

ON A SMALL COLLECTION OF CTENUCHIDAE (INSECTA ;
LEPIDOPTERA) FROM ARUNACHAL PRADESH

G. S. ARORA*, S. K. GHOSH & M. CHAUDHURY
Zoological Survey of India, Calcutta.

I. INTRODUCTION

The Zoological Survey of India has undertaken several faunistic surveys of Arunachal Pradesh including one expedition during the period 1961-1973. The surveys cover different districts of Arunachal Pradesh including Kameng, Subansiri, Siang, Lohit and Tirap.

Very little information is hitherto available regarding Ctenuchidae of Arunachal Pradesh. However, Hampson (1892, 1898 & 1914), Zerny (1912), Seitz (1913), Fletcher (1925) and Arora (1980) have worked on Indian Ctenuchidae. In addition, Obraztsov (1966) made a valuable contribution on Ctenuchidae while revising the Palaearctic species of the genus *Amata* Fabricius.

The authors in course of their studies on Ctenuchidae from Arunachal Pradesh identified eleven species in four genera and all of them constitute new records from the State. In this connection it may be mentioned that following Obraztsov (1966), *Syntomis luteifascia* Hampson and *Callitomis multifasciata* Hampson have been kept under the genus *Amata* (*Amata*) Fabr. and *Syntomis diaphana* Kollar, *S. hydatina* Butler and *S. bicincta* Kollar have been treated under *Amata* (*Syntomis*).

II. SYSTEMATIC ACCOUNT

Family CTENUCHIDAE

Proboscis well developed or aborted. Labial palpi present, short and porrect, long and down-curved or upturned. Frons simple, rounded. Antennae variable, being either simple or with short branches in males, or simple in both the sexes. Tibiae with the spurs short. Fore wing with vein 3A forming a fork with 2A ; 1A absent ; M_2 from near the lower angle of cell : R_5 stalked with $R_3 + R_4$. Hind wing small ; Sc absent, rarely rudimentary from base and not reaching costa, or forming a fork with R_s ; frenulum present, retinaculum bar-shaped ; 3A absent.

*Present address : Northern Regional Station, Zoological Survey of India, Dehra Dun.

Key to the identification of genera from Arunachal Pradesh.

1. Hind wing without vein Cu_{1a} ... *Ceryx* Wallengren
 —Hind wing with vein Cu_{1a} 2
2. Fore wing without vein R_s ; hind wing with vein M_2 from lower angle of cell ... *Psichotoe* Boisduval
 —Fore wing with vein R_s present ; hind wing with M_2 - Cu_{1a} variable. ... 3
3. Hind wing with vein M_2 from angle, connate with Cu_{1a} or rarely above it. Hind tibia with two pairs of spurs. ... *Amata* Fabr.
 —Hind wing with vein M_2 always from above the lower angle. Hind tibia with a single pair of spurs. ... *Eressa* Walker

Genus *Ceryx* Wallengren

1863. *Ceryx* Wallengren, *Wien. Ent. Mon.*, 7 : 140.

Type : *Naclia anthraciformis* Wallengren (1860).

Diagnosis : Labial palpi porrect, not extending beyond the frons. Fore wing with vein R_1 - R_5 stalked ; M_1 from or from below the upper angle of cell. Hind wing with R_s coincident with M_1 ; M_2 present ; M_3 and Cu_{1a} absent ; Cu_{1a} from behind the angle of cell. Mid and hind tibia each with a minute pair of spurs, hind tibia rarely with two pairs.

Distribution : Indo-Australian region. Also in part of the African region.

Remarks : Fletcher (1925) recorded eight species of *Ceryx* from the Indian region, including one from Burma. Later, Arora (1980) recorded it from Andaman Islands.

The present study includes two species of Arunachal Pradesh, and these are differentiated by the following key.

Key to the identification of the species of Ceryx Wallengren

- Hind wing with narrow terminal black band ... *godartii* (Boisduval)
 —Hind wing with broad terminal black band extending nearly to cell.
 ... *imaon* (Cramer)

1. *Ceryx godartii* (Boisduval)

1829. *Syntomis godartii* Boisduval, *Mon. Zyg.*,—115, pl. 7, fig. 3.

