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## First report of *Creobroter apicalis* Saussure, 1869 (Mantodea: Hymenopodidae) from Uttar Pradesh, India

**Ramesh Singh Yadav, Dharmpal Kerketta, Dharmendra Kumar and GP Painkra**

### Abstract

The present study was based on the specimens collected of the subfamily Hymenopodinae during the course of a field survey of the district Ghazipur, Uttar Pradesh in the month of October 22, 2017. The Mantids were collected from the flowers of the *Thevetia peruviana* by hand picking. One female mantidfauna have recorded and identified as *Creobroter apicalis* Saussure, 1869. The fauna have firstly recorded from the Uttar Pradesh. The descriptions of the species were made based on the morphological characters. The identifying features of species were Vertex with a very small spine, Prozona granulate and pronotum with slightly dentate lateral edges in female and smooth in male; having forewing with yellow band bordered by two black semi-circular rings like an eye spot and placed in the middle of the both wings, this eye mark enclosed black dots, usually two; base of forewing with a yellow spot also, the hind wing with pink at base, yellowish in costal area and brownish in discoidal and anal areas. The morphological descriptions and measurements of the relevant body parts are presented.

**Keywords:** Hymenopodidae, *Creobroter*, Ghazipur, Mantids, Survey, Uttar Pradesh

### 1. Introduction

Mantids are key agent of Natural and Biological control in terrestrial ecosystem. They belong to the order Mantodea which are the very sophisticated insect fauna in the terrestrial ecosystem. There are 2,300 species of 434 genera from 15 families under Mantodea known throughout the world (Ehrmann) <sup>[1]</sup> while Otte compiled taxonomic information for over 2,400 species of mantids from their globally distribution <sup>[2]</sup>. About 162 species under 68 genera and 6 families from India have reported by Mukherjee *et al.* <sup>[3]</sup> whereas, Ghate *et al.* <sup>[4]</sup> compiled 184 species belonging to 73 genera under 11 families of Indian Mantids. Some earlier and notable works were carried out by Laidlaw <sup>[5]</sup> and Nandkerni <sup>[6, 7]</sup> on this group from Ranchi and Maharashtra respectively, are much helpful for Indian mantids. The credit of extensive work for Indian mantids goes to the Mukherjee *et al.* (1995) <sup>[3]</sup>. Thereafter, some studies came from some regional mantid fauna of various Indian states are by Mukherjee and Shishodia <sup>[8, 9]</sup>, Chaturvedi and Hegde <sup>[10]</sup>, Rane *et al.* <sup>[11]</sup>, Ghate *et al.* <sup>[12-13]</sup>, Ghate and Ranade <sup>[14]</sup>, Vyjayandi and Narendran <sup>[15]</sup>, Ghate and Mukherjee <sup>[16]</sup>, Ranade *et al.* (2004) <sup>[17]</sup>, Sureshan *et al.* (2004a, 2004b) <sup>[18, 19]</sup>, Thulsi Rao *et al.* (2005) <sup>[20]</sup>, Sureshan *et al.* (2006a, 2006b, 2006c) <sup>[21, 22, 23]</sup>, Jadhav *et al.* (2006) <sup>[24]</sup>, Vyjayandi *et al.* (2006) <sup>[25]</sup>, Mukherjee and Hazra (2007a, 2007b) <sup>[26, 27]</sup>, Roy (2007) <sup>[28]</sup>, Roy and Svensen (2007) <sup>[29]</sup>, Vyjayandi (2007) <sup>[30]</sup>, Jadhav <sup>[31, 32]</sup>, Sureshan (2009) <sup>[33]</sup>, Chandra (2009) <sup>[34]</sup>, Jadhav (2009) <sup>[35]</sup>, Mukerjee and Ghate (2010) <sup>[36]</sup>, Mukherjee *et al.* (2010) <sup>[37]</sup>, Vyjayandi *et al.* (2010) <sup>[38]</sup>, Chandra *et al.* (2011) <sup>[39]</sup> and Yadav (2018a and 2028b) <sup>[40, 41]</sup>. There are not any consolidated reports of mantids from Uttar Pradesh, a subtropical province of India. From compilation of scattered report by Ghate *et al.* (2015) <sup>[4]</sup> listed about 55 species of 29 genera of mantids are reported from Uttar Pradesh till date so far. The genus *Creobroter apicalis* Saussure, 1869 is commonly known as the flower mantids, a member of the family Hymenopodinae (Hymenopodidae). The subfamily Hymenopodinae has of 2 tribes namely, Anaxarchini and Hymenopodini. The tribe Hymenopodini contains about 47 species from 8 genera globally under which the *Creobroter* Audinet-Serville, 1839 comes also (Otte *et al.*, 2017) whereas, 6 species of 2 genera from India known so far (Ghate *et al.*, 2017) <sup>[2]</sup>. The Hymenopodidae is a group of mantids 'which possess cephalic horn. They are predacious in both stage, nymphal and adult of life to the varieties of insect pests and even

