DIVERSITY OF ANTS ASSOCIATED WITH *MANGIFERA INDICA L.* (ANACARDIACEAE) IN MALVAN (MAHARASHTRA)

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***Abstract*:** This study was undertaken to investigate the diversity of ants associated with *Mangiferaindica L.* (Anacardiaceae) in residential area of Malvan in Kokan (Maharashtra). Formicinae was recorded as subfamily with five species. *Oecophylla smaragdina* exhibited prominent presence with active nests on many of the host trees. Ten other species of ants were also recorded. Dominance of Weaver ants indicated their significant role in food chain associated with the host trees.

KEYWORDS: Ant diversity, Mango trees, *Oecophylla smaragdina.*

INTRODUCTION

Ants are one of the most significant arthropods in terms of diversity and density. These insects exhibit association with plants for feeding and nesting. Large trees offer favourable nesting sites, especially for arboreal ants. The predatory ants also form an important link in the food chains by using pest insects as food and thus are beneficial to the trees. *Mangifera indica L.* (Anacardiaceae) is the well-known fruit tree from Kokan region. This study included observation of ant diversity associated with these trees.

MATERIAL AND METHODS

Malvan is a town in Sindhudurg District. It is located on West Coast of Maharashtra (16.05 72 21N 73.470322E) and well known for mango plantation. We selected few residential areas having mixed vegetation of fruit trees and ornamental plants. *Mangifera indica* was the commonly recorded tree in the study area with Alphonso, Ratna, Kesar, Mankurad and few local varieties. The selected trees were not being exposed to chemical insecticide for at least 6 months prior to the study. The observations were recorded during flowering and fruiting season. The worker ants were hand- picked, suitably preserved and identified using standard keys (Narendra and Kumar, 2006; AntWeb, 2015).Arboreal nests were recorded if the activity was recorded for at least 20 minutes at a stretch. The nests were not disturbed during the observations. Seventy trees were selected considering their location in mixed vegetation and absence of chemical treatment.

OBSERVATIONS

Total eleven species of ants were recorded with Formicinae as species abundant subfamily. The ants were recorded on forty three mango plants and classified into common, occasional and rare depending on their abundance on the trees and activity at the nesting. The nests are commonly observed in trees with broad leaves like Mango (*Mangifera indica* L.), Jamun (*Syzygium spp*.) and Rain tree (*Samania saman*) (Langthasa S *et al.*, 2017). During the present study, the nest of *Oecophylla smaragdina* was prominently recorded on the *Mangifera indica* (Mango) trees and *Manilkara zapota* (Chiku).

Graph 1 – Subfamily occurence

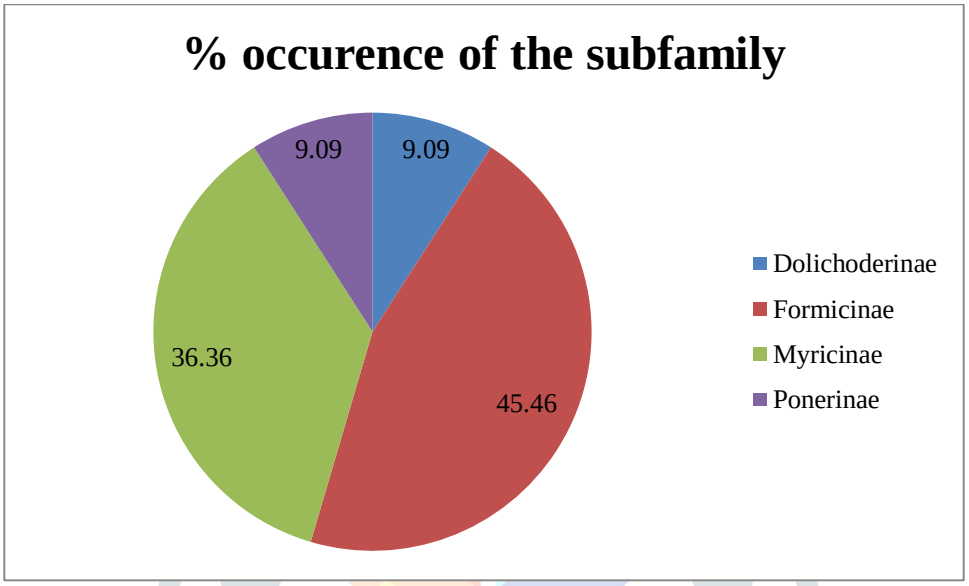
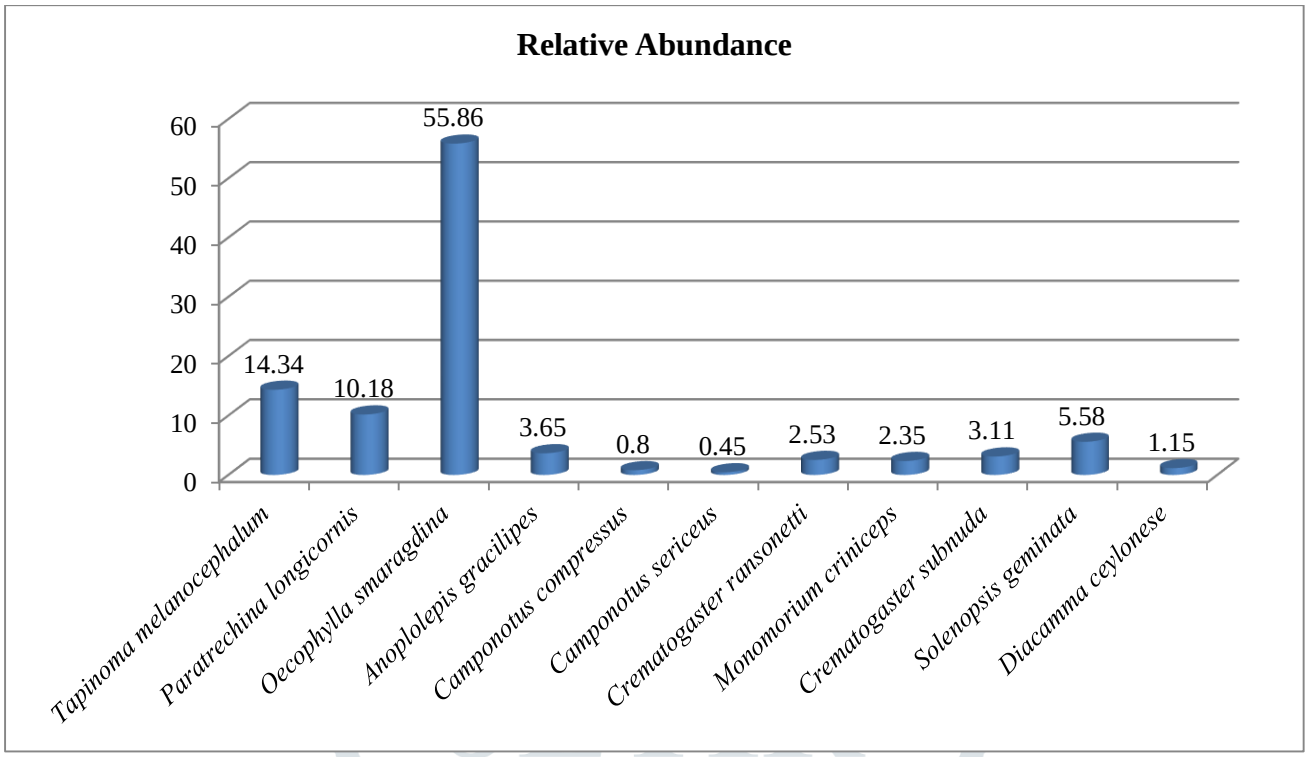