Material examined : Arunachal Pradesh : Siang Dist., Siji, 200m., 1 ♂, 8.x.1966 ; Padding Village, 300 m., 2 ♂♂, 11.x.1966 ; Kambang, 200 m., 2 ♂♂, 14./16.x.1966 ; Newjining, 200 m., 2 ♂♂, 18.x.1966 ; Tappi Dulla, 500 m ; 1 ♂, 22.x.1966 ; Tachidoni, 400 m. 1 ♂, 24.x.1966 ; Daporijo, 150 m., 2 ♂♂, 1 ♀, 26, 27, 28.x.1966 ; Bame, 550 m.,

2♂♂, 31.x.1966 (*S. K. Tandon & G. S. Arora* Coll.), Lohit Dist., Chowkham, 100 m., 1♂, 16.ii.1969; Bhalukpong, 195 m., 1♂, 23.ii.1969, Sadiya, 100 m., 2♂♂, 28.ii.1969; Shantipur, 100 m., 1♂, 2.iii.1969; Sunpura, 100 m., 1♂, 3.iii.1969; Roing, 300 m., 2♂♂, 1♀, 7, 8, iii.1969 (*S. K. Tandon* Coll.), Daphabhum, Chowkham; 244 m., 1♂, 1♀, 26.xi.1969 (*J. M. Julka* Coll.), Tirap Dist., Margherita Inspection Bungalow, 125 m., 1♂, 23.x.1971; Jairampur, 200 m., 3♂♂, 24.x.1971, Guest House, Jairampur, 225 m., 1♂, 1♀, 25.x.1971 (At light); Changlong, around Camp, 540 m., 3♂♂, 4♀♀, 30, 31.x.1971; Power House, Khonsa, 800 m., 3♂♂, 3♀♀, 6.xi.1971; Deomali, 200 m., 3♂♂, 1♀, 9, 10, 11, 12.x.1971 (all *G. S. Arora* Coll.)

Wing expanse : ♂ 22-30 mm. ; ♀ -25-29 m.

Distribution : India (Sikkim, Assam, Arunachal Pradesh, West Bengal (Calcutta) and South India); Sri Lanka; Burma (Yunnan); Malay and Sumatra.

Remarks : The wing expanse as reported by Hampson range between 26-32 mm., but in the specimens under study are within 22-30 mm.

2. *Ceryx imaon* (Cramer)

1780. *Sphinx imaon* Cramer, *Papil. Exot.*, 3 : 94, pl. 248, fig.

Material examined : Arunachal Pradesh : Kameng Dist., Amatulla, 2800 m., 1♀, 23.v.1961, Ankaling, 2000 m., 1♂, 1♀, 25.v.1961 (*K. C. Jayaramakrishnan* Coll.), Subansiri Dist., Pinjuli, 244 m., 1♀, 4.v.1966; Bhalukpong, 213 m., 3♀♀, 6.v.1966; Charduar, 79 m., 1♂, 29.v.1966 (*A. N. T. Joseph* Coll.), Lohit Dist., Sunpura, 100 m., 1♀, 3.ii.1969 (*S. K. Tandon* Coll.), Tirap Dist., Guest House, Jairampur, 225 m., 1♀, 25.x.1971 (*G. S. Arora* Coll.)

Wing expanse : ♂ -24mm., ♀ -27-32 mm.

Distribution : India (Assam, Cachar, Meghalaya (Khasi Hills), Arunachal Pradesh, Sikkim, West Bengal, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Tamil Nadu and Andamans); Indonesia; Sri Lanka and Burma.

Remarks : The largest wing expanse as reported by Hampson (1898) is 42 mm. but in the specimens under study, it is restricted within 32 mm.

Genus *Psichotoë* Boisduval

1829. *Psichotoë* Boisduval, *Mon. Zyg.* : 129.

Type : *P. duvauceli* Boisduval (1829).

Diagnosis : Antennae in male serrate. Forewing broad, the apex rounded. Venation mainly as in the genus *Amata* except that the vein R_s being absent in this genus and the abdominal segments are dilated and hairy.

Distribution : India (West Bengal : Calcutta); Arunachal Pradesh; Pakistan (Sind and Karachi).

Remarks : Hampson (1892) recorded the genus only from North India, and mentioned Karachi, Sind [now Pakistan] and Calcutta, West Bengal : India (now Indian region), for *duvauceli*. The present record of the genus from the further east is of the geographical interest.

