



Faunal Composition of Mookambika Wildlife Sanctuary, Karnataka: Insecta: Hemiptera (Terrestrial)

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Abstract— *The Mookambika Wildlife Sanctuary, a vital component of the Western Ghats biodiversity hotspot, remains under-explored regarding its insect diversity. This study presents the first comprehensive checklist of terrestrial Hemiptera from this sanctuary. Faunistic surveys conducted from 2019 to 2021 recorded 55 species belonging to 47 genera under 16 families. The families Pentatomidae (9 species), Rhyparochromidae (6 species), and Coreidae (5 species) exhibited the highest species richness. Specimens were collected from two primary locations, Heddanmane Halkal Junction and Aanejcom Buttely Camp, using standard entomological methods. Detailed collection data and global distribution notes for all species are provided. This baseline inventory fills a significant knowledge gap and underscores the sanctuary's importance for hemipteran diversity and conservation in the region.*

Keywords— *Hemiptera, Biodiversity, Checklist, Western Ghats, Mookambika Wildlife Sanctuary, Karnataka, Faunal Survey.*

I. INTRODUCTION

The order Hemiptera, comprising true bugs, cicadas, hoppers, and allied forms, is one of the most diverse insect groups, representing approximately 8% of global insect fauna (Henry, 2017). Hemipterans occupy nearly every terrestrial and aquatic habitat, playing critical ecological roles as phytophages, predators, pollinators, and vectors of plant diseases, thus holding significant economic and ecological importance (Schuh & Weirauch, 2020). In India, the order is represented by over 6,500 species under about 92 families (Chandra, 2012, 2013), though many regions remain poorly documented.

The Western Ghats of India is a UNESCO World Heritage Site and a global biodiversity hotspot renowned for its exceptionally high levels of endemism and species richness (Myers et al., 2000). Within this chain, the Mookambika Wildlife Sanctuary (MWLS) in Karnataka spans 370.37 sq. km of evergreen, semi-evergreen, and moist deciduous forests. It serves as a crucial ecological corridor between the Someshwara and Sharavathi Wildlife Sanctuaries. Despite its ecological significance, detailed entomofaunal inventories from MWLS are scarce. Previous hemipteran records from the region are limited to isolated studies on specific groups, such as whiteflies (Sundraraj & Pushpa, 2011; Sandeep et al., 2022) and aquatic bugs (Thirumalai, 2004). A consolidated account of the terrestrial Hemiptera fauna is lacking.

This study aims to address this gap by providing the first systematic checklist of terrestrial Hemiptera from the Mookambika Wildlife Sanctuary. The objectives were to (1) document the species diversity and composition, (2) provide precise collection records with distributional data, and (3) establish a baseline for future ecological and conservational studies in this vital part of the Western Ghats.

II. MATERIALS AND METHODS

2.1 Study Area:

The Mookambika Wildlife Sanctuary (MWLS) is located in the Udupi district of Karnataka (Figure 1). It features a complex mosaic of tropical evergreen and moist deciduous forests, with patches of teak plantations, providing diverse microhabitats for insect life.

2.2 Collection and Preservation:

Field surveys were conducted by scientific teams from the Zoological Survey of India during 2019–2021. Specimens were collected from two main sites: Heddanmane Halkal Junction and Aanejcom Buttely Camp. Standard entomological techniques were employed: sweeping nets for vegetation-dwelling species, hand-picking from substrates, and light traps for nocturnal taxa. All collected specimens were preserved in 70% ethanol.

2.3 Identification and Documentation:

Specimens were identified using available taxonomic keys and descriptions (Distant, 1902-1918; Schuh & Slater, 1995; Ananthasubramanian, 1996; Rider et al., 2002) and by comparison with authenticated voucher specimens housed in the National Zoological Collection (NZC) of the Zoological Survey of India, Kolkata. Digital images of smaller specimens (<5 mm) were captured using a Leica M205-A stereo zoom microscope, and larger specimens (>5 mm) were photographed with a Sony DSC-W55 digital camera. All identified specimens have been deposited in the NZC for permanent reference.

