

# Investigation on Papaya Feeding Butterflies (Nymphalidae) at Dhelsara Village, Teshil Sitapur, District Surguja, Chhattisgarh, India

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**Abstract:** Research on Fruit-feeding butterfly fauna was carried out in Dhelsara Village, Sitapur Teshil, District Surguja, Chhattisgarh. A total of 4 species of Nymphalidae were observed feeding on Papaya fruit on tree as well as fallen fruits on ground. These were most commonly seen sipping in through their long unfurl proboscis, on Ripped Papaya. Butterfly conservation can be done by planting Papaya trees in home gardens; this will help in maintaining the number of existing butterfly population, especially those feeding on Papaya fruits constantly for energy gain. Movements of butterflies while feeding on Papaya were still, therefore, the identification was very easy to do on field itself. A peculiar characteristic noticed was that while feeding, it sits on the fruit and flaps its wing up and down as a queen of the fruit and makes sure that there is a slight disturbance while feeding.

**Keywords:** Fruit-feeding, Dhelsara, Surguja, Chhattisgarh, Nymphalidae, Papaya, Conservation

## 1. Introduction

Butterflies, especially Nymphalids live not only on nectars but well ripped papaya to feed on. Butterflies are attracted to these juicy fruits to obtain necessary substance like carbohydrates, minerals and salts. Besides papaya; watermelon, orange, lemon, strawberry and other juicy fruits have liquid substance, which is readily digested and giving energy to butterflies. Most of these Nymphalids were noticed around agricultural and home lands flying close to the ground. To increase butterfly population, there is a papaya plantation in Dhelsara Village. Butterflies belong to the family Lepidoptera and are found at the specific host plants and at suitable habitats (Fermon H et al., 2000). Fruit-feeding butterflies are the most precise bio indicators of any habitation due to easy trapping and conveniently stratification (Molleman F, et al., 2006). Depending on food availability, butterflies are found at different sources, specially the butterflies of Nymphalidae which are robust size, are seen feeding on Papaya fruits in the home gardens. Some butterflies are noticed flying high above the tall canopy just because of accessibility of nutrition sources (De Vries PJ et al., 1997). Butterflies give good information on plant pollination, habitat suitability, decomposition, nutrient cycling, seed predation, parasitism, herbivory and environmental prediction. Enormous benefits and information have been transformed by butterflies to us but till now, no serious research on fruit feeding butterflies been undertaken in Dhelsara Village, Sitapur Teshil. The aims of this study is to determine the stratification of fruit feeding butterflies, exclusively Nymphalidae at Dhelsara Village and bring awareness to the people about benefits of butterflies and start conserving it by meticulous home gardening at first hand. The virtue of fruit-feeding behavior of Nymphalids may help in to study well stratified groups of butterflies because they are easily captured. This study will provide a baseline for young scientists to care for these natural live flowers (butterflies) and create beautiful gardens for them to bring in abundance of growth to the society at large.

## 2. Materials and Methods

Butterfly watching and recording was done every week for 4 months at Dhelsara Village, Sitapur. Butterfly collection was strictly forbidden but observation was done followed by taking photographs with the help of Cannon 1200D with 55-250mm zoom lenses. Feeding and sitting behavior was keenly observed during the study period. Identification was followed Evans (1932), Wynter-Blyth (1957) and Kunte (1997).

## 3. Survey Site

Study on fruit-feeding butterflies were done from January 2015- April 2015 at Dhelsara village, Teshil Sitapur, Elevation is 619 meters (ASL), it is located 58 KM towards South from District headquarters Ambikapur and it is 2 KM away from Sitapur Town. Dhelsara village is situated at the river Mand which flows from Manpat (Simla of Chhattisgarh) which is a hilly area and tourist place. Latitude 26.05N. and longitude 74.04 E. During summer the highest temperature is 45 °C and in winter the lowest temperature is 5 °C. According to 2011 census, the total geographical area of village is 559.94 hectares.

## 4. Result

The study shows that fruit-feeding Nymphalids obtain energy from papaya juice. Digested juice is also used as pheromones to attract female butterflies where they successfully mate and bring out their offspring abundantly. During the study, 4 species of Nymphalids namely- *Melanitis leda*, *Charaxes solon*, *Ariadne merione* and *Euthalia aconthea*, were seen constantly feeding on Papaya fruit in home garden of Dhelsara Village. While feeding together sometimes the butterflies do not realize their straws come in contact with other butterflies next to it. Butterflies congregate at the feeding sites during the sunny day between 10.00 a.m. to 13.00 p.m. This time is said to be an optimum for Nymphalids to get nutrients from papaya in the home

garden of Dhelsara Village. It is also observed that males are more in numbers than females at feeding sites. These butterflies were seen feeding along with ants and this shows the mutualistic behavior between butterflies and ants. Papaya fruit juice nourishes Nymphalids from the start to until it dries away. Papaya has not only luscious taste but also full of vitamin c which provides butterflies to be active all throughout their lives.

## 5. Discussion

Study on fruit-feeding Nymphalids shows fruit juice, moisture and flower nectars play an important role in energy gain. Similar studies have been done by Allen M. Young (1975) feeding on rotting, decaying and crushed Banana in dry season (January). Feeding behavior of Nymphalids lack an aggressive interaction among them when more than 2 are present at the feeding spot (Allen M. Young, 1975). It was noticed that when butterflies of the same family feed together, sometimes their proboscises touch one another but they do not get disturbed. Allen Young (1975) also have done related studies that two adults of the same age and sex feed on so close to one another that their proboscises actually come into contact. If the butterflies, while feeding, suddenly interrupted all of the butterflies take to the wing and flutter in circle over the feeding site and within a few minutes, settle on nearby understory vegetation and forest floor after that they slowly one by one gather to the feeding fruits once again. The affinity of the Nymphalids to fruit juice provides better understanding about its biological life. Fruit juice and other factors have an impact on variation of life span of butterflies. Nectar feeding butterflies are known for continuous flying in wider zone of geography from flower to flower to get pollens. Whereas fruit feeders are shade lovers and slow fliers, in fact they are more prone to predators than rapid fliers due to restricted geographical range. This study coincides with the findings of Malabika Kakati Saikia et al., (2009) and states that butterflies with greater light preference had significantly wider geographical distribution, whereas, the species with shade lovers had considerably narrower geographical dispersals.

Fig:1



*Melanitisleda*, *Charaxes solon*, *Ariadne merione* and *Euthaliaaconthea* feeding on Papaya fruit at Dhelsara Village

## 6. Conclusion

The tropical juicy fruit (Papaya) attracts butterflies in the garden for nutrient gain substances which helps Nymphalids to sustain energy for flight and successful reproduction. During the study four species of Nymphalids namely: *Melanitisleda*, *Charaxes solon*, *Ariadne merione* and *Euthaliaaconthea* feeding on Papaya fruits were identified at Dhelsara village. To increase butterfly population, there is a papaya plantation in Dhelsara Village. Feeding upon papaya juice exceedingly helps Nymphalides in energy gain and on the other hand flowering papaya gets pollinated and yielding more fruits. Most of these Nymphalids were noticed around agricultural and home gardens flying close to the ground visiting other tumbled fruits in the gardens too.

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