Eco. Env. & Cons. 29 (2) : 2023; pp. (703-706)
Copyright@ EM International
ISSN 0971–765X

DOI No.: http://doi.org/10.53550/EEC.2023.v29i02.025

First report of *Eudocima cajeta* (Cramer) (Lepidoptera: Erebidae) from Kerala, India with notes on male and female genitalia

Adarsh P.K. and Abhilash Peter*

Entomo Taxonomy Lab, Department of Zoology, Christ College (Autonomous), Irinjalakuda, Thrissur 680 125, Kerala, India (Affiliated to University of Calicut)

(Received 7 October, 2022; Accepted 10 December, 2022)

ABSTRACT

A report on the fruit piercing moth *Eudocima cajeta* (Cramer) (Lepidoptera: Erebidae) is authenticated for the first time from Kerala, India. In addition to the morphology of the adults, detailed notes on the male and female genitalia structures are also provided in this paper.

Key words : *Eudocima cajeta, Erebidae, Genitalia, Kerala*

Introduction

The genus *Eudocima* Billberg includes approximately 50 species of fruit piercing moths which are distributed tropical, subtropical and neotropical regions (Zaspel and Branham (2008); Zilli *et al*. (2017). Many species of neotropical and oriental regions were earlier placed under other genera such as *Othreis* Hübner, *Ophideres* Boisduval and *Trissophaes* Hübner. Currently, all the fruit piercing moths were placed under the genus *Eudocima* (Sergio Vargas-Fonseca *et al*. (2020). Unlike other moth pests, many adult *Eudocima* species are reported as major pests of pomegranate, citrus, orange and papaya (Shendge and Chavan (2019). Adults pierce and suck juice using its strong sclerotized proboscis, which leave behind scars and color change on fruits gradually leading to rotting of fruits.

E. cajeta (Cramer), *E. srivijayana* (Banziger) and *E. talboti* (Prout A.E.) are the morphologically similar and sexually dimorphic species reported from the Indo- Australian regions. (Zilli *et al*. (2017). It is mandatory to do genitalia analysis for the species level authentication. 12 species of *Eudocima* have been reported so far from India (Singh *et al*. (2019); Shendge, and Chavan, 2019). The genitalia feature of *Eudocima* moths of India is not well recorded. Most of the species level identifications were done without genitalia study, even for species groups with similar morphology. Singh *et al*. 2019 conducted genitalia studies of *E. materna* and *E. phalonia* from India. This species has also been reported from other parts of India (Assam, Rose (2002); Tamil Nadu, Sivasankaran *et al*. (2017). In this manuscript, we authenticate *Eudocima cajeta* for the first time from the state of Kerala, India based on the study of both male and female genitalia.

Materials and Method

The adult male and female specimens of *E. cajeta* were collected from Kattungachira, Irinjalakuda, Thrissur, Kerala on 3rd of February 2022 (100 22′08′′N 76012′50′′E) and Panamaram, Wayanad

district, Kerala (110 42′32′′N 76003′25′′E) on 27th of December 2021 respectively. The specimens were collected using light trap method. Collected specimens were pinned, dried and labeled. The identified specimens were duly registered and deposited in the insect collection of Entomo Taxonomy Lab (ETL) of Zoology Department, Christ College (Autonomous), Irinjalakuda. Identification of the specimens were done using the literatures published by Zilli *et al.,* 2017, Zilli and Hogenes 2002, Brou Jr. and Alberto, 2016. Genitalia dissection was done based on the method described by Robinson, 1976. The last 4 abdominal segments were removed and kept in 10 % KOH overnight. It is then washed with water and transferred to alcohol for dissection under Labomed Luxeo 4D Stereozoom microscope.

Results and Discussion

Systematic status
Superfamily: Noctuoidea Latreille
Family: Erebidae Leech
Subfamily: Calpinae Boisduval
Tribe: Calpini Boisduval
Genus: Eudocima Billberg
Eudocima cajeta (Cramer)
Type: *Ophideres multiscripta* Walker, 1858, Type Locality: Sri Lanka.
Distribution: India, Sri Lanka, Bhutan, Southern China, Myanmar, Thailand, Vietnam, Andamans (Zilli *et al.,* 2017); (Alberto *et al.,* 2017).

Description: Male (Fig. 1): Head medium sized, thorax stout, tegula, collar and dorsal part of thorax covered with pale brown colored hair. Abdomen pale orange not reaching beyond wing margin. Antennae filiform. Hind leg is completely clothed with hairs except in tarsus and with two pairs of spurs. Foreleg and midleg clothed with hairs only on the ventral side. Palpi upturned, reaching vertex, first and second joints thickened and covered with very small hairy scales, 3rd joint slender and naked. Proboscis is long, strong and sclerotized. Forewing long and broad with a length of 38 mm. Apex is acute, termen convex. Tornus slightly inwardly hooked. Long and shallow anal excision with prominent anal flap. Ground color of the forewing is brown, with shades of black and white scales on the veins. A well distinct ante medial and post medial sub parallel lines clearly divide the wing areas into 3 distinct basal, median and anal regions. The lines run from the costa and end in the inner margin obliquely. The post median line originates from costa well before the apex. The median area encloses a sub rectangular discal spot. Outer margin is sinuous near the apical region. Hind wing is orange in color with a black band on the apex and outer marg in except in the tornus region. Thickness of the black band is more in the apex area however less towards the lower part of the outer margin. A broad 'C' shaped discal band is present on the hind wing.

