

A Primary Report On Diversity Of Butterflies Of Nethikadu, Vathalmalai (Hills), Dharmapuri District, Tamilnadu

Rathika R¹, Pugazhendy K², Srinivasan K³ and Singaravelan J⁴

^{1,3 &4}Department of Zoology, Government Arts College, Dharmapuri, Tamilnadu, India.

³Department of Zoology, University of Madras, Guindy Campus, Chennai, Tamilnadu, India

Abstract

The present study focused about diversity of butterflies in Nethikadu (Vathalmalai Hills) in Dharmapuri District (Tamilnadu). Totally 25 different butterfly species were collected during the month of January to February 2018 and species were identified. Based to the conducted survey the diversity of butterfly fauna belongs to 1 Order, 4 Families, 25 Genera. Out of 25 species the following species were widely distributed along with the area were Nymphalidae (*Ariadne ariadne*, *Ariadne merione*, *Cercyonis*, *Danaus genutia*, *Euploea Sylvester*, *Hypolimonas misippus*, *Junonia lemonias*, *Neptis hylas*, *Parantica aplea*, *Phalanta phalantha*, *Speckled wood*, *Tirumala septen trionis*, *Acraea terpsicore*), Pieridae (*Eurema blanda*, *Pareronia*, *Pieris canidia*, *Pieris rapae*, *Eurema nicippe*), Papilionidae (*Papilio polytes*, *Pachliopta hector*, *Papilio crino*, *Papilio demoleus*, *Papilio polytes niko barus*, Common mormone), Lycaenidae (*Rapala varuna*).

Keyword: Diversity, Butterfly, Order, Families, Genera

Introduction

In Ecology and Conservation studies, Butterflies are treated as a significant model (Mukherjee *et al.*, 2015). Biological diversity represented the varied living organisms from all sources as well as terrestrial, marine, and other aquatic ecosystem. Biological diversity study encompasses both the essential and anthropocentric values associated with in terms of the ecosystem services. Lepidoptera is the second largest order which comprises moths, butterflies and skippers (Doerk *et al.*, 2014). There are about 2,00,000 species of Lepidoptera out of which 15,000 species were butterflies belonging to the class Insecta, there were four families such as Papilionidae, Nymphalidae, Lycaenidae and Pieridae (Pathania *et al.*, 2009). Butterflies are generally very colorful winged insect with an overlay of tiny scales which are arranged much as the tiles of a roof with each scale having a single colour pattern.

Butterflies were considered as one of the best taxonomically studied group of insects. The Indian subcontinent manner a diverse terrain, climate and vegetation host about 1,504 species of butterflies whereas, peninsular India and Western Ghats hosts 351 and 334 species respectively. More than 28,000 species of butterflies were reported among worldwide whereas 80% of them found in tropical regions. In central India, the butterfly diversity reported as 177 species. The study of butterflies was very vital because these insects were indicators of environmental and ecological changes (Maharana *et al.*, 2014). For butterflies diversity studies, ecosystem and host plants morphology and their interaction with butterfly fauna were the important criterions (Nair *et al.*, 2014)..

Materials and Methods**Study area description**

Vathalmalai is a small village covers nearly 25km located at 3600 ft height (MSL) in Dharmapuri district (Tamilnadu, India) with local flora and fauna of Vital have didapper due to severe and thrive numerous protected area nearby include Shervarayan Hills (Yarcaud) which were known for several threatened and endemic species including Nilgiri tahr, the grizzled giant squirrel, the Nilgiri Wood-pigeon, the Gaur, wild pig, the Nilgari langur, the Sambar and the Neelakurinji (blossoms only once in twelve years). This village was 25 km away from Dharmapuri Town 17 km to reach underside of the hills and 8 km to hills top. Average and warm conditions (max 38°C in summer) with normal temperature from 26-34°C and with 9-12% humidity with 10km/hr wind flow were observed. Vathalmalai population was 1733.

Sampling of Butterflies

Sampling of Butterfly was carried out from January and February 2018 in and around area Nethikaadu, Vathalmalai Hills, Dharmapuri District (Tamilnadu, India). 10 days during the period of 8.00-16.00hrs because butterflies were found mostly active mid day due to their trust of sun light directly to regulate their body temperature (Royeret *al.*, 1998) identified sampling is limited to relatively calm condition and times when air temperature exceeds 13°C sunny weather or 17°C cloudy weather.

