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First report of a catantopid grasshopper from eastern Uttar Pradesh, India

Ramesh Singh Yadav, Dharmendra Kumar and Dharpal Kerketta

Abstract

Grasshoppers are one of the major fauna of Orthopteroid-group of insects which cause damage to the field crops, forest trees and horticultural plants. They are dominant fauna in the tropical and subtropical ecosystem. The present study was based on the specimens of Catantopidae during the course of a survey of district Ghazipur, Uttar Pradesh. One male specimen was collected from white LED bulb and identified as a species *Choroedocus illustris* (Walker, 1870) (Orthoptera: Acridoidea: Catantopidae), was newly recorded from here. The description was based on both conventional morphological and genitalic characters. The identifying features of the species were tegmina with small scattered brownish spot except costal and anal area; fastidium of vertex distinctly depressed, obtusely and roundly angulate in frons; pronotum with lateral carina distant only up to end of prozona and subgenital plate was conical and curved upward. Hind tibia and tarsi were purplish blue with black tipped spine on tibia. Distribution, morphometric and measurement data are also provided.

Keywords: Catantopidae, *Choroedocus illustris*, Ghazipur, Grasshopper, Orthoptera

Introduction

Grasshoppers are the most diversified fauna of the world having significant economic importance because of their damaging potential. The numbers of known species of order Orthoptera is over 20,000 species worldwide and about 1,750 species (it's 10 percent of the total worldwide known species) are recorded from India^[1]. They are broadly classified into suborder Caelifera, having small antennae (short-horned grasshoppers) and suborder Ensifera, having larger antennae (long-horned grasshoppers). Suborder Caelifera is predominantly tropical and indicate some 27,768 valid species globally^[2]. Acridoidea is the notable superfamily of suborder Caelifera are 518 species worldwide and 285 known species from the country^[3]. Catantopidae is a major family under superfamily Acridoidea and the members of Catantopidae are known as short horned grasshopper and spur throated grasshopper also. The modern definition of Catantopidae took after the name of Cyrtacanthacrinae^[4, 5] and was subsequently assigned subfamily status as Catantopinae by Mistshenko^[6]. Dirsh later divided Mistshenko's Catantopinae into two families, Hemicacrididae and Catantopidae, and included Egnatiinae in the family Catantopidae^[7]. Catantopidae is readily defined by the unmistakable synapomorphy of having a distinct prosternal process between the forecoxae^[8]. The grasshopper family Catantopidae is a well-known group, whose members include some of the most notorious agricultural pests^[8]. The Catantopinae is a huge subfamily consisting of around 17 tribes and more than 382 genera and is distributed throughout old world^[9]. Out of them over 65 species of 35 genera are reported from India by Chandra *et al.*^[10]. The genus *Choroedocus* Bolivar^[11] comes under the tribe Catantopini with six species namely, *Choroedocus capensis* (Thunberg), *Choroedocus illustris* (Walker), *Choroedocus pallens* Uvarov, *Choroedocus robustus* (Serville), *Choroedocus sparsus* (Serville) and *Choroedocus violaceipes* Miller. The species *Choroedocus illustris* (Walker)^[12] is distributed in throughout India. In Northern India, *Choroedocus illustris* (Walker) commonly called as bamboo locust, is a pest of forest plantation like bamboo, teak, Sal, sheesham and other cultivated crops like guava, maize, jowar, bajra, rice, millet, groundnut, sandal, and sugarcane. Kirby^[13] recorded this species from South India. More recently, Srinivasan and Prabhakar^[14] reported this species from Western Himalaya and Hirdesh and Usmani^[15] from Rajasthan. Rafi *et al.*^[16] have reported *Choroedocus illustris* (Walker) from different districts central and eastern part of Uttar Pradesh namely, Deoria, Gorakhpur, Kanpur, Jhansi, Auraiya and Mahrajganj but not found in the district Ghazipur, Uttar Pradesh.

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Uttar-Pradesh is the largest northern state of the India and Ghazipur is a known district of Purvanchal of Uttar-Pradesh. Ghazipur 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.

2. Materials and Methods

Study site and collection: District Ghazipur situated between 25.5840° N latitudes and 83.5770° E longitudes. The Collection place is situated very nearer to the river Ganges. The district is moderately rich in diversity. The Edaphic system of locality is sandy loam soil having different grasses, sugarcane, pearl millet, summer season cucurbitaceous vegetables. Mango, guava, papaya bamboo and Jamun (*Eugenia*) are the major horticultural and forest trees. The specimen was collected on a white LED bulb of the house in the month of the June 2017 from Karampur village of district Ghazipur, Uttar-Pradesh. The house is surrounded by natural vegetation (mostly *Bambusa* sp.), a small pond and very old pucca houses. The collection was made through sweeping net. The collected specimens were killed into jars containing ethyl acetate soaked cotton and it was prepared, stretched and pinned.

