Brief note on hooded grasshopper*Teratodesmonticollis*(Gray, 1832)and intraspecific colour variationfrom Bonai forest division,Odisha, India

ABSTRACT

Hooded grasshopper belongs to order Orthoptera and family Acrididae and are native to India and Sri Lanka. Hooded grasshopper *Teratodes monticollis* was described as *Gryllus monticollis*by English Zoologist George Robert Gray in 1832. The distribution of this species of hooded grasshopper has been recorded from different parts of Burma, Ceylon and India. The contemporary reports about records of this species from various states of India is very limited. From our current study area of Bonai forest division we observed *Teratodes monticollis*(Gray, 1832) andits intraspecific colour variation from Sundargarh district of Odisha, India.

Keywords: Phytophagous;Component;Intraspecific.

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INTRODUCTION

Across the globe grasshoppers are among the most economically important insects and are an important component of grassland and forest ecosystem. Grasshoppers are one of the earliest living groups of munching phytophagous insects, dating back to the early Triassic period around 250 million years ago.In the past decades, grasshoppers were treated as nuisance and believed to be the reason of draught and famine because of their overpopulation and phytophagic nature specially crops and plants. Due to lack of studies, less data available in literatures and previously more importance was given to larger majestic animals, there was not much ideas we have about the importance of insects in our ecosystem. For the past few years studies has been doneon different insects including grasshoppers and their importance to balance our ecosystem as a potent pollinator. Due to urbanization, we are losing forest lands, agricultural lands along with floral and faunal species, among them grasshoppers are also very crucial for our environment. The genus *Teratodes* (Brunner von Wattenwyl, 1893) coming under family Acrididae, and this genus is comprised of three species; *brachypterus* (Carl, 1916), *monticollis* (Gray, 1832) and *folitus* (Herbst, 1803)**.**

MATERIALS AND METHODS

The investigated specimen in our study was observed with intraspecific colour variation and identified in the Bonai forest division (21.75° N latitude and 84.97° E longitude) of Sundargarh district, Odisha, India. The studied specimen was spotted during a preliminary survey in the year 2022. This targeted specimen was investigated and closely observed in its natural habitat for 24 days (31st May 2022 to 23rd June 2022), during morning hours (7:00am to 12:00pm) and evening hours (4:30pm to 7:00pm). The main aim of our observation was to document its morphological features, habit and habitat. Identification of *T. monticollis*(Gray, 1832) was confirmed after going through literatures to observe the characteristics to identify the specimen and to be confirmed about its distribution and the morphological traits and figures mentioned in Kirby [1] and Willemse [2].

RESULT AND DISCUSSION

During the present investigation we observed *T. monticollis*(Gray, 1832) in Odisha, India, and its's intraspecific colour variationi.e., green and brown coloured, inside the deep Sal Forest areas, small shrub and open dry areas of Bonai forest division, Sundargarh.

MATERIAL EXAMINED

1 ♂ (green) and 1 ♀ (brown) Bonai (), Odisha State, India on small plant and tree- Jungle, 31.05.2022, Coll. Pradhan. I., Sanjeet Kumar, 1 ♀ (green) Bonai (), Odisha State, India on forest floor -Jungle, 23.06.2022, Coll. Sanjeet Kumar, Pradhan. I (Figs. 1 & 2).

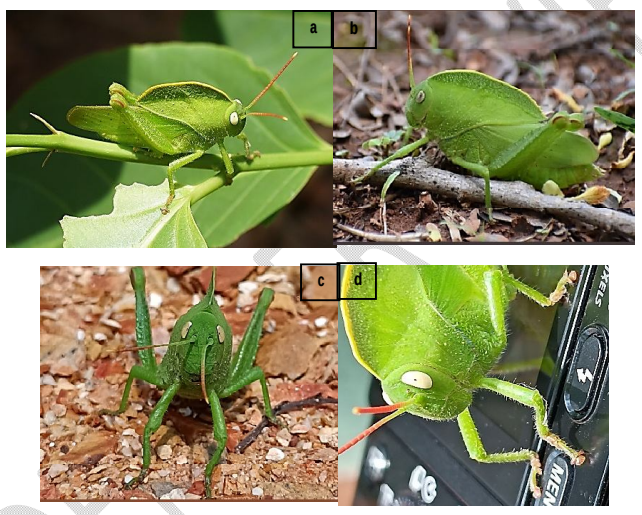

Fig: 1*Teratodes monticollis*(Gray, 1832) in Bonai Forest Division, Odisha, India**a.** lateral view of Male specimen **b.**lateral view of female specimen**c.** anterior view of female specimen**d.** anterior view of male specimen.

