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International Journal of Environmental Sciences
(ISSN: 2277-1948) (Scientific Journal Impact Factor: 6.043)

UGC Approved-A Peer Reviewed Quarterly Journal



Full Length Research Paper

Diversity of Butterflies of the Sahyadri College Campus, Shivamogga District, Karnataka, India

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ARTICLE DETAILS

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Key words:

Butterfly diversity,
Nymphalidae,
Shivamogga, Sahyadri
College Campus.

ABSTRACT

Butterflies are indicators to climate change and environmental degradation. They are important food chain components of birds, reptiles, spiders and predatory insects. They are valuable pollinators in the local environment and help in pollinating more than 50 economically important crops. A study was conducted on the diversity of butterflies of Sahyadri College campus at Shivamogga, Karnataka. Butterflies were sampled from February 2022 to January 2023. Observations were made through Pollard walk method by counting all the butterflies found in 10 meters, beside the observation, visual count method was also adopted during good weather conditions. Butterflies were observed, captured, identified and released immediately at the spot of capture. A total of 32 species of butterflies belonging to 5 families were recorded during the study period. Among the 5 families, Nymphalidae dominated the list with 13 species, Papilionidae with 7 species, Pieridae with 5 species, Lycaenidae with 4 species and Hesperidae with 3 species. It was found that 7 species of butterflies are very common, 18 species are common and 7 species are rare in occurrence in Sahyadri College campus. The present study reports the preliminary information on butterfly species diversity of Sahyadri College campus at Shivamogga, which can be used in monitoring ecosystem health, stability and functioning of the study area. The species richness and diversity of butterflies is higher in the study area

1. Introduction

Butterflies are most tantalizing beautiful creatures among the insect group; they are often regarded as Flagship species (Gowda *et al.*, 2011). Butterflies are lovely and graceful insects provide economic and ecological benefits to the human society. They are valuable pollinators when they move from plant to plant gathering nectar. They are also good indicators of environmental quality as they are sensitive to changes in the environment (Aneesh *et al.*, 2013). They respond to disturbances and changes in the habitat quality and landscape structure variations (Kochar and Williams, 2000). Habitat enrichment has been found to play a vital role in conserving butterfly species and their abundance.

Throughout the world butterflies are seen in large number mainly in tropical belt, which are categorized in to 6 different families (Ehrlich, 2008), however they are not found in Antarctica. India is known for its rich heritage of biological diversity, ranking among the top ten species-rich nations, showing high endemism (Dayananda, 2014). India has more than 1400 species of butterflies, 330 of them in the Western Ghats alone, and of which 37 are endemic (Kunte, 2000). Butterflies are seasonal in their occurrence.

They are common for only a few months and rare or absent in other months. In this paper an attempt is made to study the diversity and status of butterflies in Sahyadri College campus at Shivamogga.

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Received: 01-July-2024; Sent for Review on: 05-July-2024; Draft sent to Author for corrections: 22-July-2024; Accepted on: 27-July-2024

Online Available from 29-July-2024

DOI: [10.13140/RG.2.2.13991.36004](https://doi.org/10.13140/RG.2.2.13991.36004)

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2. Materials and Methods

2.1 Study area

Shivamogga (13° 55' 18" N, 75° 34' 12" E) is heart land of Karnataka, located on the banks of river Tunga. Sahyadri College Campus (13° 55' 2" N, 75° 35' 35" E) is one of the biggest colleges in Shivamogga. The campus has a variety of flowering plants. The campus has a total area of about 79.01 acres.

2.2 Butterfly collection

Butterflies were sampled for a period of twelve months from February 2022 to January 2023. Field observations were made once in a week. The survey was done every Sunday between 10.00 to 16.00 hours on Sahyadri College Campus. Observations were made through Pollard walk method by counting all the butterflies found in 10 meters, beside the observation, visual count method was also adopted (Gupta *et al.*, 2012; Kunte *et al.*, 2012) during good weather conditions. Butterflies were observed, captured, identified and released immediately at the spot of capture. The butterflies which were difficult to identify the field were collected as voucher specimens using a hand net. The dead specimens were kept in butterfly collection box.

