

Taxonomic Studies on Three *Caeneressa* Species (Lepidoptera: Syntominiæ) from India with Special Reference to Their External Genitalia

Jagbir Singh Kirti¹, Navneet Singh², Rahul Joshi^{3,*}

¹Department of Zoology and Environmental Sciences, Punjabi University, Patiala 147002, India

²Zoological Survey of India, Gangetic Plains Regional Centre, Bahadurpur Housing Colony, Sector-8, Patna 800 026, India

³Department of Agriculture, Baba Farid College, BFGI, Deon, Bathinda 151001, India

ABSTRACT

Caeneressa diaphana muirheadi (Felder) and *Caeneressa brithyris* (Druce) have been recorded for the first time from India. Further, a new combination viz. *Caeneressa melaena* (Walker) comb. nov., has also been proposed on the basis of external genitalic features. With these records, genus *Caeneressa* will be represented by five species from India, *Caeneressa diaphana* (Kollar), *Caeneressa diaphana muirheadi* (Felder), *Caeneressa brithyris* (Druce), *Caeneressa melaena* (Hampson) and *Caeneressa swinhoei* (Leech). The studied material was collected from North-Eastern states of India. *Caeneressa brithyris* (Druce) was collected near riverside at low altitude whereas the other two species were collected at high altitude.

Keywords: Lepidoptera, Syntominiæ, *Caeneressa*, new records, India

INTRODUCTION

Genus *Caeneressa* Obraztsov (1957) was established on its type species *Syntomis diaphana* (Kollar) from Kashmir, India in order to provide stability to Oriental species previously placed under three genera, i.e., *Amata* Fabricius, *Syntomis* Ochsenheimer and *Eressa* Walker. Besides this, seven new species viz., *proxima*, *klapperichi*, *hoenei*, *dispar*, *zernyi*, *ningyuena*, *tienmushana* and six new combination *C. pratti* (Leech), *C. obsoleta* (Leech), *C. swinhoei* (Leech), *C. oenone* (Butler), *C. graduata* (Hampson) and *C. rubruzonata* (Pouj.) were also described in this publication by Obraztsov. Holloway (1988) followed the same nomenclature and described one new species, *C. marcescoides* Holloway under this genus and also shifted seven other species under genus *Caeneressa* Obraztsov from Borneo.

In the present manuscript, external genitalia of three species have been studied and a new combination has been proposed, *Caeneressa melaena* (Walker) comb. nov. Further, *C. muirheadi* (Felder) and *C. brithyris* (Druce) have also been recorded for the first time from India. With these records, the genus will be known by following species from India:

Caeneressa diaphana (Kollar), *Caeneressa diaphana muirheadi* (Felder), *Caeneressa brithyris* (Druce), *Caeneressa melaena* (Hampson) comb. nov., and *Caeneressa swinhoei* (Leech). The studied material was collected from North-Eastern states of India. The collected material was treated as per standardized techniques in Lepidopterology. Comstock (1918) and Klots (1970) have been followed for study of wing venation and genitalia. Adult moths were photographed using digital camera. Photography of external male genitalia was done with the help of an Image Processing Unit in the Department of Zoology & Environmental Sciences, Punjabi University, Patiala.

