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Diversity of butterfly in Sadiya College, campus and its adjacent area of Chapakhowa, Tinsukia, Assam

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Abstract
Butterflies are one of the most fascinating ad diverse groups of Insects, which are very much sensitive to changes or alteration in an ecosystem. They are, therefore regarded as key indicators of an ecosystem's health and also, play a key role in functioning of the same. The present study was carried out in and around the Sadiya College campus, which is situated in a easternmost part of the state of Assam, India in Chapakhowa Town of Sadiya Co-District. In this study, a total of 33 species, representing 5 families and 26 genera were recorded. The family, Nymphalidae was the most dominant one and Papilionidae was the least recorded family. Also, two species recorded in this study were having vulnerable status in IUCN red list.

Keywords: Butterfly Diversity, Sadiya, Nymphalidae, Pollard walk method, Shannon Diversity index.

Introduction

Butterflies are the highly diverse animals and the living jewels in the landscape. Butterflies are easily identified and are the biological indicators of change in habitat quality. Butterflies are considered the flagship species in insect conservation and are valued primarily for their aesthetic qualities. They are also significant ecological indicators [1]. Despite making up only 1.87% of the world's known insect fauna, they are utilized as models in the majority of ecological entomology and habitat conservation research [2]. Change in butterfly diversity and distribution reflect changes of a given area due to land use patterns, changes in the forest structure and other disturbances. They frequently react to disturbances, modifications, and shifts in habitat quality and landscape structure. Because of their strong reliance on plants, they may suffer greatly from changes in the environment and in the structure of the forest [3]. Butterflies are among the insects that are essential to healthy biological communities since they are herbivores, pollinators, seed dispersers, predators, and prey [4]. They are an important component of the food chain since they are prey to birds, bats, and other insectivorous animals.

About 962 species and subspecies of butterflies from five taxonomic groups in the Assam region are well documented scientifically by W.H. Evans [5].The first person to work on butterflies in the state was Doubleday (1845) [6], who covered the regions of Sadiya, Jorhat, and Cachar in northern Assam. Moore (1857) [7] then worked in Abor Hills and Mishimi Hills, which included Sadiya. Talbot (1946) [8] reported that out of about 15,000 species of butterflies found in India, 962 species from the five families namely Papilionidae, Nymphalidae, Pieridae, Lycaenidae and Hesperidae are available in NE India.

Butterflies are very sensitive to alteration in the local climate, weather and light intensity levels, and therefore act as excellent indication of environmental shifts [9]. These amazing creatures are facing threats globally due to anthropogenic activities leading to decline in abundance and diversity of the species. While various studies have been undertaken on butteflies in different parts of the world, they are mostly treated as non-target group of organisms in Wildlife Conservation and management [10].

Therefore, this preliminary study was undertaken to assess the diversity of butterflies in the Sadiya College campus along with the adjoining area of Chapakhowa situated in Sadiya, District- Tinsukia of Assam, and the easternmost part of the state.

Materials and Method

Study area: The study was done in the campus and adjoining areas of Sadiya College, Chapakhowa, located in Tinsukia District in the extreme north eastern corner of Assam. Sadiya is situated near Arunachal Pradesh which is known for rich biodiversity. Sadiya is located at 123m above the sea level. The Sadiya region is 789.95 km² in size and is situated at 95º40'1"E, 27º45'02"N. The landscape is a level plain that slopes progressively from north to south. The vegetation has been characterized as a tropical wet evergreen forest in the Assam valley [11]. Sadiya College has a lush green campus of 43 bighas, with ample amount of trees, shrubs, grasslands and aquatic habitats.

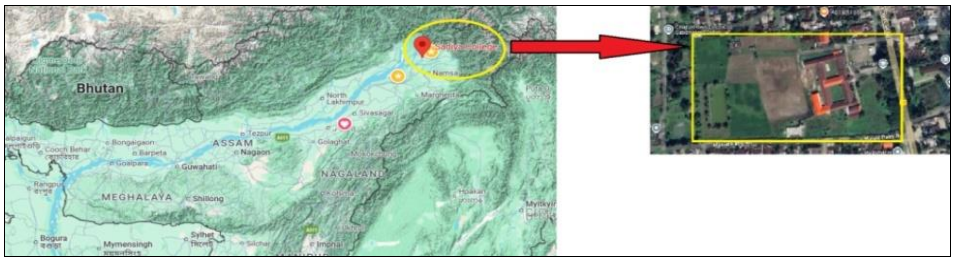

Fig 1: Maps of Assam along with the location of the Sadiya College Campus. (Source- Google Maps).

Survey method: The study was conducted using a Pollard walk method [3]. All observations are recorded in the morning and evening time in good weathered conditions from January, 2024 to December, 2024. The information about the coordinates and elevation of study sites were obtained by using Google's location services. The photographs of the butterflies were captured.