2.4 Data Presentation:

The systematic list follows the current classification of Hemiptera (Henry, 2017). For each species, current valid name, collection details (location, coordinates, date, collector), and a summary of its known distribution within India and globally are provided in Table 1.

III. RESULTS

The study recorded a total of **55 species** of terrestrial Hemiptera, classified under **47 genera**, **16 families**, and **4 superfamilies** within the suborders Auchenorrhyncha and Heteroptera (Table 1). All species are reported for the first time from the Mookambika Wildlife Sanctuary.

3.1 Systematic Account:

Phylum: Arthropoda

Class: Insecta

Order: Hemiptera

The annotated systematic list is presented below. An asterisk (*) denotes species for which representative specimen data is provided in Table 1.

Suborder Auchenorrhyncha

Infraorder Cicadomorpha

Superfamily Membracoidea

Family Cicadellidae

1. *Cofana spectra* (Distant, 1908)*
2. *Exitianus indicus* (Distant, 1908)*
3. *Nephotettix virescens* (Distant, 1908)*
4. *Bothrogonia ferruginea* (Fabricius, 1787)*

Family Membracidae

5. *Leptocentrus leucaspis* (Walker, 1858)*
6. *Leptocentrus taurus* (Fabricius, 1775)*

7. *Otinotus oneratus* (Walker, 1858)*

Superfamily Cercopoidea

Family Aphrophoridae

8. *Poophilus costalis* (Walker, 1851)*
9. *Ptyelus affinis* Distant, 1908*
10. *Ptyelus nebulosus* (Fabricius, 1794)*
11. *Clovia conifer* (Walker, 1851)*

Family Lophopidae

12. *Pyrilla perpusilla* (Walker, 1851)*

Suborder Heteroptera

Infraorder Cimicomorpha

Superfamily Reduvidae

Family Reduviidae

13. *Polididus armatissimus* Stål, 1859*
14. *Rhynocoris costalis* (Stål, 1866)*
15. *Rhynocoris fuscipes* (Fabricius, 1787)*
16. *Coranus fuscipennis* Reuter, 1881*

Superfamily Miroidea

Family Miridae

17. *Charagochilus longicornis* (Reuter, 1884)*
18. *Probosciodocoris capitatus* Distant, 1904*
19. *Cyrrtorhinus lividipennis* (Reuter, 1884)*

Infraorder Pentatomomorpha

Superfamily Pentatomoidea

Family Pentatomidae

20. *Plautia crossota* (Fabricius, 1787)*
21. *Agonoscelis nubilis* (Fabricius, 1775)*
22. *Eysarcoris montivagus* (Distant, 1902)*
23. *Eysarcoris ventralis* (Westwood, 1837)*
24. *Halys serrigera* Westwood, 1837*
25. *Erthesina fullo* (Thunberg, 1783)*
26. *Acrosternum graminea* Kirkaldy, 1787*
27. *Nezara viridula* (Linnaeus, 1758)*
28. *Bagrada hilaris* (Burmeister, 1835)*

Superfamily Coreoidea

Family Coreidae

29. *Cletus bipunctatus* (Westwood, 1842)*
30. *Cletus punctiger* (Dallas, 1852)*
31. *Cletus punctulatus* (Westwood, 1842)*
32. *Cletomorpha hastata* (Fabricius, 1787)*
33. *Notobitus meleagris* (Fabricius, 1787)*

Family Alydidae

34. *Leptocorisa acuta* (Thunberg, 1783)*

35. *Riptortus linearis* (Fabricius, 1775)*

Family Rhopalidae

- 36. *Liorhyssus rubicundus* (Signoret, 1859)*
- 37. *Liorhyssus hyalinus* (Fabricius, 1794)*
- 38. *Leptocoris augur* (Fabricius, 1781)*

