular India Including Madhya Pradesh (Damoh, Indore, Jabalpur, Mandla, Seoni, Umariya) Chhattisgarh and Andamans. Elsewhere : Indonesia, Sri Lanka and Myanmar.

23. *Fodina stola* Guenee

1852. *Fodina stola* Guenee, *Noct.* iii : 275.

1894. *Fodina stola* : Hampson, *Fauna Brit. India*, Moths, **2** : 466-467.

Material examined : VDWS, Giridharshan, 27.vi.2010 (2 exs.); Tilgula Patrolling, 28.vi.2010 (1 ex.), coll., J. Thilak and Party.

Diagnostic characters : Head and thorax bright red-brown; collar and metathorax banded with whitish; abdomen orange. Fore wing with the basal part of costa purplish; a large irregular red-brown patch on basal half of wing, with ochreous edges and running out to an angle on vein 2; the area between it and large red-brown patch occupying the apical area; the cilia grey. Hind wing orange; with the apical area fuscous black; traces of fuscous patch near outer angle. Underside orange, with dark medial patch to fore wing and apical patches to both wings. Wing expanse : 36-46 mm.

Distribution : India - Madhya Pradesh (Damoh), N. W. Himalayas and Sikkim. Elsewhere : Myanmar and Sri Lanka.

24. *Hypocala deflorata* (Fabricius)

1794. *Hyblaea deflorata* Fabricius, *Syst. Ent.* iii : 472.

1894. *Hypocala deflorata* : Hampson, *Fauna Brit. India*, Moths, **2** : 453.

Material examined : VDWS, Bhaisaghat, (1 ex.), 08.09.2010, coll., K. Chandra and Party.

Diagnostic characters : Adult moth differs from *H. subsatura* in the head, thorax and fore wing being paler. Hind wing with the orange area larger; the marginal black area reduced and the two orange spots conjoined. Underside with the black on fore wing reduced to two bars and that on hind wing also much reduced. Wing expanse : 30-42 mm.

Distribution : India - Madhya Pradesh (Damoh), N. W. Himalayas, Karnataka and Tamil Nadu. Elsewhere : East and South Africa.

25. *Othreis fullonica* (Linnaeus)

1767. *Phalaena (Attacus) fullonica* Linnaeus, *Syst. Nat.* (ed.12) : 812.

1894. *Ophideres fullonica* : Hampson, *Fauna Brit. India*, Moths, **2** : 560.

Material examined : VDWS, Danital, 08.ix.2010 (1 ex.), coll., K. Chandra and Party.

Diagnostic characters : Head and thorax red-brown suffused with plum-colour; abdomen orange. Female - fore wing much variegated and striated with dark red-brown; the reniform dark and sending a spur along median nervure to below the orbicular speck; a triangular white mark usually present on the postmedial line below vein 3. Wing expanse : Male 80-94 mm; Female 90-110 mm.

Distribution : India-Madhya Pradesh (Damoh, Indore), Himachal Pradesh, Maharashtra, Meghalaya and Sikkim. Elsewhere : Africa, Australia and Pakistan.

26. *Pandesma anysa* Guenee

1852. *Pandesma anysa* Guenee, *Spec. Gen., Noct.*, **2** : 439.

1894. *Polydesma quenavadi* : Hampson, *Fauna Brit. India*, Moths, **2** : 466-467.

Material examined : VDWS, Danital, 21.vi.2009 (1 ex.); Tilgula Patrolling, 28.vi.2010 (3 exs.), coll., J. Thilak and Party.

Diagnostic characters : Brownish grey. Fore wing with sub basal, antemedial, medial, excurved postmedial and submarginal wavy lines; the orbicular and reniform indistinct; a marginal series of specks. Hind wing with the basal area whitish, the outer brownish, with postmedial and sub marginal indistinct wavy lines. Underside white, with a broad submarginal fuscous band and marginal series of black specks to each wing. Wing expanse : 40-56 mm.

Distribution : Throughout India including Madhya Pradesh (Damoh, Indore), Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Punjab and Orissa. Elsewhere : Bangladesh, Myanmar, Pakistan and Sri Lanka.

27. *Psimada quadripennis* Walker

1828. *Psimada quadripennis* Walker, *Cat.* xv. : 128.

1895. *Psimada quadripennis* : Hampson, *Fauna Brit. India*, Moths, **3** : 466-467.

Material examined : VDWS, Bhaisaghat, 23.xi.2009; (1 ex.), 18.ii.2010 (1 ex.), coll., J. Thilak and Party.

Diagnostic characters : Head and collar red brown; thorax paler; abdomen fuscous. Fore wing red-brown, the outer dark with a purplish tinge; a large triangular dark red-brown patch on costa at apex. Hind wing dark with a purplish tinge on basal half; the outer half redder, with a large semicircular pale patch on out margin towards anal angle. Wing expanse : 42 mm.

Distribution : India - Madhya Pradesh (Damoh, Mandla, Seoni), Andamans, Karnataka. Elsewhere : China (North), Myanmar and Sri Lanka.

6. Subfamily : Hadeninae**28. *Callyna costiplaga* Moore***

1885. *Callyna costiplaga* Moore, *Lep. Ceyl.* **3** : 100, pl. 156, f. 10.

1894. *Callyna costiplaga* : Hampson, *Fauna Brit. India*, Moths, **2** : 357.