RESULTS AND DISCUSSION

Order Lepidoptera
Family Erebidæ
Genus *Caeneressa* Obraztsov

***Caeneressa melaena* (Walker) n. comb. (Fig. 1)**

Syntomis melaena Walker, 1854: 133; *Syntomis andersoni*

© This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

***To whom correspondence should be addressed**
Tel: 91-9569325383
E-mail: joshiarctiidae@gmail.com

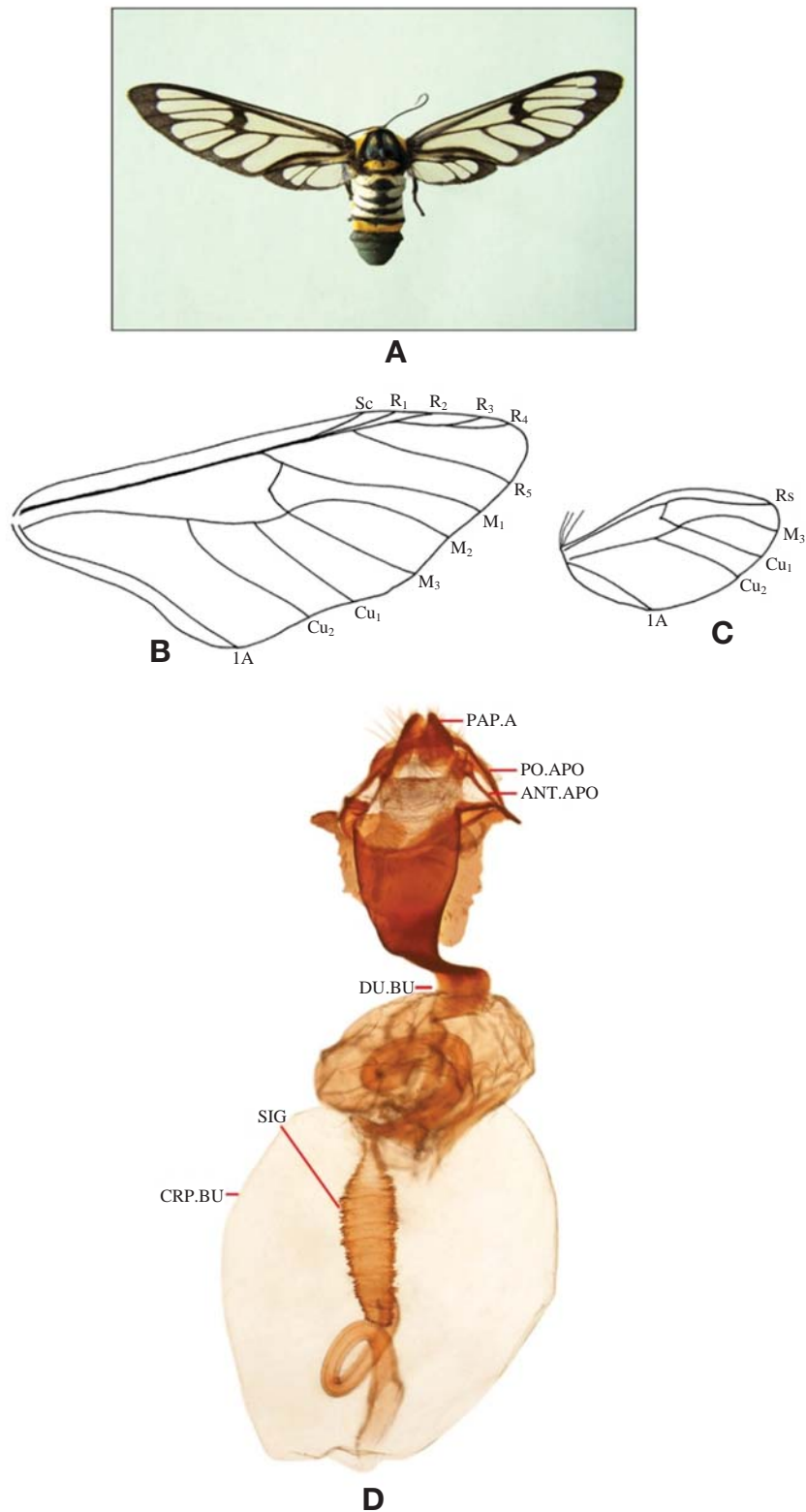


Fig. 1. *Caeneressa melaena* (Walker). A, Adult (female); B, Forewing; C, Hindwing; D, Female genitalia. ANT.APO, anterior apophyses; CRP.BU, corpus bursae; CU₁, first cubital vein; CU₂, second cubital vein; DU.BU, ductus bursae; M₁, first median vein; M₂, second median vein; M₃, third median vein; PAP.A, papila analis; PO.APO, posterior apophyses; R₁, first radial vein; R₂, second radial vein; R₃, third radial vein; R₄, fourth radial vein; R₅, fifth radial vein; Rs, radial sector; Sc, subcosta; SIG, signum; 1A, first anal vein.

