DIVERSITY OF TERRESTRIAL PLANT BUGS (HEMIPTERA: HETEROPTERA) FROM SATPURA RANGES IN NANDURBAR DISTRICT, MAHARASHTRA, INDIA

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Abstract
The present study documented the diversity of terrestrial bugs (Hemiptera: Heteroptera) in the Satpura ranges of Nandurbar District, Maharashtra, India, during February 2024–January 2026. Surveys employed the visual encounter method and field photography without specimen collection. Identification was based on externally visible morphological characters. A total of 58 taxa belonging to 46 genera and 14 families were recorded, comprising 55 species-level identifications and three genus-level identifications: Placosternum sp., Coptosoma sp. and Cletus sp. Pentatomidae exhibited the highest taxonomic richness, with 19 taxa (32.76%), followed by Coreidae with nine (15.52%), together contributing 48.28% of the checklist. Frequent taxa constituted the largest occurrence category (56.90%), followed by Occasional (31.03%), Common (10.34%) and Rare (1.72%); no taxon was categorised as Abundant. Ebutius bellus was the only taxon assigned to the Rare category. These categories reflect assigned occurrence frequency rather than individual abundance. The survey provides a photographic baseline for regional heteropteran diversity, although identifications requiring microscopic examination remain subject to further verification.

Keywords: *Terrestrial Heteroptera, taxonomic richness, photographic survey, occurrence frequency, Satpura ranges, Nandurbar.*

Introduction

Terrestrial true bugs belonging to the suborder Heteroptera constitute an ecologically diverse component of insect communities in natural and agricultural ecosystems. Their piercing–sucking mouthparts enable them to exploit different food resources, including plant tissues, seeds and animal prey. Consequently, terrestrial heteropterans occupy several trophic roles, functioning as herbivores, seed feeders and predators. Although certain species are economically important crop pests, others contribute to the regulation of insect populations. This functional diversity makes the documentation of heteropteran assemblages relevant to biodiversity assessment, agricultural entomology and ecosystem management. The occurrence of both phytophagous and predatory groups within the Pentatomidae of Maharashtra illustrates the ecological breadth of these insects (Baidya et al., 2023).

Regional inventories provide an essential foundation for understanding the taxonomic composition and geographical distribution of terrestrial Heteroptera. They also help distinguish well-documented groups from those requiring further investigation. In central India, Chandra and Kushwaha (2014) documented ground bugs of Madhya Pradesh and provided information on their distribution within India. Their identification of additional state records demonstrates the contribution of focused faunistic surveys to improving regional distributional knowledge. Similarly, Aakriti and Sharma (2025) investigated terrestrial Hemiptera in Mount Abu Wildlife Sanctuary, Rajasthan, contributing information on the fauna of a western Indian hill ecosystem. Such studies provide useful regional reference points for further investigations of terrestrial bug diversity.

In Maharashtra, recent investigations have expanded the available information on heteropteran diversity through both family-level checklists and locality-based surveys. Baidya et al. (2023) compiled a checklist of Pentatomidae, consolidating records of stink bugs from the state. Pande and Inamdar (2024) examined true bug diversity in selected localities of Ahilyanagar and documented representatives of several families, with Pentatomidae showing the greatest taxonomic richness in their survey. Together, these contributions provide a basis for regional comparisons while emphasizing the value of extending investigations across different localities and taxonomic groups. However, a statewide checklist or an inventory from one district cannot substitute for direct documentation of assemblages in another landscape.

The Satpura ranges of Nandurbar District offer an important setting for further investigation of terrestrial heteropteran fauna. Direct evidence of their occurrence in this region was provided by Ansari and Goswami (2025), who investigated Pentatomoidea and Coreoidea at Toranmal hill station. Their study established a local faunistic reference for these superfamilies and confirmed the relevance of the Toranmal forest region for heteropteran surveys. Nevertheless, its geographical

and taxonomic scope leaves opportunities for additional documentation across other terrestrial heteropteran groups and sampling localities within the Satpura landscape of Nandurbar. The present investigation therefore builds upon existing regional records rather than treating the area as previously unexplored.

