Parental care among Insects

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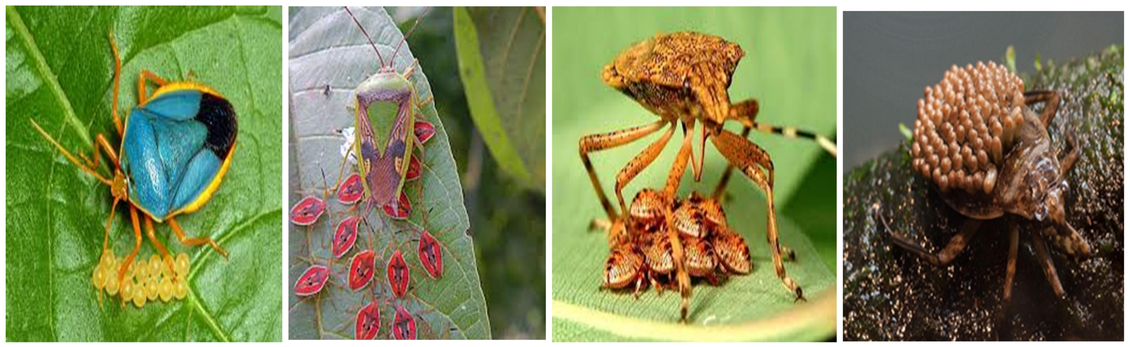
Introduction

Insects are the largest group within Arthropod phylum. They are the most diverse group of animals, about 1 million species. Insects have segmented bodies, jointed appendages, and exoskeletons. The insect's body is divided into three regions: head, thorax, and abdomen. Some have developed wing which helps them to colonize different habitats. All insects undergo metamorphosis. Some Insects have a four-stage life cycle: egg, larvae, pupa, adult. Other insects have a three-stage life cycle: egg, nymph, adult. Insects egg can be found everywhere. Some around food sources, some around plants etc. Most Insect do not show parental care. About 1% of them have developed parental behavior. In some species parental care plays an important role on the offspring fitness. Any social behavior that increases the offspring fitness is considered parental behavior. Because insects are highly diverse group, parental behavior has developed many times independently in respond to environmental factors. Parental behavior is most developed in Hemiptera (true bugs), Thysanoptera (thrips), Embiidina (webspinners), Coleoptera (beetles), Hymenoptera (ants, bees, and wasps), and Isoptera (termites).

Methods

Data was collected from 80 species, 24 families, and 6 orders. The information was processed on Excel and histograms were created based on the data.

Results



Based on the data collected, insects show different forms of parental care to their offspring. All three forms of parental care were observed among 80 species. Maternal care were observed in 54 species. Paternal care in 18 species, and biparental care in 8 species. From the graphs shown below maternal care was the most common behavior and biparental care was the least common behavior. The parental behavior were observed mostly on the egg stage 34 species , followed by larvae stage 26 species and egg brooding 20 species.

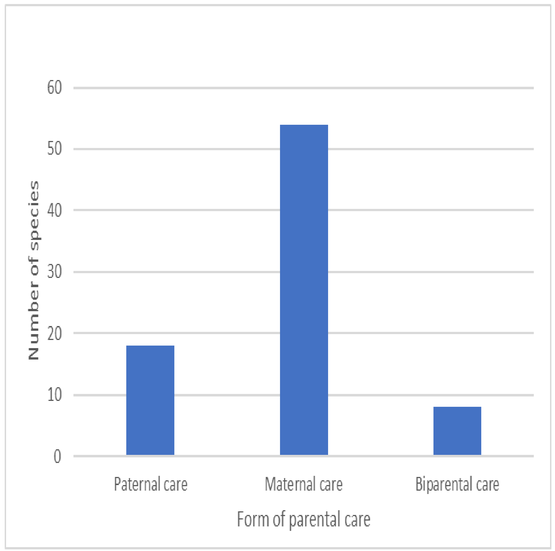


Figure 1. Forms of parental care in 80 species. First bar shows paternal care in 18 species. Second bar shows maternal care in 54 species. Third bar shows biparental care in 8 species.

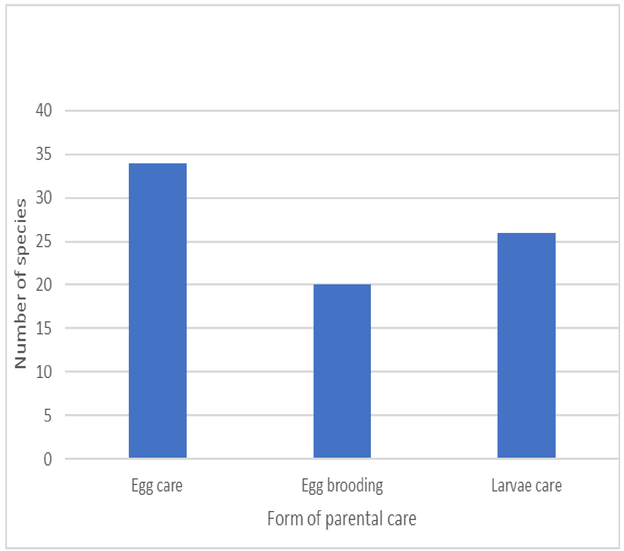


Figure 2. Parental care through the life cycle of 80 species. First bar shows parental care in egg stage. Second bar shows parental care in egg brooding. Third bar shows parental care in larvae stage.

Conclusions

In this study we found that parental care can be observed in different life stages among insects. Parental behavior varies from protecting the egg, burying, feeding the larvae finding a good habitat to lay the eggs etc. The parental behavior can be observed at the beginning of egg stage or it can last up to the larvae stage. From the results the majority of parental behavior was observed during the egg stage. The latest stage was the larvae stage. In most species the female takes care of the offspring and on other species male take care of the offspring or both. Some species put more effort on parental care after the egg hatching. At this point hormonal factors play an important role on offspring survival. At this stage larva are vulnerable ,immobile, and disposed to predators. These factors and other different environmental conditions have influenced the evolution of parental behavior among insects.

References

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