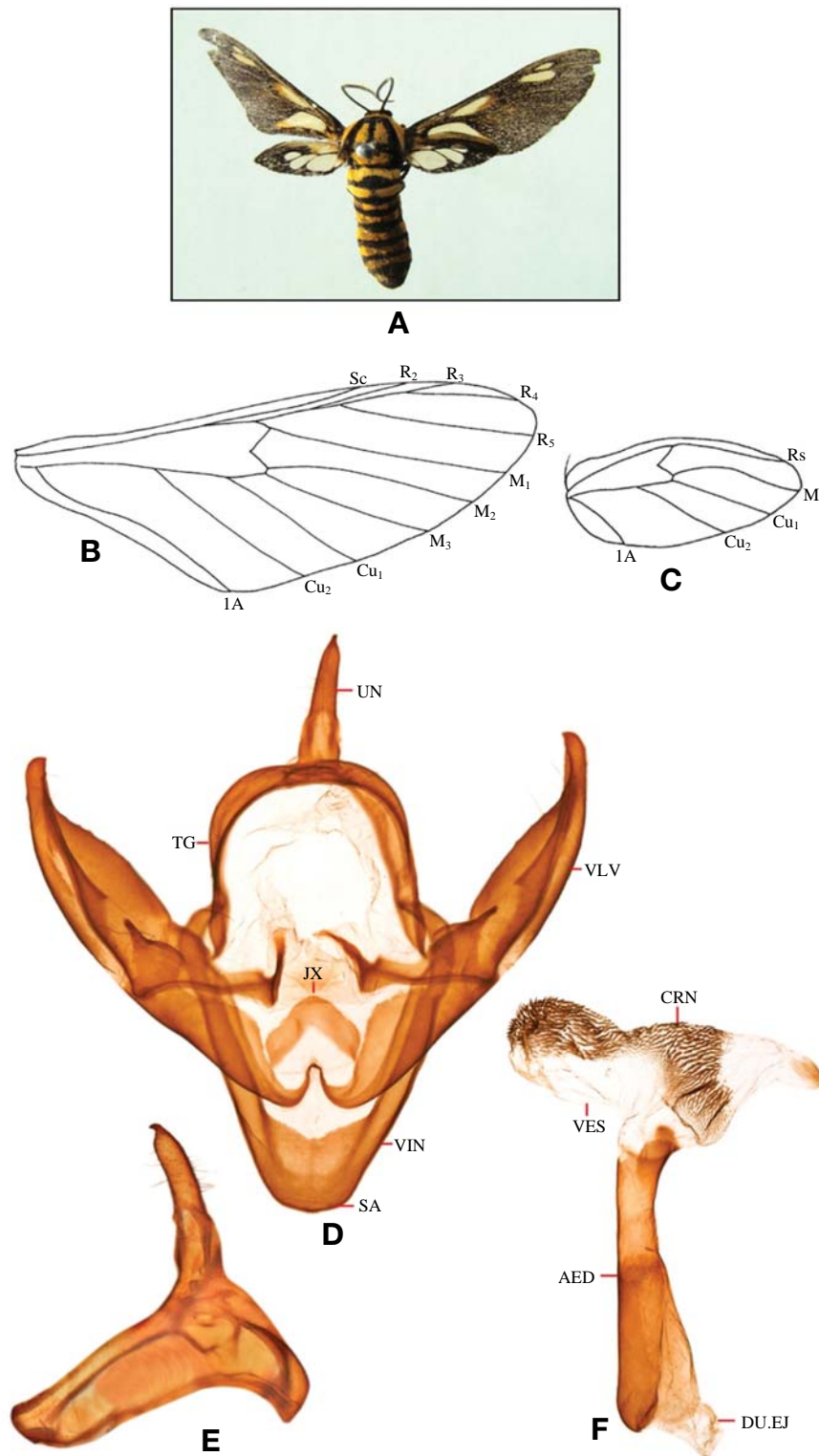


Fig. 2. *Caeneressa brithyris* (Druce). A, Adult (male); B, Forewing; C, Hindwing; D, Male genitalia; E, Aedeagus; F, Uncus (dorsal view). AED, aedeagus; CRN, cornutus; CU₁, first cubital vein; CU₂, second cubital vein; DU.EJ, ductus ejaculatorius; M₁, first median vein; M₂, second median vein; M₃, third median vein; R₂, second radial vein; R₃, third radial vein; R₄, fourth radial vein; R₅, fifth radial vein; Rs, radial sector; SA, saccus; Sc, subcosta; TG, tegumen; UN, uncus; VES, vesica; VIN, vinculum; VLV, valva; 1A, first anal vein.

