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APPLIED RESEARCH JOURNAL

RESEARCH ARTICLE



ISSN: 2423-4796

*Applied Research Journal*

Vol.1, Issue, 3, pp.141-144, May, 2015

## STUDIES ON MALE AND FEMALE GENITALIA OF *CTENOPLUSIA FRACTA* WALKER

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### ARTICLE INFO

#### Article History:

Received: 08, April, 2015

Final Accepted: 11, May, 2015

Published Online: 15, May, 2015

#### Key words:

Lepidoptera, Noctuidae, *Ctenoplusia fracta*, male and female genitalia.

### ABSTRACT

External male and female genitalia of *Ctenoplusia fracta* Walker have been studied in detail to update the diagnosis of this species. This species has been reported for the first time from North-east India.

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## 1. INTRODUCTION

Dufay erected genus *Ctenoplusia* for its type species *Plusia limbirena* Guenee and added two new species i.e. *porphyrea* Dufay and *vermiculata* Dufay under it [1]. Dufay studied 16 species under this group [2] and after three years he described two species i.e. *etiennae* Dufay and *perplexa* Dufay [3]. After a gap of seven years, Dufay described two more species i.e. *glaphyra* Dufay and *karthala* Dufay [4]. Holloway described male genitalia of two species i.e. *albostriata* Bremer & Grey and *sigillata* Dufay in detail [5]. Ronkay described a new species *microptera* Ronkay in this genus [6]. Behounek & Ronkay described four species from Phillipines in this group [7]. Ronkay & Behounek studied a species *violachrysa* Ronkay & Behounek [8]. Lafontaine & Schmidt listed one more species i.e. *oxygramma* (Greyer) in their checklist of Noctuidae of North America, north of Mexico [9].

In the present manuscript, single species i.e. *Ctenoplusia fracta* along with its male and female genitalia has been studied, described and photographed to update its diagnosis and recorded for the first time from North-East India.

## 2. MATERIALS AND METHODS

Intensive and extensive collection-cum-survey tours have been conducted in Northeast India between September, 2009 to May, 2012. The collection of adult Noctuid moths have 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.

Only single male and single female representatives of *Ctenoplusia fracta* Walker have been collected from Arunachal Pradesh. The identification of captured specimens was done with the help of relevant literature [10]. 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 [11]. 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

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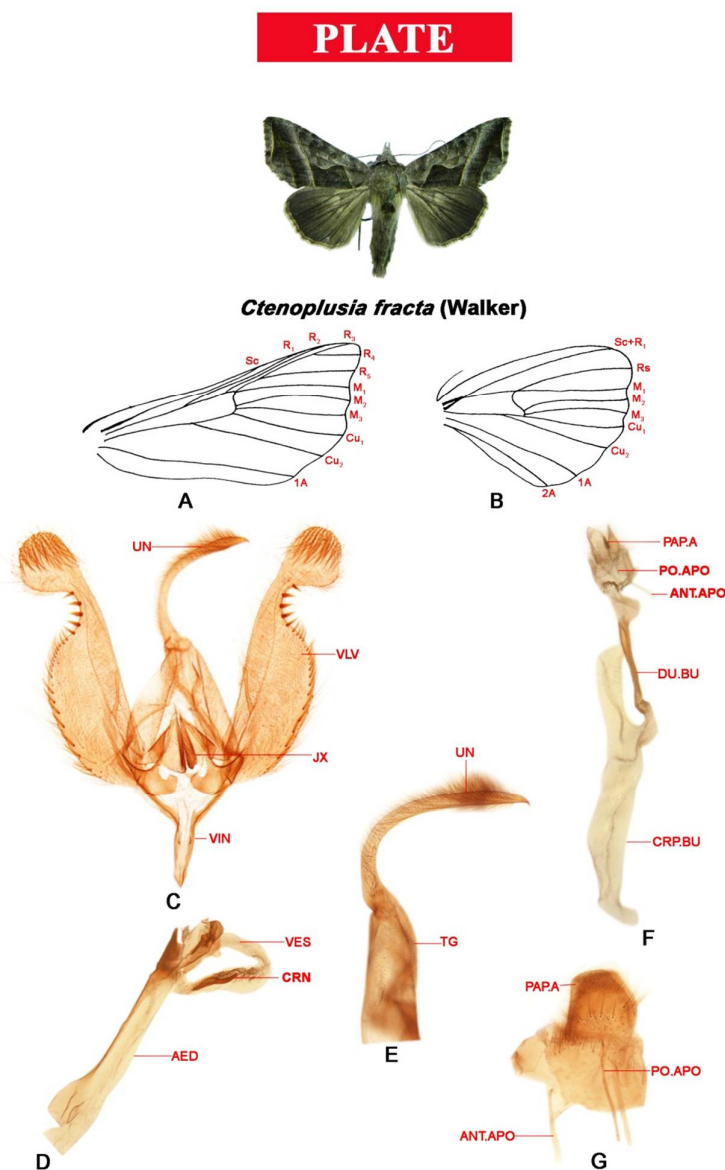
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and residual traces of KOH removed later by dipping these structures in 1% glacial acetic acid. The abdomen dissected in 50% alcohol for taking out the male and female genitalic structures. Aedeagus separated from the main genitalia by carefully keeping 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 has been followed in the present studies for naming different structures of genitalia [12].

