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Parental care in Insect Thrips mycophagous Elaphrothrips sp (Thysanoptera: Phlaeothripidae)

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ABSTRACT : The order Thysanoptera encompasses minute insects called Thrips which shows many peculiarities in their reproductive biology and parental behaviour. Elaphrothrips sp is a mycophagous thrips feed on the fungus infested dry leaves of host plant *Butea monosperma*. These thrips express a specific parental care which was usually not observed in phytophagous thrips. Sexual polymorphisms play an important role in behaviour. Parental care takes place by both male and female. In the present investigation observation on mating behaviour and parental care of mycophagous thrips are discussed. **Key words:** Elaphrothrips, parental care, social behaviour.

INTRODUCTION:

Elaphrothrips sp. is a mycophagous thrips are found within the curved folds of fungal infected dry leaves. They are feeds on fungal spores and generally occur on the fungus infected dry leaves of *Butea monosperma* plant. Comparatively to the other thrips, the size of adults Elaphrothrips sp is large. Sexes easily differentiates due to male is larger than female. Male having tarsal tooth on foreleg, while in female absent. Larvae are red in colour with black terminal tubes, occurs in colony and eggs are dull white in colour glued vertically on the leaf surface and in group. They are mostly available during month of September to November.

The Thysanoptera insects offer unique

opportunities to study the other variables of social behaviour due to exhibits a wide variety of life histories and social interaction. The purpose of this presentation is to analyse the parental care of Elaphrothrips species of mycophagous type.

MATERIAL AND METHODS:

Collection and Laboratory rearing:

The thrips were collected from their host plant *Butea monosperma* dry fungal infected leave during the humid periods of the year when they mostly occur. The eggs, larvae, pupae of the were collected and carried to the laboratory along with leaf fold and fungal infected dry leaves of *Butea monosperma* for rearing.

The collected specimens of Elaphrothrips adult male, female, larvae and eggs were kept in large plastic bowls along with fungus infected dry leaves. They were regularly fed on fungus infected dry leaves of *Butea monosperma*. For protection bowls were covered by muslin cloth. Light 12:12 and temperature ($25\pm 1^{\circ}\text{C}$) were maintained. Relative humidity maintained at 80% by keeping wet filter paper in the rearing bowl.

Whenever required the adults are separated from their colony and reared in separate rearing bowl for minimise the competition among them for food sharing. This method was found helpful for the observation of social and reproductive behaviour.

Field Observation:

Documentation was also made by taking photographs by using digital camera (Olympus: SP550UZ) without disturbing them. During insect collection, field observations were also done for the natural behaviour that was not possible in laboratory because indoor condition may change some behaviour.

RESULTS AND DISCUSSION:

Reproductive behaviour:

In a colony, sexually mature males orient towards mature females. The males were making a point of contact either from posterior

end or at right angles to the thorax of the female. Sometimes head to head contacts were initiated a specific response. In many cases the antennal palpation acting as stimulus enabled acceptance by the female and resulted in the initiation of mating.

Parental care:

The female laid eggs in the range of 10-40 in a group and each egg was vertically glued to the leaf. The oviposition period lasts for 2 to 4 days. Female oviposited and guard their eggs in shelter locations on the leaf cluster such as in curled areas of the leaf or between leaves.

After the eggs have begun hatching, female usually remain to one side of egg masses. Sometimes female mounts guards over her eggs and sits over egg mass with legs sprawling wide. Female have her long abdomen at frequent intervals as if to frighten any intending enemy. During the whole time, she never strays far away from the place of oviposition even for feeding. Female usually guard their eggs until all have hatched, after which they sometimes remain in the vicinity of the larvae and egg mass. The young nymphs hatch first then also continue to remain under the protecting care of the female. While brooding, if mother is disturbed, she waves her abdomen with increased vigour, moves off to a distance but soon return to her eggs, which proceed to feel with her antennae to assure of their safety (Fig. 1).



The presence and intensity of maternal defence influence offspring survivorship into the first-instar stages. However female reproductive success depends also on fecundity, local

ecological and social factors affecting the success of egg-guarding, offspring survivorship to the adult stages and size of offspring as adult (**Crespi, 1990**). Egg defence, generally by adult females, has been reported in thrips (**Bagnall, 1915; Kiester and Strates, 1984 and Ananthakrishnan, 1984**) while in some thrips male may also engage in parental behaviour (**Haga, 1980**). In *Elaphrothrips procer* (Schmutz) both the sexes show parental care by protecting eggs sitting over them or present nearer the egg mass and reacting the intruder by moving their antennae and pretarsi of forelegs around the breeding site so that the predators and enemies can be detected and avoided (**Nagrale, 2011**). Similar behaviour is also noted in *Elaphrothrips brevicornis* (**Bagnall, 1915**) and *Elaphrothrips greeni* (**Watane, 1985**).

Elaphrothrips procer (Schmutz) females in a colony lay their eggs in cluster (**Nagrale, 2011**). When they form aggregations, the oedymorous male guard and protect the colony and egg mass by both, thus tend to exhibit division of labour. It is observed that *Elaphrothrips brevicornis*, a West Indian species, sits over her eggs after laying them on the leaves and protects the eggs from the predators (**Bagnall, 1915**) and reported the same in some sporophagous thrips (**Ananthakrishnan et al., 1983**).

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