



# DIVERSITY OF GRASSHOPPERS (ORTHOPTERA) FROM THE PANDHARPUR REGION OF SOLAPUR DISTRICT, MAHARASHTRA, INDIA

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## Abstract

The present study explores the diversity of grasshoppers (Order: Orthoptera) in the Isbavi region Pandharpur of Solapur district, Maharashtra. Sampling was conducted during the period 2018–2019 using sweep net collection methods across different local habitats. A total of 12 grasshopper species were recorded. Out of 12 species, 9 were identified, while 3 remained unidentified. The findings contribute to understanding the local orthopteran fauna and highlight the need for further ecological studies in semi-arid regions of Maharashtra.

**Keywords:** Grasshopper, Orthoptera, Biodiversity, Pandharpur, Sweep net, Solapur

## Introduction

**Grasshoppers** are terrestrial insects belonging to the order *Orthoptera* and suborder *Caelifera*, easily identified by their long, powerful hind legs for jumping, short antennae, and robust chewing mouthparts. They are highly adaptable and occur across diverse habitats worldwide from the tropics to near-polar regions (Chapman, 1991). In India, they are frequently observed in grasslands, agricultural fields, scrublands, and open forests, particularly in the dry and semi-arid zones of western and central parts of the country. Ecologically, grasshoppers function as both primary herbivores and prey, feeding on a variety of grasses and foliage while supporting populations of birds, reptiles, and small mammals. Their role in the food chain is crucial, yet certain species can become destructive agricultural pests when present in large numbers, causing significant damage to crops and pastureland (Latchininsky, 2013). Their adaptability enables survival in diverse environments, including high-altitude regions, deserts, dense rainforests, and semi-aquatic zones (Lomer et al., 2001).

The diversity of grasshoppers, shaped by long-term evolutionary processes, strongly influences grassland ecosystem structure and function (Wang et al., 2021; Schwarz & Fartmann, 2022). Globally, more than 20,000 species have been recorded, with over 1,750 found in India, underscoring the country's remarkable insect biodiversity (Gall et al., 2019). Taxonomically, they are grouped into the suborders *Caelifera* and *Ensifera*, and further into superfamilies such as *Acrididae* and *Pyrgomorphidae* (Knapp & Dvořák, 2023). While *Pyrgomorphidae* species are distributed widely across India, the family *Acrididae* is particularly diverse, represented by over 600 species in 136 genera, with only 14 subfamilies formally documented to date (Usmani et al., 2018; Subedi & Bhaskar, 2023). In semi-arid landscapes like the Pandharpur area of Solapur district, where natural and human-modified habitats coexist, documenting grasshopper diversity offers insight into how

land use, climate, and vegetation affect insect populations. Despite their ecological and economic significance, regional data on grasshopper diversity remain scarce in many parts of India (Shishodia et al., 2010). This study aims to document and describe the grasshopper species found in this area to contribute to regional faunal records and provide baseline data for future ecological research.

## Materials and Methods

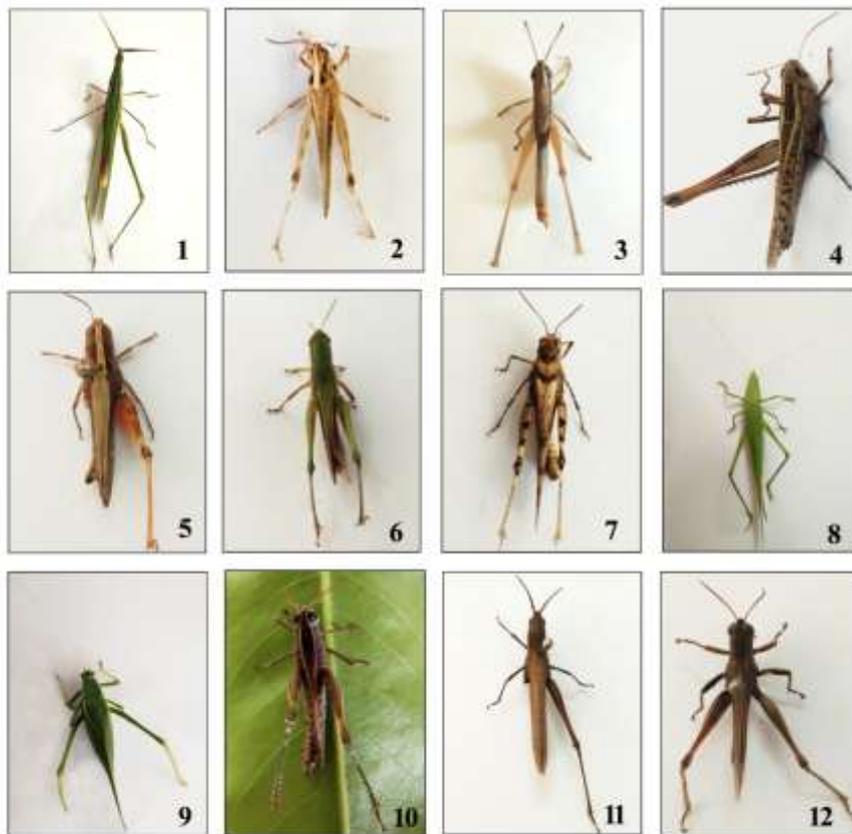
Field sampling of grasshoppers was conducted during August 2018 to February 2019 in the Isbavi, Pandharpur region. The specimens were collected using the **sweep net method**, which is effective for catching active grasshoppers in grassland and open field habitats. Sampling was performed during the daytime when grasshopper activity was highest. Each captured specimen was preserved in labeled containers and later identified using standard taxonomic keys. The study covered various habitat types including agricultural fields, roadside vegetation, grasslands, and scrublands. Identification of collected specimens was carried out using literature such as *The Fauna of India* (Shishodia et al., 2010) and other reference materials relevant to Indian Orthoptera.

