
Documentation of shorthorn grasshopper (Orthoptera: Acrididae and Pyrgomorphidae) fauna in the campus of Achhruram Memorial College, Jhalda: An approach towards ‘Green Audit’

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Abstract: From March 2024 to February 2025 a field sampling was conducted within the Achhruram Memorial College campus that resulted identification and documentation of 21 shorthorn grasshopper species under Order Orthoptera, Family Acrididae and Pyrgomorphidae across 19 genera. The majority belonged to the family Acrididae, with Oedipodinae being the most dominant subfamily; moreover, 14 species were found to be categorized as ‘Not Evaluated’ by IUCN, that highlighted a significant knowledge gap in the conservation status and ecological importance of these insects that encouraged undertaking baseline research that taxonomically documents species from different communities. The rich diversity of grasshopper community within the college premises indicated a relatively healthy ecosystem despite a growing anthropogenic pressure in its vicinity. A comprehensive inventory that materialized from the present work should serve as a yardstick for future ecological monitoring and conservation strategies in the selected locality. Moreover the outcome will surely contribute to the college’s responsibility towards students and academics by fostering a deeper understanding of its natural heritage.

Key words: Acrididae; Biodiversity; Environmental Audit; Orthoptera; Pyrgomorphidae.

1 Introduction

In view of the escalating global awareness on various issues regarding environment and its conservation, academic institutions in India are currently being involved in promoting ecological consciousness and sustainable practices [1]. This special drive has been extensively encouraged by the National Assessment and Accreditation Council (NAAC) of India, which has made ‘Environmental Audit’ or ‘Green Audit’ an indispensable component of the accreditation process [2]. According to National Education Policy of India, 2020 [3], instead of merely imbibing theoretical knowledge about environment within classrooms, the students should be equipped with practical understanding and engagement in environmental conservation [4]. This issue pinpoints the importance

of dedicated departments involved in research works on the conservation of nature and natural resources that can provide students with tangible, scientific exposure to the finer points of environmental protection, moving beyond book-learning of ‘Environment’ as a subject [5].

The evolving educational scenario worldwide compelled to conduct the present research work that takes a fundamental step towards understanding the ecological health of Achhruram Memorial College, Jhalda, Purulia through the documentation of its shorthorn grasshopper fauna (Orthoptera: Acrididae and Pyrgomorphidae). Being primary consumers, these insects dwell in a crucial trophic level in the terrestrial food chains [6]. Consequently, even a slight budge in their population dynamics can jeopardize the entire ecosystem, which may finally lead to a stern

environmental impact [7]. In this juncture, various studies have already established many grasshopper species as reliable bio-indicators of habitat disturbance globally, making their monitoring exceedingly valuable [8].

Achhruram Memorial College is located on the serene suburbs of Jhalda town, with the famous Ayodhya Hills of Purulia and its ranges in its proximity. This unique geographical locale harbors plethora of insect species, including the target grasshoppers under “Order: Orthoptera”. However, the growing urban expansion and increased anthropogenic activities around the college could potentially perturb the existing grasshopper populations [9]. Consequently, it is a vital step to develop a detailed checklist of the shorthorn grasshopper community within the college premises. This study, therefore, was conducted to document and compile a comprehensive taxonomic inventory of the target insects.

2 Materials and method

Study area

The present study was conducted within the Achhruram Memorial College campus that covers approximately 10 acres and lies roughly within the coordinates 23.36°N and 85.98°E. It is situated at a small town called Jhalda, in Purulia district of West Bengal, India.

Sampling and documentation of shorthorn grasshoppers

Shorthorn grasshoppers were collected using sweeping nets with mesh size 1.42 mm

× 1.42 mm between 3 pm and 6 pm before sunset as they become quiescent in the dark. Field sampling was conducted from March, 2024 to February, 2025. The sampled insect specimens were identified upto species level using the keys provided in Bhowmik’s manual [10] and scientifically tabulated.

3 Results

A total of 21 shorthorn grasshopper species belonging to 19 genera were identified within Achhruram Memorial College campus. This data, along with their common name and IUCN status are depicted as Table 1. The majority of observed species (19 in total) belonged to the Family Acrididae, while only 2 species were from the Family Pyrgomorphidae. Among the Acrididae, eight subfamilies were documented: Acridinae, Catantopinae, Eyprepocnemidinae, Gomphocerinae, Hemiacridinae, Oedipodinae, Oxyinae, and Spathosterninae. In contrast, the Pyrgomorphidae were represented only by a single subfamily, Pyrgomorphinae.