3. *Psichotoë duvauceli* Boisduval

1829. *Psichotoë duvauceli* Boisduval, *Mon. Zyg.* : 129, pl. 8, Fig. 5.

Material examined : Arunachal Pradesh : Siang Dist., Lekhabali, Jeep Camp, 2♂♂, 6.x.1966 (S. K. Tandon and G. S. Arora Coll.)

Wing expanse : 14 mm.

Distribution : India (Arunachal Pradesh, Assam and West Bengal) ; Burma ; Pakistan (Sind and Karachi).

Remarks : Hampson (1898) reported that the wing expanse of the species varied from 18 to 20 mm. But the males of the material under study are smaller with 14 mm. wing expanse.

The species is characterised by the presence of orange bands on the last abdominal segments and the wing being uniformly fuscous and hyaline.

Genus *Amata* Fabricius

1807. *Amata* Fabricius, *Illiger's Mag.*, 6 : 289.

Type : *Zygaena passalis* Fabricius, 1775.

Diagnosis : Head with the frons mostly smooth. Antennae in male either pectinate or simple, slightly broadened beyond middle. Labial palpi short, down-curved and hairy ; 3rd segment extremely reduced. Fore wing long and rather narrow ; veins R_1 - R_5 stalked ; M_1 from near upper angle of cell ; M_2 - M_3 from lower angle or stalked. Hind wing with the vein R_s coincident with M_1 ; M_3 absent ; M_2 and Cu_{1a} from angle or stalked, rarely M_2 slightly above the angle. Hind tibia with two pairs of spurs.

Distribution : Europe, the whole of African, Oriental and Australian regions.

Remarks : Fletcher (1925) recorded as many as forty species from India, including three from Andaman Islands. Later, Arora (1980) added *A. cingulata* (Weber) from the Andaman region.

The present study of the wing venation has shown that veins M_2 - Cu_{1a} in hind wing are quite separate at the base as in the genus *Eressa* Walker but the species can be differentiated from the genus in having two pairs of spurs on the hind tibia. In *Eressa* there is only a single terminal spur.

Obraztsov (1966), while revising the palaeartic species of the genus *Amata* Fabr., divided it into two subgenera, *Amata* Fabr. and *Syntomis* Ochseneheimer, on the basis of the male genitalic characters. The following key may be given :

- Basal process of at least one of the claspers well developed, with the end free, fused together with the aedeagus above only at basal part. Subgenus *Syntomis* Ochseneheimer
 —Basal process of both claspers undeveloped, or simple and fused together with membranes of aedeagus above through the tip. ... Subgenus *Amata* Fabricius

Five species are being described here, three under the subgenus *Syntomis* Ochseneheimer and two under subgenus *Amata* Fabr. as under.

I. Key to identification of the species of Subgenus *Syntomis*

1. Abdomen with seven orange bands in male ... *diaphana* (Kollar)
 —Abdomen with two orange bands, on 1st and 5th segment in male ... 2
 2. Metathorax with orange patch ... *hydatina* (Butler)
 —Metathorax without orange patch ... *bicincta* (Kollar)

4. *Amata* (*Syntomis*) *diaphana* (Kollar)

1844. *Syntomis diaphana* Kollar, in : Hugel's *Kaschmir und das Reich der seit*, 4 : 460, pl. 19, fig. 7.

Material examined : Arunachal Pradesh : Subansiri Dist., Pinjuli, 244 m., 1 ♂, 4.v.1966 (*A. N. T. Joseph* Coll.)

Wing expanse : 44 mm.

Distribution : India (Assam, Meghalaya, (Khasis), Arunachal Pradesh, N. W. Himalayas, Uttar Pradesh, (Almora, and Mussoorie), Himachal Pradesh, (Dalhousie and Kasauli) ; and Jammu & Kashmir) and Burma.

Remarks : The minimum wing expanse as reported by Hampson (1898) is 46 mm. while the male specimen under study is 44 mm.

5. *Amata* (*Syntomis*) *hydatina* (Butler)

1876. *Syntomis hydatina* Butler, *Journ. Linn. Zool.*, 12 : 246.

Material examined : Arunachal Pradesh : Subansiri Dist., Majgaown, 79 m., 5 ♂ ♂, 2 ♀ ♀, 30.v.1966 (*A. N. T. Joseph* Coll.)

Wing expanse : ♂, ♀ —30 mm.