### 3. RESULT AND DISCUSSION

Genus *Ctenoplusia* Dufay

Dufay, 1970. *Taune Madagascar*, 31: 91



**Figure 1** A. Forewing, B. Hindwing, C. Male genitalia, D. Aedeagus, E. Uncus (Enlarged), F. Female genitalia, G. Papilla analis with Apophysis

#### 3.1. Diagnostic characters

Palpi upturned, the 2<sup>nd</sup> joint reaching vertex of head; antennae of male ciliated. Thorax with a very large spreading tuft on the vertex. Abdomen with three large dorsal tufts on basal segments and lateral and anal tufts more or less strongly developed in male. Fore wing hooked at outer angle.

*Ctenoplusia fracta* Walker

*Plusia fracta* Walker, 1857, *Cat.*, 12: 926

### 3.2. Description

Head grey brown; palpi upturned, brown; antennae ciliated; collar fuscous brown, with pale tips. Thorax greyish brown. Forewing olive grey with metallic tinge, irrorated with brown; antemedial and postmedial lines straight and oblique, the former obsolete above median nervature the area between them below the cell bronzy; the bronzy submarginal line slightly sinuous, almost marginal bronzy line conjoined with submarginal line at apical area; cilia brown with fuscous patches. Hindwing fuscous; cilia with tips white. Abdomen fuscous. Underside fuscous, with medial dark line and marginal pale in both wings (Fig. 1 A&B).

### 3.3. Male genitalia

Uncus long, curved, setosed, tip spined; tegumen small, broad; transtilla membranous; juxta large, triangular; vinculum V- shaped; saccus well developed, small, narrow, tubular; valve long, broad, saccular margin, setosed with small, robust setae, deep round notch in saccular margin towards cucullus; cucullus round, ball- shaped, setosed with long setae; harper long, needle shaped; aedeagus long, rod like; vesica long, narrow, with patches of weak sclerotization and a robust long cornutus; ductus ejaculatorius enters into the aedeagus sub apically (Fig. 1 C-E).

### 3.4. Female genitalia

Papilla analis long, quadrate, setosed with few small setae; posterior apophysis longer than the anterior apophysis; ductus bursae small, narrow, sclerotized except at both ends; corpus bursae long, narrow, tube like, membranous; ductus bursae enters medially; signum absent (Fig. 1 F&G).

### 3.5. Material Examined

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

### 3.6. Distribution

Arunachal Pradesh, N. India, Nilgiris; Abyssinia; Congo; Sri Lanka.

## 4. CONCLUSION

*Ctenoplusia fracta* Walker has been reported for the first time from North-east India and updated its diagnosis by incorporating external genitalic characters for authentic identification of species.

## 5. ABBREVIATIONS

AED: Aedeagus; PAP.A: Papilla analis; ANT.APO : Anterior apophysis; CRP.BU : Corpus bursae; DU.BU : Ductus bursae; PO.APO : Posterior apophyses; Cu1: First cubital vein; Cu2 : Second cubital vein; 1A : First anal vein; 2A : Second anal vein; M1 : First medial vein; M2 : Second medial vein; M3 : Third medial vein; R<sub>1</sub> : First radial vein; R<sub>2</sub> : Second radial vein; R<sub>3</sub> :Third radial vein; R<sub>4</sub> : Fourth radial vein; R<sub>5</sub> : Fifth radial vein; Rs : Radial sector; Sc+R<sub>1</sub> : Stalk of Sc and R<sub>1</sub>; CRN: Cornuti/Cornutus; JX : Juxta; TG : Tegumen; UN : Uncus; VES: Vesica; VIN :Vinculum; VLV : Valva.

## 6. ACKNOWLEDGEMENTS

The author is thankful to the Head, Department of Zoology and Environmental Sciences, Punjabi University, Patiala; University Grant Commission; Director, Zoological Survey of India and PCCFS and other forest staff of North-East India for providing necessary facilities during this research work.

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