

Ants (Hymenoptera: Formicidae) Nest and Habitat

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Abstract

Ants a diverse group of insects, and are a highly developed social animals. Ants form one of the very dominant arthropods of about 13,062 living species with 16 subfamilies, 39 tribes and 324 genera (Ant web, 2015). Ants, like the honey bees and one section of the wasps are social insects, with a well-established nest or community. They display a remarkable range of social behavior, foraging habits and association with other organisms (Hölldobler and Wilson, 1990). Some species even form symbiotic association with particular group of plants, which produce suitable pre-formed nest sited to attract the ants to take up residence (Bolton, 1994). The design and architecture of nest is distinctly purposeful and constructed with patience. They construct nests in various types of habitats, some nest in cavities in plants, but majority of ants make nests in the ground. Same colony of ants may adopt very different methods of nest building at different periods during the growth and development (Wheeler, 1913)

Key words- Ants, Nests, Habitat, Symbiotic association

1. Introduction

Ants are eusocial hymenopteran insects and have great values. They are found in all terrestrial habitats from sub artic tundra to equatorial rain forests. From swamp to harsh desert, from sea coast to great altitude and from deep in the soil and tips of highest trees. The morphology is as varied as their habitat preference and their range of life ways is enormous (Bolton, 1994). Some species of ants form symbiotic association with plants. The plants and produce make suitable preformed nest sites to attract the ants to take up residence.

Currently, there are 13,062 extant ant species as per the recent classification. They are grouped into 16 subfamilies, with 324 genera (Ant web, 2015). All of these belong to a single family called Formicidae included in the super family vespoidea of the order hymenoptera, which is placed in the largest class insecta in the animal kingdom. In India, there are 631 species coming under 82 genera classified under 13 subfamilies. (Bolton, 1995). The current study aims to provide

2. Materials and Methods

The study was done in Thrissur district which is located at 10.52°N 76.21°E and has an average altitude of 2.83 metres. The region lies in the south western coastal state of Kerala. The climate is tropical. There is only a minor differences in temperatures between day and night, throughout the year. Visits have been arranged to these places, collections of specimens were done. Photos have been taken for the study of nature of nest. Nests and habitat observation has also been done by using hand lens and all out search method. Some specimens have been collected from the nests.

3. Observation and Results

The collected specimen have been identified up to the genus level by using Stereoscopic binocular microscope (Leica MZ6).

It has been found that most of the ant's nests were in soil, some made nests in concrete structures, while some made nests on trees (arboreal nests). The list were given in table: 1

3.1 Nest in soil

Soil forms the habitat for many microorganisms. It also forms the habitat and housing place for ants. It is found genus *Camponotus* Mayr (Fig:1) has made a raised mound like structure and diligently plaster and smoothens the surface by using their own salivary secretions, while some species of *Camponotus* Mayr has constructed nest in garden. Genus *Pheidologeton* Mayr (Fig: 6) has made nests under the logs behind the rocks. The genus *Pheidole* Westwood (Fig: 5) has constructed fort like structure in the soil, while genus *Myrmecaria* Mayr (Fig:7) has constructed a nest under the base of trees and also in open spaces. *Tetramorium* Mayr (Fig:11) and *Monomorium* Mayr (Fig:8) also have constructed nest in soil like tunnels, cones etc.

3.2 Nest in concrete structure

Restaurants, buildings, houses, also form the nesting habitat for some formicids like *Pheidole* Westwood, *Paratrechina* Motschoulsky (Fig: 3), *Solenopsis* Westwood,

Monomorium Mayr etc. But these types of nests are temporary. They construct nest in their places for their food. They have shifted from one habitat to another for food.

3.3 Arboreal nests

Oecophylla Smith (Fig:4) has constructed nests out of leaf which are bound together by fine whitish membranous tissue paper like synthetic substance and some species of *Polyrhachis* Smith (Fig:2) also has constructed similar kind of nest while *Crematogaster* Lund (Fig:9) has made carton nests on plants. *Tetraoponera* Smith (Fig: 10) has constructed nest on the tree trunks like hollow tunnels. *Anoplolepis* Motschoulsky (Fig: 12) also constructed their nest under the bark of trees.

Table: 1 Habitat and Nest of Formicidae

Sl. No	Genus	Habitat	Nest
1.	<i>Camponotus</i> Mayr	Soil, bark of tree trunk	Mound like
2.	<i>Polyrhachis</i> Smith	Tree trunk	Nest formed by sticking together of leaves
3.	<i>Paratrechina</i> Motschoulsky	Base of concrete and rocks	Chamber like
4.	<i>Oecophylla</i> Smith	Tree	Hanging type
5.	<i>Pheidole</i> Westwood	Soil	Tunnel like
6.	<i>Pheidologeton</i> Mayr	Bark of tree, Soil	Hollow tube like pathways
7.	<i>Myrmecaria</i> Mayr	Soil	Mound or hill like
8.	<i>Monomorium</i> Mayr	Building site / soil	Temporary nests, cone like
9.	<i>Crematogaster</i> Lund	Tree trunk	Carton
10	<i>Tetraoponera</i> Smith	Tree trunk	Hollow tunnels
11	<i>Tetramorium</i> Mayr	Soil	Tunnel like
12	<i>Anoplolepis</i> Motschoulsky	Under the bark of trees	chambers

4. Discussion and Conclusion

Like an architectural shape ants have constructed the nest. Ants like the honeybees and one section of the wasps are social insects within any well established nests and communities (Bingham, 1903). They have exhibited well social behavior and three types of caste system can be seen within a colony i.e. fertile female, the male and worker. They have lived in groups or colony within the nest. The design and nature of nest vary according to the habitat, species, and the availability of colony size. Some

ants spend most of the time for the betterment of nest. They also ensure the growth and survival of the colony. The nest form the safe place for maintaining the offspring and also for the storage of food (Ajay Narendra, 2006) in some nest lot of chambers have been constructed for certain purpose like for brood eggs, larvae, pupae, food storage etc.

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Plate 1



Fig 1. Nest of *Camponotus* Mayr



Fig 2. Nest of *Polyrachis* Smith



Fig 3. Nest of *Paratrechina* Motschoulsky

Plate 2



Fig 4. Nest of *Oecophylla* Smith



Fig 5. Nest of *Pheidole* Westwood



Fig. 6. Nest of *Pheidologeton* Mayr

Plate 3



Fig 7. Nest of *Myrmecaria* Mayr



Fig 8. Nest of *Monomorium* Mayr



Fig 9. Nest of *Crematogaster* Lund

Plate 4



Fig 10. Nest of *Tetraponera* Smith



Fig 11. Nest of *Tetramorium* Mayr



Fig 12. Nest of *Anoplolepis* Motschoulsky