



## International Journal of Current Research and Academic Review

ISSN: 2347-3215 Volume 2 Number 12 (December-2014) pp. 42-46

[www.ijcrar.com](http://www.ijcrar.com)



### Genitalic studies on three species of genus *Phlogophora* Treitschke (Lepidoptera: Noctuidae: Hadeninae)

Jagbir Singh Kirti<sup>1</sup>, Harkanwal Singh<sup>1\*</sup> and Navneet Singh<sup>2</sup>

<sup>1</sup>Department of Zoology and Environmental Sciences, Punjabi University, Patiala-147 002, Punjab, India

<sup>2</sup>Zoological Survey of India, Gangetic Plains Regional Centre, Sector-8, Bahadurpur Housing Colony, Patna-800026, Bihar, India

\*Corresponding author

#### KEYWORDS

Lepidoptera, Noctuidae, *Phlogophora* Treitschke, Three species, Genitalia.

#### A B S T R A C T

The present article deals with the genitalic attributes of three species, *Phlogophora conservuloides* (Hampson), *Phlogophora albiovittata* (Moore) and *Phlogophora costalis* (Moore) to update the diagnosis of the species

### Introduction

Treitschke (1825) proposed genus *Phlogophora* and Duponchel (1829) designated *Phalaena meticulosa* Linnaeus as its type species. Genus *Phlogophora* is a typical member of tribe Phlogophorini Hampson of family Noctuidae. Poole (1989) catalogued a total number of 52 species from the Globe. Hreblay and Ronkay (1998) described two new species i.e. *P. humilis* Hreblay and Ronkay and *P. nobilis* Hreblay and Ronkay from Nepal and thus, raised the total number of global species to 54. Indian fauna of genus *Phlogophora* is known by a total of five species. In the present work, external male and female genitalia of three species *P. conservuloides* (Hampson), *P. costalis*

(Moore) and *P. albiovittata* (Moore) have been described and illustrated in detail.

### Materials and Methods

Intensive and extensive collection-cum-survey tours have been conducted in Northeast India between September, 2009 and May, 2012. The collection of adult Noctuid moths has been made with the help of light traps fitted at different places during night time. Both vertical sheet and portable light trap methods have been used for this purpose. Petromax lamp/ battery operated lamp was also used for collection purpose in some areas where electricity supply was not available. Collection was done in pre-monsoon and post-monsoon seasons.

The representative specimens of genus *Phlogophora* mentioned in the present manuscript were collected with the help of light traps from different localities of Arunachal Pradesh and Sikkim. The identification of captured specimens was done with the help of relevant literature (Hampson, 1894).

For study of genitalic attributes, the abdomen detached from the body of preserved moth with needle and forceps, as cutting of last few segments often damages the constituent parts of male and female genitalia (Robinson, 1976). The detached abdomen dropped in test tube containing 10% KOH overnight to soften the chitin and for removal of muscles and other unwanted parts. The potashed material washed in distilled water and residual traces of KOH removed later by dipping these structures in 1% glacial acetic acid.

The abdomen dissected in 50% alcohol for taking out the male and female genitalic structures. Aedeagus separated from the main genitalia by carefully keeping juxta and transtilla intact. Vesica everted carefully with help of fine forceps. After proper dehydration in different grades of alcohol, the genitalic structures were cleared in clove oil and then mounted in Canada balsam on cavity slides. The terminology given by Klots (1970) has been followed in the present studies for naming different structures of genitalia.

## Result and Discussion

### GENUS *PHLOGOPHORA* TREITSCHKE

Treitschke, 1825, in Ochsenheime *Schmett. Eur.* 5(1): 369.

**Type species:** *Phalaena meticulosa*  
Linnaeus

**Diagnosis:** Proboscis fully developed; palpi upturned, the 2<sup>nd</sup> joint reaching about to middle of frons and moderately scaled, 3<sup>rd</sup> short; frons smooth; eyes large, rounded; antennae of male typically serrate and fasciculate; head and thorax clothed with hair. The prothorax with triangular ridge-like crest, the metathorax with paired crests. Abdomen with dorsal series of crests and lateral tufts on terminal segments, male with extensible tufts of long hair from lateral stigmata; Fore wing with the apex obliquely truncate, the termen and cilia dentate; veins Cu<sub>1</sub> and M<sub>2</sub> from near angle of cell; M<sub>1</sub> from upper angle; R<sub>3</sub> from R<sub>2</sub> anastomosing with R<sub>4</sub> to form the areole; R<sub>1</sub> from cell. Hind wing with veins Cu<sub>1</sub>, M<sub>2</sub> from angle of cell; M<sub>2</sub> obsolescent from just below middle of discocellulars; M<sub>1</sub>, Rs from upper angle; Sc+R<sub>1</sub> anastomosing with cell near base only.