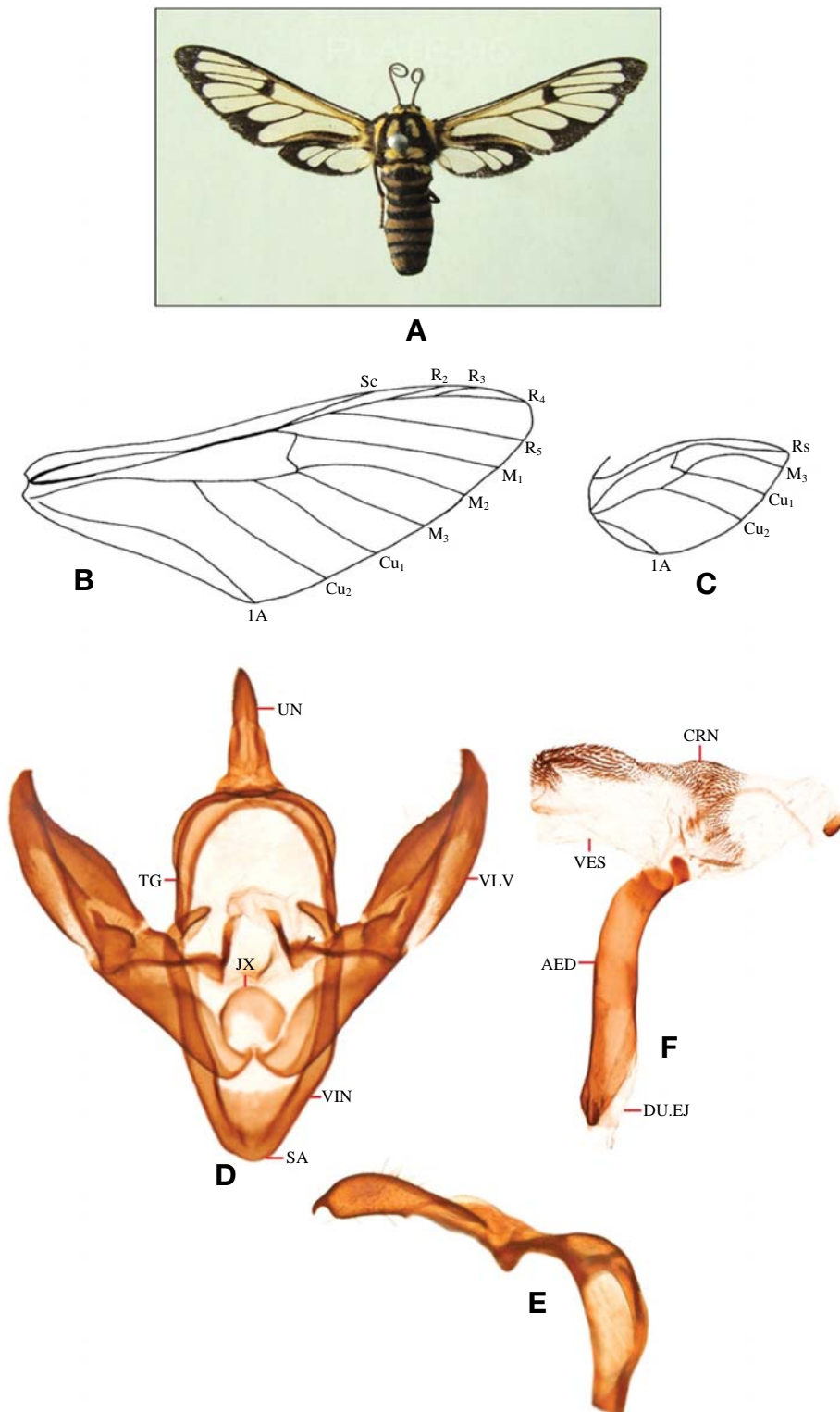


Fig. 3. *Caeneressa diaphans mulrheadi* (Felder). A, Adult (male); B, Forewing; C, Hindwing; D, Male genitalia; E, Uncus with Tegumen (lateral view); F, Aedeagus. AED, aedeagus; CRN, cornutus; CU₁, first cubital vein; CU₂, second cubital vein; DU.EJ, ductus ejaculatorious; M₁, first median vein; M₂, second median vein; M₃, third median vein; R₂, second radial vein; R₃, third radial vein; R₄, fourth radial vein; R₅, fifth radial vein; Rs, radial sector; SA, saccus; Sc, subcosta; TG, tegumen; UN, uncus; VES, vesica; VIN, vinculum; VLV, valva; 1A, first anal vein.

Moore, 1871: 244; *Syntomis melaena* Walker; Hampson, 1898: 96.

Material examined. India: Assam, Jatinga, 650 m, 10 Apr 2009, (2 ♀) coll. R. Joshi (registration no. PUP/RJ-196).

Description. Female genitalia with corpus bursae large, globular, membranous; single sclerotized signum, large flap-like, continuous with pipe like structure; cervix bursae sclerotized, ductus seminalis entering cervix bursae; ductus bursae short, sclerotized; anterior apophyses as long as posterior apophyses; papilla analis besets with long setae.

Wing span. Female 54 mm.

Distribution. Sikkim, Assam, Khasi hills; Burma; Nepal; Yunnan.

Remarks. Female genitalia of the species has been studied and described for the first time and it falls into the characterization of genus *Caeneressa* which were proposed by Obraztsov (1957) and later by Holloway (1988). Hence, on the basis of its external female genitalic features, a new combination, *C. melaena* (Walker) comb. nov. is proposed here.

