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Research Article

ANT MIMICKING: SALTICID AND THOMICID SPIDERS FAUNA OF INDIAN INSTITUTE OF SCIENCE, BENGALURU., KARNATAKA

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ABSTRACT

A survey of spider fauna of Indian Institute of Science (IISc), Bangalore, was carried out. A total of 40 species of spiders belonging to 33 genera under 14 families were recorded in the premises of IISc. The documentation of spider fauna was done for the first time. Amongst all the species recorded, two ant mimicking spiders namely *Myrmarachne plataleoides* (MacLeay, 1839) and *Amyciaea forticeps* (O.P. Cambridge 1873) belonging to the families' salticidae and thomicidae respectively, were recorded. The videography of the same was done. And the behavior was studied. In both the spiders the mimicry is so perfect that it is difficult even for an expert Arachnologist to differentiate the spider from an ant. They often live with the ants they mimic. The gait is ant like. The first pair of legs is held like antennae. They show close resemblance to the common red ant, *Oecophylla* species. Key words: IISc., Arachnologist, *Oecophylla*

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INTRODUCTION

Our knowledge of Indian spider fauna is extremely fragmentary, in particular Karnataka. It is one of the neglected fauna/ area in research. Indian spiders from all regions have been studied earlier by several European workers and later by Indian Arachnologists. The earliest contributions on Indian spiders were by Stoliczka (1869) and Karsch (1873). Gravely (1921) added considerably to the knowledge of Indian spiders. Major contributions to Indian arachnology were made by Pocock and Tikader who made other researchers to take interest in research on spiders. Pocock, described 112 new species of spiders from India. His book in 1900 provided the first list of spiders, along with enumeration and new descriptions in British India. It is referred and still referring by Arachnologist of India. Tikader (1987) also published the first comprehensive list of Indian spiders, which included 1067 species belonging to 249 genera in 43 families.

In the present study, we have recorded two species of ant mimicking spiders namely *Myrmarachne plataleoides* (MacLeay, 1839) and *Amyciaea forticeps* (Cambridge OP.1873) belonging to the families salticidae and thomicidae respectively. The genus *Myrmarachne* is one of the largest groups in the family Salticidae, includes around 250 species (Prószy ski 2012; Platnick 2012). *Amyciaea forticeps*, is the

only one species recorded in India (Dr.P. A. Sabastian, Spiders Of India) and the same species spider identified at IISc. Campus. The videography of the same was done. Their mimicry, behavior and feeding habit was recorded and studied. They show close resemblance to the common red ant, *Oecophylla* sp.

Study Area: The area surveyed is as follows:

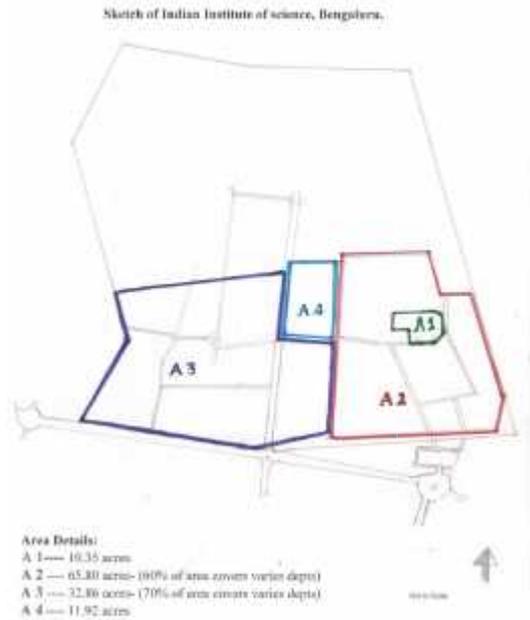
Fig. Four marked locations of IISc, campus. Total area Surveyed 120.93 acres approximate out of 400 Acres. *Myrmarachne plataleoides* located in Area 3 and *Amyciaea forticeps* located in Area 2.

MATERIALS AND METHODS

Photography and videography was done with a digital camera EOD500D equipped with 100mm macro lens using tripod in its natural habitat. Multi-focused images were produced. Morphological observations were made with binocular and dissecting microscope. Specimens were collected by visual method were kept alive. Same day /next day photography and videography were made once again. They are studied thoroughly. Spiders cannot be preserved as dry specimens. Collected specimens were transferred to the preserving PP bottles for the permanent preservation.

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Number of Species. recorded in India: 24

Amyciaea forticeps (OP Cambridge 1873)

Family- Thomisidae

Size: F-8mm

Habit habitat: It appears like a common red ant *Oecophylla* sp. found along with it and feeding on them. The abdomen imitates the head of the ant with two dark spots simulating the ant's compound eyes. On seeing ant it pounces on it. While holding the ant in its jaws and anchoring itself with a safety line of silk, swings to other twigs. Silken line allows the spider to remain suspended in the air with the ant. Ant has no chance for counter attack and become unconscious due the effect of the spiders venom.