Distribution : India : Sikkim, Arunachal Pradesh, Madhya Pradesh and West Bengal (Calcutta).

Remarks : The wing expanse in male and female specimens under study is 30 mm. which is more than what has been reported by Hampson (1898), with the wing expanse being 24 mm.

6. *Amata (Syntomia) bicincta* (Kollar)

1844. *Syntomis bicincta* Kollar, in : *Hugels, Kaschnir und das Reich der siek*, 4 : 460, pl. 19, fig. 8.

Material examined : Arunachal Pradesh : Siang Dist., Dali Camp, 200 m., 1 ♀, 10.x.1966 (S. K. Tandon & G. S. Arora Coll.), Tappi, 175 m., 1 ♂, 20.iii.1973 (S. K. Tandon Coll.)

Wing expanse : ♂—24 mm., ♀—36 mm.

Distribution : India : Arunachal Pradesh : N. W. Himalayas, Himachal Pradesh (Kangra), Uttar Pradesh (Dehra Dun), Sikkim, West Bengal (Calcutta), Meghalaya (Khasia), and China (Foochow).

Remarks : Hampson (1898) reported that the first tarsal joint of hindtibia is white while in the specimens under study the first tarsal joint is white in all the legs. Hampson (*loc. cit.*) reported that the wing expanse varies between 30-44 mm. but in the present specimens variation is observed between 24-36 mm.

II. *Key to identification of the species of subgenus Amata Fabr.*

1. Thorax black, with yellow spots. Wings diaphanous with distal yellow border specially in hind wing. Fore wing with eight diaphanous spots

... *luteifascia*
(Hampson)
- Thorax black, without yellow spots. Wings black, except the diaphanous spots and without yellow border. Fore wing with six diaphanous spots

... *multifasciata*
(Hampson)

7. *Amata (Amata) luteifascia* (Hampson)

1892. *Syntomis luteifascia* Hampson, *Fauna Brit. India*, 1 : 218.

Material examined : Arunachal Pradesh : Siang Dist., Dali Village, 200 m., 2 ♀ ♀, 10.x.1966 (S. K. Tandon & G. S. Arora Coll.)

Wing expanse : 32-40 mm.

Distribution : India (Assam, Nagaland (Naga Hills) and Arunachal Pradesh).

8. *Amata (Amata) multifasciata* (Hampson)

1892. *Callitomis multifasciata* Hampson, *Fauna Brit. India*, 1 : 225.

Material examined : Arunachal Pradesh : Subansiri Dist., Chukra, 1128 m., 6 ♂♂, 22.x.1966, Godak, 975 m., 1 ♂, 23.v.1966. (A. N. T. Joseph Coll.), Siang Dist., Parying Village, 200 m., 1 ♂, 15.x.1966 ; Kambang, 200 m., 1 ♀, 16.x.1966 ; Newjining, 200 m., 1 ♂, 19.x.1966, Tappi, 600 m., 1 ♂, 2 ♀♀, 23.x.1966, Tachidoni, 400 m., 1 ♂, 1 ♀, 24.x.1966. Daporijo, 150 m., 2 ♂♂, 1 ♀, 26, 27, 28.x.1966 (S. K. Tandon & G. S. Arora Coll.), Daphabum Expedition, Glohowel, 1186 m., 1 ♀, 9.xii.1966 (J. M. Julka Coll.)

Wing expanse : ♂—13-36 m., ♀—22-31 m.

Distribution : India (Sikkim, Arunachal Pradesh, Assam, and Nagaland).

Genus *Eressa* Walker

1854. *Eressa* Walker, *List Lep. Het. Brit. Mus.*, 1 : 149.

Type : *Glaucopis confinis* Walker (1854).

Diagnosis : Proboscis small or well developed. Labial palpi short and porrect. Frons hairy, simple. Mid and hind tibia with a pair each of minute terminal spurs. Fore wing usually broad ; veins R_1 - R_5 stalked ; M_1 from below the upper angle of cell ; M_2 - M_3 from angle ; Cu_{1a} from well before the angle of cell. Hind wing with the vein R_s coincident with M_1 ; M_3 absent ; veins M_2 and Cu_{1a} quite separate at origin, M_2 well above the angle of cell.

Distribution : Mainly Indo-Australian regions.