Identification and Data Analysis: To identify the species of the butterfly, the photographs of butterfly were taken. The species of butterfly was identified by taking into account its color patterns, sizes, forms, and designs. The butterflies were identified in the Department of Zoology in Sadiya College, using identification keys published in Kehimkar (2011) [12], literature of W. H Evans (1932) [5], and the Butterflies of India website (http//www.ifoundbutterflies.org/) [13].

The species richness for the five families was calculated using Shannon Diversity index [14]

H'= $\sum P_i$ ln(P*i*) where, Pi= Proportion of the *i*th species,
ln= Natural logarithm of P*i*

Results & Discussion

Over the course of the investigation, 33 species of butterflies spanning 5 families and 26 genera were identified (Table 1). Papilionidae (3 species), Pieridae (6 species), Lycaenidae (5 species), Hesperiidae (4 species), and Nymphalidae (15 species) were determined to have the highest number of species.

Nymphalidae family was recorded as the dominant species during the study period which shows the similar of findings with some findings. During the study of butterfly diversity in Soraipung Range of Dehing Patkai National Park [15], a total of 92 butterfly species belonging to 5 families were recorded during the study. Out of the 5 families Nymphalidae family were found to be dominant with 41 species. A total of 63 species belonging to six families viz., Hesperidae, Nymphalidae, Pieridae, Papillionidae, Lycaenidae, and Riodinidae were identified and recorded during a study conducted at Borajan-Bherjan Padumani Wildlife Sanctuary, located in the Tinsukia District of Assam [10] . Another study in Dibrugarh University campus recorded 65 different species from five different families- Nymphalidae, Pieridae, Hesperiidae, Papillionidae and Lycaenidae of butterflies [16].

The Shannon Weiner Index (H') was calculated to be 1.439. The Shannon-Weiner index for various habitat types was recorded by Baruah and Saikia [17] is as follows: H' = 3.323 for ponds, H' = 3.310 for open tracts of land, H' = 3.243 for rivers, and H' = 3.205 for beels or lakes. According to the IUCN red list, most the recorded species are either in 'Least concern' or 'Not Evaluated', but two species, Brown skipper butterfly (*Parnara* sp.*(Moore))and* Largethree ring (*Ypthima nareda (Kollar))* were found to have 'Vulnerable' status.

Table 1: Checklist of butterfly species recorded in the study area.

Sl. No.	Common Name	Scientific Name	IUCN status
	Family: Nymphalidae		
1.	Common five ring	*Ypthimus baldus (Fabricius)*	*NE*
2.	Plain tiger	*Danaus chrysippus* (Linnaeus)	*LC*
3.	Common four ring	*Ypthima huebneri (Kirby)*	*NE*
4.	Peacock pansy	*Jumonia almanac* (Linnaeus)	*LC*
5.	Grey Pansy	*Jumonia atlites (Linnaeus)*	*NE*
6.	Large three ring	*Ypthima nareda (Kollar)*	*VU*
7.	Striped blue crow	*Euploea mulciber (Cramer)*	*NE*
8.	Common evening brown	*Melanitis leda (Linnaeus)*	*LC*
9.	Commander	*Moduza procris (Cramer)*	*NE*
10.	Spotted palmfly	*Elymnias malelas (Hewitson)*	*NE*
11.	Common eggfly	*Hypolimnas bolina (Linnaeus)*	*NE*
12.	Tailed palmfly	*Elymnias caudate (Butler)*	*LC*
13.	Dark-brand bush brown	*Mycalesis mineus (Linnaeus)*	*NE*
14.	Medus brown	*Osrotriaena medus (Fabricius)*	*NE*
15.	Sailor butterfly	*Neptis sp. (Cramer)*	*NE*
	Family: Pieridae		
1.	Cabbage white	*Pieris canidia (Linnaeus)*	*NE*
2.	Redbase jezebel	*Delias pasithoe (Linnaeus)*	
3.	The Psyche	*Leptosia nina (Fabricius)*	
4.	Common grass yellow	*Eurema hecabe* (Linnaeus)	
5.	Cabbage butterfly	*Pieris brassicae (Linnaeus)*	
6.	Molted emigrant	*Catopsilia pyranthe* (Linnaeus)	*NE*
	Family: Papilionidae		
1.	Lemon butterfly	*Papileo demoleus (Linnaeus)*	*NE*
2.	Great mormon	*Papilio memnon* (Linnaeus)	*NE*
3.	Birdwing	*Triodes sp.(Linnaeus)*	*LC*
	Family: Lycaenidae		
1.	Pale grass blue	*Pseudozizeera maha (Kollar)*	*LC*
2.	Common Pierrot	*Castalius rosimon (Fabricius)*	*NE*
3.	Slate Flash	*Rapala sp.(Kollar)*	*NE*
4.	Purple sapphire	*Heliophorus epicles (Godart)*	*LC*
5.	Blue sapphire	*Heliophorus bakeri (Evans)*	*NE*

Sl. No.	Common Name	Scientific Name	IUCN status
Family: Hesperiidae			
1.	Brown skipper butterfly	*Parnara sp.(Moore)*	*VU*
2.	Dark small branded swift	*Pelopidas mathias* (Linnaeus)	*LC*
3.	Dark palm dart	*Telicota bambusae (Moore)*	*NE*
4.	Common snow flat	*Tagiades japetus (Stoll)*	*NE*

Table 2: Showing the total number of genus recorded in each Family

Sl. no	Name of the Family	Total number of Genus recorded in each Family
1	Nymphalidae	12
2	Pieridae	5
3	Papilionidae	2
4	Lycaenidae	3
5	Hesperiidae	4
	Total= 5 families	26 Genus

Table 3: Table showing the species diversity Index of the recorded Butterfly.

