

OBSERVATIONS ON THE MATERNAL BEHAVIOR OF MADAGASCAR COCKROACHES (*GROMPHADORHINA PORTENTOSA*)

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Abstract

This paper aims to observe the nesting behavior of Madagascar cockroaches. Although, after laying eggs, the implication of parents insect is zero or minimal, however, it was observed in this ovoviviparity species a feature absolutely unique that the female takes care of nymphs after hatching of 60 days, behavior that may be considered maternal.

Keywords: Madagascar cockroaches; growth period; expulsion

Introduction

This study aims following the Madagascar cockroaches maternal behavior both during and after the period of "gestation".

They present an obvious sexual dimorphism, with males having two elevations at prothorax called "horns" and the antennas are hairy. In addition, they are very territorial and can be observed fighting in the habitat created (head-push), thus establishing the hierarchy. Females presents a smoother thorax, with protrusions more faded or even absent.

Materials and methods

In this study we used 20 adult females, following the maternal behavior aspects and particularities of each females during both the "gestation" and after the expulsion of the nymphs.

Results and discussion

The Madagascar cockroach called "hisser" or "hissing cockroach" has its origin on the island of Madagascar where they can be found on land in remote locations, usually under leaves or rotten logs. Although naturally grow in Madagascar (over 20 species), due to the size (10 cm female, 11 cm male), harmlessness, the rate increased of prolificacy and especially because when they are touched make a hissing sound characteristic and unique in the world of insects, it began to be bred as pets for pleasure or as a source of food for other living pets.

1. Anatomic and physiologic particularities

Being a ovoviviparity species, the eggs are grouped in an organized manner in a structure called ootheca which will be taken outside of the female's abdomen for airing, then to be brought back.



Fig. 1. Abandoned ootheca



Fig. 2. "Airy" ootheca

After about 60 days of the act of copulation the female will expel live offspring in number of 27-35. Both during the "birth" and in the next few hours, the female exacerbates their maternal behavior, giving them protection until they acquire specific color and are able themselves to avoid possible danger.

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Fig. 3. Female



Fig. 4. Male

2. Maternal behavior

At the moment when the period of gestation ended, the babies will come out from ootheca in the female's abdomen. Before them expel the female will search for a safe, quiet and wet place where she can expel the offspring.

In the artificial habitat created by each breeder, often that place is the water container or the container for dry food.

Thus, the female will expel a varied number from one gestation to another of nymphs. Nymphs are white in the early hours, following to obtain gradually the specific color and they are 0.4-0.5 cm in length.



A



B

Fig. 5 (A, B). Nymphs expulsion

It should be emphasized that immediately after the expulsion of the nymphs, the female maternal instinct is manifested intense, contrary to the concept of "cold animal". Thus, after leaving the female's abdomen the nymphs begin to explore the surrounding area in the immediate vicinity of the female.

Meanwhile, the female show an aggressive behavior towards others cockroaches in the colony, even to humans through their specific whistling. Even in contact with an external stimulus (eg: stick) the female does not withdraw or runs, but it still protects its offspring pulling out specific sounds and adopting a defensive position.

The offspring, in their turn, if will feel threatened they will seek protection from the female parent, climbing up on it.

After about 6 hours, the female detaches of the offspring, and they will remain grouped until they turn black.



Fig.6. Defensive position of the female



Fig. 7. A-nymph 1 hour. B- nymph 24 hours

Conclusions

1. Although it takes a short time, the maternal behavior of Madagascar cockroaches female exist under three forms of manifestations:

- The intention to find a nest or a special place for expulsion
- The attachment of the offspring to female
- The female defense reaction, thus providing an inedited aspect into the world of insects.

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