

# Diversity of Local Ants in Chincholi Kaldat Karjat, Ahilyanagar

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## Abstract

Ants are one of the dominant and important insects in terrestrial ecosystems. They play a vital role in ecological balance by aerating the soil, breaking down organic matter, and controlling pests. The main goal of the present study was to study the diversity and distribution of ant species in different habitats of Karjat Taluka. The study was carried out in different habitats such as agricultural fields, gardens, residential areas, roadside areas, and grasslands by employing different sampling techniques such as hand collection, bait trapping, and pitfall trapping. The collected ant species were identified based on different morphological characteristics such as body size, color, segmentation, and antennae. In current work, we observed five species of ants in the study area. The study revealed that different ant species were present in different habitats. The ant diversity was high in areas with high vegetation density compared to urban areas. The study revealed the ecological importance of ant species as bioindicators. The study can be useful in future biodiversity studies in the region.

**Keywords:** Ant, diversity, local etc.

## Introduction

Ants are small but highly organized social insect belonging to the family Formicidae under the order Hymenoptera. They are among the most successful and dominant groups of terrestrial arthropods, found in almost every habitat across the world except extreme polar regions. Ants live in well-structured colonies that exhibit a high level of social organization, division of labour, and communication. A typical ant colony consists of a queen, workers, and males, each performing specific roles essential for the survival and growth of the colony. Ants are ecologically important organisms and are often considered ecosystem engineers. Through their nesting and foraging activities, ants improve soil structure by increasing aeration and water infiltration. They contribute to nutrient cycling by decomposing organic matter and transporting food materials within the soil. Many ant species act as predators and scavengers, thereby controlling

populations of other insects and helping maintain ecological balance. Some species also play a crucial role in seed dispersal (myrmecochory), which aids in plant regeneration and biodiversity maintenance.

India is a country with a wide range of climatic and geographical variations. Such variations in temperature, rainfall, vegetation type, etc., are known to affect the ant fauna. The ant fauna is known to reflect the local habitats. The presence or absence of ants is a significant factor that helps us understand the quality of habitats. Therefore, the ant fauna is generally considered a significant tool for understanding the local habitats.

Karjat Taluka is a region in the Ahilyanagar district of Maharashtra. This region is known to contain a variety of habitats such as agricultural fields, gardens, roadside vegetation, residential areas, etc. Such variations in habitats are known to create a suitable environment for the survival of various ant species. However, the impact of urbanization and agricultural practices may affect the biodiversity. Therefore, the ant fauna is significant in this region.

The current project under the title Diversity of Local Ants in Chincholi Kaldat, Karjat, (Ahilyanagar) intends to explore the diversity of local ants found in the region. This project not only increases the knowledge of the diversity of local insects found in the region; it also increases the awareness of the importance of conserving even the smallest of creatures such as ants. By exploring the diversity of local ants found in the region of Karjat, this project can be helpful to the region. This is because the project can be helpful to the region in the future.

## **Materials & Methods**

### **Study Area**

The present study was conducted in Chincholi Kaldat, Karjat Taluka, District Ahilyanagar Maharashtra. The study area includes a mixture of agricultural fields, gardens, residential areas, roadside vegetation, grasslands, and open lands. The region experiences a semi-arid climate with moderate rainfall and high summer temperatures. Different habitats were selected to observe variation in ant diversity across environmental conditions.

### **Duration of Study**

The survey was carried out over a period of August 2025 to February 2026. Observations were made during morning and evening hours when ant activity was maximum.

### **Materials Used**

Forceps, Soft brush, Collection bottles, 70% alcohol (for preservation), Hand lens / Magnifying glass, Notebook and pen, Camera/mobile phone (for photographs)

### **Sampling Methods**

To study the diversity of ants, the following collection methods were used

- **Hand Collection Method**

Ants were directly collected from the ground, walls, tree trunks, leaf litter, and nests using forceps or a soft brush. This method was useful for collecting visible and active species.

- **Baiting Method**

Small quantities of sugar solution and edible oil were placed on paper or leaves at selected locations. Ants attracted to the bait were observed and collected after a fixed time interval (15–30 minutes). This method helped in identifying food preferences and dominant species.

