



Diversity of Ants in University Campus, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra

Subhash Natthu Salve ^{a*}

^a *Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra, India.*

Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Original Research Article

Received: 15/08/2023

Accepted: 20/10/2023

Published: 25/10/2023

ABSTRACT

Ants are abundant insects and are considered important in ecosystem working they have different ecological roles including nutrient cycling seed dispersal. Ants are imperative of ecosystem not as they were since they constitute an incredible portion of the creature biomass, but moreover, since they act as ecosystem build. This research is carried out from January 2021 to June 2021. Amid this research insect samples were collected from the college campus, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. In these findings ants of around 10 species were found distinctive species were collected through distinctive strategies and recorded their differing qualities. Amid the display think about on diversity of ants from college campus, Dr. B.A.M.U. Aurangabad 10 species belonging to the 10 genera and 4 sub-families, such as dolichoderinae, formicinae, myrmicinae and pseudomyrmecinae. Differences of ant's identification is carried out from January to April amid this research ants were collected by utilizing entanglement traps, scented trap and hand collection methods ants were generally collected during morning and were preserved by the wet preservation methods. Ants play a vital part in the environment. Ants turn and circulate air through the soil; permitting water and oxygen to reach plant roots. Ants take seeds down into their burrow to eat the nutrition elaiosomes that are the portion of the seed. Ants eat a wide assortment of natural fabric and give nourishment to numerous distinctive life forms. Through moving of soil by settle building action and by collecting nourishment they influence the level of supplements within the soil. This may by implication affect the nearby populaces of decomposers such as from collembolan, to species much higher up the nourishment chain.

Keywords: Ant diversity; species identification; ecological roles; community behaviors.

*Corresponding author: Email: salveson007@gmail.com, salvesu007@gmail.com;

1. INTRODUCTION

Ants are vital of ecosystem not as it were since they constitute an incredible portion of the animal biomass, but too since they act as biological system build. All the known species of ants are eusocial (Gadekar et al. 1992). The family formicidae has a place to arrange hymenoptera. Ants are found on all landmasses but Antarctica and as it were few expansive islands such as Greenland, Iceland, etc. Most subterranean insect species are not considered to be bugs. They are in actualities, useful insect that prey upon other insects, collectively till more soil when making their settle than do worms and are important part of our ecosystem [1-4]. Ants advanced from wasp-like precursors within the mid-cretaceous period between 110 and 130 million a long time back and diversified after the rise of flowering plant [5-8]. There are approximately 15,000 living insect species, belonging to 296 genera of which 9000-10000 have been depicted. All of this falls into a single family formicidae, which is classified into 16 sub-families [9]. Ants frame colonies that range measure from some dozen predatory people living in small natural cavities to highly organized colonies that will possess expansive territories and consist of millions of individuals [10-12]. Larger colonies consist generally of sterile, wingless females shaping castes of "workers", gather. Nearly all insect colonies "drones" and one or more rich females called "queens". The colonies are depicted as super living beings since the ants collectively working together to back the colony [13-16].

1.1 Social Structure

A. Colony life and community behaviors: -

Formicidae species are eusocial and live in colonies that show advanced, complex social frameworks with divisions of labor. They participate in caring for their young, share a common settle location with complex burrows and chamber and display regenerative divisions of labor utilize pheromones to communicate with one another pheromones are specialized chemicals emitted by the which help them to recognize colony individuals, stamp characteristics to nourishment and water sources, decide the caste another people and flag others for crisis measures (i.e. Assault, defense or help) handley d. (2008).

B. Ecological importance of ants:-

Ants play an important part in the environment. Ants turn and circulate air through the soil,

permitting water and oxygen to reach plant roots. Ants take seeds down into their burrow to eat the nutrition elaiosomes that are portion of the seed. Ants eat a wide assortment of natural material and give nourishment to numerous distinctive organisms. Through moving of soil by settle building movement and by collecting nourishment they influence the level of supplements within the soil.