Specific collection times were follows in January 1st - 15th and February 6th -13th, 20th in the early morning time and evening time respectively. The locations of collection in this study were the prairie including Mid-Prairie and the edge of the prairie and forest area including the edge of the forest and mid-forest.

The specimens of butterflies were collected with the help of insect collection net (Figure 1) (Circumference 93cm, handle length 87cm, bag depth 77cm) by sweeping method during day time. This methods were quite suitable for collection of butterflies over the leaves and flowers (Gupta *et al.*, 2014).

Figure 1. Aerial sample collecting net



Preservation of butterflies

Inside the killing bottle, Ethyl acetate soaked cotton was kept and covered by one or two blotting paper, to avoid the direct contact of sample with chemical which may affect the wing colour. Utmost care insects were put inside the bottle or taken out to prevent any morphological damage. The specimens collected from various localities were pinned with different sizes entomological pins (38mm×40mm, 38mm×55mm) and stretching in spreading board boxes (40cm×30cm×10cm) or on the stretched specimens were stored in well fumigated (naphthalene balls) wooden boxes.

All the specimens carrying information such as locality, date of collection, altitude and name of the collector etc., the taxonomic procedure involves on examination of various morphological characters such as head, labial palps, legs, wing shape, wing maculation and wing venation. Photographs of the adults of different species were taken with the help of digital camera (Nikon D800).

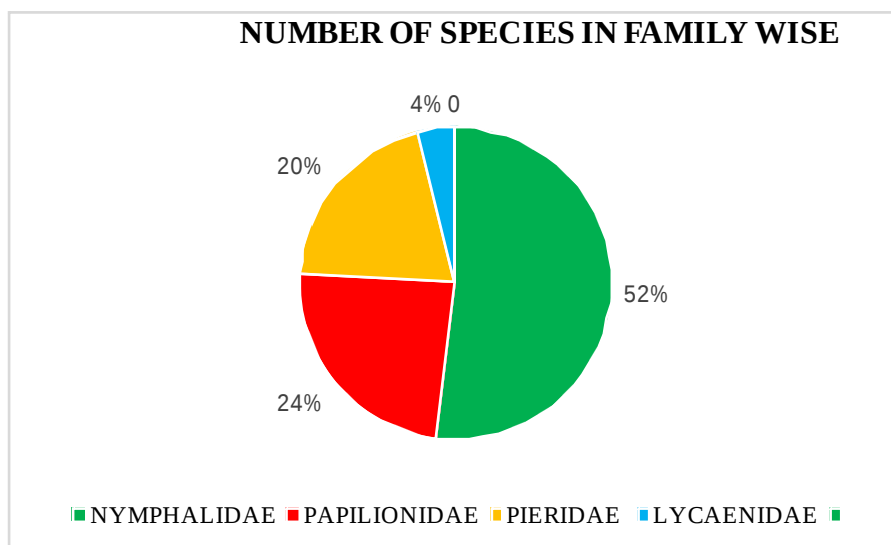
Results and Discussion

Present biodiversity studies revealed the presence of 25 species of butterflies belonging to four different families were observed in and around Nethikadu, Vathalmalai hills (Dharmapuri District) (Table 1, Figure 2) based on fraction value of butterfly occurrence in the sites. The maximum number of butterfly species, were recorded under family Nymphalidae (52%) followed Papilionidae (24%), Pieridae (20%), Lycaenidae (4%). All the above survey were collected during the period of January 2018 to February 2018.

Table 1. Different Family and their respective butterflies species binomial names

S.NO	Family	Scientific name
1	Nymphalidae	<i>Ariadne Ariadne</i>
		<i>Ariadne merione</i>
		<i>Cercyonis</i>
		<i>Danaus genutia</i>
		<i>Euploea Sylvester</i>
		<i>Hypolimnas misippus</i>
		<i>Junonia lemonias</i>
		<i>Neptis hylas</i>
		<i>Parantica aglea</i>
		<i>Phalanta phalantha</i>
		Speckled wood
		<i>Tirumala septentrionis</i>
		<i>Acraea terpsicore</i>
		<i>Eurema blanda</i>
2	Pieridae	<i>Parerona</i>
		<i>Pieris canidia</i>
		<i>Pieris rapae</i>
		<i>Eurema nicippe</i>
		<i>Papilio polytes</i>
		<i>Pachliopta hector</i>
3	Papilionidae	<i>Papilio crino</i>
		<i>Papilio demoleus</i>
		<i>Papilio polytes nikobarus</i>
		<i>Common Momon</i>
		<i>Rapala varuna</i>
4	Lycaenidae	

