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STUDIES ON THE SPHINGID FAUNA (LEPIDOPTERA : HETEROCERA : SPHINGIDAE) OF DALMA WILDLIFE SANCTUARY, JHARKHAND

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INTRODUCTION

Sphingidae is a family of moths (Lepidoptera), commonly called hawk moths, sphinx moths and hornworms, and are known to travel long distances on migration; some species have been encountered at mid-sea by ships (Kehimkar, 1997). They are moderate to large in size and are distinguished among other moths by their rapid, sustained flying ability (Scoble, 1995). The stout and cigar shaped body and long and narrow forewings are clearly adapted for rapid flight. The possession of long proboscis makes them ideal and distinct pollinators for flowers with long tubular corolla (Barlow, 1982). The family comprises of roughly 1,354 species reported worldwide, out of which about 204 species are distributed in India (Bell & Scott, 1937; D' Abrera, 1986).

The earlier studies revealed that little works have been done on the taxonomy, ecology and distribution of sphingidae in India and practically very little information is available from Bihar and Jharkhand (Bell & Scott, 1937; Beeson, 1941; Lefroy & Howlett, 1971). In the present work attempts have been made during 2007 and 2008 to collect and study sphingid moths from Dalma wildlife sanctuary which is one of the important conservation areas in Jharkhand. The studies have revealed the presence of 17 species of sphingid moths under 12 genera which are reported here for the first time from Dalma wildlife sanctuary.

The diagnostic characters, occurrence, distribution etc. dealt in this paper are based on Beeson (1941), Bell and Scott (1937), Mandal and Maulik (1991, 1997) and Chandra and Nema (2007).

DIVISION : ASEMANOPHORAE

Subfamily ACHERONTIINAE

Tribe ACHERONTIINI

Genus *Acherontia* Laspeyres

1. *Acherontia lachesis* (Fabr.)

1798. *Sphinx lachesis* Fabricius, *Syst. Ent. Suppl.*, : 434.

1937. *Acherontia lachesis*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 55.

Diagnosis : Head and thorax blackish, powdered with white, yellow and blue-grey scales. The skull mark on the dorsum of the thorax more conspicuous. Fore wing blackish, powdered with white, yellow and bluish grey scales. Hind wing upper side with the basal third marked with black. Abdomen black with a broad, interrupted, grey-blue dorsal stripe and small yellow side patches on the four proximal segments.

Material Examined : 2 exx., 5.viii.2008; 2 exx., 6.viii.2008; 2 ex., 7.viii.2008. Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 102-132 mm.

Occurrence : July-September.

Distribution : India : Jharkhand (East Singhbhum), Andaman Islands, Madhya Pradesh (Indore, Seoni), Orissa (Balasore) and West Bengal (Kolkata and North 24-Parganas); almost throughout the rest of the mainland except the North-West Himalaya .

Elsewhere : Bangladesh, Bhutan, China, Java up to Southern Moluccas in the farther east, Malaysia (western), Myanmar, Pakistan and Sri Lanka.

Host Plants : *Erythrina* spp., *Ipomaea* spp., *Jasminum* spp., *Solanus* spp., *Tectona grandis*, *Vitex negundo*, etc.

2. *Acherontia styx styx* (Westwood)

1848. *Sphenx* (*Acherontia*) *styx* Westwood, *Cab. Or. Ent.*, : 88.

1937. *Acherontia styx styx*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 58.

Diagnosis : Skull mark on thorax is less conspicuous. Fore wing with tawny-russet streaks. The basal third of hind wing upper side being immaculate instead of marked with black. Abdomen bears yellow side-patches well extensive. Fore tibiae with few spines.

Material Examined : 1 ex., 6.viii.1975, Rajendra Nagar, Patna, Bihar. Coll. K.C. Kansal; 2 exx., 5.viii.2008; 2 exx., 6.viii.2008; 1 ex., 7.viii.2008. Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 90-130 mm.

Occurrence : April-August.

