



A Study On Feeding Behavior Of Plain Tiger Butterflies In Taranagar Area Of Churu District (Rajasthan)

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Abstract - This study was conducted in Churu, the desert district of Rajasthan, India, where the Thar Desert is spread all around. Butterflies are very unique creatures that attract everyone's curiosity. Plain tiger butterfly (*Danaus chrysippus*) is one of the most attractive and beautiful insect that found abundantly in this area. These are classified in the order Lepidoptera of the class Insecta in the phylum Arthropoda. The study was conducted to investigate the feeding behavior of plain tiger butterflies (*Danaus chrysippus*). The data were collected by direct observation during field work. In this study, the researchers found that these butterflies consume the nectar of flowers and plants as food through their proboscis. The authors also found that their larvae rapidly eat the leaves of plants.

Keywords: Butterflies, *Danaus chrysippus*, Taranagar, Churu, Insecta, feeding, proboscis, nectar.

Introduction: Nature contains many living creatures and many types of organisms like birds, reptiles, mammals, fishes, insects etc. By which insects counts as special creatures of nature which are included in the Insecta class of the Arthropoda phylum. The plain tiger butterflies (*Danaus chrysippus*) are included in the Lepidoptera order of the Insecta class. Butterflies are very beautiful and attractive insects that make a positive environment around us. The plain tiger butterfly (*Danaus chrysippus*) is a large sized insect and is commonly found in the Taranagar region. These butterflies are mostly found in various habitats including

gardens, open green areas, desert areas and around water sources. These are brown in color and slow flying insects. They hover over flowers for their feeding purpose. The body of the plain tiger butterfly (*Danaus chrysippus*) contains three basic parts, that are as follow-

Head- The head is the first segment of their body. Head is further segmented but segments of head are fused to each other. Antennae, compound eyes, ocelli, mouth parts etc. are situated on their head. A long sap sucking proboscis also found in this part.

Thorax- Thorax is second important segment of their body. Wings and legs are attached on thorax in paired form. Three pairs of legs are present on each segment of thorax. Two pairs of wings present on meso- and meta-thorax segment respectively. The forewings are brown and orange in color with a series of white spots in a black apical border. The hind wings are shorter than forewings and have a narrow dark border with white spots. There are also some black spots on the wings. A special feature found on their wings is a powdery structure known as Scales. Wings are membranous in structure.

Abdomen -Plain tiger butterflies (*Danaus chrysippus*) have a long abdomen as a last body segment. Their life cycle is completed through the metamorphosis process. The life cycle of plain tiger butterflies (*Danaus chrysippus*) has four important stages. Their male and female mate near the host plant and then the female lays eggs on the host plant.

Egg- This is the first stage of the life cycle. After mating with the male butterfly, the female lays eggs on the leaves of host plants, such as milkweeds.

Larva- This is second very important stage of development which is a very important stage. The larvae emerge from eggs and start feed on the leaves of host plant. Their larva is known as Caterpillar. Larva is also called as “Eating Machine” due to their fast eating nature. In this stage they consume large amount of food for next stage.

Pupa - The caterpillar later transform into the next stage, the pupa. Pupa usually attached to the leaf or branches of a host plant.

Adult- Adults emerges from the pupa after 2-4 weeks and live for 2-4 weeks. They show a variety of interesting behavior in their life cycle such as flight, communication, mating, feeding etc.

In this research, researchers studied the feeding behavior of plain tiger butterflies. They also studied their food very closely and eating habits in their larval and adults stages.

Review of Literature:

The work already done is studied in following criteria:

A study on the life history of Plain tiger *Danaus chrysippus linnaeus* (Lepidoptera: Nymphalidae) in west Bengal was done by Dalui *et al.*, (2022). In this study, the Authors observed that adult butterflies and their larvae feed on different species of milkweed plants.

A detailed account of observation on feeding by adults of the Plain tiger, *Danaus chrysippus* (Lepidoptera: Nymphalidae) in Bangkok, Thailand, with a review of some literature dealing with flower visitation by the species has been provided by Hawkeswood and Sommung (20018). The authors observed in this study that the adult butterfly feeds on nectar and other parts of plants.

A study on feeding behavior of Neotropical butterflies Lepidoptera, (Papilionoidea) has been provided by Krenn (2008). In this study, the author observed that adult butterfly feed on tree sap, fruits, nectar etc.