Superfamily Lygaeoidea

Family Rhyparochromidae

- 39. *Elasmolomus sordidus* (Fabricius, 1787)*
- 40. *Metochus uniguttatus* (Thunberg, 1822)*
- 41. *Dieuches insignis* (Distant, 1904)*
- 42. *Pseudopachybrachius guttus* (Dallas, 1852)*
- 43. *Horridipamera nietmeri* (Dohrn, 1860)*
- 44. *Gyndes pallicornis* (Dallas, 1852)*

Family Lygaeidae

- 45. *Spilostethus pandurus* (Scopoli, 1763)*
- 46. *Spilostethus hospes* (Fabricius, 1794)*
- 47. *Graptostethus servus* (Fabricius, 1787)*
- 48. *Nysius lacustrinus* (Distant, 1909)*

Family Geocoridae

- 49. *Geocoris ochropterus* Fieber, 1844*\

Family Oxycarenidae

- 50. *Oxycarenus laetus* (Kirby, 1891)*

Superfamily Pyrrhocoroidea

Family Largidae

- 51. *Physopelta schlansbuschi* (Fabricius, 1787)*
- 52. *Physopelta gutta* (Burmeister, 1834)*
- 53. *Macroceroea grandis* (Gray, 1832)*
- 54. *Iphita limbata* Stål, 1870*

Family Pyrrhocoridae

- 55. *Dysdercus koenigii* (Fabricius, 1775)*

TABLE 1
SYSTEMATIC ACCOUNT, COLLECTION DATA, AND DISTRIBUTION OF TERRESTRIAL HEMIPTERA RECORDED FROM MOOKAMBIKA WILDLIFE SANCTUARY, KARNATAKA.

Sl. No.	Species (with authority)	Material Examined (No. of ex., Location, Coordinates, Date, Collectors)	Distribution within MWLS	
			Heddmanne Halkal Junction	Aanejcom Buttely Camp
Suborder Auchenorrhyncha				
Infraorder Cicadomorpha				
Superfamily Membracoidea				
Family Cicadellidae				
Subfamily Cicadellinae				
<i>Genus Cofana</i> Melichar, 1926				

1	<i>Cofana spectra</i> (Distant, 1908)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Subfamily Deltocephalinae				
<i>Genus Exitianus</i> Ball, 1929				
2	<i>Exitianus indicus</i> (Distant, 1908)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Nephrotettix</i> Matsumura, 1902				
3	<i>Nephrotettix virescens</i> (Distant, 1908)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Bothrogonia</i> Melichar, 1926				
4	<i>Bothrogonia ferruginea</i> (Fabricius, 1787)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Superfamily Cercopoidea				
Family Aphrophoridae				
<i>Genus Poophilus</i> Stål, 1866				
5	<i>Poophilus costalis</i> (Walker, 1851)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Ptyelus</i> Le Peletier & Serville, 1825				
6	<i>Ptyelus affinis</i> Distant, 1908	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓

7	<i>Ptyelus nebulosus</i> (Fabricius, 1794)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Clovia</i> Stål, 1869				
8	<i>Clovia conifer</i> (Walker, 1851)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Family Membracidae				
<i>Genus Leptocentrus</i> Stål, 1866				
9	<i>Leptocentrus leucaspis</i> (Walker, 1858)	5 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
10	<i>Leptocentrus taurus</i> (Fabricius, 1775)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
<i>Genus Otinotus</i> Buckton, 1903				
11	<i>Otinotus oneratus</i> (Walker, 1858)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Family Lophopidae				
<i>Genus Pyrilla</i> Stål, 1859				
12	<i>Pyrilla perpusilla</i> (Walker, 1851)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Suborder Heteroptera				
Infraorder Cimicomorpha				
Superfamily Reduvidae				
Family Reduviidae				
Subfamily Harpactorinae				
<i>Genus Polididus</i> Stål, 1858				