## Results:

A total of 12 grasshopper species were recorded during the study period. Out of these species, 9 were identified and remains unidentified. These species belonged to different genera and were distributed among two families of Orthoptera. The most commonly observed families included Acrididae and Tettigoniidae, which are known for their wide distribution in dry and open areas. Family Acrididae recorded with 7 species while Tettigoniidae with 2 species only. Species richness was highest in open grasslands compared to cultivated fields, indicating a preference for undisturbed or semi-natural habitats. A table of species diversity would represent each identified species along with habitat preferences.

**Table 1: List of Identified species of grasshopper**

Sr. No.	Species Name	Family	Habitat Type
1	<i>Acrida exaltata</i>	Acrididae	Grasslands, agricultural fields, open scrub
2	<i>Aiolopas thalassinus tamalus</i>	Acrididae	Grasslands, crop fields, roadside vegetation
3	<i>Dnopherula luteipes</i>	Acrididae	Grasslands, meadows, light scrub
4	<i>Eyprepocnemis alacris alacris</i>	Acrididae	Grasslands, agricultural areas, open scrub
5	<i>Phlaeoba antennata</i>	Acrididae	Grasslands, agricultural fields, open woodland
6	<i>Spathosternum prasiniferum prasiniferum</i>	Acrididae	Grasslands, paddy fields, moist open areas
7	<i>Trilophidia annulata</i>	Acrididae	Dry grasslands, scrub, agricultural margins
8	<i>Euconocephalus incertus</i>	Tettigoniidae	Tall grasses, wetlands, edges of cultivated land
9	<i>Holochlora sp.</i>	Tettigoniidae	Forest edges, shrublands, gardens



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Images: 1. *Acrida exaltata*, 2. *Aiolopus thalassinus tamalus*, 3. *Dnopherula luteipes*, 4. *Eyprepocnemis alacris alacris*, 5. *Phlaeoba antennata*, 6. *Spathosternum prasiniferum prasiniferum*, 7. *Trilophidia annulata*, 8. *Euconocephalus incertus*, 9. *Holochlora* sp., 10. Unidentified sp.1, 11. Unidentified sp.2, 12. Unidentified sp.3

## Discussion

The diversity of grasshoppers in the Pandharpur region reflects the ecological richness of the area despite its semi-arid climate. The presence of 12 species within a single region like Isbavi, Pandharpur demonstrates considerable grasshopper diversity. The dominance of certain species may be linked to vegetation type, microhabitat availability, and seasonal changes. The presence of unidentified species suggests the potential for discovering new or poorly documented taxa, highlighting the need for molecular studies and expanded surveys. Usmani et al 2012 surveyed various agricultural areas of Bihar and Jharkhand and reported 34 species. Kumar et al 2015 studied the Species composition, abundance, density and diversity of grasshoppers and recorded 14 species of grasshopper in 2 families from a protected forest ecosystem in the Western Himalayas, India. More and Nikam 2016 recorted 17 species of grasshoppers from Tilar Forest Maharashtra. Pareek et al 2017 reported 12 acridid species from maize field of Southern Rajasthan. Ahmed and Islam 2023 recorded 14 species of grasshoppers from the Howly region in Barpeta, Assam.

Compared to other regions of India, this study indicates similar trends in species distribution, with dominant grasshopper species being generalist feeders. However, specific habitat types in Pandharpur such as uncultivated lands and traditional agricultural systems might be supporting the survival of lesser-known or region-specific species. Understanding local insect diversity is essential for ecosystem monitoring, especially in areas that are subject to agricultural intensification, grazing, and climate variation. The current documentation provides foundational data that can support further ecological studies or biodiversity conservation efforts.

## Conclusion

The study documented twelve grasshopper species in the Isbavi, Pandharpur region, with nine identified and three remaining unidentified. These findings underscore the ecological significance of the region and the need

for continued taxonomic and ecological research. Continued documentation of insect diversity is crucial for assessing ecosystem changes and for promoting sustainable land-use practices.

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