Fig. 1.

Female (Fig. 2): Head medium sized, thorax and abdomen less stout than in male. Thorax, collar and tegula clothed with a thick tuft of dark brown hair. Abdomen pale orange comparatively longer than male. Antennae filiform. Features of legs and palpi similar as in male. Proboscis is long, strong and sclerotized. Forewing long and broad with alength of 41mm. Ground color of the forewing is beige with dark color mottling, which is pale near to the inner margin compared to the apex and costa. Termen is distinctly crenulated and costa is almost straight. Inner margin of the forewing inwardly curved. A distinct dark outlined sub rectangular discal spot is

Fig. 2.

present on the median area near to costa. Hindwing is similar to male.

Male genitalia (Fig.3): Valva is broad and round in apex. The costal margin of valva possesses a spine like projection. Apex of valva dorsally possess hairs. Juxta is arche shaped, paired long slender processes reaching the base of uncus. Saccus is not prominent. Aedeagus is slender, vesica with tubular diverticulum tipped with long and straight cornutus. Bundle of spine like cornutii present distally on the aedeagus.

Fig. 3

Female genitalia (Fig. 4): Ostium is ventrally covered by sternum. Ostium leads to the ante vaginal plate which ends in a long and wide antrum. Ductus bursa is distinctly visible with narrow sclerotized ridges anteriorly near to the opening of corpus bursa. Corpus bursa is an elongated tapered sac-like structure without distinct signum.

Fig. 4

Acknowledgements

The authors are grateful to the Head of Christ College (Autonomous) Irinjalakuda, Thrissur, Kerala, for providing the facilities for the research work. The first author offers sincere gratitude to UGC, Government of India, for the financial support in the form of UGC junior research fellowship.

References

Brou Jr, V.A. and Zilli, A. 2016. An overlooked sibling of the fruit-piercing moth *Eudocima phalonia* (Linnaeus, 1763) from Africa (Lepidoptera, Erebidae, Calpinae). *Zootaxa.* 4109(3): 391-399.

Robinson, G.S. 1976. The preparation of slides of Lepidoptera genitalia with special reference to the Microlepidoptera. *Entomologist's Gazette.* 27(2): 127-132.

Rose, H.S. 2002. An inventory of the moth fauna (Lepidoptera) of Jatinga, Assam, India. *Zoos' Print Journal.* 17(2): 707-721.

Shendge, E.S. and Chavan, R.J. 2019. Review on fruit piercing moths of the genus *Othreis*. *Indian Journal of Entomology.* 81(4) : 712-716.

Singh, N., Ahmad, J., Kaustubh, K. and Joshi, R. 2019. New distributional records of *Eudocima* Billberg, 1820 (Lepidoptera: Erebidae: Calpinae) from Gangetic Plains (India). *Records of the Zoological Survey of India.* 119(3): 238-245.

Sivasankaran, K., Sekar, A., Mathew, P. and Ignacimuthu, S. 2017. Checklist of the superfamily Noctuoidea (Insecta, Lepidoptera) from Tamil Nadu, Western Ghats, India. *Check List.* 13(6): 1101.

Vargas-Fonseca, S., Correa-Carmona, Y., Montes-Rodríguez, J.M., Calero-Mejía, H. and Zilli, A. 2020. Synopsis of fruit-piercing moths of the genus *Eudocima* Billberg (Lepidoptera, Erebidae) from Colombia. *ZooKeys*. 953: 85.

Walker, F. 1858. List of the Specimens of lepidopterous insects in the collection of the British Museum 13. Trustees of the British Museum, London: 983–1236pp.

Zaspel, J.M. and Branham, M.A. 2008. 0047. World Checklist of Tribe Calpini (Lepidoptera: Noctuidae: Calpinae). *Insecta Mundi,* pp.1-15.

Zilli, A. and Hogenes, W. 2002. An annotated list of the fruit-piercing moth genus *Eudocima* Billberg, 1820 (sensu Poole) with descriptions of four new species

(Lepidoptera: Noctuidae, Catocalinae). *Quadrifina,* 5: 153-207.

Zilli, A., Brou, V.A., Klem, C. and Zaspel, Jennifer. 2017. The *Eudocima* Billberg, 1820 of the Australian Region (Lepidoptera: Erebidae: Calpinae). Biodiversity, Biogeography and Nature Conservation in Wallacea and New Guinea; Telnov, D., Barclay, MVL, Pauwels, OSG, Eds, pp. 631-655.