

## **Identification and distribution of worker ants at Vantharumoolai region, Eastern province, a preliminary communication**

A.C.F. Shamlal Jesmil<sup>1</sup> and M. Vinobaba<sup>1</sup>

<sup>1</sup>Department of Zoology, Eastern University, Vantharumoolai.

Ants are all social insects and with the exception of a few parasitic forms [1] and belonging to the family formicidae of the order Hymenoptera [2]. Ants are differing from their relative wasps by elbowed antenna and narrow waist [3]. Commonly ants can be categorized into several types and each has specific characters. Fire ants may sting or bite people and animals. Pharaoh ants get into wounds and dressings in hospitals. House-infesting ants can become pests by their presence in kitchens and living areas. Carpenter ants tunnel into structural wood. Mound-building ants have the appearance of lawns and landscaped areas. Sometimes ants must be managed to suppress a pest problem.

Nearly 2080 species of living ants have been found in Asian region [4]. In Sri Lanka 210 species were identified belonging to nine sub families [5]. Identified ants in Sri Lanka are available at the National Museum, Colombo and the Department of Zoology, University of Kelaniya. [6]. But no detailed study or identification of ants in the North and East region is carried out. Most of the studies are from South, West and Central region of Sri Lanka.

The study of ants is important. Because attention has focused on the use of terrestrial invertebrates as bio indicators, because of their dominant biomass and diversity and their fundamental importance in ecosystem function [7, 8]. This study attempts to provide more information on the morphometric characters and the identification of species as a preliminary study at the Vantharumoolai region.

The study was conducted at the Vantharumoolai region in Batticaloa district during the period from June to September 2006 as a short term project. In this study ants were collected using quadrates, baits, pooter and pitfall trap. Ants were collected from different habitats such as wet soil, dry soil, shadow areas, grasses and litter. Collected ants were preserved in 85% ethanol, slides and dry specimen as card point techniques. The species were identified using keys [9], and identification was confirmed (Dias personal communication) to the genus or species level. Different micro habitats were selected and number of each species in each micro habitat also was studied.

Eight different types of ants belonging to three sub families were identified. Within those five were identified into species level and rest of three up to genus level only. *Camponotus* species, *Paratrechina longicornis* and *Oecophyllus smaragdina* belonging to sub family formicinae, *Solenopsis geminata*, *Meranoplus bicolor*, *Monomorium* species and *Crematogaster* species identified in sub family Myrmicinae and sub family dolichoderinae had only one species is the *Tapinoma melanocephalum* in the Vantharumoolai region. Key for the separation of collected ants into sub families is as follows:

1. Waist composed of petiole only and second segment entirely confluent with first gastral segment.....2  
     Waist composed of petiole and post petiole.....Myrmicinae
2. Cloacal aperture circular and surrounded by fringe of hairs.....Formicinae  
     Cloacal aperture slit like.....Dolichoderinae

(Abstracted key from Bolton (1995))

### Sub family Formicinae

#### *Camponotus* species (Local Tamil name “Kadderumpu”)

*Camponotus* species are bicoloured ants such as red and black. They have rounded smooth thorax and circular cloacal opening. Antenna has 12 segments with single club. Apical segment of antennal funuculus is not forming a club. Large eyes are present. Comb like spur is present on legs. Simple claws are present at tip of the legs. Petiole is an erect node or scale and nodiform to thickly scale like. No spine is on petiole, pronotum and propodeum. The gaster is not capable of reflexion over the alitrunk. No true sting is found.

***Paratrechina longicornis* (Local Tamil name “Pillaiyar erumbu”)**

*Paratrechina longicornis* is black in colour. Antenna has 12 segments with single club. First segment of antennae is twice as long as head. Smooth thoracic and large eyes present. Head and alitrunk are found with stout setae. Legs are very long in proportion to the body. Comb like spur present and simple claws present at the tip of the long legs. Single petiole is present. Circle of hairs present at tip of abdomen. No sting at the tip of the gaster.

***Oecophilus smaragdina* (Local Tamil name “Musuru”)**

It is brown or reddish brown colour ant. Antenna 12 segmented with single club. Large eyes are present. Lack or no hairs found on body surface. Comb like spur is present on legs. Petiole is elongated. Low node, that allows the gaster to be reflexed over the alitrunk. Acidopore is present at the tip of the gaster.

