ENTOMON 34(1): 29–32 (2009)
Article No. ent.34104

Ant species richness in Chorao Island, Goa, India

I. K. Pai*[1], Kavita Kumari[1], T. M. Mushtak Ali[2] and R. H. Kamble[3]

[1]*Department of Zoology, Goa University, Goa 403 206, India*
Email: ikpai@unigoa.ac.in
[2]*Department of Entomology, University of Agricultural Science, GKVK Campus, Bangalore 560 065, India*
[3]*Zoological Survey of India, Western Regional Station, Pune 411 044, India*

ABSTRACT: Though ants are ubiquitous in distribution, scientific recording of their diversity in various ecological niches, particularly islands, is far from satisfactory. Hence an attempt was made to record ant species richness in Chorao Island of Goa, a coastal island known for considerably rich biodiversity. This island, about 2.1 km^2 in area, was found to harbour 38 species of ants belonging to 24 genera and six subfamilies.

KEYWORDS: ant species richness, Chorao Island, Goa

INTRODUCTION

Ants are ubiquitous insects present in all terrestrial habitats. Their distribution and abundance are greatly influenced by altitudinal and vegetational gradients. A large number of ant species exhibit high adaptability and occupy a wide range of habitats while several species are restricted to specific habitats. There are about 15,000 living ant species estimated from the world, of which 9,000 to 10,000 are described so far (Bolton, 1994). About 500 species have been described from the Indian sub-region by the turn of the 20th century (Bingham, 1903) and since then over 100 species have been added to the Indian ant fauna (Mushtak Ali and Chakravarthy, 2001). Studies on the Indian ant fauna include those of Mushtak Ali (1981, 1991, 1992) in Bangalore and Karnataka State; Gadagkar *et al.* (1993) and Rajagopal *et al.* (1998) in a few selected sites in the Western Ghats; Reddy (1981) in Dharwar; Neena Thak (1995) in the arid zone of Rajasthan; Belavadi *et al.* (1998) in Mudigere representing part of Western Ghats; and Mercy *et al.* (1998) in Chennai. However, lists of ant fauna of islands are still meager, though the Indian mainland is surrounded by clusters of islands of varying sizes and vegetation. In addition to true islands, there are several islands closer along

*Corresponding author

the coast. These islands along west coast are particularly interesting since they are almost extensions of Western Ghats and therefore share same ecological history. This study is an attempt to describe the ant fauna of Chorao island in Goa.

MATERIALS AND METHODS

The study was made at Chorao island of Goa, which measures about 2.1 km^2 in area and is surrounded by Mandovi river near Panaji. The area has a network of criss-crossing water channels with tidal variation and has mangrove vegetation (*Rhizophora, Avicennia, Bruguiera, Kandella, Acanthus*, etc.). Other natural vegetation comprises *Anacardium occidentale, Mangifera indica, Bambusa vulgaris, Cocos nucifera, Artocarpus heterophyllus*, etc. Agricultural crops include *Oryza sativa* and *Capsicum annum*. The island has several small human settlements with a population of about 800–1000 contributing to a high level of anthropogenic activity.

Ants were collected from forest, grassland, plantations, mangrove, agricultural areas and human habitation, using standard sampling methods such as bait trap, leaf litter sampling and visual counts. Sampling in each habitat was carried out once in a fortnight between 08.00 h and 16.00 h. A total of 2246 ants from 26 sites within 1.78 km^2 area of the island were collected. Ants were preserved in 70% alcohol (Anonymous, 1990) and were identified with the help of standard literature (Bingham, 1903; Holldobler and Wilson, 1990; Bolton, 1994). The identified ants are deposited in Department of Zoology, Goa University, Goa.

RESULTS AND DISCUSSION

A total of 38 ant species belonging to 24 genera and 6 subfamilies (Table 1) were collected. Myrmicinae were dominant with 16 species, followed by Formicinae with 14 species. The remaining species were under the sub-families Ponerinae (4 spp.), Dolichoderinae (2 spp.), Pseudomyrmicinae (1 sp.) and Aenictinae (1 sp.). The high level of species richness for Myrmicinae and Foramicinae is not surprising since these two sub-families are the most speciose and widely distributed (Holldobler and Wilson, 1990). The total number of species available in the island will be far greater than recorded in this survey since our sampling intensity and area coverage were limited.

The plantation and forest habitats showed highest number of species, 30 and 26, respectively. The grassland had 24 species, while 23 species were recorded in human habitation and 18, in cultivated lands. Only five species could be collected from the mangroves. The richness of the species in plantation and forest habitats can be attributed to heterogeneity of the habitat which improved the availability of nesting sites and food. The richness of ants *Solenopsis* spp., *Monomorium* spp., *Componotus* spp., and dolichoderines, near human habitation may be attributed to their scavenging habitats. The scarcity of ant species in the mangrove ecosystem may be attributed to constant perturbation by changes in tides resulting in alternating flooding with saline and freshwaters. Out of five species recorded from the mangroves, three species construct arboreal nests, while the other two nest in sites on ground and in tree holes.