Figure 1 shows 14 species were under the ‘Not Evaluated’ status of IUCN, while 5 were ‘Least Concern’ and 2 were categorized as ‘Data Deficient’. Figure 2 illustrates the proportional distribution of species among these subfamilies. The subfamily Oedipodinae contained the highest proportion of observed species (24%), followed by Acridinae (19%) and Oxyinae (14%); whereas the subfamilies Catantopinae, Gomphocerinae, and Hemiacridinae accounted for the smallest proportion of species, at 5% each.

4 Discussion

The present study provides a comprehensive documentation of shorthorn grasshoppers (Order Orthoptera, Family Acrididae and Pyrgomorphidae) within Achhruram Memorial College campus, where a total of

21 species under 19 genera were obtained. This rich diversity establishes the college campus as a safe haven for these crucial primary consumers. This report is particularly noteworthy because of the global upsurge of the anthropogenic foot-print, and

Table 1: Taxonomic inventory of short-horn grasshoppers documented from Achhruram Memorial College Campus

Sl. No.	Family	Sub Family	Genus	Specific Epithet	Common Name	IUCN Status
	Acrididae					
1		Acridinae	<i>Acrida</i>	<i>exaltata</i>	Slant-faced grasshopper	LC
2		Acridinae	<i>Phlaeoba</i>	<i>infumata</i>	Silent slant-faced grasshopper	NE
3		Acridinae	<i>Phlaeoba</i>	<i>panteli</i>	Short-horn grasshopper	NE
4		Acridinae	<i>Truxalis</i>	<i>indica</i>	Short-horn grasshopper	NE
5		Catantopinae	<i>Catantops</i>	<i>pinguis</i>	Short-horn grasshopper	NE
6		Eyrepocnemidinae	<i>Heteracris</i>	<i>pulchra</i>	Splendid grasshopper	NE
7		Eyrepocnemidinae	<i>Tylotropidius</i>	<i>varicornis</i>	Short-horn grasshopper	NE
8		Gomphocerinae	<i>Aulacothrus</i>	<i>luteipes</i>	Short-horn grasshopper	NE
9		Hemiacridinae	<i>Hieroglyphus</i>	<i>banian</i>	Rice grasshopper	NE
10		Oedipodinae	<i>Aiolopus</i>	<i>thalassinus</i>	Blue-winged grasshopper	LC
11		Oedipodinae	<i>Dittopternis</i>	<i>vanusta</i>	Short-horn grasshopper	DD
12		Oedipodinae	<i>Gastrimargus</i>	<i>africanus</i>	Green locust	NE
13		Oedipodinae	<i>Oedaleus</i>	<i>abruptus</i>	Band-winged grasshopper	LC
14		Oedipodinae	<i>Trilophidia</i>	<i>annulata</i>	Carinate locust	LC
15		Oxyinae	<i>Gesonula</i>	<i>punctifrons</i>	Short-horn grasshopper	NE
16		Oxyinae	<i>Oxya</i>	<i>fuscovittata</i>	Rice grasshopper	NE
17		Oxyinae	<i>Oxya</i>	<i>hyla</i>	Rice grasshopper	NE
18		Spathosterninae	<i>Spathosternum</i>	<i>prasimiferum</i>	Short-horn grasshopper	LC
19		Spathosterninae	<i>Tristria</i>	<i>pulvinata</i>	Short-horn grasshopper	DD
20	Pyrgomorphidae	Pyrgomorphinae	<i>Atractomorpha</i>	<i>crenulata</i>	Tobacco grasshopper	NE
21		Pyrgomorphinae	<i>Chrotogonus</i>	<i>trachypterus</i>	Surface grasshopper	NE

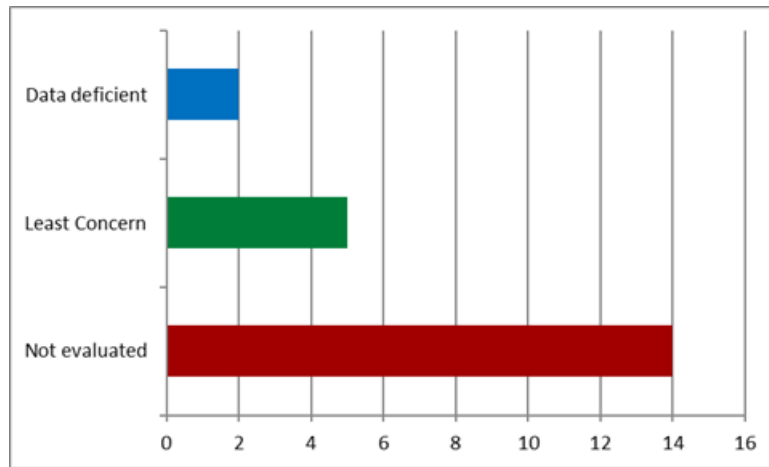


Figure 1: Number of grasshoppers species collected and their IUCN status.

