

Notes on the Biology and Habits of the Red Tree Ant *Oecophylla smaragdina* (Fabricius)

by

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Introduction: The spinning, weaver or the red tree ant-*Oecophylla smaragdina* (Fabricius) is a familiar ant occurring in mango and other trees in the neighbourhood of houses. On account of its peculiarities a large amount of literature on its activities and habits has been published. Yet, its importance in agriculture, life history and habits have not been fully investigated. Therefore observations made on the ant in this region are given herunder.

The nesting and food habits were elaborated by the early workers like Wroughton (1892—1893) and the spinning capacity by Aitken, (1889), Green (1903) and Dofflein (1905). Further work on its behavioural patterns have been summarised by Morley (1953).

Nesting: The ant builds its nest in trees especially mango. The leaves are drawn together by the concerted action of number of individuals standing on the edges and pulling in one direction. Some ants bring the larvae and pass them from one to the other like a shuttle so that the silk produced by them may be drawn into long threads for binding together the leaves. This kind of using the larvae as tools is peculiar to this ant. The silk is made into a thick sheet by making many layers of it one over the other. The leaves are connected together by the edges and the interior is divided into a number of chambers of about 10 mm in width. The entrance to the nests are usually found on the upper surface. The nests vary in size from 3 to 6 inches and are usually globular.

Organisation in the nest: There is only one queen in the nest and a number of soldiers and two different kinds of workers. The eggs, larvae and pupae are housed in different places slightly separated from each other in the same chamber. The nest does not contain any stored food material but occasionally some coccids and aphids are kept in the nest or in the byres.

The immature stages of the ant are attended to by the workers and the soldiers do not take any part in it. In the nests kept in the laboratory the grooming was done not only by the

members of the colony but also by the members of other colonies on the tree. However ants from other trees were antagonistic and were killing and eating away the larvae.

The larvae do not produce silk unless they have to build the nest. In the laboratory the larvae did not produce any silk but developed normally.

Life History: The elongate white eggs were covered with nucilage and was attended to by the workers. The egg period lasted from 4 to 8 days with an average of 6.2 days. The larvae were nude except for small hairs on the head and thoracic region. It passed through three instars which lasted 3 to 5, 5 to 8, and 2 to 4 days with averages of 4.1, 6.5 and 3 days. The pupa was also nude and was stored in any place. Pupal period lasted from 5 to 7 days with an average of 6.1 days. The life cycle thus lasted 26.1 days.

The callows which emerged were pale white and turned to yellow after one day and red after two days. The callows were also active from the time of their emergence from the pupae and went out foraging with the others.

Food and other habits: The ant is mainly carnivorous and feeds on live insects like flies, moths, beetles and others which are caught by the coordinated action of number of individuals. The insects are killed only by stretching them in all directions and are then carried to the nest. Caterpillars without hairs are also relished and are eaten.

The ant is vicious and bites all intruders. It bites by the mandibles as it has no sting and squirts formic acid from its anal region. The acid irritates bigger animals but paralyzes smaller ones.

It gets on the alert at the approach of anyone and stands erect in an alarm attitude. It causes a disturbance by running about or striking the sides of the nest with its abdomen. This is meant as a means of communication to the others, at which all of them run wildly and attack or fall upon the intruder. The bite is not let loose even when they are killed in their attempt to kill the intruder. In the flurry that results as a result of such alarm and hasty action, the ants bite one another also.

The success of the ant depends on its poisonous bite, active habits, communication and coordination in action and ability to withstand weather conditions to a certain extent. It runs easily

and forages quickly over large areas on the same tree or on the ground and some adjacent plants also. There is no regular track but when necessary as in the case of building a bridge, taking food home or attacking enemies, they call together others by sound-signs and attitude-signs.

The ant feeds also on the honeydew from many coccids and aphids and some of them are maintained in their nests or in byres. The mango aphid, *Toxoptera odinae* and the coccid *Rastrococcus iceryoides* have commonly been found in the nests of the ant in this region. These are only temporary attendance and not a completely dependent myrmicophilous condition as is obtained in some European species like *Acanthomyops flavus*. There is not the regular transportation of the insects also attributed to the ant by some writers.

It is usual to find the tree on which this ant lives being free from other ants and also many pests. But the stingless tree ants belonging to the subfamily Dolichoderinae live unobtrusively on the same tree and are tolerated by the red tree ant.

Inquilines and Parasites: In spite of its ferocious nature many inquilines have been found in the nests or in the trails of this ant. Some spiders and assassin bugs have been found to mimic the ant and go along with them on the trees. In Coimbatore two spiders which mimic the ant have been taken from the nests.

No parasites have so far been noted on the ant in this region.

Economic Status: On account of its vicious bite, the red tree ant has been considered a nuisance if not an injurious one on the important fruit trees like mango in South India (Ramakrishna Ayyar 1940). It has also been credited with harbouring injurious insects like coccids and aphids and transporting or protecting them from their natural enemies. In recent years it has been found that such transportation and protection do not exist except in some cases where the charge is totally dependent on the ant concerned. Therefore direct or indirect injury to plants can only be limited.

On the other hand the ant being a predacious one, it is stated that it eliminates many injurious forms of insects like caterpillars, beetles and the like. The case of introducing the ant into Ceylon with the object of protecting coffee plantations from the ravages

of the scale, *Lecanium viride* can be cited here. The ants are said to have been very useful in the destruction of the pest but had interfered with the working of people in the gardens and had to be eliminated.

Control of the ant: When it becomes necessary to control the ant, it can easily be done by pulling down the conspicuous nests and destroying the queens in them. The ant has been found to be susceptible to many of the hydrocarbons and BHC dust (Thirumal Rao *et al* 1953).

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