13	<i>Polididus armatissimus</i> Stål, 1859	1 ex., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
<i>Genus Rhynocoris</i> Hahn, 1834				
14	<i>Rhynocoris costalis</i> (Stål, 1866)	1 ex., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
15	<i>Rhynocoris fuscipes</i> (Fabricius, 1787)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Coranus</i> Curtis, 1833				
16	<i>Coranus fuscipennis</i> Reuter, 1881	1 ex., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Superfamily Miroidea				
Family Miridae				
Subfamily Mirinae				
<i>Genus Charagochilus</i> Fieber, 1858				
17	<i>Charagochilus longicornis</i> (Reuter, 1884)	2 exs., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Proboscidoecoris</i> Reuter, 1882				
18	<i>Proboscidoecoris capitatus</i> Distant, 1904	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Subfamily Orthotylinae				
<i>Genus Cyrtorhinus</i> Fieber, 1858				

19	<i>Cyrtorhinus lividipennis</i> (Reuter, 1884)	2 exs., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Infraorder Pentatomomorpha				
Superfamily Pentatomoidea				
Family Pentatomidae				
Subfamily Pentatominae				
Tribe Antestiini				
<i>Genus Plautia</i> Stål, 1867				
20	<i>Plautia crossota</i> (Fabricius, 1787)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Tribe Agonoscelidini				
<i>Genus Agonoscelis</i> Spinola, 1837				
21	<i>Agonoscelis nobilis</i> (Fabricius, 1775)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Tribe Eysarcorini				
<i>Genus Eysarcoris</i> Hahn, 1834				
22	<i>Eysarcoris montivagus</i> (Distant, 1902)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
23	<i>Eysarcoris ventralis</i> (Westwood, 1837)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Tribe Halyini				
<i>Genus Halys</i> Fabricius, 1803				
24	<i>Halys serrigera</i> Westwood, 1837	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Erthesina</i> Spinola, 1837				

25	<i>Erthesina fullo</i> (Thunberg, 1783)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Tribe Nezarini				
<i>Genus Nezara</i> Amyot & Serville, 1843				
26	<i>Acrosternum graminea</i> (Fabricius, 1787)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
27	<i>Nezara viridula</i> (Linnaeus, 1758)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Tribe Strachiini				
<i>Genus Bagrada</i> Stål, 1862				
28	<i>Bagrada hilaris</i> (Burmeister, 1835)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Superfamily Coreoidea				
Family Coreidae				
Subfamily Coreinae				
<i>Genus Cletus</i> Stål, 1860				
29	<i>Cletus bipunctatus</i> (Westwood, 1842)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
30	<i>Cletus punctiger</i> (Dallas, 1852)	1 ex., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓

31	<i>Cletus punctulatus</i> (Westwood, 1842)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
<i>Genus Cletomorpha</i> Mayr, 1866				
32	<i>Cletomorpha hastata</i> (Fabricius, 1787)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
<i>Genus Notobitus</i> Stål, 1873				
33	<i>Notobitus meleagrís</i> (Fabricius, 1787)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Family Alydidae				
<i>Genus Leptocoris</i> a Latreille, 1829				
34	<i>Leptocoris acuta</i> (Thunberg, 1783)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Riptortus</i> Stål, 1860				
35	<i>Riptortus linearis</i> (Fabricius, 1775)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Family Rhopalidae				
Subfamily Rhopalinae				
<i>Genus Liorhyssus</i> Stål, 1870				
36	<i>Liorhyssus rubicundus</i> (Signoret, 1859)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
37	<i>Liorhyssus hyalinus</i> (Fabricius, 1794)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–

Subfamily Serinethinae				
<i>Genus Leptocoris</i> Hahn, 1833				
38	<i>Leptocoris augur</i> (Fabricius, 1781)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Superfamily Lygaeoidea				
Family Rhyparochromidae				
Subfamily Rhyparochrominae				
<i>Genus Elasmolomus</i> Stål, 1872				
39	<i>Elasmolomus sordidus</i> (Fabricius, 1787)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Metochus</i> Scott, 1874				
40	<i>Metochus uniguttatus</i> (Thunberg, 1822)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
<i>Genus Dieuches</i> Dohrn, 1860				
41	<i>Dieuches insignis</i> (Distant, 1904)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Tribe Myodochini				
<i>Genus Pseudopachybrachius</i> Malipatil, 1978				
42	<i>Pseudopachybrachius guttus</i> (Dallas, 1852)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Horridipamera</i> Malipatil, 1978				
43	<i>Horridipamera nietneri</i> (Dohrn, 1860)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–

