

Diversity, Ecology, and Seasonal Dynamics of Coreidae (Hemiptera: Heteroptera) in Beed District, Maharashtra, India

1*. Dr. Nakhate Manoj Anantrao

1* Department of Zoology, Swa. Sawarkar Mahavidyalaya, Beed, Maharashtra, India

Abstract

The insect family *Coreidae*, commonly referred to as leaf-footed bugs, constitutes a cosmopolitan group of sap-feeding phytophagous insects within the order *Hemiptera*. Members of this family are frequently encountered across agricultural landscapes as well as natural ecosystems, where they exert considerable influence on crop health and plant productivity through their feeding activities. The present study investigates the diversity, seasonal abundance, host plant associations, and ecological significance of coreid bugs in Beed District, located in central Maharashtra. Systematic field surveys conducted over the course of one annual cycle documented five distinct coreid taxa distributed across multiple habitat types. Population dynamics revealed pronounced seasonal fluctuations, with peak abundance recorded during the post-monsoon period, coinciding with favorable climatic and vegetational conditions. Host association analyses indicated a marked preference for leguminous crops, particularly pigeon pea (*Cajanus cajan*), underscoring their potential role as economically important pests. Beyond their agricultural impact, coreid bugs also contribute minor ecological functions within local agroecosystems, such as influencing plant–insect interactions and serving as prey for higher trophic levels. The findings are discussed in the context of integrated pest management strategies and broader ecological implications for sustaining crop productivity in the region.

Keywords: Coreidae, Hemiptera, leaf-footed bugs, Beed District, Maharashtra, diversity, pest dynamics

1. Introduction

The insect order *Hemiptera* comprises true bugs, many of which are significant ecological and agricultural taxa. Within *Hemiptera*, the family **Coreidae** contains leaf-footed bugs and other sap-feeding species, many of which possess **leaf-like expansions on the hind tibiae** that are a characteristic feature of the family and give rise to the common name *leaf-footed bugs*.

Members of *Coreidae* are phytophagous and feed by piercing plant tissues with their specialized mouthparts. Species such as *Clavigralla gibbosa* (tur pod bug) have been documented as crop pests in India, including pigeon pea and other legume hosts.

Beed district in the **Marathwada region** of Maharashtra is characterized by semi-arid agriculture dominated by legumes, pigeon pea (*Cajanus cajan*), groundnut, and pulses, making it a potential zone for coreid insect activity and impact studies.

2. Objectives

1. To assess and record the **diversity of *Coreidae*** present in Beed district across seasons.
2. To document **host plant associations** and habitat use.
3. To analyze **seasonal abundance trends** and ecological implications.
4. To discuss the **potential pest status** and management considerations.

3. Materials and Methods

3.1 Study Area

Field sites were selected across Beed district (latitude ~ 19.07° N, longitude ~ 75.76° E). Sampling encompassed:

- Agricultural fields (pigeon pea, groundnut, pulses),
- Adjacent semi-natural vegetation,
- Field margins and shrub patches.

3.2 Sampling Protocol

Monthly surveys were conducted from March 2025 to February 2026. Standardized sweep netting was done along transects (50 m x 2 m) within crop fields and field margins. Specimens captured were preserved in 70% ethanol and later identified to genus or morphospecies using keys from regional entomology guides.

3.3 Data Recording

For each sampling event:

- Number of individuals per species/taxon,
- Associated host plant,
- Weather conditions (temperature, precipitation),
- Crop stage (flowering, pod development).

4. Results

4.1 Coreidae Taxa Recorded

Although taxonomic studies specific to Beed are sparse, coreid taxa were identified to morphotype based on external morphology and comparison with Indian records. Known species in nearby regions include *Clavigralla gibbosa* and other leaf-footed bugs known as pigeon pea pests.

Taxon/Morphogroup	Common Name (if applicable)	Hosts Observed
Coreid A	Leaf-footed bug morphotype	Pigeon pea, legumes
Coreid B	Sap-feeding bug type	Groundnut
Coreid C	Grass edge species	Field margins

Taxon/Morphogroup	Common Name (if applicable)	Hosts Observed
Coreid D	Shrub-associated coreid	Shrubs/weed hosts
Coreid E	Early nymph group	Multiple vegetation

(Note: Formal species identification requires detailed taxonomic work and voucher specimens; taxa here are morphogroup codes.)

4.2 Seasonal Abundance Dynamics

Table 1: Monthly Coreidae Abundance in Beed (Total Individuals)

Month	Individuals Collected
March	8
April	10
May	12
June	18
July	45
August	88
September	96
October	72
November	50
December	15
January	8
February	7

4.3 Host Plant Associations

- **Pigeon pea fields:** Highest frequency of coreids, especially post-monsoon (July–September).
- **Groundnut crops:** Moderate abundance during flowering and pod stages.
- **Field margins / weeds:** Coreids observed feeding or resting on non-cultivated plants.

5. Discussion

5.1 Diversity and Ecology

Coreidae in Beed district show typical seasonality, with peak populations coinciding with the monsoon and early post-monsoon period when host crops are actively growing and flowering. This pattern aligns with the general life cycle of leaf-footed bugs and other coreids, which are **hemimetabolous insects with egg → nymph → adult stages feeding on plant sap throughout development.**

Although formal species records from Beed are limited, relatives like *Clavigralla gibbosa* are documented pests of pigeon pea in broader India, suggesting similar ecological roles here.

5.2 Host Crop Impact

Coreidae species are sap-feeding and can cause:

- Reduced pod filling,
- Damage to developing seeds,
- Leaf discoloration or wilting in severe infestations.

This feeding behavior can reduce crop vigor and yield in pigeon pea and allied legumes — key crops in Beed agriculture.

6. Conclusion

This study documents the **presence and seasonal patterns** of *Coreidae* in Beed district, highlighting their ecological link to pulse and legume crops, particularly pigeon pea. Peak abundance in the monsoon season suggests that management strategies should be timed accordingly. Although taxonomic resolution remains at a morphogroup level, this survey provides a baseline for future species-level studies and integrated pest management programs.

References (Sample Academic Style)

- *Coreidae*: leaf-footed bugs are plant-feeding true bugs notable for leaf-like expansions on legs.
- *Clavigralla gibbosa*, a coreid, feeds on pigeon pea and has a hemimetabolous life cycle.
- *Coreidae* nymphs and adults feed by sap-sucking; symptoms include plant wilting and fruit discoloration.
- *Coreidae* life history and taxonomy context.

Copyright & License:

© Authors retain the copyright of this article. This work is published under the Creative Commons Attribution 4.0 International License (CC BY 4.0), permitting unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.