- **Pitfall Trap Method**

Plastic cups were buried in the soil with their rim at ground level. These cups acted as pitfall traps to capture ground-dwelling ants. A small amount of preservative (70% alcohol) was added to prevent escape and preserve specimens. Traps were left for 24 hours and then examined.

### **Preservation of Specimens**

Collected ants were transferred into labeled vials containing 70% alcohol. Each vial was labeled with date, location, habitat type, and method of collection.

### **Identification of Species**

Specimens were examined using a hand lens or magnifying glass. Identification was based on morphological characteristics such as:

Body size and color, Number of body segments, Antennae structure, Presence of spines, Nesting habits

Standard identification keys, textbooks, and online reference materials were used to classify ants up to genus or species level wherever possible.

This methodology helped in systematically documenting the diversity of local ants in Karjat and analyzing their distribution across different habitats.

### **Results / Observations**

Sr. No.	Common Name	Subfamily	Genus	Species
1	Tropical fire ant (Little red ant)	Myrmicinae	Wasmannia	auropunctata
2	Asian Weaver ant (Medium size red ant)	Formicinae	Oecophylla	smaragdina
3	Florida carpenter ant (Big size brown ant)	Formicinae	Camponotus	atriceps
4	Longhorn crazy ant (Small size black ant)	Formicinae	Paratrechina	longicornis

5	Big headed ant (Medium size black ant)	Myrmicinae	Pheidole	megacephala
6	Carpenter ants (Big size black ant)	Formicinae	Componotus	compressus
7	Pharaoh ant (Small whitish yellow ant)	Myrmicinae	Monomorium	pharaonis
8	Red imported fire ant	Myrmicinae	Solenopsis	invicta

The present study on the Diversity of Local Ants revealed that the study area supports a moderate diversity of ant species belonging to different genera and ecological groups. Based on morphological observation and habitat preference, eight major types of ants were identified.

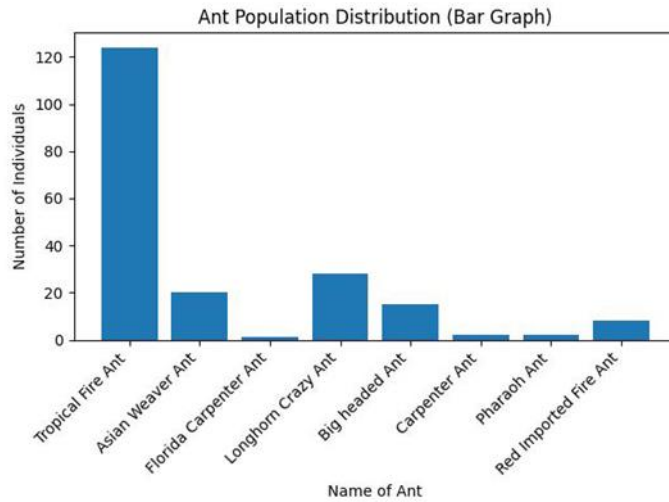
During the field survey conducted in Chincholi Kaldat, Karjat (Ahilyanagar), different types of ants were observed and recorded. The observations were based on body size and color characteristics. A total of 200 individual ants belonging to seven different categories were recorded in one day.

The small red ants were found to be the most abundant species with 124 individuals, indicating their high population in the study area. Small black ants (Longhorn crazy ants) were the second most abundant with 28 individuals, followed by medium red ants (Asian Weaver ants) with 20 individuals. Medium size black ants (big headed ants) were also moderately present with 15 individuals. Red Imported fire ants were also present with 8 individuals.

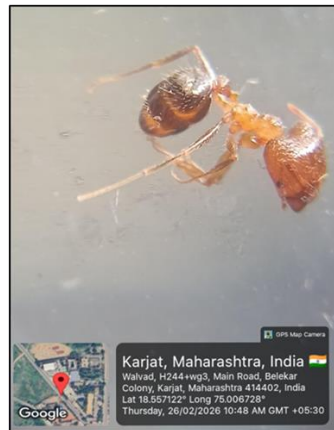
In contrast, large ants were comparatively less common in the study area. Only 1 big brown ant (Florida carpenter ant) and 2 big black ants (Carpenter ants) were recorded during the observation period. White ants (Pharaoh ants) were also rarely observed, with only 2 individuals recorded.