Material examined : VDWS, Bhaisaghat, 23.xi.2009; (1 ex.), 18.ii.2010 (1 ex.), coll., J. Thilak and Party.

Diagnostic characters : Head dark red-brown; collar black; thorax and abdomen brown; Fore wing brown with indistinct subbasal, antemedial, postmedial and submarginal waved lines; large quadrate black costal patches between the two former and the two latter; The orbicular and reniform indistinct. Hind wing dark fuscous. Wing expanse : 46 mm.

Distribution : Widely distributed in India - Madhya Pradesh (Damoh), Maharashtra and Tamil Nadu. Elsewhere : Sri Lanka.

29. *Spodoptera litura* (Fabricius)

1775. *Noctua litura* Fabricius, *Syst. Ent.* : 601.

1989. *Spodoptera litura*, Holloway, *The Malayan Nature Journal*, **42(2&3)** : 136.

Material examined : VDWS, Bhaisaghat, 23.xi.2009; (1 ex.), 18.ii.2010 (1 ex.), coll., J. Thilak and Party.

Diagnostic characters : The adult moth greyish brown; fore wing more strikingly patterned, stigmata are delineated pale creamy on a dark brown ground, the orbicular produced in to a streak to wards the tornus, crossing the cubital vein that is also picked out in pale cream, with an extensive dull violet subapical zone. Wing expanse : 36-40 mm.

Distribution : India - Madhya Pradesh (Hoshangabad, Jabalpur, Mandla, Seoni, Raisen, Umari), Himachal Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Punjab, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal. Elsewhere : Indonesia, Myanmar (South), Nepal, Sri Lanka, Singapore and Taiwan of oriental and also Australo-Papuan, Ethiopian, Palaearctic and Hawaiian Reigons.

7. Subfamily : Heliothinae**30. *Helicoverpa armigera* (Hubner)**

1827. *Noctua armigera* Hubner, *Samml. Eur. Schmett., Noct.* f. 370.

1894. *Heliothis armigera*, Hampson, *Fauna Brit. India*, Moths, **2** : 174-175.

1980. *Helicoverpa armigera*, Vaishampayan, *Indian J. Entomology*, **42(3)** : 453-459.

Material examined : VDWS, Bhaisaghat, 23.xi.2009 (9 exs.), coll., J. Thilak and Party.

Diagnostic characters : The adult moth is ochreous with pale brown. Fore wing with indistinct double waved antemedial lines, a dark speck representing the orbicular, an indistinct

curved medial line, the reniform indistinct, postmedial and submarginal waved lines, the space between them somewhat darker and with a series of pale. Hind wing white, the veins fuscous, a broad blackish outer border usually with a pale sub marginal central patch. Wing expanse : 31-41 mm.

Distribution : Widely distributed in India as pest including Madhya Pradesh (Damoh, Chhindwara, Jabalpur, Mandla, Raisen, Shivpuri, Umari).

8. Subfamily : Noctuidae**31. *Xestia semiherbida* Walker**

1857. *Triphaena semiherbida* Walker, *List specs. Lep. Ins. Br. Mus.*, **11** : 743.

1894. *Epilecta semiherbida* : Hampson, *Fauna Brit. India*, Moths, **2** : 193.

Material examined : VDWS, Bhaisaghat, 08.ix.2010 (1 ex.), coll., K. Chandra and Party.

Diagnostic characters : Head, thorax and fore wing variegated with green and brown shades; abdomen fuscous brown; fore wing with subbasal, ante- and post medial double waved lines distinct; the claviform obsolete; the waved submarginal line with a black spot on it below the costa; a marginal series of lunules. Hind wing bright yellow, with a large black cell-spot; a black fascia along the costa joining the broad irregular submarginal black band. Wing expanse : 44 mm.

Distribution : India - Madhya Pradesh (Damoh), Himachal Pradesh and Sikkim. Elsewhere : Japan.

The extensive survey of Veerangana Durgavati Wildlife Sanctuary, Madhya Pradesh yielded the identification of 31 species of owlet moths belonging to 27 genera and 8 subfamilies. Of these, 10 species namely *Asota ficus* (Fabricius), *Aegocera bimacula* Walker, *Sarbanissa transiens* Walker, *Attatha regalis* (Moore), *Grammodes stolidus* (Fabricius), *Remigia frugalis* (Fabricius), *Remigia undata* (Fabricius), *Trigonodes hyppasia* (Cramer), *Episparis varialis* (Walker), *Callyna costiplaga* Moore are reported for the first time from the sanctuary. The subfamily Catocalinae represents highest number of species represented by 16 species, followed by the subfamily Calpinae with 6 species, subfamilies Aganainae, Agaristinae and Hadeninae each with two species and remaining with only one species. This study was an attempt to describe some aspects of bio-diversity of moth fauna of Veerangana Durgavati Wildlife Sanctuary.

ACKNOWLEDGMENTS

The authors are grateful to Dr. Venkataraman, Director, Zoological Survey of India, Kolkata for providing necessary facilities. Sincere thanks are also due to PCCF (Wildlife), Bhopal, D.F.O., Forest Ranger Officer and Staffs of Veerangana Durgavati Wildlife Sanctuary, Madhya Pradesh for grant of permission and logistic support during the survey of the sanctuary.

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