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A Study of Ant Diversity in Chimur Tehsil of Chandrapur District, Maharashtra, India

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Abstract-- The study was carried out to Investigated the diversity of ants in Forest, Grassland and Agriculture field located around Chimur Tehsil District Chandrapur during January 2024 to December 2024. The Ants collection for pitfall trap, quadrat method, hand collecting method. A total 15 species of ants belonging to 12 genera and 4 subfamilies namely Formicinae, Myrmicinae, Pseudomyrmicinae and Dolichoderinae were reported from three different habitats of present study area. Formicinae is the most abundant subfamily having 6 genera and 8 species of ants followed by Myrmicinae having 4 genera and 5 species of ants and two subfamilies i.e. Dolichoderinae and Pseudomyrmicinae having only one genera and one species of ants.

Keywords-- Agricultural, Camponotus, Diversity, Forest, Habitat, Subfamily,

I. INTRODUCTION

Ants originated from wasp-like ancestors about 99 million years ago during the Cretaceous period. When flowering plants appeared, ants found new food sources and habitats. This helped them spread into many different species and each adapted to unique ecological roles. Today, they built strong social groups and became one of the most common insects in the world, of adaptation and survival in changing environments [1].

Ants are Invertebrates insects that belong to the group called Hymenoptera. They are very important for the environment because they help keep ecosystems balanced and healthy. By moving through the soil and interacting with plants and other organisms, ants help improve soil quality. Their activities affect the soil in three ways; physically changes by moving particles, chemically balance by mixing nutrients, and biologically by interacting with other organisms. Making it more fertile and better for plant growth [2].

Human activities such as deforestation, large scale farming, overgrazing, expanding cities, and mining are putting immense pressure on terrestrial ecosystems across the globe.

This activities disturb the delicate balance of relationship between plants and animals, creating serious ecological or environmental challenges. Ants, however, show demonstrate an adaptability to adjust to these changes. Ants can build their nests varied habitat decaying wood, soil, leaf litter, plant stems, rotting logs, and even under the rocks or stones. Some species cultivate underground fungal gardens in the soil, which not only nourish their colonies but also enhance the surrounding ecosystem [3].

This study was carried out to understand the variety and spread of Ants species in three types of habitat i.e. Forest, Grassland and Agriculture areas. No one has studies ant diversity in this region before. This research gives useful information about the number and different types of ant species [4].

II. MATERIAL AND METHODS

Present study was carried out for one year from January 2024 to June 2024. Ants were collected from three different vegetation i.e. Grassland, Agriculture and Forest with Pitfall trap, Quadrat method, and Hand collecting method.

Pitfall trap: Each plot was divided into 20 quadrates. A plastic bottle (6 cm dia. x 10cm height) was placed in each hole with the tip of the trap level with the soil surface. 75% ethyl alcohol with 2-3 drops of glycerine was used for a pit fall trap. Samples were collected after 24 hours.

Quadrat Method: 10 x 10 quadrat were placed in the three different vegetation types. 20-25 quadrates were laid; 25-30 minutes were spent per day in each quadrat and collected the specimens in labelled bottles containing 70% ethanol.

Hand Collecting Method: This method is the very simplest and most direct way go gather ants specimens. All around searching for ants in their habitat and during sampling ants were capturing by hand using brush and forceps.

Observation table –

Table No. 1 Diversity of ant species in Chimur Tehsil

Subfamily	Genus	Species
Formicinae	<i>Anoploepis</i>	<i>grailipes</i>
	<i>Camponotus</i>	<i>spp.</i>
		<i>eonsobrinus</i>
		<i>pennsylvanensis</i>
	<i>Eciton</i>	<i>burchellai</i>
	<i>Lasius</i>	<i>niger</i>
	<i>Oceophylla</i>	<i>smaragdina</i>
	<i>Paratrechina</i>	<i>longicornis</i>
Myrmicinae	<i>Solenopsis</i>	<i>invicta</i>
		<i>geminata</i>
	<i>Pogonomyrmex</i>	<i>barbatus</i>
	<i>Crematogaster</i>	<i>coarctata</i>
	<i>Messor</i>	<i>cephalotes</i>
Pseudomyrmecinae	<i>Tetraponera</i>	<i>rufonigra</i>
Dolichoderinae	<i>Tapinoma</i>	<i>melanocephalum</i>
Total	12	15