2.3 Determination of Abundance

The species were further divided in to 3 categories: Very common (VC), Common(C) and Rare(R) on the basis of their count from the study area. Any species with count less than 10 times placed in rare category, count between 10 and 15 were placed in common category, while species with count more than 20 times were placed in very common category.

2.4 Identification of butterflies

The key characters used for identification were color pattern, wing span and mode of flight. Identifications were carried out by using the literature (Evans, 1932), Photographic guides of Smith (2006), Van dr Poel & Wangchuk (2007) and internet references (www.flutters.org; www.ifoundbutterflies.org).

3. Results and Discussion

A total of 32 species of butterflies belonging to 25 genera and 5 families were recorded (Table 1& Fig. 1). Among the 5 families, Nymphalidae dominated the list with 13 species, Papilionidae with 7 species, Pieridae with 5 species, Lycaenidae with 4 species and Hesperidae with 3 species. It was found that 7 species of butterflies are very common, 18 species are common and 7 species are rare in occurrence in Sahyadri College campus (Fig. 2). Prasanna kumar *et al.* (2013) recorded 84 species of butterflies from tropical habitats of the Eastern Ghats in Andhra Pradesh. Pramod Kumar *et al.* (2007) recorded 57 species of butterflies from the Tiger-Lion safari, Thyavarekoppa, Shivamogga. Raghavendra Gowda *et al.* (2011) reported 54 species of butterflies from Lakkavalli range of Bhadra wildlife Sanctuary, Karnataka. Venkata Raman (2010) reported 70 species of butterflies in Eastern Ghats. Sayeswara (2018) reported 36 species of butterflies from Gandhi park of Shivamogga, Karnataka. Ashwini and Sudha (2024) reported 14 species of butterflies from Shankararao Mohite Mahavidyalay Akluj campus of Malshiras, Tahsil, Solapur district.

A total of 32 species of butterflies belonging to 25 genera and 5 families were recorded. A total of 11 genera 13 species of butterflies were recorded in the family Nymphalidae. The genus *Hypolimnas* and *Junonia* was represented by two species each, while *Acraea*, *Danaus*, *Elymnias*, *Euploea*, *Melanitis*, *Neptis*, *Tirumala*, *Phalantha* and *Ypthima* were represented by a single species each. Papilionidae population represents 3 genera and 7 species. The genus *Papilio* was represented by three species, while *Graphium* and *Pachliopta* were represented by two species each. Pieridae population comprises 4 genera and 5 species of butterflies. The genus *Catopsila* was represented by two species, while *Delias*, *Eurema* and *Anaphaeis* were represented by a single species each. Lycaenidae population comprises 4 genera and 4 species. The genus *Jamides*, *Zizeeria*, *Castalius* and *Alphnaeus* were represented by single species each. Hesperidae was represented by 3 genera and 3 species. The genus *Hesperia*, *Spialia* and *Borbo* were represented by a single species.

Table 1. List of Butterflies of Sahyadri College Campus, Shivamogga

Sl. No.	Name of Butterfly(Scientific name)	Common name	Status
FAMILY - PAPILIONIDAE			
1	<i>Graphium agamemnon</i> L.	Tailed Jay	C
2	<i>Graphium nomius</i> Esper	Spot Swordtail	C
3	<i>Papilio demoleus</i> L.	Common Lime Butterfly	VC
4	<i>Papilio polytes</i> L	Common Mormon	C
5	<i>Papilio polymnestor</i> Cra.	Blue Mormon	R
6	<i>Pachliopta hector</i> L.	Crimson Rose	C
7	<i>Pachliopta aristolochiae</i> Fab.	Common Rose	R
FAMILY - NYMPHALIDAE			
8	<i>Acraea violae</i> Coster	Tawny Coster	C