Species identification

The adult specimen of the species was carefully studied for all details of morphological characters under stereoscopic binocular microscope and it was separated into different species with the help of available literatures and keys [13, 14, 15]. The specimen was also confirmed to follow the Cigliano *et al.* [7] and Camera Lucida drawings of major parts were prepared

3. Results

In present study *Choroedocus illustris* (Walker, 1870) has recorded firstly from Ghazipur, Uttar-Pradesh (Fig.1). Details of fauna are discussed below-

Systematic Account

Order: ORTHOPTERA

Suborder: CAELIFERA

Infraorder: ACRIDIDEA

Superfamily: ACRIDOIDEA Macleay, 1821

Family: CATANTOPIDAE Brunner von Wattenwyl, 1893

Subfamily: CATANTOPINAE Brunner von Wattenwyl, 1893

Genus: *CHOROEDOCUS* Bolivar, 1914

Choroedocus illustris (Walker, 1870)

1870. *Heteracris illustris* Walker, Catalogue of the Specimens of Dermaptera, Saltatoria in the Collection of the British

Museum, IV: 663.

1910. *Heteracris illustris* Kirby, A Synonymic Catalogue of Orthoptera (Orthoptera Saltatoria, Locustidae vel Acridiidae), 3(2): 555.

1921. *Choroedocus illustris* Uvarov, *Transactions of Entomological Society of London*, 69(1&2): 109.

1976. *Choroedocus illustris* Tandon, *Rec. Zool. Survey India Occ. Paper*, No. 3: 12.

1984. *Choroedocus illustris* Bhowmik & Halder, *Rec. Zool. Survey India*, 81(1-2): 182.

2007. *Choroedocus illustris* Mandal & Yadav, *Fauna of Andhra Pradesh., State Fauna Series*, 5(3): 211.

2008. *Choroedocus illustris* Gupta, *Bionotes*, 10(3): 89

2012. *Choroedocus illustris* Ahmad & Nabi, *Italian Journal of Zoology*, 79(4): 598-606.

2014. *Choroedocus illustris* Mandal, *Rec. Zool. Survey India*, 114(4): 603-606.

Diagnosis and description: Male. Body size large (45.6 mm). Antennae filiform. Head mostly yellowish in colour, along with a brown colour stripe more or less uniform in their width, yellow coloured border on both sides extending over the vertex and upper part of the pronotum; vertex carinated; fastidium of vertex distinctly depressed, obtusely and roundly angulate in front; ridge on frontal side not much more expanded and punctured; brown coloured face, bluish black coloured narrow stripe beneath the eye of both sides. Pronotum with lateral carina distant only up to end of prozona; punctured; brownish coloured sides; fine whitish coloured depressions above and yellowish coloured spots below. Prosternal process cylindrical, a little inclined back. Tegmina with small scattered brownish spot except costal and anal area; sub hyaline. The hind femur yellowish in colored; fine haired above; hind tibia and tarsi purplish blue in colour, the tibia with white-black tipped 12 rows spines. Subgenital plate conical and curved upward.

Table 1: Measurements of body of *Choroedocus illustris* (all measurements in mm)

S. No.	Body parts	Male (♂)
1.	Length of Body	52.6
2.	Length of Body excluding tegmina	45.1
3.	Length of Pronotum	7.8
4.	Length of tegmen	35.6
5.	Length of expanded tegmina	71.8
6.	Length of hind femur	28.9
5.	Length of hind tibia	26.9

Distributon: Uttar-Pradesh, Jharkhand, Uttarakhand, Himachal Pradesh, Madhya Pradesh, Maharastra, Tamil Nadu, Andhra Pradesh.



Fig 1: *Choroedocus illustris* (Walker, 1870). Male. Lateral View



Fig 2: Lateral view of the head



Fig 3: Dorso lateral view of the pronotum



Fig 4: Prosteral process



Fig 5: Fore leg



Fig 6: Tegmina, and hind leg



Fig 7: Middle leg

Material examined: INDA, Uttar-Pradesh, Karampur, Ghazipur, 1 ♂, 28.vi.2017, on LED bulb, Ashutosh Kumar.

4. Discussion

The tribe Catantopini has six species namely, *Choroedocus capensis* (Thunberg), *Choroedocus illustris* (Walker), *Choroedocus pallens* Uvarov, *Choroedocus robustus* (Serville), *Choroedocus sparsus* (Serville) and *Choroedocus violaceipes* Miller [2]. The species *Choroedocus illustris* (Walker) was described as *Heteracris illustris* Walker (1870) by Walker [12] and Kirby [13] also. Bolivar [11] was described as the genus *Choroedocus*. The credit for *Choroedocus illustris* (Walker) goes to Uvarov [17]. The species *Choroedocus illustris* is widely distributed in throughout India [18]. This species has been previously reported from the Indian subcontinent by Tandon [19], Shrinivasan and Prabhakar [14], Bhowmik and Haldhar [20] recorded from Himachal Pradesh, Shishodia *et al.* [21] and Mandal [18] recorded from Kolhan forest range of Jharkhand. From Uttar Pradesh Rafi *et al.* [16] recorded from certain districts of the state. In the present study a specimen recorded of the subfamily Catantopinae on white LED bulb of district Ghazipur, Uttar Pradesh (eastern). This collected material identified as *Choroedocus illustris* (Walker), a first record from district Ghazipur, Uttar Pradesh. Morphological description and measurements of male has been provided.

5. Conclusion

The aim of the present paper is to provide knowledge of the subfamily Catantopinae from the district Ghazipur, Uttar Pradesh. *Choroedocus illustris* (Walker) is representing the first record from this district of eastern Uttar Pradesh. However, several survey works has been done exclusively for Orthoptera from eastern, nevertheless, this species did not found so far.

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