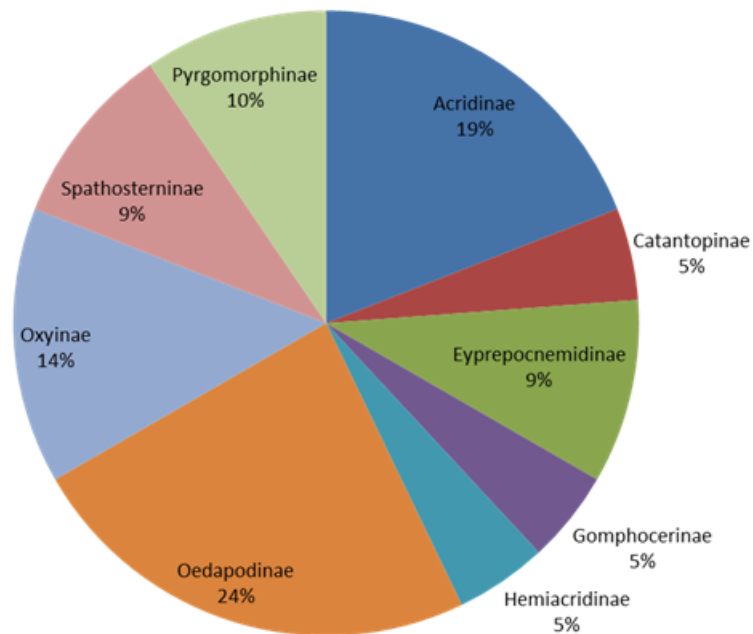


Figure 2: Proportional distribution of species (%) among nine documented subfamilies.

Jhalda is not an exception. The presence of such a varied grasshopper community in a small area suggests that, despite increasing human activity in the vicinity, the college campus retains a fairly healthy ecosystem that is capable of supporting a significant amount of insect population.

Grasshoppers are well-established bio-indicators of habitat disturbance, and their population dynamics can reflect the overall health of an ecosystem [11]. The outcome of the present research work serves as a crucial benchmark for future ecological assessments and thus helping in the 'Environmental Audit' or 'Green Audit' of the campus. Any significant alterations in the species composition of these insects could signal habitat modification within the campus, thereby providing actionable insights for maintenance towards 'Green Campus' efforts. Additionally, the IUCN status of the documented species revealed that a substantial majority of 14 species are categorized as 'Not Evaluated'. This finding is of special importance because it highlights that majority of the grasshoppers are only taxonomically identified, and information on their general biology or ecology is primarily missing. Because of this, there is a significant knowledge gap regarding the conservation status of majority of these insect species in the selected region. Here comes the importance of baseline studies like the present work, which can contribute to gather essential data for future conservation assessments and policy formulation [12-13]. Among the documented insect fauna, Oedipodinae subfamily emerged as the most dominant one, followed by Acridinae and Oxyinae. Individuals under these three subfamilies often thrive in open, grassy, and semi-arid environments [14], which is in concert with the typical landscape of the Achhruram Memorial College campus and its surrounding areas. On the contrary, the lower representation of subfamilies like Catanopinae, Gomphocerinae, and Hemiaceridinae suggests that they might have different microhabitat preferences or in general their

diversity is lower in the surveyed area.

5 Conclusion

In a nutshell, the study could be concluded with the notion that the presence of such a diverse community of shorthorn grasshoppers accentuates the ecological value of Achhruram Memorial College campus as a preserved habitat. The comprehensive taxonomic inventory provided in this paper not only fulfills a vital component of the college's environmental responsibility but also serves as an invaluable resource for fostering a deeper scientific understanding about natural heritage of the campus as well as conveying the importance of its conservation for generations to come. Finally, the data obtained through the present work not only provides a crucial resource for Green Audit, but also guarantees that a continued long-term monitoring of this entomo-fauna could be recommended to track any environmental alterations and execute future conservation strategies within the campus, ensuring its sustained ecological health.

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Declaration

The author reports no competing of interest as far as his knowledge is concerned.

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