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mantid also. They are very potential predator due to their peculiar habits of prey capture, camouflage and reproductive behavior. The genus *Creobroter* Audinet-Serville, 1839 has 6 species namely, *C. apicalis* Saussure, 1869, *C. elongate* Beier, 1929, *C. gemmatus* (Stoll, 1813), *C. laevicollis* (Saussure, 1870), *C. pictipennis* Wood-Mason, 1878 and *C. urbanus* (Fabricius, 1775) known from India (Ghate *et al.*, 2017) [4]. The distribution of the *C. apicalis* Saussure, 1869 is very well known. More recently, species has been recorded from Orissa, Assam, Karnataka, Kerala, Manipur, Meghalaya, Maharashtra, Sikkim and West Bengal (Ghate *et al.*, 2017, Vyjayandi, 2007, Sureshan and Sambath, 2009 and Mukherjee *et al.*, 2017) [4, 30, 42, 43]. Therefore, the present investigation was carried out to explore the Hymenopodini from Uttar Pradesh, India and the *Creobroter apicalis* Saussure, 1869 have first time recorded from the Uttar Pradesh.

## 2. Materials and Methods

### a. Study sites and collection

The district Ghazipur is a known district of the eastern Uttar Pradesh. The district share its border with the state of Bihar to the east, Azamgarh (district of Uttar Pradesh) to the west, Maunath Bhanjan and Ballia (district of Uttar Pradesh) to the north and Chandauli and Varanasi (district of Uttar Pradesh) to the South. The survey site situated between 25.415961<sup>0</sup> N latitudes and 83.559818<sup>0</sup> E longitudes in the Ghazipur district. The collections were made from the flowers of *Thevetia peruviana* plantation is situated very nearer to the bank of the river *Karmanash*. The site is moderately rich in floral diversity. The Edaphic system of locality is sandy loam soil having different grasses, pearl millet, *Bambusa* and forest trees. The specimens were collected by hand picking in the month of the October 22, 2017 and collected specimens were killed into jars containing ethyl acetate soaked cotton and they were prepared, stretched and pinned for study. The specimen to be deposited to the Department of Entomology and Agricultural Zoology, Faculty of Agriculture, Rajiv andhi South Campus, Banaras Hindu University, Mirzapur, U.P. (India).

### b. Species identification

The adult specimens of the species were carefully studied for all details of morphological characters under high magnification hand lens. The species was separated from others with the help of available literatures and keys [3, 33]. The photographs were taken of the major parts of the identified species.

## 3. Results

In the present study *Creobroter apicalis* Saussure, 1869 was recorded for the first time from Uttar Pradesh. The details of the species are discussed below-

### a. Systematic Account

Order: Mantodea

Family: Hymenopodidae

Subfamily: Hymenopodinae

Tribe: Hymenopodini

Genus: *Creobroter* Audinet-Serville, 1839

*Creobroter apicalis* Saussure, 1869

1869. *Creobroter apicalis* Saussure Mill. *Schweiz. Entomol. Ges.*, 3: 73

1927. *Creobroter apicalis* Giglio-Tos *Das Tierreich.*, 50: 558.

2017. *Creobroter apicalis* Mukherjee, Iyer and Chatterjee J

Threat.. Taxa, 9(2): 9832

**Materials examined:** INDIA, Uttar Pradesh, Udharanpur (Ghazipur), 3♀, 22.X.2017, on *Thevetia peruviana*, Coll. RS Yadav and Khushi

### b. Diagnosis

Female (Fig. 1-10): Body medium to large, Body greenish with yellow spot on the fore wing; Winged forms; Head trapezoidal, Vertex of head with a small mid dorsal spine, squarish with prominent lateral lobes; eyes conical, black band with white tips, projecting upwards; antennae slender, filiform; ocelli conspicuous; Pronotum saddle shape, shorter than fore coxae, supra coxal dialation well pronounced, prozona laterally denticulated, spatulate with central indistinct carina, metazonal constriction well pronounced; Coxae of fore legs triangular dorsally with 8 obtuse marginal spines, middorsal carina with spines, internal apical lobes converging; femur longer than coxa, with 4 external, 4 discoidal, (third longest and stoutest,) with six longer internal and seven shorter internal spines, two distal longer internal spines enclose two shorter spines; tibia with 16 smaller, depressed external spines, 14 longer internal closely arranged spines; metatarsus as long as all other tarsal segments together; Middle and hind femur twice as long as mid tibia, with semicircular, distalventral lobe, with two genicular spines; tibia with three distal genicular spines; Wings longer than abdomen; costal and anal areas of forewing transparent, forewing with yellow band bordered by two black semi-circular rings like an eye spot and placed in the middle of the both wings, this eye mark enclosed black dots, usually two; base of forewing with a yellow spot also, the hind wing with pink at base, yellowish in costal area and brownish in discoidal and anal areas. Measurement of different body parts are given in the Table 1.