Further surveys are needed to develop a more complete account of the terrestrial Heteroptera occurring in this region and to establish a sound baseline for subsequent ecological investigations. Reliable species inventories can support comparisons among localities, improve understanding of regional faunal composition and guide future studies of habitat associations and the ecological roles of individual taxa. Accordingly, the present study aims to document the diversity and taxonomic composition of terrestrial heteropteran bugs from the Satpura ranges in Nandurbar District, Maharashtra, India. By supplementing existing distributional information, the study seeks to strengthen the regional biodiversity record and provide a foundation for future research on conservation and sustainable management of terrestrial insect communities.

Materials and Methods

The study was conducted from February 2024 to January 2026 in the Satpura ranges of Nandurbar District, Maharashtra, India. Terrestrial heteropteran bugs were surveyed using the visual encounter method, involving direct searches on vegetation and other accessible terrestrial microhabitats. Individuals encountered were photographed in their natural habitats without collection or preservation. Whenever possible, photographs were taken from different angles to document diagnostic features.

Identification was based on externally visible morphological characters, including body shape, colour patterns, antennae, pronotum, scutellum, wings and legs, using relevant taxonomic literature and published descriptions [Distant (1902 and 1904); Slater (1985); Nayar (1986); Schaefer and Panizzi (2000); Picker *et al.,* (2002); Bailey (2007); Azim (2011)]. Species-level identification was assigned only when diagnostic characters were sufficiently visible; otherwise, individuals were identified to the lowest confidently determinable taxonomic level. The resulting checklist represents a photographic inventory, with identification limited by the absence of specimen examination and microscopic confirmation.

Results and Discussion

Table 1 presents the checklist of terrestrial bugs (Hemiptera: Heteroptera) recorded from the Satpura Ranges of Nandurbar District, Maharashtra, during January 2024–February 2026. The checklist comprises 58 taxa belonging to 46 genera and 14 families, including 55 entries identified to species level and three identified only to genus level, namely *Placosternum* sp., *Coptosoma* sp. and *Cletus* sp.

Pentatomidae exhibited the highest taxonomic richness, with 19 taxa representing 32.76% of the total checklist, followed by Coreidae with nine taxa (15.52%). Reduviidae accounted for five taxa (8.62%), while Miridae comprised four taxa (6.90%). Scutelleridae, Alydidae, Pyrrhocoridae and Lygaeidae were each represented by three taxa (5.17%). Plataspidae, Tingidae and Dinidoridae contained two taxa each (3.45%), whereas Tessaratomidae, Rhopalidae and Largidae were represented by one taxon each (1.72%). Together, Pentatomidae and Coreidae contributed 48.28% of the recorded taxa.

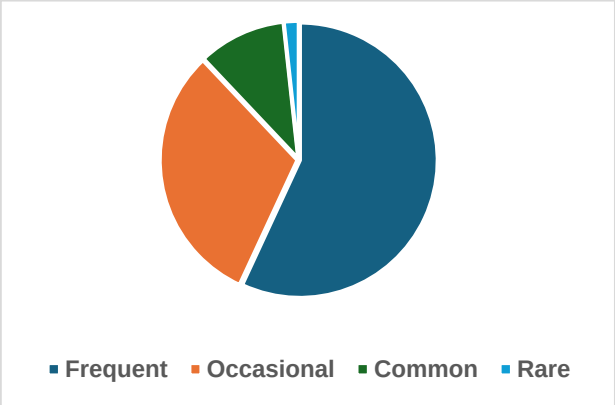


Figure 1.: Overall occurrence of Species

The overall occurrence categories showed that Frequent (F) taxa constituted the largest group, comprising 33 taxa (56.90%), followed by Occasional (O) with 18 taxa (31.03%). Six taxa (10.34%) were categorised as Common (C), while only one taxon (1.72%) was classified as Rare (R). No taxon was assigned to the Abundant (A) category during study period. The common taxa were *Bagrada hilaris*, *Nezara viridula*, *Riptortus pedestris*, *Dysdercus cingulatus*, *Dysdercus koenigii* and *Spilostethus pandurus*. *Ebutius bellus* was the sole taxon classified as rare.

