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Studies on behavior of common baron *Euthalia aconthea*

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Abstract- : The objective of the present study was to identify the preference habitat (ecology), as well as host-plant interaction and different behavioral (ethology) patterns of *Euthalia aconthea*. The study was conducted in the campus of PG Department of Zoology Ranchi University, Ranchi. Since the species selected are rarely found therefore it was reason for selection of the species for research work.

Keywords:- Arthropoda, Lepidoptera, *Euthalia aconthea*, ecology

INTRODUCTION

Insects are the unique arthropod bearing head, thorax and abdomen, a single pair of antennae, three pairs of walking legs, one or two pairs of wings, and a long abdomen bearing distally the genital appendages.[1] Insects are the species that constitutes more than half of earth diversity[2]. And among the species butterflies are regarded as one of the best taxonomically studied group of insect[3]. India is described as a "Butterfly paradise" by Vankatramani[4]. Butterflies belong to the order Lepidoptera. Lepidoptera are the most familiar and easily recognizable of all insects and it is in this order that coloration has reached the highest degree of specialization[5]. They been studied systematically since early 18th century, so far 19,238 species documented worldwide of which, 1,504 species occur in India with 100 (15%) endemic and 26 (1.08%) globally threatened species in peninsular India, 334 butterflies species were reported from the Western Ghats and 150 species from the Eastern Ghats region[6]. Butterflies are scaled wing insects belonging to the order Lepidoptera of class Insecta[7]. Butterflies are regarded as one of the best indicator of the habitat quality. Worldwide there are more than 28,000 species of butterflies, with about 80 percent found in tropical regions. If we are to have any chance of effectively conserving insect populations globally, we must understand their ecologies[8]. Butterflies enable sustenance of ecosystem services through their role in pollination and serving as important food chain components. Being potential pollinating agents of their nectar plants as well as indicators of the health and quality of their host plants and the ecosystem as a whole, exploration of butterfly fauna thus becomes important in identifying and preserving potential habitats under threat. There has also been an alarming rise in industrial and automobile pollution in Indian metropolitan

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cities. *Euthalia aconthea* is recorded as minor pest infesting mango plantations. It is regarded as one of the most destructive species to mango plantations causing severe damage of the leaf. Regarding this the detailed study of the insect was done.

MATERIALS & METHODS

Study site

The study site was selected in the campus of University Department of Zoology Ranchi University located Jharkhand. The campus building is surrounded by garden with a large public maidan or field, and a nursery on the western region and constructed buildings on all other sides. The sprawling campus had good vegetation with different herbs, shrubs and trees. The western side of the campus building had wild plants growing along with cultivated plant species. The present study was conducted in a garden created on the south side of the campus to compensate for the habitat loss in the area due to construction and building activity.

Study period

The study period was divided into two phases. In the first phase, survey of butterflies habitat and behavioral activities within an unmanaged garden in the campus was done and in the second phase, setting up a garden in another site of same campus with plantation of host plants preferred by butterfly and caterpillar species (*Euthalia aconthea*) was done and observed for visits, host-plant preference and ethological activities. The study was conducted during the month of October 2018-February 2019.

Field survey for eco-ethology and behavioral study

A study on *Euthalia aconthea* one of the butterfly species was done in the college campus. A checklist containing butterflies in relation to host-plant preferences was given special preference. Different behavioral activities of butterflies were studied using focal-animal sampling method[9-10]. Time duration was also calculated. Behavioral allocation in man hours of different activities in different species of butterflies was done over a period of 5 months (Two hours in the morning and Two hours in the evening with intermittent gaps, October -December). Observation was done specially keeping attention the behavioral pattern, host plant preference etc. Each individual of *Euthalia aconthea* was observed for 5 minutes. During this sample period, all the different activities by the individual were recorded. A time-budget of behaviors like foraging, nectaring, flower-visiting (flight), defending attitude, resting, courtship flight, was also recorded.

RESULT & DISCUSSION

During observation it was found that most of the *Euthalia aconthea* species habituated in the mango tree and completed its half of the life cycle such as from larval

Fig.1- *Euthalia aconthea*

to pupal stages. Like other members of the order Lepidoptera *Euthalia aconthea* goes through four different stages to complete its life cycle.egg, larva, pupa and adult.

Mating behavior

Mating in adult stage of *Euthalia aconthea* was observed during the flight hours and usually lasted for 70-80 minutes. The eggs were laid under the leaves surface of the mango tree in single clutch. The eggs were hemispherical in shape with base diameter of about 1.5-1.8 mm. The surface of the eggs was covered with hair like structures. The fresh eggs were green in colour but later on it turned into darker.

Incubation Period

The incubation period lasted for about 4-5 days. From the incubated eggs young larva (*Mangifera indica*) hatched out. The young larva usually fed on fresh mango leaves.

Larval Stages

Five different larval periods was observed during the investigation period, first instar, second instar, third instar, fourth instar and fifth instar. The larval stage of *Euthalia aconthea* had hair like structures that surrounded the entire body and was generally used as defensive organ.

Pupal stage

Fully fed and matured larva feeding and started to spin silk thread around itself to make silk mound. The prepupal larva hangs itself from the anchor pont in a head down posture. The pupal period lasted for 7-8 days prior to adult stage.

Adult stage

After 7- 8 days of pupal stage the adult larva emerged out from the pupa. The adult larva was brownish in colour with brown antennae head, thorax, abdomen etc. the proboscis was lime green in colour. The wings were pale brown in colour with black spots with expansion of about 68-79 mm.

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