Studies on threats status and food habits of butterflies (Lepidoptera) of Shimla Water Catchment Wildlife Sanctuary, Himachal Pradesh, (India) was done by Kumar & *et al.*, (2023). The authors provide details about food plant resources of butterflies in this study.

A study on Nectar resource use by butterflies in Gir Wildlife Sanctuary, Sasan, Gujarat was done by Sharma & Sharma (2013). The authors provide details about nectar and butterfly-flowers interaction in this study.

Aims of the Study:

1. To investigate the feeding behavior of Plain Tiger butterflies in Taranagar region.
2. To know about the foods of Plain Tiger butterflies in Taranagar region.
3. To enhance the knowledge about Plain Tiger butterflies.

Study area: Taranagar is situated in the western part of India in Rajasthan. Rajasthan is more precisely famous for its deserted area and hot climatic condition. When we talk about Taranagar, it is situated in the North-Eastern part of Rajasthan in Churu district. It has less vegetation as most of the vegetation rich areas are near the Aravalli mountain range in the state, therefore it is included as a short part of India's famous Thar desert. From the climatic point of view, Taranagar has a semi-humid, hot and dry climate most of the time throughout the year and on the other hand, during the time of winter season we can also experience a pretty cold climate when temperature also touches 0°C sometimes, monsoon come across Taranagar during the months of July and August and continues to September and October.

Most of the people are dependent on farming. There are varieties of crops cultivated. Bajra and pulses (Moong, Moth etc.) are main Kharif crops and Gram, Wheat, Mustard and Groundnut etc. are some main Rabi crops. People also cultivate watermelon, muskmelon and other cucumins family.

Materials & Methods: Binocular, camera, hand lens, mobile phone, papers, boxes, etc. materials were used by researchers to observe the feeding mechanism of plain tiger butterfly. Researchers used mainly direct observation method and photography method for the study. This observation was done by field study in different area of Taranagar.

Result and Discussion: The feeding behavior of the larvae and adults of the plain tiger butterflies (*Danaus chrysippus*) was observed by the researchers as follows:

Feeding behavior of Larva-Their larvae contain biting and chewing types of mouth parts. Generally mouth parts found in insects are dependent upon their feeding behavior. Larva emerges from eggs known as caterpillar start to feeding just after emergence and it continuously feeds upon leaf and dead organic matter of host plant.

Host plants for caterpillar of plain tiger butterflies are *Calotropis*, *Pergularia daemia* and others milkweeds plants.

Feeding behavior of Adult- The adult of plain tiger (*Danaus chrysippus*) carries siphoning types of mouth parts in which a coiled tube is found that is refers to as Proboscis. This is also known as tongue. From the proboscis butterfly sucks the sap of flowering plants and flower. In the resting stage its tongue is coiled like a wound. Rather than proboscis butterfly also take food from its feet. The food consume from legs is known as nectar. Plain tiger butterfly (*Danaus chrysippus*) piercing its proboscis into flower and suck fluid or sap from flower and also uptakes floral nectar. The adult butterfly feeds on many flowering plants such as *Marigold*, *Catharanthus roseus*, and *Hibiscus* flowers. Caterpillars consume the poison of milkweeds plants. From larvae it transfers the pupa and adult respectively. The head of adult is totally depended upon feeding behavior or capacity of caterpillar.

Like adult larva do not have any coiled structure. As the larva and adult are different to seen therefore the feeding behavior or feeding capacity is different in both of the stages respectively. Larvae bites and chew the leaf of plants whereas adult feed or drink only sap or juice of flowers. Larva and adult of plain tiger is mostly found on vascular plants that's contains conducting tissue which help in transportation of food, minerals and water. These food substances are consumed by larva by biting and adult by sucking through proboscis.

Conclusion: This research work provides specific information about the feeding behavior of plain tiger butterflies (*Danaus chrysippus*) found in the extreme climate of Taranagar area of Churu district of Rajasthan. Despite the extreme environmental conditions, this species is found here and complete its life cycle successfully.

The authors were observed a lot of variations in the feeding behavior of larvae and adults of plain tiger butterflies in this study. Their larvae have biting and chewing type of mouth parts with the help of which these larvae consume the leaves of the host plants as food. Their adults have siphoning type of mouth parts in which a special structure called proboscis is present with the help of which they suck the sap from the flowers of the plants. They also consume the nectar of the flowers as food.

Hence, in this research work, it was observed that plain tiger butterflies directly depend on leaves, flowers, sap of plants for food.

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