The checklist included stink bugs, shield-backed bugs, coreid bugs, rice earhead bugs, cotton stainers, seed bugs, mirid plant bugs, lace bugs and assassin bugs. This composition documents the taxonomic breadth of terrestrial Heteroptera represented in the survey. The family percentages express proportions of checklist taxa, while the status categories describe their assigned occurrence frequency; neither represents the relative abundance of individual insects.

Table 1: Checklist of Terrestrial Bugs (Hemiptera: Heteroptera) from the Satpura Ranges of Nandurbar District, Maharashtra, India

Sr. No.	Scientific name	Common name / Descriptive group	Overall status[#]
	Family: Pentatomidae		
1.	*Amyotea malabarica* (Fabricius, 1775)	Predatory stink bug	O
2.	*Andrallus spinidens* (Fabricius, 1787)	Spined predatory stink bug	F
3.	*Antestiopsis cruciata* (Fabricius, 1775)	Variegated coffee bug	O
4.	*Bagrada hilaris* (Burmeister, 1835)	Painted bug / bagrada bug	C
5.	*Bathycoelia indica* (Dallas, 1851)	Shield bug	O
6.	*Carbula biguttata* (Fabricius, 1794)	Stink bug	F
7.	*Carbula insocia* (Walker, 1868)	Stink bug	O
8.	*Carbula socia* (Walker, 1867)	Stink bug	O
9.	*Catacanthus incarnatus* (Drury, 1773)	Man-faced stink bug	O
10.	*Dolycoris indicus* (Stål, 1876)	Earhead stink bug	F
11.	*Eocanthecona furcellata* (Wolff, 1811)	Predatory stink bug	F
12.	*Erthesina fullo* (Thunberg, 1783)	Yellow-spotted stink bug	O
13.	*Halyomorpha picus* (Fabricius, 1794)	Brown stink bug	F
14.	*Halys serrigera* (Westwood, 1837)	Brown shield bug	F
15.	*Menida versicolor* (Gmelin, 1790)	Stink bug	O
16.	*Nezara viridula* (Linnaeus, 1758)	Southern green stink bug	C
17.	*Piezodorus hybneri* (Gmelin, 1790)	Legume stink bug	F
18.	*Placosternum* sp. (Leach, 1815)	Shield bug	O
19.	*Plautia crossota* (Dallas, 1851)	Green shield bug	F
	Family: Scutelleridae		
20.	*Cantao ocellatus* (Thunberg, 1784)	Ocellated shield-backed bug	O
21.	*Chrysocoris purpureus* (Westwood, 1837)	Jewel bug	F
22.	*Chrysocoris stollii* (Wolff, 1801)	Jewel bug	F
	Family: Tessaratomidae		
23.	*Tessaratoma javanica* (Thunberg, 1783)	Giant stink bug	F
	Family: Plataspidae		
24.	*Coptosoma* sp. (Laporte, 1833)	Globular shield bug	F
25.	*Megacopta cribraria* (Fabricius, 1798)	Bean plataspid / kudzu bug	F
	Family: Coreidae		
26.	*Acanthocoris scabrator* (Fabricius, 1803)	Leaf-footed bug	F
27.	*Anoplocnemis phasiana* (Fabricius, 1781)	Leaf-footed bug	F
28.	*Clavigralla gibbosa* (Spinola, 1837)	Pigeonpea pod bug	F
29.	*Clavigralla scutellaris* (Westwood, 1842)	Pod bug	F
30.	*Cletus punctiger* (Dallas, 1852)	Rice coreid bug	F
31.	*Cletus* sp. (Dallas, 1852)	Coreid bug	F
32.	*Cletus trigonus* (Thunberg, 1783)	Slender rice bug	F
33.	*Gralliclava horrens* (Dohrn, 1860)	Pod bug	O
34.	*Petillopsis patulicollis* (Walker, 1871)	Leaf-footed bug	O
	Family: Alydidae		
35.	*Leptocorisa acuta* (Thunberg, 1783)	Rice earhead bug	F
36.	*Leptocorisa oratoria* (Fabricius, 1794)	Rice earhead bug	F
37.	*Riptortus pedestris* (Fabricius, 1775)	Bean bug	C
	Family: Rhopalidae		
38.	*Leptocoris augur* (Fabricius, 1781)	Soapberry bug	F
	Family: Pyrrhocoridae		
39.	*Antilochus coquebertii* (Fabricius, 1803)	Predatory red bug	F
40.	*Dysdercus cingulatus* (Fabricius, 1775)	Red cotton stainer	C
41.	*Dysdercus koenigii* (Fabricius, 1775)	Red cotton bug	C
	Family: Largidae		
42.	*Physopelta slanbuschii* (Fabricius, 1787)	Largid bug	F
	Family: Lygaeidae		
43.	*Graptostethus servus* (Fabricius, 1787)	Seed bug	F
44.	*Spilostethus hospes* (Fabricius, 1794)	Seed bug	F
45.	*Spilostethus pandurus* (Scopoli, 1763)	Red-and-black seed bug	C