TABLE 1. Checklist of ant fauna of Chorao Island, Goa

Sl.No.	Identity (subfamily, genus and species)	Habitat*
	AENICTINAE	
1	*Aenictus laeviceps* Smith	F, G, P, A, H
	DOLICHODERINAE	
2	*Tainoma melanocephalum* Fabricius	P, H
3	*Technomyrmex albipes* Smith	P, H
	FORAMICINAE	
4	*Anoplolepis gracilipes* (F.Smith)	P, A, G, H
5	*Camponotus compressus* Jerdon	F, G, P, A, H
6	*C. angusticollis* Jerdon	F, G, P, A, H
7	*C. parius* Fabricius	F, G, P, A, H
8	*C. radiatus* Emeri	F, G, P, A, H
9	*C. sericius* Forel	F, G, P, H
10	*Camponotus* sp. Nr. *saundarsi* Emeri	M
11	*Camponotus* sp.1	H, P
12	*Camponotus* sp.2	P
13	*Oecophylla smaragdina* Fabricius	F, P, M
14	*Paratrechian longicornis* Latreille	G, P, A
15	*Polyrhachis tibialis* Forel	F
16	*Prenolepis* sp. *Nr. naoroji* Forel	F, G, P, A, H
17	*P. indica* Forel	M
	MYRMICINAE	
18	*Apahenogaster beccarrii* Emery	P, G
19	*Cataulocus latus* Forel	P, H
20	*Crematogaster rogenhoferi* Mayr	F, G, P, A, H, M
21	*Crematogaster* sp.	F, G, P, A, H
22	*Meranoplus bicolor* Guerin	F, G, P, A, H
23	*Monomorium criniceps* Mayr	F
24	*M. gracillimum* Smith	F, G, P, A, H
25	*M. latinode* Mayr	F, G, P, A, H
26	*M. scabriceps* May *r*	F, P
27	*Myrmicaria brunnea* Saunders	M
28	*Solenopsis geminate* Fabricius	F, G, P, A, H
29	*Pheidologeton diversus* Jerdon	F, G
30	*Pheidole parva* Mayr	M
31	*Pheidole* sp.1	F, G, P, A, H
32	*Pheidole* sp.2	F
33	*Tetramorium* sp. *Nr. mixrum* Forel	F, P, H
	PONERINAE	
34	*Diacamma rugosum* Le Guillou	F, G
35	*Leptogenys diminuta* Smith	F, G, P, A, H
36	*Leptogenys* sp.1	F, G, A, H
37	*Pachychondyla tesserinoda* Emery	F, P
	PSEUDOMYRMICINAE	
38	*Tetraponera rufonigra* Jerdon	F, G, P, A, H

*F, Forest; G, Grassland; P, Plantation; A, Agriculture; H, Human habitation; M, Mangrove

The ant fauna of Chorao Island did not reveal any endemic species or species with specific habitat requirements, probably because the habitats encountered are ephemeral in nature. The findings constitute the first step towards development of regional inventories of ants in the west coast of India.

REFERENCES

Anonymous (1990) Collection and preservation of animals. Zoological Survey of India, Calcutta.

Belavadi V. V., Thyagaraj N. E. and Mushtak Ali T. M. (1998) Diversity of ants in Mudigere-III. *National symposium of IUSSI-Indian. Chapter held at UAS*, ARS, Mudigere, March 7-9

Bingham C. T. (1903) Hymenoptera vol. II Ants, Cuckoo Wasps. In: *The fauna of British India including Cylon and Burma*, Blanford W. T. (Ed). Taylor and Francis, London.

Bolton B. (1994) *Identification Guide to Ants of the World*, Harward University Press, Cambridge, Massachusetts.

Gadagkar R., Nair P., Chandrashekara K. and Bhat D. M. (1993) Ant species richness and diversity in some selected localities in Western Ghats, India, Hexapoda. 5: 79–94.

Holldobler B. and Wilson E. O. (1990) *The Ants*, Harward University Press, 732.

Mercy P., Amrithraj S., John Williams T. M. and Mushtak Ali (1998) Diversity of ant fauna at Chennai (Hymenoptera: Formicidae). In: *III National symposium of IUSSI-Indian Chapter held at UAS, ARS, Mudigere*, March 7-9

Mushtak Ali T. M. (1981) Ant fauna (Hymenoptera: Formicidae) of Bangalore with observation on their nesting and foraging habits. *M.Sc Thesis*, University of Agril. Sci. Bangalore., 208 pp.

Mushtak Ali T. M. (1991) Ant fauna of Karnataka. I IUSSI-Indian Chapter Newsl., 5(1&2): 1–8.

Mushtak Ali T. M. (1992) Ant fauna of Karnataka. I IUSSI-Indian Chapter Newsletter, 6(1&2): 1–9.

Mushtak Ali T. M. and Chakravarthy A. K. (2001) Biodiversity and Conservation of ants. Trends in Wildlife Biodiversity Conservation and Management, 11: 27–54.

Neena Thak (1995) Studies on ants (Formicidae) of Rajasthan-I, Jodhpur. Hexapoda. 7(1): 17–28.

Rajagopal D., Mushtak Ali T. M. and Chakravarthy A. K. (1998) Ant species richness, across the altitudinal gradient in the Western ghats of Karnataka. Zoos. Print., 13: 10–13.

Reddy G. (1981) Ant fauna of Dharwad (Karnataka State) with special reference to the foraging behavior of *Myrmicaria brunnea* Saunders (Hymenoptera: Formicidae). *M.Sc Dissertation* submitted to the University of Agricultural Sciences, Dharwad, 81 pp.

(Received 6 November 2008; accepted 15 February 2009)