Table 1: Morphometric data of *T. monticollis*(in mm)

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Morphometric analysis of *T. monticollis* (in mm) ()			
SI No.	**Body part**	**Male (mm)**	**Female(mm)**
1.	Length of body	30.3	51.6
2.	Length of head	6.2	13.7
3.	Length of antenna	8.9	16.8
4.	Hight of pronotum	11.4	23.6
5.	Length of pronotum	15.8	32
6.	Length of wing	22.9	26.7
7.	Length of fore limb	10.5	28.9
8.	Length of mid limb	10.4	28.8
9.	Length of hind limb	33.2	55.3
10.	Length of femur (hind limb)	11.1	22.3
11.	Length of tibia (hind limb)	13.9	25.4

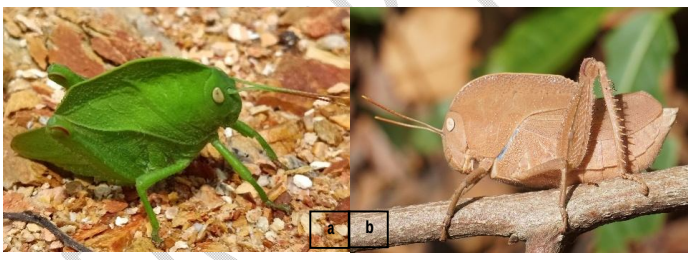

Fig: 2.a& b*Teratodes monticollis*(Gray, 1832) female specimens of green and brown variant.

DIAGNOSTIC FEATURES

This species has a broad head, medium-sized body, a pronotum (much compressed forming a crest, the front arched above its head at a point, the middle portion forming a higher crest, denticulate and covering head anteriorly, half of the abdominal length posteriorly and never cross transverse sulci,frontal ridge is sulcate, short prosternal process, mesosternal interspace is open, straight and pointed apex.), lateral carniae absent,fastigium of vertex is rounded, one pair of filiform antennae which are shorter than the combined length of pronotum and head, antenna are wide apart from each other, out of three pair of limbs, fore limbs and mid limbs are shorter and hind limbs are longer. Hind femurs have small pointy spines on the upper carinae and on hind tibia8-10 comparatively longer and strong spines are present dorsally. Tegmina is opaque, shorter or longer than the abdomen and wings are hyaline. The green variant specimenis uniformly green and the brown variant one is uniformly brown. Antennae reddish at the middle, yellowish at tips in both the variantswhile pale green at the basal part of the green variant and pale brown at the basal part of brown variant. The line of the whole crest of the pronotum is yellow in both male and female of green variant, and the whole crest

of pronotum of brown variant is brown. Two arches of each knee, the upper carinae of the femur of hind limbs and the lower carinae and spines of the hind tibia are reddish and yellowish in colour in green variant and brownish and reddish in brown variant. Tegmina of green variant is evenly green with pale and yellow spots where as brown variant has evenly brown tegmina with pale and brown spots and tegmina of both the variants are reticulated and thick. Wings are pale greenish in green variant and pale brown in brown variant. Around the crest of pronotum and out upper carina of the femurs pale and yellow spots are observed in green variant and pale and brown in brown variant. Abdomen area of female specimen is raised upward in both the variants which differentiate them from male specimens and wings of the male specimen are longer than the female specimen in comparison to their body size.

HABITAT

*Teratodes monticollis*can be found near or on shrubs and trees, and dry open habitats.

DISTRIBUTION

*T. monticollis*is native to Burma, Ceylon and India. In India this hooded grasshopper has been reported from;Jharkhand, Bihar, Chhattisgarh, Bengaluru, Rajasthan, Karnataka, Kerala, Tamil Nadu, Telangana, Andhra Pradesh, Maharashtra, Madhya Pradesh, Uttar Pradesh, Gujarat, and Odisha.

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CONCLUSION

Teratodes monticollis (Gray, 1832) and its intraspecific colour variation is formally new to the Bonai forest division. This study provides the first ever photographic evidence to confirm the occurrence, habit and habitat study of *T. monticollis* from Bonai Forest Division, Odisha, India. The green variant of *T. monticollis* has been observed and studied from India's various states, Jharkhand, Bihar, Chhattisgarh, Bengaluru, Rajasthan, Karnataka, Kerala, Tamil Nadu, Telangana, Andhra Pradesh, Maharashtra, Madhya Pradesh, Uttar Pradesh, Gujarat in addition to Odisha, But the brown variant is reported for the first time from India in the State of Odisha. *T. monticollis* with Its two variants are very rare and less in numbers than other grasshoppers. We observed it from deepSal Forest areas of Bonai forest division. It is a major defoliator of sandalwood, and teak and also feeds on *Calotropis procera* and *Ziziphus nummularis*. There is very less research has been done about the behavioural, genetic and ecological aspects of this hooded grasshopper, so there is more need of studies.

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