### *Phlogophora albovittata* (Moore)

*Euplexia albovittata* Moore. 1867, *P.Z.S.*: 57 (Fig. 1–4)

**Diagnostic characters:** Head black with pale dots; palpi porrect, black outward, pale inward; third joint minute, tipped with pale; collar black with pale dots; Thorax black; antenna ciliated, pale tuft at base; Forewing pale with black and grey suffusion; costa black; pale ante medial band starts from coastal margin of cell, coastal area of band suffused with grey; median black band, greyish towards costa, brown towards inner margins, excurved towards base below cell; antemedial area pale, slightly irrorated with black, flesh coloured fasciae from costa to median nervature; submarginal area greyish black towards apex, two pale patches between cubitus veins, tornus pale. Hindwing dull ochreous whitish, fuscous along termen; veins dark at terminal ends, fringe purple black, tips white; Thorax black

with pale tipped tufts towards proximal end; Underside blue grey with pale inner margins (Fig. 1).

**Male genitalia:** Uncus small, flat, leaf like, setosed; tegumen long, broad, inverted V-shaped; transtilla membranous; juxta with upper margin convex, lower margin triangular, weakly sclerotized; vinculum small, V-shaped; saccus well developed, long, flat; valve long, spindle-shaped; two harpe present, one long, robust, straight spine like, another curved, weakly sclerotized, hook like; cucullus pointed, setosed; aedeagus, tip with serrate patch; vesica small, with robust, serrate bar; ductus ejaculatorius enters into the aedeagus sub apically (Fig. 2&3).

**Female genitalia:** Papilla anales semicircular, setosed; anterior and posterior apophysis almost of same length; osteum bursae strongly sclerotized; ductus bursae long, sclerotized, swollen and triangular medially; corpus bursae small, broad, rounded, spindle-shaped, membranous; signum present, three long bars on lower half of corpus bursae (Fig. 4).

### Material Examined

Arunachal Pradesh: Bomdila 09.X.2010- 1♂, 2♀♀.

Sikkim: Golitar 02.IV.2010: 1♂, 2♀♀.

**Distribution:** India (Arunachal Pradesh, Sikkim), Japan.

### *Phlogophora costalis* (Moore)

*Chutapha costalis* Moore, 1882, *Lep. Atk.*: 131 (Fig. 5–8).

**Diagnostic characters:** Head olive green; palpi upturned, brown at sides, third joint minute; antennae ciliated; collar and thorax

olive green. Forewing with a pale fascia below the costa; a double subbasal waved black line; an antemedial straight line; orbicular and reniform pale and conjoint to a pale patch below medial nervature, with black lower edge; the postmedial double line indistinct and nearly straight; a submarginal waved pale line with diffused dark inner edge. Hindwing pale fuscous. Abdomen pale fuscous, with proximal pale tufts. Underside pale, suffused with fuscous in places (Fig. 5).

**Male genitalia:** Uncus small, flat, narrow towards base, tip spatulate, heart shaped, setosed; tegumen U-shaped, weakly sclerotized; transtilla membranous; juxta oval, spindle-shaped; vinculum small; saccus well developed, broad, triangular; valve very long, narrow, saccular process long, robust, finger like, spined at tip; saccular margin irregular, round towards cucullus, costal margin curved; cucullus long, pointed like tip of knife, setosed with long setae; aedeagus long, curved; vesica large, bilobed, with patches of sclerotization; ductus ejaculatorius enters into the aedeagus sub apically (Fig. 6&7).

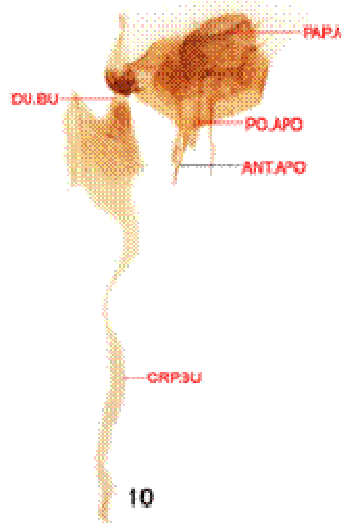
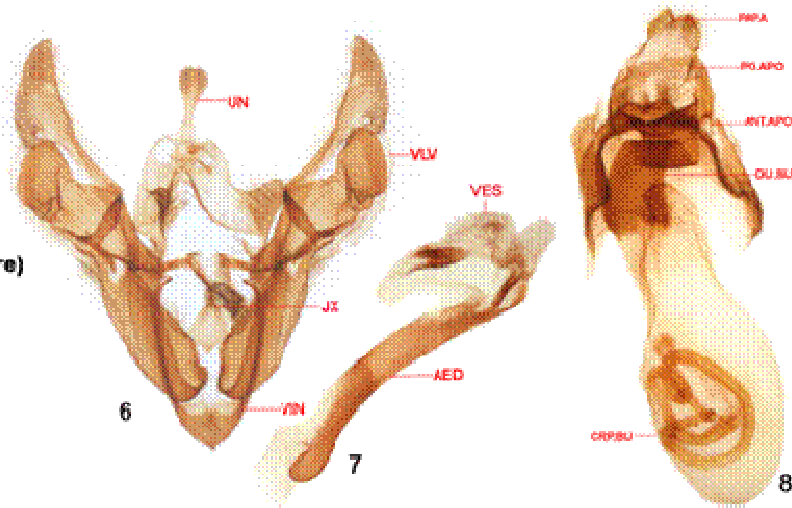
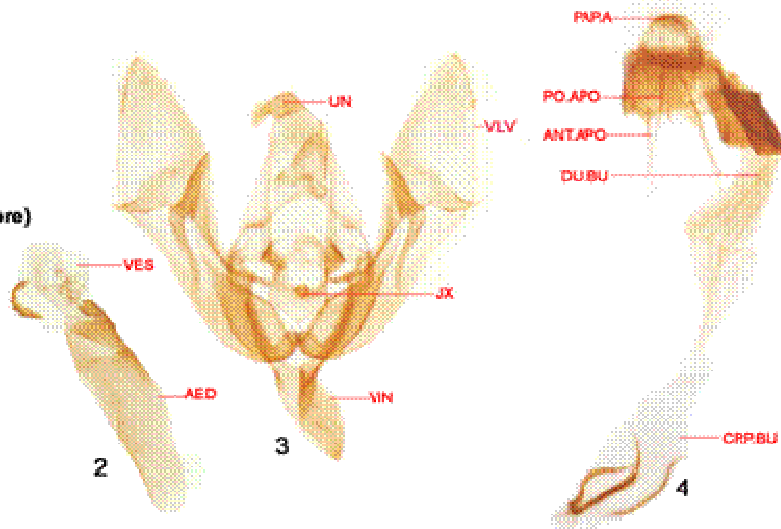
**Female genitalia:** Papilla anales small, triangular, setosed with small setae; posterior apophysis longer than the anterior apophysis; ductus bursae flat, broad, curved, ribbon shaped, strongly sclerotized; corpus bursae elongated membranous, lower end round swollen, bulb-shaped; signum absent (Fig. 8).