Caeneressa brithyris (Druce) (Fig. 2)

Syntomis brithyris Druce, 1898: 146; *Syntomis brithyris* Druce; Hampson, 1898: 90; *Caeneressa brithyris* (Druce); Holloway, 1988: 31.

Material examined. India: Meghalaya, Shella, 20 m, 3 Sep 2008 (2 ♂) coll. N. Singh (registration number: PUP/RJ-198).

Description. Male genitalia with uncus long, sclerotized, apically hooked; tegumen broad, inverted U-shaped; vinculum longer than tegumen, V-shaped; saccus present. Valvae symmetrical, broad, narrowing towards apex; costal margin smooth slightly excurved; cucullus and valvula not differentiated; harpe present. Juxta inverted V-shaped; transtilla weakly sclerotized. Aedeagus hammer-shaped, long and moderately broad, sclerotized, vesica membranous with on extensive field of short spines, a small sclerotized patch at one end; ductus ejaculatorius entering laterally.

Wing span. Male 44 mm.

Distribution. Borneo; Sandakan; India.

Remarks. Female genitalia of the present species was described by Holloway in 1988. However, male genitalia of *brithyris* (Druce) has been studied and described here for the first time. The reporting of this species from Meghalaya is its first record from India.

Caeneressa diaphana muirheadi (Felder) (Fig. 3)

Syntomis muirheadi Felder and Felder, 1862: 37; Hampson, 1898: 95; *Caeneressa diaphana muirheadi* (Felder); Obraztsov, 1957: 426.

Material examined. India: Mizoram, Champhai, 1,680 m, 26 Sep 2009, (2 ♂) coll. R. Joshi (registration no. PUP/RJ-199).

Description. Male genitalia with uncus long, sclerotized, narrow at base, broad towards apex, apical spine present; tegumen sclerotized, bell-shaped, as long as uncus; vinculum as long as tegumen, deep v-shape; saccus present. Juxta sclerotized, globular; transtilla weakly sclerotized. Valvae leaf-like, not well differentiated into costal and saccular processes, thickened near middle. Aedeagus hammer-shaped, long, sclerotized; vesica membranous with an extensive field of short spines, a small sclerotized patch at another end; ductus ejaculatorius entering sub-apically.

Wing span. Male 38 mm.

Distribution. China, India.

Remarks. Obraztsov (1957) shifted *muirheadi* as subspecies under *C. diaphana* by proposing a new combination for it. However, in *muirheadi* uncus is slightly narrow than typical *diaphana*. This is the first record of *muirheadi* (Felder) from India.

ACKNOWLEDGMENTS

We thank the Department of Science and Technology, Govt. of India, New Delhi for providing financial assistance in the form of two major research projects on Taxonomic revision of Indian Arctiidae. We are also thankful to Forest officials of all the visited states for allowing us to collect these moths.

REFERENCES

- Comstock JH, 1918. The wings of insects: an exposition of the uniform terminology of the wing veins of insects and a discussion of the more general characteristics of the wings of the several orders of insects. Comstock Publishing Co., Ithaca, New York, pp. 1-430.
- Druce H, 1898. Description of some new species of Heterocera. The Annals and Magazine of Natural History, London, 1: 146-149.
- Felder C, Felder R, 1862. Observationes de Lepidoteris nonnullis Chinae centralis et Japoniae. Wiener Entomologische Monatschrift, 6:33-40.
- Hampson GF, 1898. Catalogue of the Lepidoptera Phalaenae in the collection of the British Museum, Syntomidae. Taylor and Francis Ltd., London, pp. 1-559.
- Holloway JD, 1988. The moths of Borneo: family Arctiidae, subfamilies Syntomini, Euchromiinae Arctiinae; Noctuidae misplaced in Arctiidae (Camptoloma, Aganainae). Southdene, Kuala Lumpur, pp. 1-101.
- Klots AB, 1970. Lepidoptera. In: Taxonomist's glossary of geni-

- talía in insects (Ed., Tuxen SL). Munksgaard, Copenhagen, pp. 115-130.
- Moore F, 1871. Descriptions of some new insects collected by Dr. Anderson during the expedition to Yunan. Proceedings of the Zoological Society of London, 1871:244-249.
- Obraztsov NS, 1957. The Chinese *Caeneressa* species (Lepidoptera, Ctenuchidae). Bulletin of the Museum of Comparative Zoology at Harvard College, 116:389-436.
- Walker F, 1854. List of the specimens of lepidopterous insects in the collection of the British Museum. Edward Newman, London, pp. 1-278.

Received May 21, 2013
Revised December 12, 2013
Accepted December 17, 2013