Distribution : India : Jharkhand (East Singhbhum), Bihar (Patna), Madhya Pradesh (Indore, Jabalpur, Seoni), Orissa (Sundargarh) and West Bengal (Bankura, Bardhaman, and Kolkata) and throughout the rest of the mainland.

Elsewhere : Bangladesh, Bhutan, Myanmar, Pakistan and Sri Lanka.

Host Plants : *Jasminum* spp., *Nyctanthes*, *Sesamum indicum*, *Vitex negundo*.

Genus *Herse* Oken

3. *Herse convolvuli convolvuli* (Linnaeus)

1758. *Sphinx convolvuli* Linnaeus, *Syst. Nat.*, ed. 10 : 490.

1937. *Herse convolvuli convolvuli*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 61.

Diagnosis : Fore wing with many narrow whitish lunulate bands, obsolescent on some specimens. Hind wing pale grey with broad subbasal, two median and post median fuscous transverse bands. Abdomen with red lateral transverse spots.

Material Examined : 2 exx., 5.viii.2008, Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 80-120 mm.

Occurrence : August-December

Distribution : India : Jharkhand (East Singhbhum), Orissa (Cuttack), West Bengal and throughout the rest of the mainland.

Elsewhere : Eastern hemisphere except the higher latitudes, Europe and rarely in England, Siberia.

Host Plants : Plants of the family Leguminosae and Convolvulaceae.

Tribe SPHINGINI

Genus *Meganoton* Boisduval

4. *Meganoton nyctiphanes* (Walk)

1856. *Macrosila nyctiphanes* Walker, *List Specimens lepid. Insects Colln Br. Mus.*, 8 : 209.

1937. *Meganoton nyctiphanes*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 73.

Diagnosis : Upper side dark brown. Fore wing variegated with various shades of brown and grey scales and crossed by numerous waved dark lines. Hind wing dark brown with a series of pale spots across the disc. Head, thorax and abdomen white below ; abdomen with white segmental streaks at sides.

Material Examined : 1 ex., 6.viii.2008; 3 exx., 27.ix.2008; 2 exx., 4.xii.2008, Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 105-125 mm.

Occurrence : August-December.

Distribution : India : Jharkhand (East Singhbhum), Andaman Islands, East Himalaya and Southern peninsula.

Elsewhere : Malaya, Myanmar and Sri Lanka.

Host Plants : *Symphorema involucreatum*.

Genus *Psilogramma* Rothschild & Jordan

5. *Psilogramma menephron menephron* (Cramer)

1780. *Sphinx menephron* Cramer, *Pap. Exot.*, 3 : 164.

1937. *Psilogramma menephron menephron*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 77.

Diagnosis : Head, thorax and abdomen and fore wing grey; dark brown bands along sides of palpi and thorax meeting on metathorax, where there are blue and yellow scales; abdomen with a blackish dorsal stripe and brown subdorsal segmental patches. Fore wing with dark oblique lines from costa; hind wing brown, with a

black patch at anal angle. Rainy season specimens are usually dark.

Material Examined : 1 ex., 5.viii.2008; 1 ex., 6.viii.2008; Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 82-138 mm.

Occurrence : August to December.

Distribution : India : Jharkhand (East Singhbhum), Orissa (Keonjhar) Madhya Pradesh (Seoni, Sidhi, Umaria), West Bengal and rest of the mainland.

Elsewhere : China and eastwards to the Solomon Islands.

Host Plants : *Clerodendron infortunatum*, *Tectona grandis*, *Vitex negundo*.

Subfamily AMBULICINAE

Genus *Polyptychus* Hubner

6. *Polyptychus dentatus* (Cramer)

1777. *Sphinx dentatus* Cramer, *Pap. Exot.*, 2 : 42.

1937. *Polyptychus dentatus*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 169.

Diagnosis : Whitish-cinereous. The post-discal and discal lines of fore wing parallel, straight, the former not curved dista beyond R2; the dentate line between them distinct.

Material Examined : 1 ex., 27.ix.2008, Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 110 mm.

Occurrence : September-December.

