DIVERSITY OF ANT SPECIES (HYMENOPTERA: FORMICIDAE) IN THE CAMPUS OF KONGUNADU ARTS AND SCIENCE COLLEGE, COIMBATORE DISTRICT, TAMIL NADU

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Abstract
The study examined the diversity of ants in the Kongunadu arts and science college campus, Coimbatore District, Tamil Nadu, as there is no adequate information pertaining on ant diversity of this region. The present study was carried out during October 2018 to December 2018. We have sampled ants by employing intensive all out search method. The sampled specimens representing 10 species belonged to 5 genera and three subfamilies. The most diverse subfamily was Formicinae (2 genera with 3 species), followed by Myrmicinae (2 genera with 5 species), followed by Dolichoderinae (1 genera with 2 species). The Pseudomyrmicinae and Ponerinae family were absent. Among the sampled genera, the highest number of species representation was Camponotus species. Few ant genera as Crematogaster and Monomorium of Myrmicinae and Camponotus of Formicinae were mostly found everywhere.

Keyword: Key words: Ants, Myrmicinae, Formicinae

1. INTRODUCTION
Ants are ubiquitous in distribution and occupy almost all terrestrial ecosystems. There are about 15000 species of ants (7); only 11,769 species have been described (8). 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 state (9).

Wayanad region of the Western Ghats. Bharti and Sharma [6] carried preliminary investigations on diversity and abundance of ants along an elevational gradient in Jammu-Kashmir Himalaya. The food of ants consists of insects, terrestrial arthropods, excretion from plants, honey dew excreted by aphids and mealy bugs, secretion of the caterpillars of the family Lycaenidae, seeds of plants etc [1].

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The main aim of the present study was to conduct survey, to document the ant species diversity in the campus of Kongunadu arts and science college, Coimbatore and prepare a partial checklist of ants in the study area.

2. MATERIALS AND METHODS

2.1. Study area
Study was conducted in Kongunadu college of arts and science campus which is surrounded by diverse habitat. Campus is located at G.N.Mills, Coimbatore district surrounded by a mosaic of concrete buildings. It is blessed with lush green vegetation having large trees, shrubs, herbs and long grasses which serves as shelter to the butterflies. Core area of observation was a plant garden which is located in the campus. Study area
experiences tropical climate with hot summers (Temperature range: 26.3°C). Area received major portion of its rainfall from the south-west monsoon between June and September. The mean annual rainfall is 618 mm with mean number of rainy days per year. The findings presented here are based on the random survey conducted from October 2018 to December 2018.

2.2. All out search Method

We employed all out search method for the collection of ants in October 2018 to December 2018. Ants were collected using a brush and forceps during day time in between 11am to 2 pm twice in every month. Ant’s species were preserved in 70% ethanol in plastic vials at the Department of Zoology, Kongunadu College of arts and science. The stored ant specimens were then counted and identified up to genus level (some to species level) using microscope. Species identification was carried out under the help of the keys of “Ants identification guide” [10], collected ants were identified up to the genus level by using based on literature (11, 12, 13, and 14). Identified specimens will be kept in the air tight insect wooden box. Ant species were listed and each species was counted to calculate and compared composition, richness, species diversity, trees association, habitat type and identification of ants.

3. RESULT

Ant diversity in the campus of Kongu Nadu arts and Science College, Tamil Nadu has been analyzed in this study. During this study a total of 50 sampled specimens were captured in the study area. The 10 ant species are belonging to 5 genera and three subfamilies. These are follows, the Myrmicinae were represented 5 species followed by Formicinae 3 species and two genera. In subfamily Dolichoderinae represented 2 species and 1 genus. The Ponerinae and Pseudomyrmicinae subfamilies were absent in our college campus. Mostly Monomorium, Crematogaster and Camponotus species founded everywhere.

Among this study Monomorium Minimum was high compared with other species like Tapinoma sessile and Paratrechina longicornis. The species of Crematogaster were dominant on tree trunk which nested on trees.

The table 1 and 2 (figure 1 and 2) represented distribution of diversity of ants species in our college. A number of ants species diversity differ from various factor like food, habitat, nesting behavior etc. the Myrmicinae subfamily family highly represented 2 genera (Monomorium, Crematogaster) and 5 species (Minimum, Pharaonis, Destructor and Subnuda) in our study area. Followed by subfamily Formicinae 2 genera (Camponotus and Paratrechina) and 3 species (Radiates, Compressus and Longicornis) and Dolichoderinae subfamily 1 genera Tapinoma and 2 species (Indicum and Sessile) rarely found the study area.