### Material Examined

Arunachal Pradesh: Dirang 06.X.2010- 1♂, 1♀, 07.X.2010- 1♂.

Sikkim: Golitar 21.IV.2010- 1♂.

**Distribution:** India (Arunachal Pradesh, Sikkim).



***Phlogophora conservuloides*** (Hampson)  
*Euplexia conservuloides* Hampson, 1897, *J. Bomb. Soc.*, 11: 443 (Fig. 9&10).

**Diagnostic characters:** Head brown; palpi obliquely porrect, reddish brown, third joint minute; antennae minutely ciliated, with pale yellow streak in shift at base; collar brown, with pale tips. Thorax brown with purplish tinge; Forewing brown, with black speck in cell; a pale edged wedg- shap mark from middle of costa, blackish on discocellulars, with a large brown V- shaped mark below it on inner margin with short arms; a waved, blackish postmedial line; a sinuous submarginal line slightly bent outward and edged with brown between vein Cu<sub>1</sub> and R<sub>3</sub>; three whitish specks on costa towards apex. Hindwing paler, suffused with brown; terminal line waved; cilia brown, with pale line at base; Abdomen brown; Underside of both the wings with dark postmedial line and indistinct pale submarginal line (Fig. 9).

**Female genitalia:** Papilla anales well developed, rectangular; posterior apophysis longer than the anterior apophysis; ductus bursae very small; corpus bursae very long, narrow, pointed, upper tip crown- shaped, weakly sclerotized, lower half long, narrow, tube- shaped; signum absent. (Fig. 10)

### Material Examined

Arunachal Pradesh: Bomdila 09.IX.2010-1♀.

**Distribution:** India (Arunachal Pradesh, Sikkim).

### Acknowledgement

The authors are thankful to the Head, Department of Zoology and Environmental Sciences, Punjabi University, Patiala;

Director, Zoological Survey of India and PCCF and other forest staff for providing necessary facilities during this research work.

### References

- Duponchel, P.A.J. 1829. *Historie Naturelle des Lepidopteres on Papillons de France*, Vol. 7, Part 2. Paris Mequignon Marvis. Pp.1–507, plates 133–170.
- Hampson, G.F. 1894. *The fauna of British India, including Ceylon and Burma, Moths 2*. Pp. 1–609, Taylor and Francis Ltd., London.
- Hreblay, M., Ronkay, L. 1998. Noctuidae from Nepal. Haruta, T. (Ed.), *Moths of Nepal*. Part 5. *Tinea* 15 (Suppl. 1). Pp. 117–310, pis 144–157.
- Klots, A.B. 1970. Lepidoptera, in taxonomists glossary of genitalia in insects. Tuxen, S.D. (Ed.). 2nd edn. Munksgaard, Copenhagen. Pp. 115–130.
- Poole, R. W. 1989. *Lepidopterorum catalogus* (N. Ser.), Fasc. 118 Noctuidae. *E. J. Brill. Leiden*. 5: 1–1314.
- Robinson, G.S. 1976. The preparation of slides of Lepidoptera genitalia with special reference to Micro lepidoptera. *Entomol. Gaz.*, 27(2): 127–132.
- Treitschke, 1825. *Die Schmetterlinge von Europa in Ochsenheimer, Schmett. Eur.*, 5 (1): 1–414.