

A preliminary survey of short-horned grasshoppers (Orthoptera, Acrididae) of Peppara Wildlife Sanctuary in Western Ghats, Kerala, India

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ABSTRACT: A preliminary survey on diversity of short-horned grasshoppers was conducted in Peppara Wildlife Sanctuary across two seasons and documented a baseline data on the grasshopper fauna of the sanctuary. Peppara Wildlife Sanctuary, an ecologically significant region characterized by diverse vegetation types and climatic conditions support rich faunal diversity. A total of 20 species belonging to 8 subfamilies were revealed during the survey, highlighting the sanctuary's notable species richness. Of the 20 species, *Dittopternis venusta* and *Phlaeoba antennata antennata* were found to be the most common species and Oedipodinae was the most dominant subfamily. A systematic checklist of the recorded diversity of short-horned grasshoppers is prepared. © 2026 Association for Advancement of Entomology

KEY WORDS: Acridids, diversity, checklist, species, richness

Grasshoppers, belonging to the order Orthoptera, one of the largest and most diverse groups of insects, play a crucial role as the dominant aerial invertebrates in natural ecosystem (Scott *et al.*, 1979; Risser *et al.*, 1981). Being primary consumers, they regulate food chains and function in the forest ecosystem's nutrient cycling. Because of their quick response to the changing environment some species are projected as an ecological indicator (Bezelet, 2011). Nowadays, these organisms provide major advances in the field of climatic change, developmental biology, ecology, evolution, genetics, bioacoustics, chemical ecology, speciation research, paleolimnology and physiology (Song *et al.*, 2015). As part of southern Western Ghats, Kerala is rich with faunal diversity with endemic species and this richness must be reflected

in the grasshopper diversity in the state also. However, these organisms are largely been ignored and received less focused attention. Latest records of orthopteran fauna indicates that Kerala has a total of 215 species belonging to 154 genera under 18 families which includes endemic and Western Ghats restricted species (Thasnim *et al.*, 2023). Bhaskar (2020) contributed significantly to the orthopteran fauna, including diversity assessments, new distributional records and habitat-based assessments; and further reported fire-induced behavioural dynamics of short-horned grasshoppers and how fire affected species abundance and composition. Acridids are diverse and comprise multiple subfamilies that differ in morphology, behaviour, and habitat preferences (Mounika *et al.*, 2024).

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Peppara Wildlife Sanctuary located in the southern Western Ghats of Kerala has an important role to play in conserving the rich biodiversity of grasshoppers. This sanctuary is relatively unexplored as far as grasshoppers are concerned. Therefore, the present study aims to document a baseline data on the short-horned grasshopper fauna of the sanctuary. The present survey was conducted in Peppara Wildlife Sanctuary (8° 34' and 8° 41' N latitude and 77° 6' and 77° 14' E longitude), which forms part of Agasthyamalai Biosphere Reserve, nestled in the southern region of the Western Ghats. The sanctuary covers 53 km² and elevation varies between 100 and 1717m. Chemmunji Mottai (1717m) is the highest mountain in this region. The temperature varies from 16 to 35° C. Forest types include west coast tropical evergreen, southern hilltop tropical evergreen, west coast semi-evergreen, southern moist mixed deciduous forest, sub-montane hill valley swamp forest etc (Kerala Forest Department, n.d). The survey was conducted for two seasons, north-east monsoon and dry winter from September 2024 to February 2025. Sampling was conducted across terrestrial habitats including, open grassland, semi evergreen forest ecosystem, forest floor substrates and moist riparian forest associated with waterfall. Grasshoppers were collected using a standard insect net, direct observation, handpicking and beating. Transect visual count method and sweep net sampling are ideal for collection. A combination of all these techniques was employed in a regular and systematic way to ensure maximum collection of grasshoppers. Collected specimens were first killed by ethyl acetate in a killing jar. After killing the specimens were preserved in 100 per cent ethyl alcohol in transparent bottles. These bottles were labelled with information regarding the collection. Both dry and wet preservations were made. Dry mounts were prepared for better understanding of certain characters like size, colour, texture etc. Live images of grasshoppers were taken in the field and at the laboratory using Nikon camera. The specimens were studied under Labomed stereomicroscope. Taxonomic literatures of Kirby (1914), Bhowmik (1986), Mandal *et al.* (2007), Srinivasan and Prabakar (2013), Cigliano *et al.* (2021) were used for the identification of short-