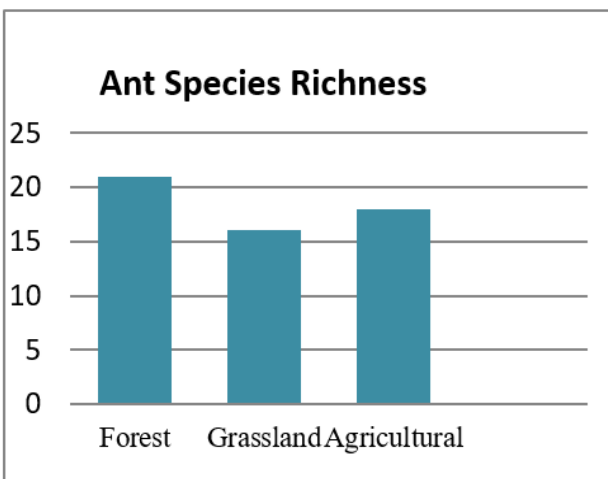
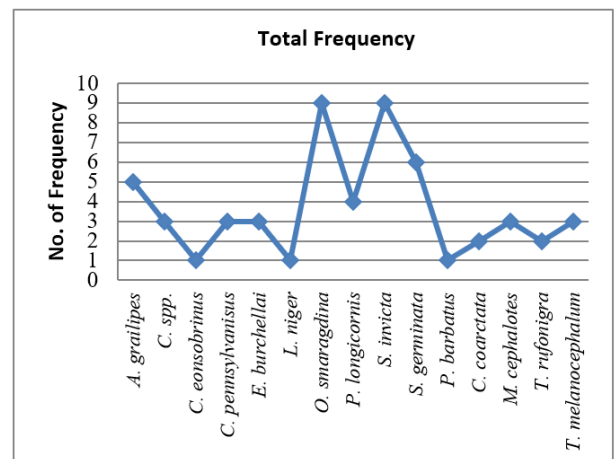


Table No. 2 Distribution of ant species in three different habitat in and around Chimur Tehsil.

Ant Species Found	Habitat			Total Frequency
	Forest (F)	Grassland (G)	Agricultural (A)	
<i>A. grailipes</i>	1	1	3	5
<i>C. spp.</i>	1	1	1	3
<i>C. eonsobrinus</i>	0	1	0	1
<i>C. pennsylvanensis</i>	2	1	0	3
<i>E. burchellai</i>	1	1	1	3
<i>L. niger</i>	0	1	0	1
<i>O. smaragdina</i>	5	0	4	9
<i>P. longicornis</i>	1	0	3	4
<i>S. invicta</i>	4	3	2	9
<i>S. geminata</i>	3	2	1	6
<i>P. barbatus</i>	0	1	0	1
<i>C. coarctata</i>	1	0	1	2
<i>M. cephalotes</i>	0	2	1	3
<i>T. rufonigra</i>	1	1	0	2
<i>T. melanocephalum</i>	1	1	1	3
Ant Species Richness	21	16	18	

III. RESULT

During present study was carried out 15 species of ants in 12 genera belonging to 4 subfamilies were recorded in the study area under the Chandrapur district. Which is Formicinae, Myrmicinae, Dolichoderinae and Pseudomyrmecinae. Out of these four subfamilies, Formicinae is the most abundant having 6 genera and 8 species followed by subfamily Myrmicinae having five species studied under four genera. In subfamilies Dolichoderinae and Pseudomyrmecinae having one species studied under one genera. Twenty one ant species were collected from the Forest area, sixteen Ant's species from the Grassland area and eighteen Ant's species from the Agricultural area.





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III. DISCUSSION AND CONCLUSION

During present study the ant collected were belongs to order Hymenoptera. They are studied with four subfamilies that is Formicinae, Myrmicinae, Pseudomyrmicinae and Dolichoderinae. They are present in everywhere, i.e plants, decay animals, rocks, stones, etc. except polar region.[5] They are most important role play in agricultural field and pollination of crops. Ant's helps improve soil quality and interacting with plants and other organisms.

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