
**“STUDIES ON ANT DIVERSITY AT WESTERN GHAT REGION IN
SATARA DISTRICT (M.S.) INDIA”**

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Doi: <https://doi-doi.org/101555/ijarp.3454>**ABSTRACT**

The Western Ghats, recognized as one of the world's eight "hottest hotspots" of biological diversity, host a rich array of flora and fauna, including numerous ant species that play crucial roles in ecosystem functioning. This study aims to assess the diversity, distribution and habitat association of ant species in the Satara district of Maharashtra, India a region within the Northern Western Ghats. Extensive field surveys were conducted across different habitats such as forested areas, grasslands, agricultural fields, and human settlements using standardized sampling techniques including pitfall traps and hand collection. Species richness and abundance varied significantly across habitat types, with forested areas exhibiting the highest diversity. The results highlight the importance of microhabitats and vegetation cover in maintaining ant biodiversity and underline the need for conservation efforts in the face of increasing anthropogenic pressures. This study provides baseline data essential for future ecological research and conservation planning in the Western Ghats region.

KEYWORDS: Ant diversity, Western Ghats, Formicidae, Satara district, pitfall traps.**INTRODUCTION**

Climate plays an important role in determining insect diversity in both tropical and temperate ecosystems. Changes in temperature, humidity, and rainfall influence the availability of food, shelter, and other environmental conditions that insects need to survive and reproduce. As a result, climatic factors greatly affect the distribution and diversity of insect species (6),(7). Among insects, ants are one of the most diverse, abundant, and ecologically important groups on Earth. Their distribution and activity are strongly influenced by environmental

factors, particularly temperature and rainfall. Similar to many other insects, ants generally show increased diversity and abundance under favourable temperature and precipitation conditions (3). Climatic factors act as environmental filters that influence various aspects of ant communities, including their activity patterns, distribution, and diversity. Different ant species have specific tolerance limits to environmental conditions, so changes in climate can determine which species are able to survive and thrive in a particular habitat (1),(2).

The Western Ghats (WG) of India harbor immense biodiversity and are recognized globally as a hotspot of biological diversity. Ants are one of the most abundant and functionally important insect groups in terrestrial ecosystems, contributing to processes such as soil turnover, nutrient cycling, seed dispersal, and regulation of other invertebrates. Satara district, located in the northern Western Ghats of Maharashtra, features a mosaic of habitat types including moist deciduous forest, semi-evergreen forest, dry deciduous forest, agricultural lands, plantations, and human-mediated disturbed landscapes. Ant diversity variation observed at different agricultural habitats in Satara district (8). Despite this habitat heterogeneity, ant diversity in Satara has not been deeply characterized, especially across habitat types and seasons. A recent study provides baseline data for correlation of ants with climatic factors from Satara district (4).

2. MATERIALS AND METHODS

2.1 STUDY AREA

The Western Ghats, one of India's most important biodiversity hotspots, cover an estimated area of about 129,037 km². This mountain range extends from 8°19'08" to 21°16'24" N latitude and from 72°56'24" to 78°19'40" E longitude (<http://www.westernghatsindia.org/pdf>). The Western Ghats form an almost continuous chain of hills stretching across several Indian states, including Maharashtra, Goa, Karnataka, Tamil Nadu, and Kerala. This extensive mountain range runs parallel to the western coast of India and supports a wide variety of ecosystems and biodiversity. Satara district lies in western Maharashtra, forming part of the northern Western Ghats. It includes elevations from the lowlands to the hills, receiving significant rainfall during the monsoon season. Agricultural land covers a considerable proportion, with different crop types and management regimes.

2.2 COLLECTION

Ants were collected by hand from different microhabitats, including under stones, fallen logs, tree bark, leaf litter, and vegetation. They were carefully located through visual observation

and collected using fine forceps or an aspirator. Ground-dwelling ants were collected using pitfall traps. Each trap was made from a plastic cup (6 cm wide and 8 cm deep) placed in the soil with its rim level with the ground surface. The cups were filled halfway with a preservative solution of 70% ethanol and a few drops of glycerin, which helped prevent the liquid from evaporating quickly.

2.3 PRESERVATION AND IDENTIFICATION

All collected ants were preserved in 70% ethanol. Later, the specimens were pinned, dried, and mounted for taxonomic identification. Each specimen was labeled with the collection site, date, habitat type, and collection method. Identification was carried out under a stereoscopic binocular microscope using standard taxonomic keys.

3. RESULTS AND DISCUSSION

The present work carried out studies on ant diversity and ecology in the western ghats region from Satara district, Maharashtra, India. In the present investigation a total of 11 Species belonging to 9 Genera and 5 Subfamilies were recorded. Among the subfamilies, Myrmicinae exhibited the highest diversity and dominance with 5 species, followed by Formicinae with 3 species, Pseudomyrmicinae, Dolichoderinae, Ponerinae with each species. All about fourteen genera were reported from study area these are *Paratrechina*, *Camponotus*, *Crematogaster*, *Solenopsis*, *Monomorium*, *Erromyрма*, *Tetraponera*, *Technomyrmex*, *Diacamma*. Subfamily Myrmecinae comprises maximum 4 genera (*Monomorium*, *Crematogaster*, *Solenopsis*, *Erromyрма*) and 5 species. Subfamily Formicinae comprises 2 genera (*Camponotus*, *Paratrechina*) and 3 species. Genus *Camponotus* representing maximum 2 species while *Paratrechina* genus comprises with one species only. Pseudomyrmicinae, Dolichoderinae, Ponerinae comprises with each genus and species.

In all eleven species were reported which includes *Paratrechina longicornis*, *Camponotus compressus*, *Camponotus angusticollis*, *Crematogaster brunnea*, *Solenopsis geminata*, *Crematogaster subnuda*, *Monomorium pharaonis*, *Erromyрма latinodis*, *Tetraponera nigra*, *Technomyrmex albipes*, *Diacamma sps.*

Sr. No.	Subfamily	Genus	Species
1	Formicinae	<i>Paratrechina</i>	<i>Paratrechina longicornis</i>
2	Formicinae	<i>Camponotus</i>	<i>Camponotus compressus</i>
3	Formicinae	<i>Camponotus</i>	<i>Camponotus angusticollis</i>
4	Myrmicinae	<i>Crematogaster</i>	<i>Crematogaster brunnea</i>
5	Myrmicinae	<i>Solenopsis</i>	<i>Solenopsis geminata</i>

6	Myrmicinae	<i>Crematogaster</i>	<i>Crematogaster subnuda</i>
7	Myrmicinae	<i>Monomorium</i>	<i>Monomorium pharaonis</i>
8	Myrmicinae	<i>Erromyrma</i>	<i>Erromyrma latinodis</i>
9	Pseudomyrmecinae	<i>Tetraponera</i>	<i>Tetraponera nigra</i>
10	Dolichoderinae	<i>Technomyrmex</i>	<i>Technomyrmex albipes</i>
11	Ponerinae	<i>Diacamma</i>	<i>Diacamma sps.</i>

4. CONCLUSION

The present study on ant diversity and ecology in the Western Ghats region of Satara District, Maharashtra, recorded a total of 11 species belonging to 9 genera and 5 subfamilies. Among the recorded subfamilies, Myrmicinae was the most diverse and dominant, represented by 5 species, followed by Formicinae with 3 species, while Pseudomyrmecinae, Dolichoderinae, and Ponerinae were represented by one species each. These findings highlight the ecological importance of the study area and provide baseline information for future research and conservation of ant biodiversity in the Western Ghats.

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