Table 1. Short-horned grasshoppers from different habitats of Peppara Wildlife Sanctuary in Western Ghats, Kerala, India

No.	Subfamily/ Species
Acridinae	
1.	<i>Phlaeoba antennata antennata</i> Brunner von Wattenwyl, 1893
2.	<i>P. infumata</i> Brunner von Wattenwyl, 1893
3.	<i>P. tenebrosa</i> (Walker, 1871)
Catantopinae	
4.	<i>Choroedocus illustris</i> (Walker, 1870)
5.	<i>Diabolocatantops innotabilis</i> (Walker, 1870)
6.	<i>Stenocatantops splendens</i> (Thunberg, 1815)
7.	<i>Xenocatantops humilis</i> (Serville, 1839)
Coptacrinae	
8.	<i>Eucoptacra praemorsa</i> (Stal, 1860)
Cyrtacanthacridinae	
9.	<i>Cyrtacanthacris tatarica tatarica</i> (Linnaeus, 1758)
10.	<i>Pachyacris vinosa</i> (Walker, 1870)
Eyprepocnemidinae	
11.	<i>Eyprepocnemis alacris alacris</i> (Serville, 1838)
12.	<i>Tylotropidius varicornis</i> (Walker, 1870)
Gomphocerinae	
13.	<i>Aulacobothrus luteipes luteipes</i> (Walker, 1871)
14.	<i>Gonista bicolor</i> (Haan, 1842)
Oedipodinae	
15.	<i>Dittopternis venusta</i> (Walker, 1870)
16.	<i>Gastrimargus africanus africanus</i> (Saussure, 1888)
17.	<i>G. marmoratus</i> (Thunberg, 1815)
18.	<i>Heteropternis respondens</i> (Walker, 1859)
19.	<i>Trilophidia annulata</i> (Thunberg, 1815)
Oxyinae	
20.	<i>Chitaura indica</i> Uvarov, 1929

horned grasshoppers. Collected specimens are deposited in the repository section of Department of Zoology, University of Kerala, Kariavattom Campus, Thiruvananthapuram, Kerala, India.

The study revealed the presence of 20 species of grasshoppers belonging to 8 subfamilies of family Acrididae (Table 1). The eight subfamilies documented during the survey differ mainly in head morphology, body size, wing colouration, pronotum structure, behaviour, and habitat association. Subfamily Acridinae and Gomphocerinae are distinguished by their slant-faced head morphology, while Catantopinae exhibit a more robust body form. Coptacrinae are generally smaller, cryptically coloured, and adapted to dry, scrubby habitats. Cyrtacanthacridinae include strong flying, large-bodied species with some displaying locust-like behavior. They exhibit high dispersal capacity (Song and Wenzel, 2008). Eyprepocnemidinae are usually medium sized and associated with moist grasslands and agricultural lands whereas Oedipodinae are band winged grasshoppers, having bright coloured hind wings (Otte, 1981). Oxyinae are slender, frequently green grasshoppers closely associated with wetlands and paddy fields. Many species are fully winged with high dispersal capability while some are wingless or exhibit reduced wings. They prefer stable habitat having less dispersal and are vulnerable to environmental disturbances. Generally, grasshoppers are herbivores and non-toxic, but some species exhibit aposomatism and are toxic to predators (Uvarov, 1966). Although these subfamilies differ in morphology, behavior and regional distribution, they share a common habitat (Song *et al.*, 2015).

Dittopternis venusta and *Phlaeoba antennata antennata* were found to be the most common species. Subfamily Oedipodinae was the most dominant subfamily with 5 species, followed by subfamily Catantopinae with 4 species. Among these, *Chitaura indica* belonging to subfamily Oxyinae, a brachypterous (reduced wings) species is endemic to south India and they are found in moist, grassland and forest habitats of western ghats region including Kerala.

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