Distribution : India : Jharkhand East Singhbhum), Madhya Pradesh (Indore, Seoni), West Bengal, Eastern and Northwest Himalaya, Maharashtra (Bombay), Southern peninsula and Uttar Pradesh (Allahabad).

Elsewhere : China, Pakistan and Sri Lanka.

Host Plants : *Cordia oblique*.

Genus *Oxyambulyx* Rothschild & Jordan

7. *Oxyambulyx subocellata* (Feld.)

1874. *Ambulyx subocellata* Felder, *Reise Ost. Fregatte Novara*, Lep. t. 76.

1937. *Oxyambulyx subocellata*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 136.

Diagnosis : Can be distinguished from all others of the genus by the thinness of the thoracic stripe over the tegula and by the series of subbasal spots on fore

wing upper side. Body reddish brown, thoracic stripe very thin. The fore wing with a series of four subbasal spots, green edged with white. Hind wing yellow pale or reddish brown.

Material Examined : 3 exx., 22.viii.2007; 3 exx., 27.ix.2008, Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 90-110 mm.

Occurrence : August-September.

Distribution : Adaman Islands, Southern peninsula.

Elsewhere : China (south), Malaya and Sri Lanka.

Host Plants : *Odina odier* and *Buchanania latifolia*.

8. *Oxyambulyx substrigilis aglaia* Jord.

1923. *Oxyambulyx substrigilis aglaia* Jordan, *Novit. Zool.*, 26 (1) : 190-192.

1937. *Oxyambulyx substrigilis aglaia*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 128.

Diagnosis : This species is easily distinguished by the large black or tawny basal patch of hind wing upper side. Dorsal line of abdomen distinct.

Material examined : 5 exx., 27.ix.2008, Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 105-120 mm.

Occurrence : September-October.

Distribution : Southern Part of India.

Host Plants : *Algaia littoralis*.

DIVISION-SEMANOPHORAE

Subfamily PHILAMPELINAE

Tribe NEPHELINI

Genus *Acosmeryx* Boisduval

9. *Acosmeryx anceus subdentata*

Rothschild & Jordan.

1903. *Acosmeryx anceus subdentata* Rothschild & Jordan, *Revision of Sphingidae*, p. 528.

1937. *Acosmeryx anceus subdentata*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 294.

Diagnosis : The smallest species of the genus, and markings different from those of all the other species. Fore wing distinctly angulate at R³, often with traces of teeth. Upper side tawny cinnamon to chestnut-brown; an oblique distal band diffuse posteriorly. Hind wing fuscous.

Material examined : 1 ex., 24.ix.2008, Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 70-88 mm.

Occurrence : September.

Distribution : India : Jharkhand (East Singhbhum), West Bengal, Sikkim, Southern peninsula.

Elsewhere : Bangladesh, Bhutan and Malay.

Host Plants : *Vitis indica*.

Genus ***Deilephila*** Laspeyres

10. ***Deilephila hypothous hypothous*** (Cramer)

1780. *Sphinx hypothous* Cramer, *Pap. Exot.*, 3 : 165.

1937. *Deilephila hypothous hypothous*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 271.

Diagnosis : Head and collar of thorax being uniformly dark purplish-brown; thorax and two segments of a abdomen dark olive-green with a white fringe to the first segment. Fore wing with a white spot at apex on upper side and at end of cell on underside.

Material examined : 2 ex., 5.viii.2008; 2 ex., 6.viii.2008; 1 ex., 7.viii.2008, Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 110-124 mm.

Occurrence : August – September.

Distribution : India: Jharkhand (East Singhbhum), Andaman Islands, Assam, Meghalaya, Sikkim, Southern Peninsula and West Bengal (Kolkata).

Elsewhere : Bhutan, China, Malaya, Myanmar and Sri Lanka.

Host Plants : *Uncharia*, *Cinchona*, etc.

Subfamily CHOEROCAMPINAE

Genus ***Hippotion*** Hubner

11. ***Hippotion boerhaviae*** (Fabricius)

1775. *Sphinx boerhaviae* Fabricius, *Syst. Ent.*, : 542.