**Sub family Myrmicinae**

***Solenopsis geminata* (Local Tamil name “Kadiyan or Nerupperumpu”)**

This is commonly called as fire ants as their sting is painful. This is an orange to brown colour and the head is brown. Antenna has 10 segments with two segmented club. Small eyes are present. Simple claws are present at the tip of the legs. Hairs are present on head, alitrunk, petiole and gaster. Two petioles are present with nodes. Petiole is not dorso ventrally flattened and post petiole articulate on anterior surface of first gastral segments. Gaster is not heart shape. Sting is present at the tip of the gaster.

***Meranoplus bicolor* (Local Tamil name not known)**

This ant is bicoloured with red head and black gaster. Antenna has nine segments with two segmented club. Large eyes are found. Hairs are present on head, alitrunk, petiole and gaster. Comb like spur present on legs. Simple claws are present at the tip of the legs. Two prominent spines are visible on thoracic. Petiole is sessile, without an elongate, bar like anterior peduncle between the articulation with the alitrunk and the node. Post petiole is articulated on dorsal surface of first gastral segment. Sting is present at the tip of the gaster.

***Monomorium* species (Local Tamil name “Nullaan” or “Siththerumpu”)**

It is reddish-brown or orange, antennae yellow, tibiae and femora brown. Antenna has 11 segmented with 3 segmented clubs. Thorax is uneven shape. Lack of hairs and spines are found on thorax and gaster. Comb like spur is present on leg. Petiole and, generally, the post petiole have distinct rounded nodes. Post petiole articulates on anterior surface of first gastral segments. Sting present in apex is straight spatulate.

***Crematogaster* species (Local Tamil name “Kulirthi”)**

This ant has reddish brown colour body. Antenna is 11 segmented with three segmented club including scape. Eyes are present. Two prominent spines found on thoracic. Hairs are present on head, alitrunk, petiole and gaster. Spur is present on the leg. Simple claws are present at the tip of the legs. Petiole is dorso ventrally flattened and without a node. The petiole is low and rounded and lacks a node on its upper surface. Acidopore present with hairs at the ventral side of gaster. Sting is present at tip of gaster.

**Sub family Dolichoderinae**

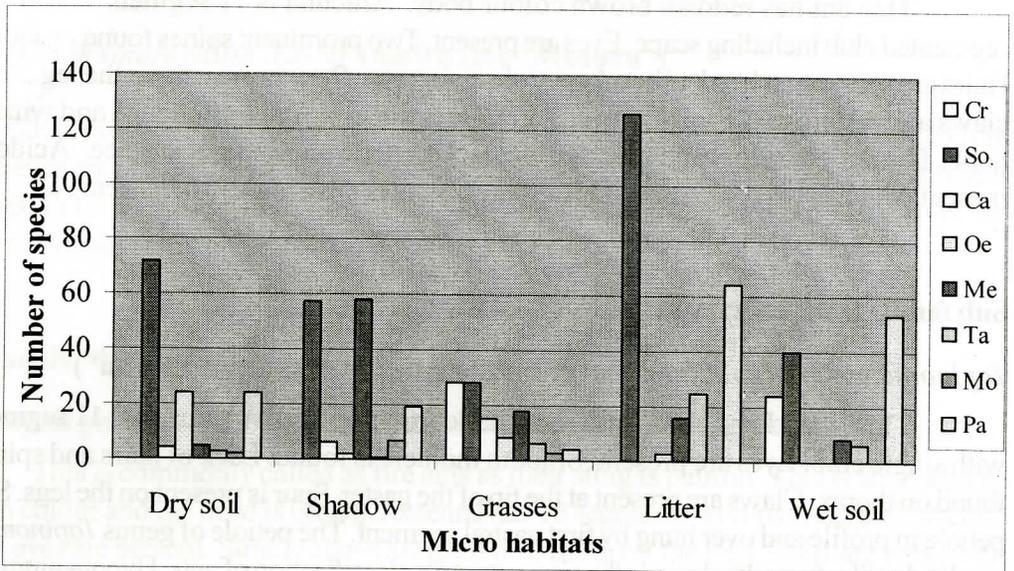
***Tapinoma melanocephalum* (Local Tamil name “Manakkum erumpu”)**