Table 1 Showing the list of identified ant Species and their distribution in Kongu Nadu arts and science college, Coimbatore District

<table>
<thead>
<tr>
<th>S.No</th>
<th>Genera</th>
<th>Species</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Subfamily: Formicinae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Campo notus</td>
<td>Radiates</td>
<td>Carpenter ant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Forel,1892</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Campo notus</td>
<td>Compressus</td>
<td>Common Godzilla ant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fabricius,1787</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Paratrechina</td>
<td>Logicornis</td>
<td>Crazy ant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Latreille,1802</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subfamily: Myrmicinae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Monomorium</td>
<td>Minimum</td>
<td>Little black ant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Buckely,1867)</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Monomorium</td>
<td>Pharaonis</td>
<td>Pharaoh ant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Linnaeus,1758)</td>
<td></td>
</tr>
</tbody>
</table>
6. *Monomorium Destructor* (Jerdon,) 
   carpenter ant

7. *Crematogaster Spe* 
   Acrobat ant

8. *Crematogaster Subnuda* (Mayr,1879) 
   Carpenter ant

**Subfamily: Dolichoderinae**

9. *Tapinoma Indicum* (Forel, 1895) 
   Ghost ant

10. *Tapinoma Sessile* (Say, 1836) 
    Odour ant

<table>
<thead>
<tr>
<th>Subfamily</th>
<th>Genera</th>
<th>Species found</th>
<th>Relative abundance %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formicinæ</td>
<td>Camponotus</td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td><em>Paratrechina</em></td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>Myrmicinæ</td>
<td>Monomorium</td>
<td>3</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td><em>Crematogaster</em></td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>Dolichoderinæ</td>
<td><em>Tapinoma</em></td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 1 showing subfamily wise distribution of ants found at KASC College*

*Table 2: Summary of ant species collected from sampling site.*
Figure 2 showing genera *Monomorium* species (n=3) followed by 30% most abundant in our study area. Followed by the genera *Creartogaster, Tapinoma* and *Camponotus* (n=2), 20% rich in species. The genera *Paratrechina* rare species (*Longicornis*) in our study area.

4. DISCUSSION

In the present study, 10 species of ants in 5 genera representing three subfamilies namely Formicinae, Myrmicinae and Dolichoderinae were recorded. Out of the three subfamily, Myrmicinae is the most abundant having 5 species in two genera. This subfamily is widely distributed in all geographic regions. The Formicinae and Myrmicinae are the largest ant subfamilies in the world and the dominant groups in most terrestrial habitats. The prevalence of these subfamilies has been reported to increase with increasing aridity [15, 16]. The Formicinae were the most abundant in the study area. The extreme dominance exhibited by Formicinae sub family with seven species in this study. Formicinae show a significant difference between the seasons. Humidity may influence the nest building. The genus *Camponotus* were record of four species. *Camponotus* was a frequently occurring species in everywhere. The *Camponotus* had the greatest individual numbers. These ants are called as carpenter ants because of their *Nesting behaviours* [17].

The subfamily Formicinae, having 3 species in two genera, subfamily Dolichodrinare were recorded only 1 genera and 2 species founded. The subfamily Ponerinae and Pseudomyrmicinae were absent in our study area. Genera *Camponotus* of Formicinae and *Trichomyrmex* of Dolichoderinae were commonly found in all the area and more localities. The genus Pheidole and Camponotus were dominant in the cultivated and Riverine area [18]. Palanichamy [19] also reported that black ant Camponotus sp. plays a major role in pollination of some flowering plants. Sunilkumar [20] reported that ant species richness generally increased with increase in vegetation.

A total of 3 subfamilies, 5 genera and 10 species of ants were recorded from the campus of kasc College, Coimbatore. The majority of species were in the Myrmicinae (50%) and Formicinae (30%) followed by Dolichoderinae (20%). At the genus level *Monomorium, Creartogaster, Camponotus, Anoploipsis* and *Tapinoma* were the most speciose genera in this study with 3,2,2,1 and 2 respetively. The myrmicinae subfamily was most abundant in the numbers of ants and the most diverse group (5 species) in this study area. These ants were more specific due to availability of food and nesting sites. *Monomorium minimum and crematogaster* mostly found everywhere because of climatic condition of our college. This family showed a significant difference between seasons [21] as recorded by other elsewhere. The genera *tapiinoma* species were founded at food availability areas. Food sources may have been important [21].

Ants exhibit a greater resistance to pollutants in comparison to other invertebrates [22 and 23] even to industrial pollutants [24]. The rich diversity of ants documented during this study may be because adequate nesting sites and availability of food as well foraging. Figure 2 showing genera *Monomorium* species (n=3) followed by 30% most abundant in our study area. Followed by the genera *Creartogaster, Tapinoma* and *Camponotus* (n=2), 20% rich in species. The genera *Paratrechina* rare species (*Longicornis*) in our study area. It is the first ants diversity study in our college.

5. CONCLUSION

The present investigation on diversity of ants in the Kongunadu arts and science college campus, Coimbatore clearly shows the richness of ants fauna in the study area. We have recorded 10 species of ants belonging under the 3 subfamilies and five genera of ants species and also large amount of *Monomorium, Creartogaster and Camponotus* genera were observed in KASC College campus. It is the first investigation study on diversity of ants species in our college.

REFERENCES


[10] Bayer. 2010. An ant identification guide, Bayer environmental science,