1937. *Hippotion boerhaviae*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 424.

Diagnosis : Hind wing red, base not black; a clayish subanal patch.

Material examined : 8 ex., 5.viii.2008; 2 ex., 6.viii.2008; 2 ex., 7.viii.2008; 3 ex., 27.ix.2008, Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 57- 60 mm.

Occurrence : August-September.

Distribution : India : Jharkhand (East Singhbhum), Andhra Pradesh, Gujarat, Madhya Pradesh (Indore, Seoni, Umaria), Maharashtra, Orissa (Bolangir, Dhenkanol, Sundargarh), Sikkim, Southern Peninsula, West Himalaya and West Bengal (Birbhum, Darjiling, Kolkata).

Elsewhere : Bhutan, China (south), Malaya, Pakistan, Philippines and Sri Lanka.

Host Plants : The food-plants belong to Geraniaceae, Nyctaginaceae, Rubiaceae, Scrophulariaceae, etc.

12. ***Pergesa acteus*** (Cramer)

1779. *Sphinx acteus* Cramer, *Pap. Exot.*, 3 : 93.

1937. *Rhyncholaba acteus*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 462.

Diagnosis : Head, thorax and abdomen purplish grey; vertex of head and a dorso-lateral stripe on thorax and abdomen green. Fore wing purplish grey; a green oblique central area from apex to inner margin. Hind wing fuscous with an anal patch and submarginal band ochreous.

Material examined : 1 ex., 22.viii.2007; 1 ex., 27.ix.2008, Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 64-70 mm.

Occurrence : August-September.

Distribution : Indian : Jharkhand (East Singhbhum), West Bengal (Bardhaman, Kolkata), East and West Himalaya, almost throughout the Peninsula.

Elsewhere : Bhutan, China (south), Myanmar to Moluccas and Sri Lanka.

Host Plants : *Vitis* spp. and plants of the family Aroideae, etc.

Genus ***Theretra*** Hubner

13. ***Theretra alecto alecto*** (Linnaeus)

1758. *Sphinx alecto* Linnaeus, *Syst. Nat.*, ed. 10 : 492.

1937. *Theretra alecto alecto*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 440.

Diagnosis : Head and thorax dark brown, abdomen pale brown; antennae and side of head and thorax whitish; abdomen with a black side batch on first

segment and three dorsal lines. Fore wing pale brown with a dark speck at end of cell. Hind wing pink, black at base, anal angle flesh colour. Under side flush colour.

Material examined : 3 exx., 22.viii.2007; 7 exx., 27.ix.2008, Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 85 mm.

Occurrence : August-September.

Distribution : India : Jharkhand (East Singhbhum), Madhya Pradesh (Indore, Jabalpur, Hoshangabad, Umaria), South India, Western and Eastern Himalaya and West Bengal (Bankura, Kolkata).

Elsewhere : Afghanistan, Bhutan, Java, Malaysia, Myanmar, Northward to Formosa and eastward to the key Islands, Pakistan, Sulawesi and Taiwan.

Host Plants : *Dillenia pentagyna*, *vitis* and *Leea* spp.

14. *Theretra clotho clotho* (Drury)

1773. *Sphinx clotho* Drury, *Illustr. Ins.*, 2 : 48.

1937. *Theretra clotho clotho*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 434.

Diagnosis : Head and thorax greenish brown, with a white lateral stripe from palpus to end of thorax. Fore wing brown with an apical line joining a discal line with which it forms a single dark line from apex to inner margin. Abdomen brown with a black side patch at base. Hind wing black, shading to brown at apex. Under side ochreous.

Material examined : 3 exx., 5.viii.2008; 1 ex., 6.viii.2008; 2 exx., 7.viii.2008, Pindra pera, Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 80-100 mm.

Occurrence : June-September.

Distribution : India: Jharkhand (East Singhbhum), Orissa (Dhenkanol), West Bengal (Darjiling, Kolkata, Medinipur), almost throughout the mainland except North-West Himalaya and Andaman Islands.