Figure 2. Number of butterfly species in family wise



The identified 25 species belonged to 1 Order, 4 Families, 25 Genera and 25 Species. In these 25 butterfly species Family Nymphalidae, Papilionidae, Pieridae, Lycaenidae was found the richest one over all the recorded families which comprised 25 species. From the literature study, it can be concluded that there was no previous record or data on butterfly fauna in this region and whole District Dharmapuri as well.

In addition to these, a variety of threats from human recreational activities, trampling, run-off from roads, litter deposition and weeds are common factors which affect butterfly populations. Although we cannot completely nullify the ill effects of urbanization and development, we can at least try to reduce them by planting endemic trees and plants supporting the local wildlife. In India, growing human population, natural greeneries were being clear-felled giving way to urbanization, pollution and overgrazing. Loss of prime habitat is the major threat to all wildlife including butterflies. This will make sure that at least the common species will not go on to the verge of extinction. Landscaping and protection of forest area and plantation are carefully planned without disturbing the biodiversity.

Mukherjee *et al.* (2015) reported a study conducted and carried out on insect diversity at Pichavaram mangrove from December 1993 to March 1994 which reported a total of 101 species of insects belonging to nine orders and 42 families where 18 insects up to species level, five insects up to genus level, and four insects up to order level in the same area. In their study maximum numbers (27) of insects were recorded from vegetation. Royer *et al.* (1998) reported 9 species from Parangipettai waters and Lepidoptera order (Coleoptera, Diptera, Heteroptera, Hemiptera and Orthopoda) was found to be more, when compared to

other species, as reported in the present study. Also 276 species of insects recorded in the Mangals of Andaman and Nicobar islands of India.

Conclusion

The survey was carried out between January and February 2018 ad 1order, 4 families, 25 species and 25 Genera living in the study area. Significance of studying the biodiversity of butterfly was essential because of their impact on the functioning of ecosystems and our livelihood with the pressing needs. Diversity of butterfly study results may increase awareness by providing a rich ground for butterfly conservation as well as for research. For our next age group we can save wonderful beautiful creature by creating surrounding garden & forest.

Acknowledgement

The authors wish to thank the authorities of Department of Zoology, Government Arts College, Dharmapuri, Tamilnadu, India for providing the facilities to carry out the study.

References

- Doerk, G. S., Cheng, J. Y., Singh, G., Rettner, C. T., Pitera, J. W., Balakrishnan, S., . . . Sanders, D. P. (2014). Enabling complex nanoscale pattern customization using directed self-assembly. *Nature communications*, 5, 5805.
- Gupta, V. K., Pathania, D., Agarwal, S., & Sharma, S. (2014). Amputation of congo red dye from waste water using microwave induced grafted *Luffa cylindrica* cellulosic fiber. *Carbohydrate Polymers*, 111, 556-566.
- Maharana, P. K., Jha, R., & Palei, S. (2014). Sensitivity enhancement by air mediated graphene multilayer based surface plasmon resonance biosensor for near infrared. *Sensors and Actuators B: Chemical*, 190, 494-501.
- Mukherjee, S., Banerjee, S., Saha, G. K., Basu, P., & Aditya, G. (2015). Butterfly diversity in Kolkata, India: An appraisal for conservation management. *Journal of Asia-Pacific Biodiversity*, 8(3), 210-221.
- Nair, A. V., Mitra, P., & Bandyopadhyay, S. (2014). Studies on the diversity and abundance of butterfly (Lepidoptera: Rhopalocera) fauna in and around Sarojini Naidu college campus, Kolkata, West Bengal, India. *Journal of Entomology and Zoology Studies*, 2(4), 129-134.
- Pathania, D., Millard, M., & Neamati, N. (2009). Opportunities in discovery and delivery of anticancer drugs targeting mitochondria and cancer cell metabolism. *Advanced drug delivery reviews*, 61(14), 1250-1275.

Royer, R. A., Austin, J. E., & Newton, W. E. (1998). Checklist and “Pollard walk” butterfly survey methods on public lands. *The American midland naturalist*, 140(2), 358-372.