9	<i>Danaus chrysippus</i> L.	Plain Tiger	C
10	<i>Elymnias hypermnestra</i> L.	Common Palmfly	VC
11	<i>Euploea core</i> Cra.	Common Crow	R
12	<i>Hypolimnas bolina</i> L.	Great Eggfly	R
13	<i>Hypolimnas misipus</i> L.	Danaid Eggfly	C
14	<i>Junonia almana</i> L.	Peacock Pansy	C
15	<i>Junonia hierta</i> Fab.	Yellow Pansy	C
16	<i>Melanitis leda</i> L.	Common Evening Brown	C
17	<i>Neptis hylas</i> L.	Common Sailor	C
18	<i>Tirumala limniace</i> Cra.	Blue Tiger	C
19	<i>Phalantha phalantha</i> Drury	Common Leopard	VC
20	<i>Ypthima baldus</i> Fab.	Common Four Ring	VC
FAMILY - PIERIDAE			
21	<i>Catopsila Pomona</i> Fab	Lemon Emigrant	C
22	<i>Catopsila pyranthe</i> L.	Mottled Emigrant	C
23	<i>Delias eucharis</i> Drury	Common Jezebel	R
24	<i>Eurema blenda</i> L.	Three Spot Grass Yellow	VC
25	<i>Anaphaeis aurota</i> Fab.	Pioneer White	VC
FAMILY - LYCAENIDAE			
26	<i>Jamides bochus</i> Stoll	Dark Cerulean	C
27	<i>Zizeeria karsandra</i> Moore	Dark Grass Blue	VC
28	<i>Castalius rosiman</i> Fab.	Common Pierrot	C
29	<i>Alphnaeus vulcanus</i> Fab.	Common Silverline	R
FAMILY - HESPERIDAE			
30	<i>Hesperia comma</i> L.	Skipper Butterfly	C
31	<i>Spialia Skipper</i> L.	India Skipper	R
32	<i>Borbo cinnara</i> Wallace	Rice Swift	C

C - Common, VC - Very common, R - Rare

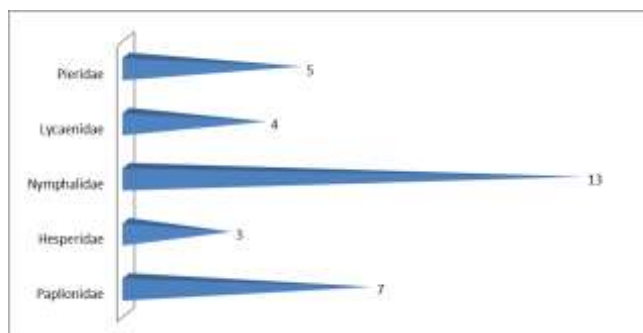


Fig: 1 Graph shows the species composition of families.

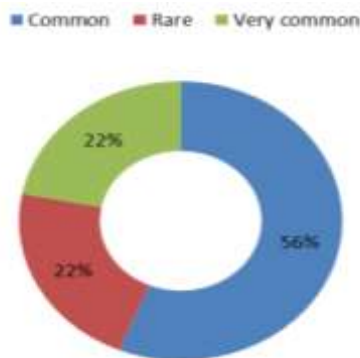


Fig: 2 Graph shows the occurrence of species

4. Conclusion

The present study reports for the first time preliminary information on butterfly species diversity of Sahyadri College campus at Shivamogga, which can be used in monitoring ecosystem health, stability and functioning of the study area

(Mandal, 2016). The species richness and diversity of butterflies is higher in the study area. The growth of natural trees and flowering plants provide a better food. Sources of food for all stage of butterflies form the reason for richness of butterflies. From our observations we conclude that, the butterfly community varied significantly among different habitats. Vegetation type played a major role in diversity patterns of butterfly communities. Butterfly habitat protection should be given the first priority in any conservation programme. Attempts should be made to initiate conservation of butterflies in the National parks and Sanctuaries.

5. Acknowledgement

The authors express their gratitude to Principal, Sahyadri Science College, Shivamogga for facilities and encouragement.

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