<i>Genus Gyndes</i> Stål, 1862				
44	<i>Gyndes pallicornis</i> (Dallas, 1852)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
Family Lygaeidae				
Subfamily Lygaeinae				
<i>Genus Spilostethus</i> Stål, 1868				
45	<i>Spilostethus pandurus</i> (Scopoli, 1763)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
46	<i>Spilostethus hospes</i> (Fabricius, 1794)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Graptostethus</i> Stål, 1868				
47	<i>Graptostethus servus</i> (Fabricius, 1787)	1 ex., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Subfamily Orsillinae				
<i>Genus Nysius</i> Dallas, 1852				
48	<i>Nysius lacustrinus</i> (Distant, 1909)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Family Geocoridae				
<i>Genus Geocoris</i> Fallén, 1814				
49	<i>Geocoris ochropterus</i> (Fieber, 1844)	5 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Family Oxycarenidae				
<i>Genus Oxycarenus</i> Fieber, 1837				

50	<i>Oxycarenus laetus</i> (Kirby, 1891)	1 ex., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Superfamily Pyrrhocoroidea				
Family Largidae				
Subfamily Physopeltinae				
<i>Genus Physopelta</i> Amyot & Serville, 1843				
51	<i>Physopelta schlanbuschii</i> (Fabricius, 1787)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
52	<i>Physopelta gutta</i> (Burmeister, 1834)	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
<i>Genus Macroceroea</i> (Spinola, 1837)				
53	<i>Macroceroea grandis</i> (Gray, 1832)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
<i>Genus Iphita</i> Stål, 1870				
54	<i>Iphita limbata</i> Stål, 1870	2 exs., Aanejcom Buttely Camp, MWLS, Udupi, Karnataka, 13.530020°N, 74.860130°E, 04.viii.2021, V.D. Hegde & Party Coll.	–	✓
Family Pyrrhocoridae				
<i>Genus Dysdercus</i> Amyot & Serville, 1843				
55	<i>Dysdercus koenigii</i> (Fabricius, 1775)	1 ex., Heddanmane Halkal Junction, MWLS, Udupi, Karnataka, 13.350102°N, 74.836400°E, 31.viii.2021, V.D. Hegde & Party Coll.	✓	–
TOTAL SPECIES			30	26