### c. Distribution

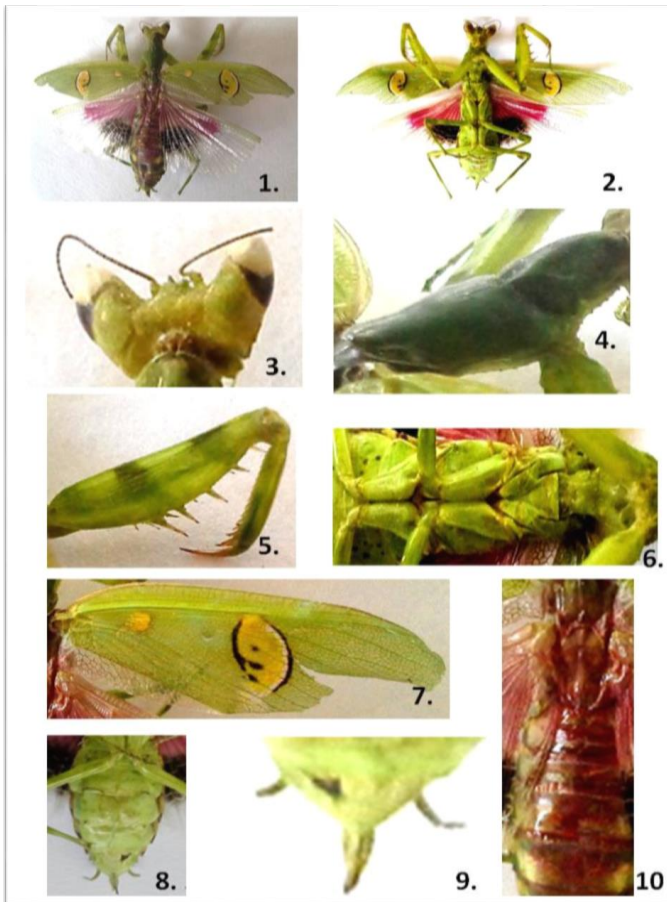
Andhra Pradesh, Arunachal Pradesh, Assam, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Odisha, Sikkim, Tamil Nadu, West Bengal [43] and Uttar Pradesh (new record).

## 4. Discussion

The genus *Creobroter* Audinet-Serville, 1839 comes under the Tribe Hymenopodini. The Tribe Hymenopodini contains about 47 species from 8 genera globally [2] and 6 species of 2 genera namely, *Hymenopus* Audinet-Serville, 1831 and Genus *Creobroter* Audinet-Serville, 1839 [4]. The genus *Hymenopus* Audinet-Serville, 1831 has only one species, *Hymenopus coronatus* (Olivier, 1792) and the genus *Creobroter* Audinet-Serville, 1839 contains five species namely, *Creobroter apicalis* Saussure, 1869, *C. elongate* Beier, 1929, *C. gemmatus* (Stoll, 1813), *C. pictipennis* Wood-Mason, 1878 and *C. urbanus* (Fabricius, 1775) from India are known so far [4]. The species *Creobroter apicalis* Saussure, 1869 has wide and well known distribution in India as Andhra Pradesh, Arunachal Pradesh, Assam, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Odisha, Sikkim, Tamil Nadu, West Bengal and Bangladesh, Bhutan, China, Java, Nepal elsewhere [43]. In recently, Mukherjee *et al.* [43] recorded 23 mantises from different States firstly and *Creobroter apicalis* Saussure, 1869 from Meghalaya, Tamil Nadu and Andhra Pradesh.

**Table 1:** Measurements of body of *Creobroter apicalis* Saussure, 1869 (all measurements in mm)

S. No.	Body parts	Female (♀)
1.	Length of Body	34.000
2.	Wing expansion	68.20
3.	Pronotum	9.00
4.	Frontal femora	12.00
5.	Frontal tibia	8.00
6.	Fore wing	31.00
7.	Cerci	2.00



**Fig 1-10:** *Creobroter apicalis* Saussure, 1869: 1. Habitus, Dorsal view, 2. Habitus, Ventral view, 3. Vertex with eyes, 4. Pronotum, 5. Preying organ (foreleg), 6. Ventral view of thorax, 7. Fore wing's eye spot, 8. Ventral view of abdomen, 9. Genitalia, 10. Dorsal view of abdomen.

The literatures reveal that the *Creobroter apicalis* Saussure, 1869 from Uttar Pradesh is not known still now. In the present study one female have recorded from the flower of *Thevetia peruviana* very nearer to the bank of the Karmanasa river of district Ghazipur, Uttar- Pradesh and fauna identified as *Creobroter apicalis* Saussure, 1869. This is the first record from the Uttar Pradesh. The morphological descriptions and measurements of the relevant body parts are presented here.

## 5. Conclusion

The *Creobroter apicalis* Saussure, 1869 is representing the first record from the Uttar Pradesh. However, several survey works have been made for Mantodea from Uttar Pradesh, nevertheless, this species was lacking so far from this province.

## 6. Acknowledgement

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