This is reddish colour with shiny dark brown gaster. Antennae are 11 segmented with single club. Eyes are present. Smooth thoracic is found. Lack of hairs and spine are found on thorax. Claws are present at the tip of the gaster. Spur is present on the legs. Single petiole in profile and over hung by first gastral segment. The petiole of genus *Tapinoma* is a small tube-like form. Its shape is thus important for classification of ants. Hypopygium is not modified into an acidopore apically but with an inverted “V” shaped slit like opening. No sting at the tip of the gaster.

In the species distribution study, following results were obtained.

- Ca *Camponotus* species
- Cr *Crematogaster* species
- Oe *Oecophillus smaragdina*
- Me *Meranoplus bicolor*

- Mo *Monomorium* species
- So *Solenopsis geminata*
- Pa *Paratrechina longicornis*
- Ta *Tapinoma melanocephalum*



**Figure 1:** Species distribution in micro habitat

Figure 1 describes the number of each species in five micro habitats such as dry soil, shadow, grasses, litter and wet soil.

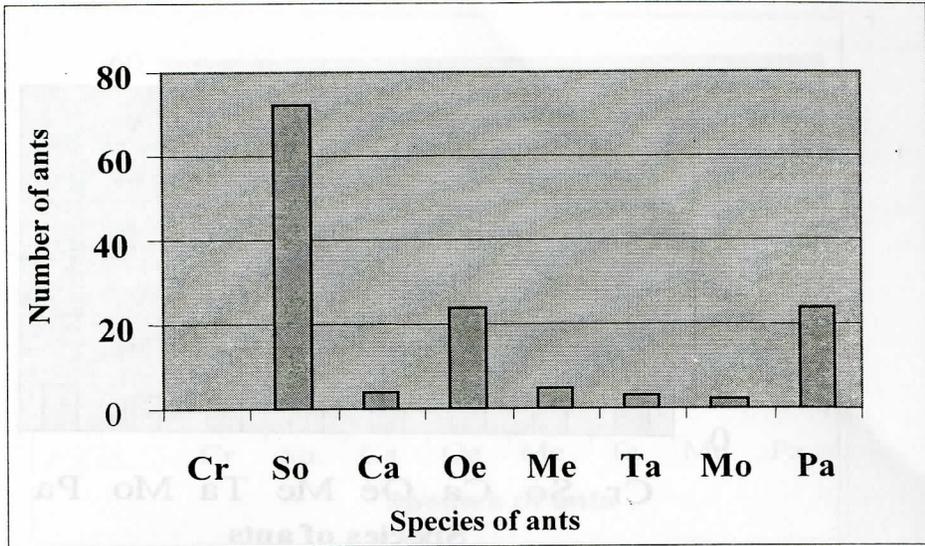


Figure 2: Species distribution in dry soil

*Solenopsis geminata* was high and *Monomorium* species was low in number in dry soil.