C. Collection methods:-

Ants can be found in numerous diverse territories and microhabitats, such as in soil and leaf litter, in decaying logs, on and settling in different plants, etc. Moreover, numerous species are diminutive and likely to be ignored by casual perception. Thus, a few strategies of collecting are required to enough samples given zone. A few of these strategies incorporate hand collecting, soil and litter examining, teasing, beating and/or clearing vegetation, and entanglement catching. The collectors moved the distinctive places more than 100 m separated a remove more noteworthy than the cruel straight scrounging remove of specialists of most species for which this data is accessible and test of subterranean insect found in their visual circle. A least 10 distinctive collection places at each location was utilized. The collected ants were identified up to genus and for few species level identification was done with the help of keys given ali (1992); bingham (1993); bolton, b. [9]; rastogi (1997, 2008).

2. MATERIALS AND METHODS

2.1 Study Area

The present study carried out in attempt to understand and measure was Dr. B.A.M.U. campus, Aurangabad. Aurangabad was selected to collection of ants located at latitude 19°53' n longitude 75°32' e.

The specimen were preserved in 70% alcohol, for or short term storage, ant can be placed in 75 % to 95% ethanol. They should be kept cool and in darkness and should not be allowed to dry out. Initial collection should be changed to assured the concentration is appropriate work was completed in 6 months at Dr. Babasaheb Ambedkar Marathwada University Campus, in campus visited every week for the collection of different ant species. The ant collect from different sites of campus such a under the tree, near the tree root playground, kitchen room and

hostel etc. The collected ants species preserved in specimen were observed under the stereoscope trinocular microscope for the identification.

2.2 Sampling Method

Ants were collected during morning and evening time using different method as described by gadekar et al, (1993). They have introduced a standard protocol for collecting ant sample in any part of the world. Mainly, there are two methods which are found to be useful for the collection of ant's i.e.

1) Pitfall traps (pf):-

A trap is device by which insect are attracted to something that's so organized that once they get into it, they can't get out from it. The distances across of the trap can vary from a few several hundred. The additive utilized is more often than not ethylene glycol propylene glycol as liquor will dissipate rapidly and the traps will dry out.

2) Hand collection (hc):-

The method is utilized to get to the lower vegetation, logs, and rocks and around the surface of the timberland. Ants were picked up utilizing forceps. This method was carried out for 30 minutes per testing area. Coordinate examining will be 100m separated from each other and collect insect in their visual circle.

2.3 Temperature

Temperature in Aurangabad extends from 17 to 33o c, with the foremost comfortable time to visit within the winter- October to February. The most elevated most extreme temperature ever recorded was 46o c (114o f) on 25 may, 1905. The most reduced recorded temperature was 2o c (36o f) on 2 February 1911. Within the cold season, the area is in some cases influenced by cold the eastbound entry north India. When the least temperature may drop down to almost 2o c to 4o c (35.6o f to 39.2o f) (wikipedia.org/wiki/Aurangabad, Maharashtra).

Ant's photos:



Fig. 1. *Tapinoma melanocephalum* (Fab.)



Fig. 2. *Camponotus sericeus* (Fab.)



Fig. 3. *Camponotus irritans* (Fab.)



Fig. 4. *Oecophylla smaragdina* (Fabr.)



Fig. 5. *Paratrechina longicornis* (Fab.)



Fig. 6. *Crematogaster subnada* (Mayr.)



Fig. 7. *Crematogaster perelegans* (Mayr.)



Fig. 8. *Monomorium pharaonis* (Mayr.)



Fig. 9. *Solenopsis geminate* (Fab.)



Fig. 10. *Tetraponera rufonigra* :(Jerdon)

(Ants specimen were observed under the stereoscope trinocular microscope)

Table 1. Observation table

Phylum	Order	Family	Sub-family	Genus	Species
Arthropoda	Hymenoptera	Formicidae	Dolichoderinae	<i>Tapinoma</i>	<i>T. melanocephalum</i> (fab.)
			Formicinae	<i>Camponotus</i>	<i>C. Sericeus</i> (fab.)
				<i>Camponotus</i>	<i>C. Irritans</i> (fab.)
			Myrmicinae	<i>Oecophylla</i>	<i>O. Smargdina</i> (fab.)
				<i>Paratrechina</i>	<i>P. Longicornis</i> (latr)
				<i>Crematogaster</i>	<i>C. Subnuda</i> (mayr)
				<i>Crematogaster</i>	<i>C. Perelegans</i> (forel)
				<i>Monomorium</i>	<i>M. pharaonis</i> (linn)
				<i>Solenopsis</i>	<i>S. Geminata</i> (fab.)
			Pseudomyrmicinae	<i>Tetraponera</i>	<i>T. Rufonigra</i> (jerdon)

3. RESULTS AND DISCUSSION

The present work centered on diversity of Ants from University campus of Dr. B.A.M.U. Aurangabad. Observations of common environment and event of the example demonstrate that the University campus is significant for survival of ants. During the present study on diversity of ants from university campus, Dr.B.A.M.U.Aurangabad 10 species belonging to the 10 genera and 4 sub-families, such as *dolichoderinae*, *formicinae*, *myrmicinae* and *pseudomyrmecinae* were recorded on shown in Table 1.

