



Diversity and species richness of butterflies in the selected areas of Sirumalai Hills, Dindigul district, Tamilnadu

Benazir Begum S¹, Melba Priyadharshini², Dinesh Raja J^{3*}

¹ Department of Zoology, V.O. Chidambaram College, Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

² Department of Biotechnology, Bishop Heber College, Affiliated to Bharathidasan University, Tiruchirappalli, Tamil Nadu, India

³ Associate Professor, Department of Zoology, Bishop Heber College, Affiliated to Bharathidasan University, Tiruchirappalli, Tamil Nadu, India

Abstract

The current study aimed to examine the species diversity of butterflies in Sirumalai Hills, Dindigul city, Tamil Nadu from three different areas of grassland, dry-deciduous forest and scrub forest. There were a total of 36 butterfly species identified, including those from the family of *Nymphalidae*, *Pieridae*, *Papilionidae* and *Danidae* families. The higher numerical representations of the families are found to be *Nymphalidae* (26%), *Pieridae* (21%), *Papilionidae* (21%), and *Danidae* (17%). *Lycaenidae* (8%), *Hesperidae* (12%), and *Satyridae* (1%) families were found to be fewest species. The study demonstrated a close association between the Sirumalai Hills' flora and butterfly biodiversity.

Keywords: Butterfly, nymphalidae, Papilionidae, Pieridae, Biodiversity

Introduction

Insects are the dominant group of organisms on earth in terms of both taxonomic diversity and ecological function. Insects represent the immense majority species in almost all types of ecosystems. Among insects, butterflies have proved to be invaluable flagship species for conservation (Kurve *et al.*, 2013) [7].

Sirumalai is a region of the Western Ghats that lies between latitudes 10°.07' and 10°.19' north and longitudes 77°.55' and 78°.12' east. There are four different types of vegetation found in Sirumalai: semi-evergreen forests, scrub forests, dry-deciduous forests, and savanna grasslands. The weather is warm in the summer and cold during the rainy and winter months. The typical annual temperature is between 18 and 28 degrees Celsius, with an average precipitation of 200 to 800 millimeters. Given the lack of sufficient information on taxonomic composition and diversity of butterflies, the present study aimed to determine the biodiversity of the Lepidopteron fauna in the chosen pockets of Sirumalai Hills, Dindigul district, Tamilnadu.

Materials and methodology

Study area

The biodiversity of butterflies was studied in Sirumalai Hills and three regions indicating grassland, dry-deciduous forest, and scrub forest were chosen for the present study. The range of altitudes covered was 0 to 750 meters. For seven months (from July to February 2023), the chosen places were visited once a week between 8:00 and 13:00 hours, with butterflies being sighted. Adult butterflies were photographed without disturbing their activity from various ecosystems. The photographic specimens took in to the laboratory and species identifications can be done by using

BNHS Field guide. The species are identified based on the Colour of the wings, Body pattern, antenna arrangements.

Results and discussion

Standard identification keys from reference books were used to identify the specimens (Guptha *et al.*, 2012) [4]. Throughout the research period, a total of 36 species of butterflies from 7 families were gathered in the designated regions (Table 1). There are nine species in the *Nymphalidae* family, two in *Hesperidae*, one in *Satyridae*, two in *Lycaenidae*, nine in *Pieridae*, seven in *Papilionidae* family, and six in *Danidae*. The most dominant members of the seven families were found to be the *Nymphalidae* (26%), followed by the *Pieridae* (21%), *Papilionidae* (21%), and *Danidae* (17%). The *Lycaenidae* (8%), *Hesperidae* (12%), and *Satyridae* (1%) families had the fewest species found in this habitat

Table 1: List of the families and percentage of butterflies collected in the selected areas

| Families | Percentage |
|---------------------|------------|
| <i>Nymphalidae</i> | 26 |
| <i>Hesperidae</i> | 12 |
| <i>Satyridae</i> | 1 |
| <i>Lycaenidae</i> | 8 |
| <i>Pieridae</i> | 25 |
| <i>Papilionidae</i> | 21 |
| <i>Danidae</i> | 17 |

Butterflies of the *Nymphalidae* family are big, vividly colored with tails attached to their rear wings. They enjoy sunbathing and are typically found in arid areas. *Pieridae* family are tiny, white, or have yellow to orange hues. According to Kunte (2000) [6], the *Pieridae* family can be

found in a wide range of environments, from semi-desert areas to arid grasslands. Skippers, a common name for Hesperidae butterflies, are thought to be a good indicator of the habitat's uniqueness and diversity (Chakravarthy *et al.*, 1997) [3]. They visit flowers in moist areas and grasslands. The Satyridae family comprises medium-sized, dark butterflies that like shade. They live on grassland and eat grass, bamboo, and palm trees. The majority of them fly in a low altitude (Gunathilagaraj *et al.*, 1998) [5]. Large, vividly colored butterflies with clubbed forelegs belong to the *Danidae* family. Large, black or brown butterflies with tail-like elongation on the hind wings belong to the *Papilionidae* family. Known by most as swallow-tail butterflies, they are frequently observed on plains, hills, and grasslands. The moderately sized butterflies in the *Lycanidae* family are primarily blue in color, with a pattern of dots on the wings and tail that resemble little prolongations on the hind wings. The color, scent, and form of a flower all influence how frequently butterflies visit it. The *Papilionidae* family of plants frequently visits citrus species. The colors yellow, orange, and red are sensitive to nymphalids.

The *Satyridae*, *Hesperidae* and *Lycanidae* family represented only few number of species in Sirumalai hills. According to Subba Reddi *et al.* (2003) [11], rainfall conditions have a significant impact on butterfly numbers and species distribution.