	Family: Miridae		
46.	*Calocoris dohertyi* (Distant, 1904)	Plant bug	O
47.	*Creontiades pallidifer* (Walker, 1873)	Plant bug	F
48.	*Ebutius bellus* (Distant, 1909)	Mirid plant bug	R
49.	*Lygus decoloratus* (Distant, 1904)	Plant bug	O
	Family: Tingidae		
50.	*Cochlochila bullita* (Stål, 1873)	Basil lace bug	F
51.	*Stephanitis typica* (Distant, 1903)	Coconut lace bug	O
	Family: Reduviidae		
52.	*Acanthaspis pedestris* (Stål, 1863)	Assassin bug	O
53.	*Acanthaspis quinquespinosa* (Fabricius, 1781)	Spiny assassin bug	O
54.	*Rhynocoris fuscipes* (Fabricius, 1787)	Assassin bug	F
55.	*Rhynocoris kumarii* (Ambrose & Livingstone, 1986)	Assassin bug	O
56.	*Rhynocoris marginatus* (Fabricius, 1794)	Assassin bug	F
	Family: Dinidoridae		
57.	*Coridius ianus* (Fabricius, 1775)	Red pumpkin bug	F
58.	*Cyclopelta siccifolia* (Westwood, 1837)	Dinidorid bug	F

C= Common, F= Frequent, O= Occasional, R= Rare

The present survey contributes to the documentation of terrestrial Heteroptera in the Satpura ranges of Nandurbar District and complements the Toranmal study of Ansari and Goswami (2025). It also provides a local reference for comparison with investigations from Ahilyanagar (Pande and Inamdar, 2024), Mount Abu (Aakriti and Sharma, 2025), and the Maharashtra Pentatomidae checklist of Baidya et al. (2023). Studies of ground bugs in Madhya Pradesh further demonstrate the value of regional surveys in improving distributional knowledge (Chandra & Kushwaha, 2014).

Conclusion

The survey documented 58 terrestrial heteropteran taxa across 46 genera and 14 families, with Pentatomidae and Coreidae contributing the greatest taxonomic richness. Most taxa were categorised as Frequent or Occasional. These photographic records provide a baseline for future biodiversity surveys, while further taxonomic verification and standardised monitoring would improve understanding of species identities, distribution and occurrence.

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