The results indicate that smaller ant species dominate the local habitat, possibly due to their better adaptability, faster reproduction, and ability to utilize available food resources efficiently. The presence of different sizes and types of ants suggests moderate diversity of ant fauna in the study region.

Sr. No	Name of Ant	No. of individuals
1	Tropical Fire Ant	124
2	Asian Weaver Ant	20
3	Florida Carpenter Ant	1
4	Longhorn Crazy Ant	28
5	Big headed Ant	15
6	Carpenter Ant	2
7	Pharaoh Ant	2
8	Red Imported fire Ant	8
	<b>Total</b>	<b>200</b>



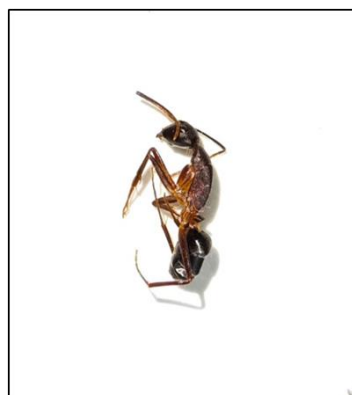
**Tropical Fire Ant**



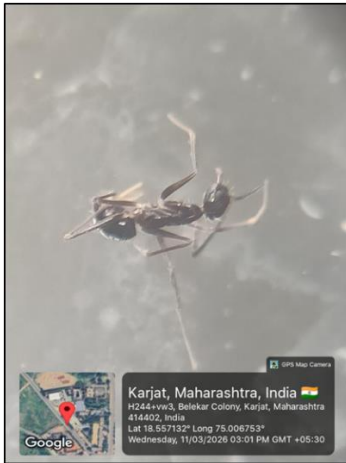
**Asian Weaver Ant**



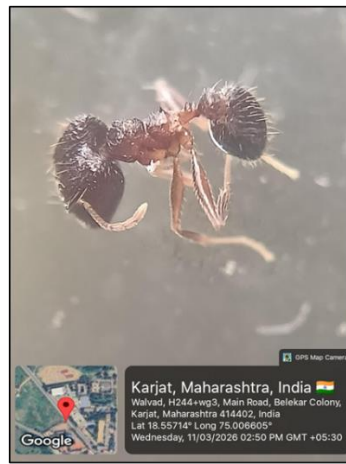
**Florida Carpenter Ant.**



**Carpenter Ant**



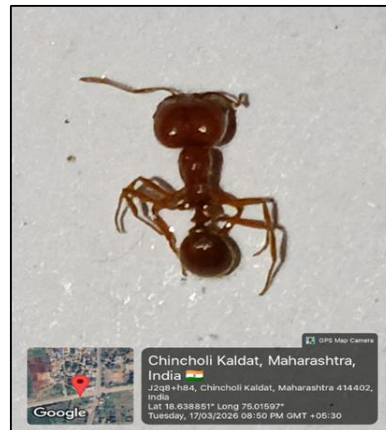
**Longhorn Crazy Ant**



**Big Headed Ant**



**Pharaoh Ant**



**Red imported fire Ant**

## **Conclusion**

The present study on “Diversity of Local Ants in Chincholi Kaldat, Karjat, (Ahilyanagar)” revealed that Karjat Taluka supports a considerable diversity of ant species across different habitats such as agricultural fields, gardens, roadside vegetation, grasslands, and residential areas. The variation in species richness and abundance observed during the survey indicates that habitat type, vegetation cover, availability of food resources, and level of human disturbance significantly influence ant distribution.

The study showed that areas with dense vegetation and organic matter supported higher ant diversity compared to highly disturb urban or roadside locations. Ants were observed performing important ecological roles such as scavenging, predation, soil aeration, and nutrient recycling. Their presence reflects the ecological health of the study area, confirming that ants can serve as reliable bio-indicators of environmental quality.

Overall, this project successfully documented baseline information on local ant diversity in Karjat. The findings emphasize the need to conserve natural and semi-natural habitats to maintain insect biodiversity. This study not only enhanced knowledge about local biodiversity but also created awareness about the ecological importance of small yet significant organisms like ants.

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