Diagnostics characters: Cephalothorax is reddish brown strongly arched giving the impression of Ant abdomen, without fovea. Eyes are re-curved and are in three rows. Posterior lateral eyes and anterior lateral eyes encircled by inner white rings and outer black patches. Median eyes are smaller than laterals. Posterior median are smallest. Sternum is heart shaped. Legs are long and slender, tarsus with two claws. Legs resemble ant's legs. The first two pairs of legs are jerkily held up and down, while spider moves in the colony of red ants. Abdomen is longer than wide. Middle portion is widest. Two black eye like spots on the posterior lateral sides of the dorsum. A conspicuous V-shaped dark brown marking is present.

DISCUSSION AND RESULTS

In both the spiders the mimicry is so perfect that it is difficult even for an expert arachnologist to differentiate the spider from an ant. They often live with the ant colony they mimic. The gait is ant like. The first pair of legs is held like antennae. *Myrmarachne plataleoides* make a thick oval silken retreat under leaves with front and backdoors (two oppositely situated flexible openings) for the in and out movement. Polymorphism is found in this species (Rhene M.Borges, 2007). *Amyciaea forticeps* found holding the red ant *Oecophylla* in its jaws and feeding on it by sucking the body fluid. The first two pairs of legs are often jerkily held up and down during its movement. It shows intermittent stops during which it sucks the fluid from the body of the ant and from the podomeres of the appendages with its chelicerae. This was recorded very clearly during the videography.



Myrmarachne plataleoides-Male

Systematic Account

Myrmarachne plataleoides(O.P Cambridge 1869)

Family-Saltisidae

Size: F-8mm, M-11mm

Habit and Habitat

It is ant mimicking Salticid spider, located on small trees along with the red ant colony, very difficult to differentiate from the ants. Their intermittent stops during walking, helps to differentiate the spider easily from the ant. By taking it on the leaf and allowing it to fall down, made us to observe the silk fiber that it releases from its spinnerates immediately. By this method one can able to differentiate from ants. Female makes a thick white oval silken retreat under leaves with both the ends open. Observed and recorded its behaviour in and out of the retreat by lifting silken net upward with the help of first two pairs of legs when it come out, where as pulling downwards while inside the retreat. It repairs the damaged net from inside all around.

Diagnostic characters: Cephalothorax is roughly rectangular with a flat ocular quadrangular separated from the thoracic region by a constriction. Area around the eyes holds black colour. Males with extraordinarily long chelicerae having a swollen tip with black eye like spots of an ant. Eyes are eight in number occur in pairs, named based on their position as anterior medians, posterior medians, anterior laterals, posterior laterals, all together arranged in two rows. Anterior median eyes are larger in size. Pointed teeth are arranged along the ventral margins of the chelicerae. Fangs are slender with a curved tip. Cephalothorax of female is a small with normal chelicerae and flat oval pedipalp. Legs are slender with long segments. A conspicuous pedicel connects the cephalothorax with abdomen in both the sex. It is a reddish orange spider. Abdomen is oval is shape.

Common name: red ant mimic.

Distribution: Karnataka (State wise record is not found)

The result of the present study showed that, great variety of spiders exists in the study area. One can undertake research work on individual species, as the climatic conditions supports the spider fauna to multiply and there is no human interference in their habitats. Research work on the biology of spiders including their web construction, food and feeding habits, physiology, reproduction and life history can be done here. Comprehensive account of any single species has not been available so far. So it is suggested that, studies on the biology of individual spider species should be under taken in IISc.



Myrmarachne plataleoides-Female



6



1



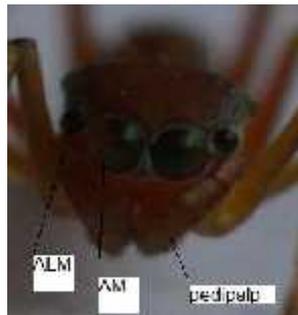
2



7



3



4



8

Figures 1-4 *Myrmarachne plataleoides*.

1. Pedipalps - Male
2. Cephalothoracic region with eyes- Male
3. Cephalothoracic region with eyes- Female
4. Female in front view
5. Male in ventral view
6. Female entering its retreat
7. Male with silk thread
8. Female inside the retreat



5



1



2



3



4

Figures 1-3 *Amyciaea forticeps*.

1. Adult Female
2. Abdomen with dark spots looks like compound eyes and last pair of legs appears like antennae of ants.
3. ventral view showing heart shaped sternum
4. With red ant *oecophylla* sp.

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