The sub- family *dolichoderinae* was reported by one species like *t.melanocephalum* then sub-family *formicinae* was found one genus like *paratrechina* and species *p.longicornes*, *oecophylla smargdina*, *camponotus sericeus*, *camponotus irritans*. Then sub-family *myrmicinae* found four genus like *crematogaster*, *monomorium* and *solenopsis*. Sub-family *pseudomyrmecinae* belongs one genera *tetraponera rufonigra* (jerdon).

4. CONCLUSION

In this way, the present investigation shows that the studied range has shown diversity of ants

with differing vegetation. It has appeared a really efficient part of ants in the study area found in the studied range. The higher ant diversity was recorded within the months of April to June 2021. It is also estimated that the most dominant group of ant was subfamily Myrmicinae and Subfamily Formicinae, which are followed by Dolichoderinae and Pseudomyrmecinae.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Wilson EO. The ants. Cambridge, the Belknap Harward University. 1990;1-732.
2. Way M and Khoo KC. Role of in pest management. Annual Review of Entomology. 1992;37:479-503.
3. Rebacca Clark and Christian K; 2004. Available:<http://gs.kabiologist.asu.edu.exaplore/ant.form> 2009.
4. Dais et al. Singapore ant destructive trailing ant (www5) mizo. Hime ari (www) compiled by Richhard Horris and jo Berry; 1993.
5. Shabina A. Nagariya, Santosh S. Pawar-distribution of ant's diversity in pohara

- forest area of Amravati region, Maharashtra state, India.
6. Kashmira Khot, Golden Quadros and Vaishali Somani- ant diversity in urban at Mumbai, Maharashtra.
 7. Sonune, Bhagwan & Chavan, Dr. Ramrao. Distribution and diversity of ants (Hymenoptera: Formicidae) around *Gautala autramghat* Sanctuary, Aurangabad Maharashtra, India. Journal of Entomology and Zoology Studies. 2016;4:361-364.
 8. Sheela S, Handbook on Hymnoptera; Formicidae Prema pramod ratnaparkhi, Dr. Gokul kale -study of ant diversity in various localities of Akola, Maharashtra, India.
 9. Boltan B. Identification guide to the ant genera of the world. Harward University. London. 1994;1;504.
 10. Chate S, Chavan Dr. Ramrao. Studies on morphology of *Leptogenys processionalis* (Jerdon 1951) (Hymenoptera: Formicidae) from Aurangabad Maharashtra, India. Journal of Entomology and Zoology Studies. 2019;7:453-455.
 11. Julie PS, NA, CY Lee. identification key to common urban pest ants in Malaysia.
 12. Gokulkrishnan S, Ramakrishnan N, Roopavathy J. Ant diversity in three selected localities of Thanjavapur and Cuddalore districts of Tamil Nadu.
 13. Patkar N, Chavan Dr. Ramrao. Research Paper Zoology Diversity of Ants (Hymenoptera: Formicidae) From Undisturbed and Disturbed Habitats of Great Indian Bustard Wildlife Sanctuary. International Journal of Scientific Research. 2014;3:398-401.
 14. Sundareswari C. Diversity and Density of Ants from Undisturbed and Domesticated Sites of Meenampatti, Sivakasi Taluk. International Journal for Research in Applied Science and Engineering Technology. 2018;6:552-555. DOI:10.22214/ijraset.2018.7094.
 15. Kumar M, Srihari KT, Nair P, Varghese, Thresiamma, Gadagkar Raghavendra. Ant species richness at selected localities of Bangalore. Insect Environment. 1997;3:3-5.
 16. Pawar Suman. International Journal of Researches in Biosciences, Agriculture and Technology Organization of Formicidae and Its Role in the Ecosystem of Bhuikot Fort, Ahmednagar. 2020;100-103.