

**Studies on diversity and species richness of ants
(Hymenoptera: Formicidae) from different localities,
Bhokardan District, Jalna**

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Abstract

The present communication deals with the study of diversity and richness of ants from Jalna district of Maharashtra, India during January 2023 to June 2023. The ant were randomly collected by hand picking method from different sites collected specimens preserved in 70% alcohol for further study. A total 170 ant were collected from the study area that representing 7 species belonging to five genera and three subfamilies of the Formicidae. The results shows that the study area is rich in ant diversity.

Key words : Ant diversity, Species richness, forest, Jalna.

Introduction Insects are virtually everywhere on the Earth's surface; excluded only the extremes of climate at the poles and on the peaks of highest mountains; just a few species live in the sea. They have a strong hold in most ecosystem processes as they are pollinators and nutrient cyclers. A large number of them act on insect predators and mutualist of all of which require conservation. They have lived on Earth about 300 million years compared with less than 1 million for man and during this time they have evolved in many direction to become adapted for life in almost every type of habitat. Ants are ubiquitous, diverse, abundant, and fairly well described¹. Ants (Hymenoptera: Formicidae) are eusocial cosmopolitan insects with about 13,262 species

and 1941 subspecies, classified into 333 genera and 17 subfamilies⁴. Ants respond to a variety of disturbances and have served as bioindicators to assess effects of forest clearing^{6,9} and agriculture^{13,14}. Ants are most dominant components of terrestrial ecosystem because of universal distribution, thus constitute greater part of biomass. Ants contribute a conspicuous component of terrestrial biodiversity and are the most divergent group among all social insects. These act as ecosystem engineers. They play very important role in the ecosystem by improving the soil and assisting in the decomposition process¹⁸ and are considered as good biological indicators due to mutualistic behavior with both flora and fauna. These eusocial insects lead high level interactive lives

assisting each other to survive and are highly evolved hymenopteran showing polymorphism. Ants belong to the family Formicidae, included in superfamily Vespoidea of order Hymenoptera placed under class Insecta of phylum Arthropoda. Ants are ubiquitous in distribution and occupy almost all terrestrial ecosystems. There are about 15000 species of ants²; only 11,769 species have been described¹. The family Formicidae contains 21 subfamilies, 283 genera and about 15000 living ant species of which 633 ant species belonging to 82 genera, 13 subfamilies are reported from India. About 226 species of ants belonging to 63 genera and 11 subfamilies are estimated from Karnataka state¹⁷.

The ant samples were collected from various localities in and around college Jalna District of Maharashtra India. We employed all out search method for the collection of ants from January 2023 to June 2023. Ants were hand collected using a brush and forceps and preserved in 70 % alcohol and brought to the laboratory for further analysis. Identification of ant species made with the help of stereozoom trinocular microscope, on the basis of taxonomic keys given by Bolton,⁴ Holldobler, and Wilson,⁸ Mathew and Tiwari,¹¹ and Sheela¹⁵ etc. Ant diversity has been analyzed in this study area. During this study a total of 50 sampled specimens were collected in the study area

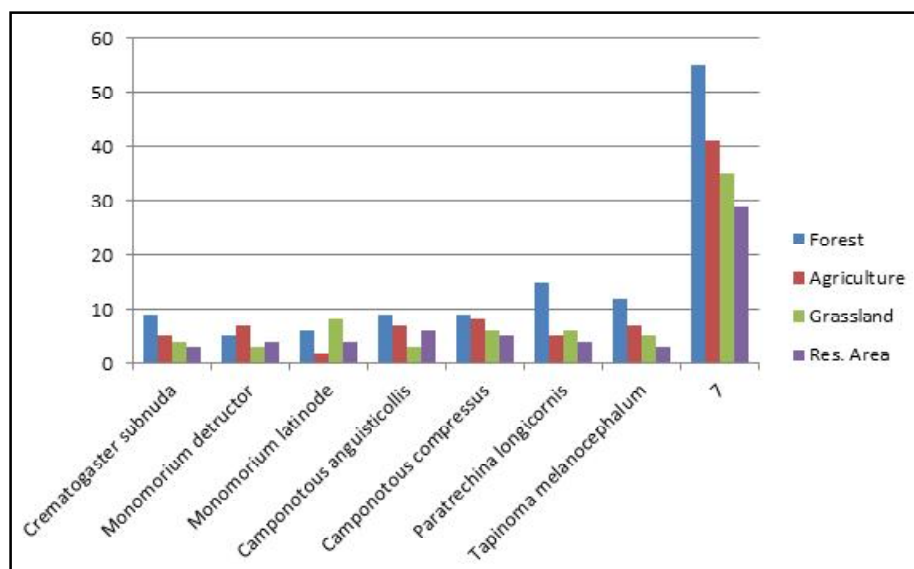
A total of 170 individuals were captured from the study area collected specimen representing seven species belonging to five genera and three subfamilies of the family Formicidae. Table no.1 showing that the most diverse subfamily was Formicinae with three

species followed by Myrmicinae with three species and least number of Dolichoderinae, both families with only one species. Among the observed genera the one which showed the highest number species was *Camponotus* with three species followed by *Monomorium* with two species some genera with single species; *Tapinoma*, *Paratrechina* and *Crematogaster*. However, the genus that represents the major number of individuals, this study matches with *Andrate, et al.*,². The species richness is one of the fundamental measures for ecological studies and conservation strategies (Anderson *et al*, 2004). The obtained result during present study indicates that the study area is rich in ant diversity it may be due to availability of food and favourable climate. According to Staffan B. Lindgren and Maclosac¹⁰, the relative abundance of most of the species encountered in the study appeared to be favoured by the presence of woody debris. Stacy *et al.*,¹⁶ studied the ant biodiversity in agro forests and their ecological role and according to him the ants are important predators, and may aid pest preservation management. During the present study in the study area frequency of occurrence of ants was reported higher in Forest and agriculture and followed by grassland. This report with Watana Weeyawat and Kanzo (2009), who studied richness in forest an agricultural systems at highland and found that forest had highest mean number of species than the crop land. In the study area the agricultural area shows that less richness with high frequency. The species richness generally declined with increasing disturbances,⁷ Graham⁷ studied that the habitat disturbances, diversity and abundance of ants in the southeastern fall line sand hills and found that highly disturbed areas

Species diversity of ants (Hymenoptera: Formicidae) from study area

Sub-family	Species	Frequency of occurrence				Total frequency
		A	B	C	D	
Myrmicinae	<i>Crematogaster subnuda</i>	09	05	04	03	21
	<i>Monomorium detrector</i>	05	07	03	04	19
	<i>Monomorium latinode</i>	06	02	08	04	20
Formicinae	<i>Camponotous anguisticollis</i>	09	07	03	06	25
	<i>Camponotous compressus</i>	09	08	06	05	28
	<i>Paratrechina longicornis</i>	15	05	06	04	30
Dolichoderinae	<i>Tapinoma melanocephalum</i>	12	07	05	03	27
Total 03	07	55	41	35	29	170

A-Forest B- Agriculture C- Grassland D- Residential area



Graph showing species diversity from the study area

had fewer species and greater number of ants than did moderately or lightly disturbed areas. Protection of biodiversity is only possible in natural forests. Forest reserves clearly the best way to conserve species. Means species richness estimations reached a similar level of

species richness in primary and secondary forest and considerably lower one in the non-forest habitats³. The ant community composition may be better indicator of habitat quality in tropical forests than species richness¹². Thus it can be concluded that the diversity and

richness of ants in the study area is influenced by environment disturbances and food resources.

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