Table 1 – Ant diversity and its occurence

No	Subfamily	Ants	Scientific name	Occurence
1	Dolichoderinae	Odour ant	*Tapinoma melanocephalum*	Occasional
2	Formicinae	Black crazy ant	*Paratrechina longicornis*	Common
3	Formicinae	Weaver ant	*Oecophylla smaragdina*	Common
4	Formicinae	Yellow crazy ant	*Anoplolepis gracilipes*	Rare
5	Formicinae	Common Godzilla ant	*Camponotus compressus*	Occasional
6	Formicinae	Golden backed ant	*Camponotus sericeus*	Occasional
7	Myrmicinae	Glossy slender ant	*Crematogaster ransonetti*	Occasional
8	Myrmicinae	Common broad acrobat ant	*Crematogaster subnuda*	Common
9	Myrmicinae	Spineless harvester ant	*Monomorium criniceps*	Occasional
10	Myrmicinae	Red fire ant	*Solenopsis geminata*	Occasional
11	Ponerinae	Greater striated bispinous ant	*Diacamma ceylonese*	Occasional



Graph 2 – Relative abundance of species

The above graph 2 of relative abundance represents that *Oecophylla smaragdina* was noted to be highly abundant on the mango trees than other species.

RESULT AND DISCUSSION

Oecophylla smaragdina was recorded as the most abundant ant species during this study. However, extinction of weaver ant in mango orchard depends on type of cropping systems, food availability and suitable nesting sites in agreement with other findings (Khoo and Chung, 1989). During the present study, it was found that the presence of these ants species on Mango tree had very less presence of other insects like weevils, bugs, hoppers and flies (Peng R and Christian K, 2005).

Approximately about sixty percent of host trees showed occurrence of active nests of this species. Lower presence of other species and insects can be due to predatory and aggressive nature of *Oecophylla smaragdina*. *Crematogaster subnuda* and *Paratrechina longicornis* exhibited competitive presence and could efficiently use other food resources even in dominance of weaver ants. Other ants showed lower abundance, but these also acted as food source for colonies of *Oecophylla smaragdina*. The large number of colonies indicated the rich food resources available to sustain large population which is primarily selecting arthropod members as food. Hence, less insects were recorded as this ant species fed on the different insects like fruit-flies, weevils and bugs in the study areas.

Prominent presence of ant mimicking spiders on these trees underlined the significance of ants in the food web. Though, *Mangifera indica* was a preferred host tree, the choice of Sapota (*Manilkara zapota*) trees for nesting was noteworthy. The trees did not show any significant presence of herbivorous insect pests and underlined the importance of weaver ants in management of insects. Though, *Anoplolepis gracilipes* species is also predatory in habit, its presence was very low as compared to *Oecophylla smaragdina*, indicating their dominance in resource utilization for colony development. *Syzygium cumini*, being present in the same locality *Oecophylla smaragdina* were noted foraging on the barks of this tree, but no nesting was noted. Workers of *Camponotus compressus* and *Camponotus sericeus* were recorded

near the bases of the trees, however insignificant activity was recorded in terms of foraging on the tree branches wherever active nests of weaver ants were present.

CONCLUSION

Weaver ants (*Oecophylla smaragdina*) serve as the crucial ant community that needs to be conserved for the good yield of the plant crops or fruits with less damage and less use of insecticide and pesticide. Awareness of the use of ants as biological control agents for insect pests (Bharti H and Silka Silla, 2011). Therefore, it is essential to spread the accurate knowledge of its economic importance and effectiveness as it protects the host trees with minor damage (Peng *et al.,* 1997b).

ACKNOWLEDGEMENT

The authors are thankful to the residents of Malvan during the field visits. Sincere thanks to Dr. Goldin Quadros, Principal Scientist, SACON, Tamil Nadu for his valuable suggestions.

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