Elsewhere : Bhutan, China, Malaya, Myanmar, Philippines and Sri Lanka.

Host Plants : *Dillenia* spp., *vitis* spp., etc.

15. *Theretra nessus* (Drury)

1773. *Sphinx nessus* Drury, *Illustr. Exot. Ins.*, 2 : 46.

1937. *Theretra nessus*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 434.

Diagnosis : A very large; head and thorax olive green, thorax suffused with ferruginous; a deep orange dorso-lateral streak; abdomen with a broad, shining golden stripe. Costa of fore wing green up to SC¹, the green spreading over front half of the base of wing. Hind wing base black, shading to dusky brown at apex. Underside suffused with reddish ochreous.

Material examined : 4 exx., 27.ix.2008; 1 ex., 28.ix.2008; 4 exx., 30.ix.2008, 2 exx., 1.xi.2008, Maculakocha; 2 exx., 7.xii.2008, Pindra pera, ; Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 90 – 132 mm.

Occurrence : September-December.

Distribution : India: Jharkhand (East Singhbhum), Madhya Pradesh (Jabalpur), South India, West and East Himalaya and West Bengal (Kolkata).

Elsewhere : Aden, Australia, Bangladesh, Bhutan, Hong Kong, Japan, Malay, Myanmar, Pakistan, Papuaasia and Sri Lanka.

Host Plants : *Pongamia glabra*, *Passiflora* spp., etc.

16. *Theretra oldenlandiae oldenlandiae* (Fabricius)

1775. *Sphinx oldenlandiae* Fabricius, *Syst. Ent.*, : 542.

1937. *Theretra oldenlandiae oldenlandiae*, Bell & Scott, *Fauna Brit. India, Moths*, 5 : 448.

Diagnosis : Head and thorax brown; a pale lateral stripe from palpus to end of thorax. Fore wing greyish-brown. Hind wing dusky with a pale submarginal band not reaching apex. Abdomen with double white dorsal lines.

Material examined : 2 exx., 5.viii.2008; 1 ex., 6.viii.2008; 2 exx., 7.viii.2008, Pindra pera, ; Dalma wildlife sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 54-70 mm.

Occurrence : June-August.

Distribution : India : Jharkhand (East Singhbhum), Madhya Pradesh (Indore, Hoshangabad, Umaria), South India, West and East Himalaya and West Bengal (Bankura, Kolkata).

Elsewhere : Bhutan, Japan, Myanmar, Pakistan, Papua and Sri Lanka.

Host Plants : The food-plants belong to the family Ampelidae, Aroidae, Convolvulaceae, Geraniaceae, Myrtaceae, Ongraceae, Rubiaceae and Tiliaceae.

Tribe SPHINGULINI

Genus *Dolbina* Stgr.

17. *Dolbina inexacta* Walker

1856. *Dolbina inexacta* Walker, *List Spec. Lepid. Insects Colln Br. Mus.*, **8** : 208.

1937. *Dolbina inexacta*, Bell & Scott, *Fauna Brit. India, Moths*, **5** : 95.

Diagnosis : Head and thorax dark brown grizzled with white; thorax with some white marks at sides and round vertex; abdomen golden-brown above brown at sides, a black streak on the dorsum of each segment. Fore wing variegated with grey, dark brown and golden-brown. Hind wing brown. Underside of abdomen with large black and white mesial patches.

Material examined : 2 exx., 24.ix.2008; 3 exx., 25.ix.2008; 2 exx., 26.ix.2008, Pindra pera, ; Dalma wildlife

sanctuary, East Singhbhum, Jharkhand, coll. S. Sambath & Party.

Wingspan : 68-75 mm.

Occurrence : August-September.

Distribution : India : Jharkhand (East Singhbhum), East and West Himalayas, South India.

Elsewhere : China.

Host Plants : *Olea dioica*, *Linociera malabarica*, *Lingustrum robustum*.

SUMMARY

The paper incorporates the accounts of 17 species under 12 genera of the family sphingidae recorded for the first time from Dalma Wildlife Sanctuary, Jharkhand.

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