Table 2: List of the Butterflies Identified Species wise

| Family: <i>Nymphalidae</i> | | | |
|----------------------------|----------------------------------|-------------------|--|
| S. No | Species of the butterfly | Common name | Plants Visited |
| 1. | <i>Venigaindia phole</i> | Indian redadmiral | <i>Ougeniadalber gloides</i> (Leguminaceae, Passion flowers (Pacifloraeaceae, <i>Tridax procumbens</i> (Astraceae), <i>Bichhu sp.</i> (Poaceae) |
| 2. | <i>Hypolimnas bolinamisippus</i> | Danaideggfly | |
| 3. | <i>Junonia lemonias</i> | Lemonpansy | |
| 4. | <i>Junonia hierta</i> | Lemonpansy | |
| 5. | <i>Phalanta phalantas</i> | Common Leopard | |
| 6. | <i>Acraeaterpsicore</i> | Tawnycoaster | |
| 7. | <i>Junonia orithya</i> | Blue pansy | |
| 8. | <i>Precis hierta</i> | Yellowpansy | |
| 9. | <i>Hypolimnas bolinajacantha</i> | Great eggfly | |

Table 3: List of the Butterflies Identified Species wise

| Family: <i>Hesperidae</i> | | | |
|---------------------------|--------------------------|---------------------|----------------------------------|
| S. No | Species of the butterfly | Common name | Plants Visited |
| 1. | <i>Pelopidas mathias</i> | Small Branded Swift | <i>Leucas aspera</i> (Lamiaceae) |
| 2. | <i>Delicot aaugias</i> | Sorghumhiber | |

| Family: <i>Satyridae</i> | | | |
|--------------------------|----------------------------|----------------------|--|
| S. No | Species of the butterfly | Common name | Plants Visited |
| 1. | <i>Malanitis leda leda</i> | Common evening brown | <i>Leucas aspera</i> (Lamiaceae), <i>Albezia lebbeck</i> (Leguminosae.) |

Table 4: List of the Butterflies Identified Species wise

| Family: <i>Lycanidae</i> | | | |
|--------------------------|----------------------------------|--------------------|--|
| S. No | Species of the butterfly | Common name | Plants Visited |
| 1. | <i>Caspalius rosimon rosimon</i> | Common pierrot | <i>Tridax procumbens</i> (Asteraceae) |
| 2. | <i>Spindasis voliganus</i> | Common silver line | |

Table 5: List of the Butterflies Identified Species wise

| Family: <i>Pieridae</i> | | | |
|-------------------------|----------------------------|---------------------|--|
| S. No | Species of the butterfly | Common name | Plants Visited |
| 1. | <i>Catopsilia pomana</i> | Lemon emigrant | <i>Leucas aspera</i> <i>Ocimum santum</i> (Lamiaceae), <i>Capers grass</i> (Poaceae), <i>Tridax procumbens</i> (Astraceae), <i>Lantana camara</i> (Verbinaceae). |
| 2. | <i>Colias nyale</i> | Pale clouded yellow | |
| 3. | <i>Cepora nerissa</i> | Common gull | |
| 4. | <i>Coloties eucharis</i> | Crimson tip | |
| 5. | <i>Catopsilia florella</i> | African emigrant | |
| 6. | <i>Catopsilia pomana</i> | Lemon emigrant | |
| 7. | <i>Ixias Marianne</i> | Whiteorange tip | |
| 8. | <i>Delias eucharis</i> | Common jezebel | |
| 9. | <i>Anaphaeis aurota</i> | Pioneer | |

Table 6: List of the Butterflies Identified Species wise

| Family: <i>Papilionidae</i> | | | |
|-----------------------------|-----------------------------------|----------------|--|
| S. No | Species of the butterfly | Common name | Plants Visited |
| 1. | <i>Papilio crino</i> | Banded peacock | <i>Leucas aspera</i> (Lamiaceae), <i>Aristolochia indica</i> (Euphorbiaceae), <i>Citrus species</i> (Rutaceae), <i>Zizyphus mauritina</i> (Rhamnaceae), <i>Citrulus colosynthus</i> (Cucurbitaceae) etc. |
| 2. | <i>Papilio polytesromulus</i> | Common Mormon | |
| 3. | <i>Papilio polymenstor</i> | Blue Mormon | |
| 4. | <i>Papilio demoleousdemoleous</i> | Lime butterfly | |
| 5. | <i>Pachioptaaristolochiae</i> | Common rose | |
| 6. | <i>Pachiopta hector</i> | Crimson rose | |
| 7. | <i>Papilio polytespolytes</i> | Common Mormon | |

Table 7: List of the Butterflies Identified Species wise

| Family: <i>Danidae</i> | | | |
|------------------------|----------------------------------|--------------------|--|
| S. No | Species of the butterfly | Common name | Plants Visited |
| 1. | <i>Danaus nilligiriensis</i> | Glassy tiger | <i>Calotropis gigantea</i> and <i>C.procera</i> (Asclepiadaceae), <i>Tridax procumbens</i> (Asteraceae), <i>Ceropegia acuminata</i> , <i>C.intermedica</i> (Asclepiadaceae). |
| 2. | <i>Danaus genutiagenutia</i> | Striped tiger | |
| 3. | <i>Danaus chrysipuschrysipus</i> | Plain tiger | |
| 4. | <i>Danaus limniaceae</i> | Blue tiger | |
| 5. | <i>Danaus plexippus</i> | Milkweed butterfly | |
| 6. | <i>Euploea core core</i> | Common crow | |

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