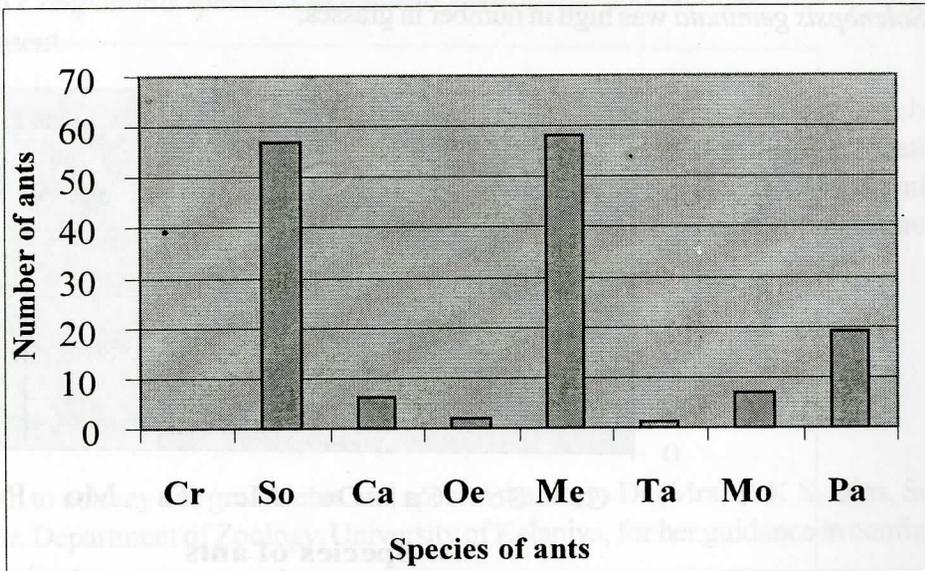


Figure 3: Species distribution in shadow

Approximately *Meranoplus bicolor* and *Solenopsis geminata* were high in number as well as *Tapinoma melanocephalum* was low in shadow areas.

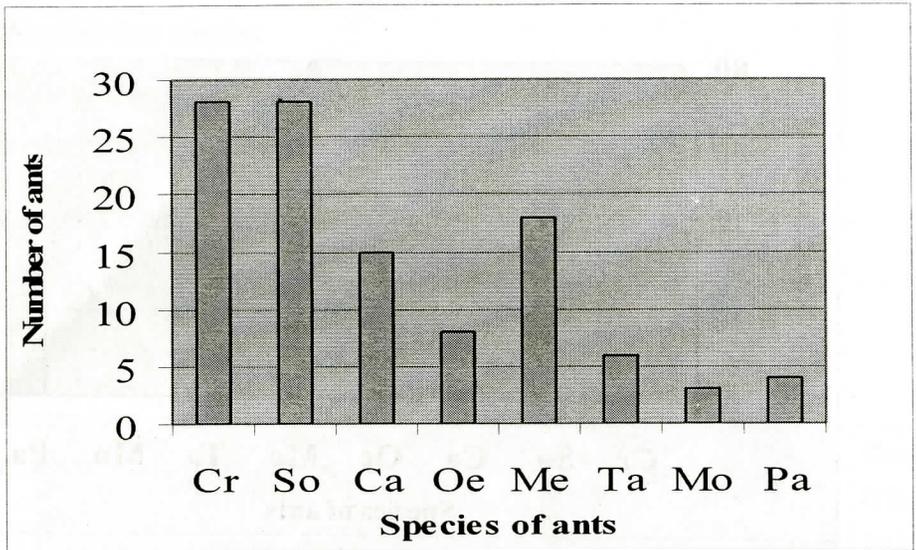


Figure 4: Species distribution in grasses

Almost all species were found in certain numbers. *Crematogaster* species and *Solenopsis geminata* was high in number in grasses.

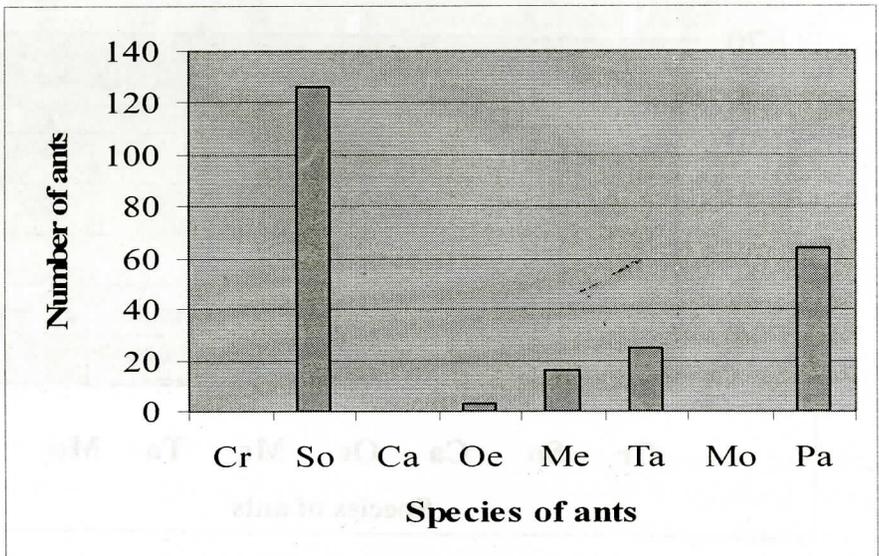


Figure 5: Species distribution in litter

In litter areas, *Solenopsis geminata* was high as in more places and no *Camponotus* species, *Monomorium* species and *Crematogaster* species.