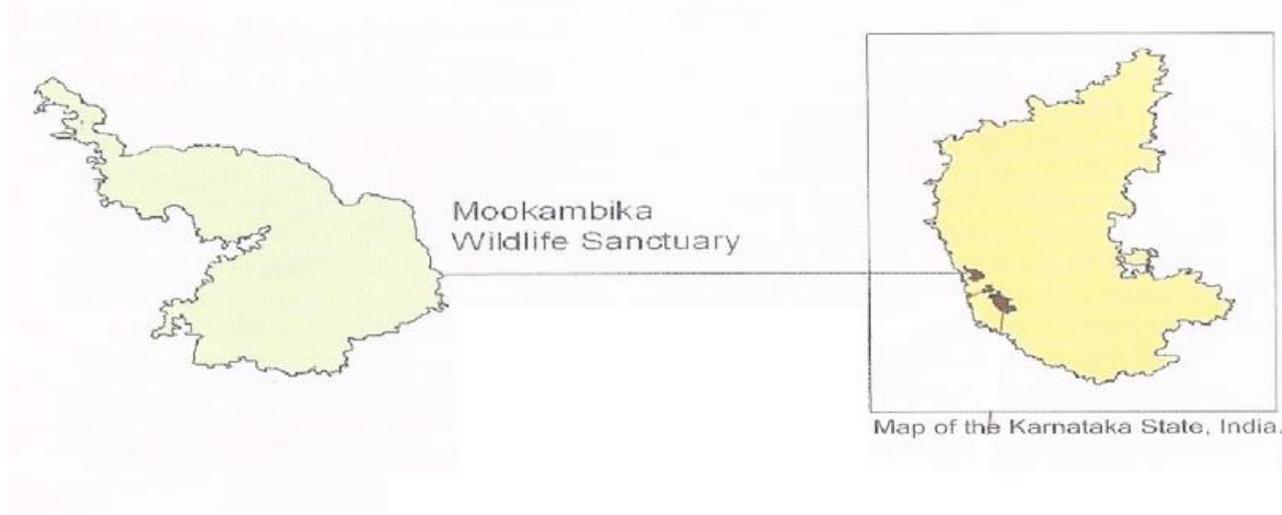


FIGURE 1: Map showing Mookambika Wildlife Sanctuary

3.2 Faunal Composition and Site-wise Distribution:

The recorded fauna comprised 16 families (Table 2). Pentatomidae was the most speciose family (9 species), followed by Rhyparochromidae (6 species), and Coreidae (5 species). Of the two surveyed sites, Heddanmane Halkal Junction yielded 30 species, and Aanejcom Buttely Camp yielded 26 species, with one species (*Dieuches insignis*) recorded from both locations.

TABLE 2
FAMILY-WISE DIVERSITY OF TERRESTRIAL HEMIPTERA IN MOOKAMBIKA WILDLIFE SANCTUARY

Sl. No.	Superfamily	Family	Number of Species
1	Membracoidea	Cicadellidae	4
2		Membracidae	3
3	Cercopoidea	Aphrophoridae	4
4		Lophopidae	1
5	Reduvisoidea	Reduviidae	4
6	Miroidea	Miridae	3
7	Pentatomoidea	Pentatomidae	9
8	Coreoidea	Coreidae	5
9		Alydidae	2
10		Rhopalidae	3
11	Lygaeoidea	Rhyparochromidae	6
12		Lygaeidae	4
13		Geocoridae	1
14		Oxycarenidae	1
15	Pyrrhocoroidea	Largidae	4
16		Pyrrhocoridae	1

IV. DISCUSSION

This study provides the foundational checklist for terrestrial Hemiptera in the Mookambika Wildlife Sanctuary. The recorded diversity of 55 species from only two sampling sites underscores the rich hemipteran fauna harbored by the sanctuary's diverse forest ecosystems. The predominance of families like Pentatomidae (stink bugs) and Coreidae (leaf-footed bugs) is consistent with patterns observed in other tropical forest habitats, where these phytophagous groups often exhibit high diversity due to the variety of host plants (Schuh & Slater, 1995).

Notably, several species documented here are of wider agricultural importance. For instance, *Nezara viridula*, *Leptocorisa acuta*, and *Dysdercus koenigii* are known pests of various crops (Rider et al., 2002). Conversely, predators from families like

Reduviidae (assassin bugs) and Geocoridae (big-eyed bugs) play a beneficial role as natural biocontrol agents. Their presence highlights the sanctuary's ecosystem balance.

While this checklist is a significant step, it is preliminary. The Western Ghats are known for high endemism, but our current data lacks host plant associations and seasonal abundance patterns. Furthermore, many hemipteran groups, particularly small Sternorrhyncha (aphids, scale insects) and cryptic taxa, were likely undersampled. More intensive, seasonally-replicated surveys across varied microhabitats (forest floor, canopy, stream banks) and the use of additional methods (e.g., malaise traps, canopy fogging) are needed to develop a complete inventory.

V. CONCLUSION

This first account of the terrestrial Hemiptera from Mookambika Wildlife Sanctuary documents 55 species, establishing a crucial baseline record for this ecologically significant area in the Western Ghats. The data emphasizes the sanctuary's role as a reservoir of both widespread and potentially endemic hemipteran diversity. Future studies should focus on detailed ecological research, molecular taxonomy for cryptic species, and long-term monitoring to understand the impact of environmental changes on these insect communities. This work contributes to the broader goal of documenting and conserving invertebrate biodiversity in India's biodiversity hotspots.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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