Remarks : Although Zerny (1912) included ten species in this genus, Fletcher (1925) excluded one of its species *Eressa simplex* Rothschild, as a synonym of *Trichaeta teneiformis* (Walker), thus reducing the number of Indian species to nine.

The genus *Eressa* is characterised by the presence of only single pair of terminal spurs in the hind tibia, unlike the genus *Amata*, which has two pairs and to which is otherwise closely allied because of the absence of vein M_3 and presence of Cu_{1a} in the hind wing. Hampson (1898) differentiated these two genera on the basis of the origin of vein M_2 which he described as from lower angle of cell or shortly stalked with Cu_{1a} in hind wing in the genus *Amata* and from well above angle of cell in *Eressa*. The character seems to be quite variable in the genus *Amata* where the origin of this vein may be from above the lower angle.

Key to the Identification of the species of Eressa Walker

1. Antennae of male serrate. Abdomen crimson, with series of blue-black spots.
... *multigutta* (Walker)

- Antennae of male bipectinate. Abdomen with dorsal and lateral orange yellow spots. 2
2. Hind wing with a large hyaline spot below base of cell. ... *confinis* (Walker)
- Hind wing with hyaline spot between M_2 - Cu_{1a} and at the end of cell. *affinis* Moore

9. *Eressa multigutta* (Walker)

1854. *Syntomis multigutta* Walker, *List Lep. Het. Brit. Mus.*, 1 : 134.

Material examined : Arunachal Pradesh : Kameng Dist., Below Dengzi, 4050 m., 1 ♂, 15.v.1961 (K. C. Jayramakrishnan Coll.), Daphabum Expdt., Kambang River, 518 m. f., 1 ♀, 17.xii.1969 (J. M. Julka Coll.)

Wing expanse : ♂—28 mm., ♀—34.

Distribution : India (Sikkim and Arunachal Pradesh) ; China ; Tibet ; Nepal and Burma.

Remarks : Wing expanse as reported by Hampson (1898) is ranging between 25-32 mm., unlike in the material under study.

10. *Eressa confinis* (Walker)

1854. *Glaucoptis confinis* Walker, *List Lep. Het. Brit. Mus.*, 1 : 149.

Material examined : Arunachal Pradesh : Lohit Dist., Sadiya, 100 m., 1 ♀, 28.ii.1969, Roing, 300 m., 2 ♂♂, 7.iii.1969, Namsai, 100 m., 1 ♀, 14.iii.1969., (S. K. Tandon and party Coll.), Tirap Dist., Margherita Inspection Banglow, 125 m., 1 ♀, 23.x.1971 (at light), Jairampur, 200 m., 1 ♀, 24.x.1971 ; Jairampur Guest House, 225 m., 1 ♂, 3 ♀♀, 25.x.1971 (G. S. Arora Coll.)

Wing expanse : ♂—24 mm., ♀—27-30 mm.

Distribution : India (Arunachal Pradesh, N. W. Himalaya, Uttar Pradesh (Almorah), Himachal Pradesh (Kangra and Shimla), Sikkim, West Bengal (Calcutta), Maharashtra (Bombay), and Tamil Nadu (Nilgiri) ; Bhutan, Sri Lanka and Burma.

Remarks : Slight variation is observed in the material under study than what has been reported by Hampson, ranging between 26-32 mm.

11. *Eressa affinis* Moore

1877. *Eressa affinis* Moore, *Proc. zool. Soc. Lond.*, : 596, pl. 59.

Material examined : Arunachal Pradesh : Subansiri Dist., Kimin. 198 m., 1 ♀, 9.v.1966, Dedgoo, 183 m., 2 ♂♂, 4 ♀♀, 10.v.1966, Charduar, 79 m., 1 ♂, 1 ♀, 29.v.1966 (A. N. T. Joseph Coll.), Siang Dist., Dali Camp, 3 Km. North of Dali Village, 300 m., 1 ♀, 10.x.1966 (S.K. Tandon & G. S. Arora Coll.).

Wing expanse : ♂—15-20 mm., ♀—20-27 mm.

Distribution ; India (Andamans and Arunachal Pradesh).

SUMMARY

The paper deals with the taxonomic account of eleven species under four genera of Ctenuchidae from Arunachal Pradesh collected by various survey parties of the Zoological Survey of India. Keys to the identification of genera and species, geographical distribution and references have been included.

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