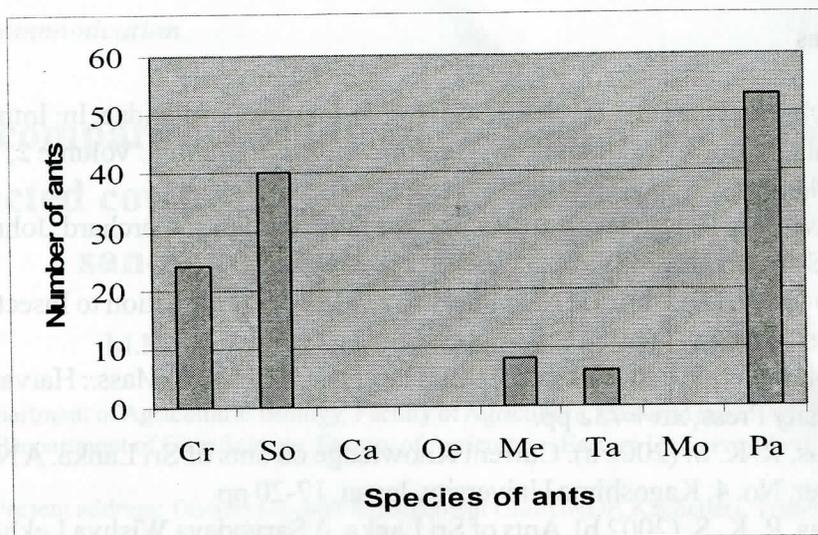


Figure 6: Species distribution in wet soil

Graph 6 describes, the number of *Paratrechina longicornis* was high in number in wet soil and *Camponotus* species, *Oecophyllus smaragdina* and *Monomorium* species were absent.

This short communication provides information about some of the ants which were studied in the Vantaharumoolai region. Further research is needed on the identification of ants in other regions of North and East provinces and the endemic species. Commonly fire ants cause damage in dry seeds, seedlings, food produces and other home structures and communication structures. More researches need to study damages by fire ants.

### Acknowledgement

We wish to convey our great debts and special thanks to Dr.(Mrs).R.K.S. Dias, Senior Lecturer, Department of Zoology, University of Kelaniya, for her guidance in confirming species of ants.

## References

- [1] Richards, O. W and Davies, R. G. (1977). Family. Formicidae. In: Imm's General text Book of Entomology: *Classification and Biology*. Volume 2, 1234-1244 pp. Chapman and Hall Limited, London.
- [2] Davidson, R. H. (1966). Insect pests of farm, garden and orchard. John Wiley & Sons, Inc., New York.
- [3] Howel, V. D., John. T. D and Paul. R. E. (1981). Introduction to Insect Biology And Diversity.
- [4] Hölldobler, B and Wilson. (1990). The ants. Cambridge, Mass.: Harvard University Press, xii + 732 pp.
- [5] Dias, R. K. S. (2002 a). Current Knowledge on ants of Sri Lanka. A Net News letter, No. 4, Kagoshima University, Japan, 17-20 pp
- [6] Dias, R. K. S. (2002 b). Ants of Sri Lanka. A Sarvodaya Wishva Lekha Publication.
- [7] Disney, R. H. L. (1986). Assessments using invertebrates: posing the problem. Pages 271-293 in M.B. Usher, editor. Wildlife conservation evaluation. Chapman and Hall, London, England.
- [8] Rosenberg, D. M., Danks, H. V and Lehmkühl, D. M. (1986). Importance of insects in environmental impact assessment. *Environmental Management* 10: 773-783.
- [9] Bolton, B. (1995). A new general catalogue of the Ants of the World. Harvard University Press, Cambridge, Massachusetts, USA.