Family	SDI
Nymphalidae	0.355
Pieridae	0.289
Papilionidae	0.222
Lycaenidae	0.314
Hesperiidae	0.259
Shannon Weiner Index (H) [H'= $-\sum P_i \ln(Pi)$]	1.439

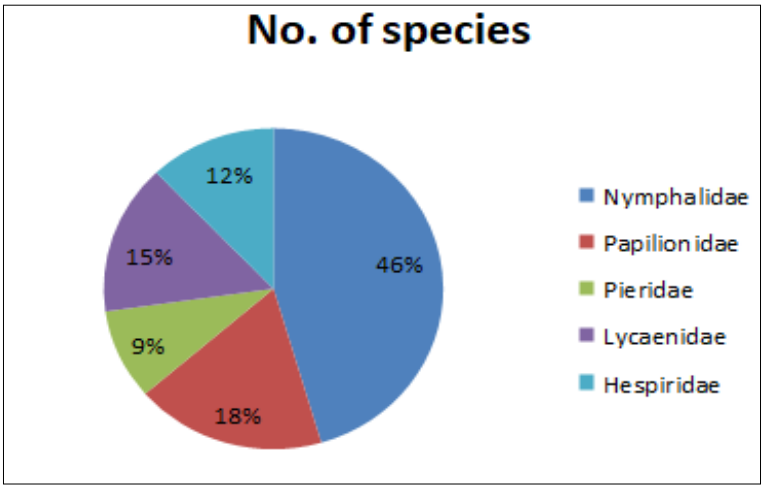

Fig 2: Family-wise composition of Butterfly species in the study area.

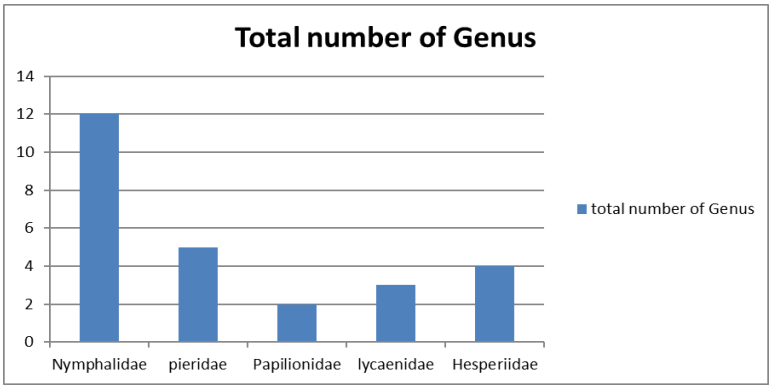

Fig 3: Showing the number of Genus recorded in each family.

Conclusion

This study is the inaugural attempt to examine the diversity of butterflies in the Sadiya region. The enormous range of species is highlighted by the study of butterfly diversity on and around college campuses. The findings demonstrate the campus's abundant biodiversity and lack of pollution. Because butterflies serve as pollinators, prey, biological pest control, provide genetic variation in plants, and increase the beauty of the environment, they also contribute to ensure that this precious living species must be preserved. The study's conclusion also emphasizes how crucial it is to keep the campus offering a rich habitat for butterfly conservation and future research.

References

1. Chakravarthy AK, Rajagopal D, Jagannatha R, Insect as bioindicators of conservation in the tropics. Zoo's Print Journal,1997:12:21-25.
2. Bonebrake TC, Ponisio LC, Boggs CL, Ehrlich PR. More than just indicators: A review of tropical butterfly ecology and conservation. Biological conservation,2010:143:1831-1841.
3. Pollard E, Yates JT. Monitoring Butterflies for ecology and conservation. Chapman and Hall, London, 1993, 292
4. Tiple AD. Butterfly fauna in an around Tadoba National Park of Central India, Hislopia Journal, 2010, 3(1).

5. Evans WH. The identification of Indian butterflies. Bombay: Bombay Natural History Society, 1932, 1-525.
6. Doubleday E. Description of new or impartially described iurnal Lepidoptera. Ann. Mag. Nat. Hist,1845:16:304-308.
7. More F. In Horsfield & More: Cat. Lep. Inst. Mus. East India Coy, 1857.
8. Talbot G. The Fauna of British India, including Ceylon and Burma: Butterflies Vol II, Taylor and Francis, London, 1947.
9. Bergerot B, Fontaine B, Julliard R, Baguette M. Landscape variables impact the structure and composition of butterfly assemblages along an urbanization gradient. Landscape Ecology,2010:26:83-94.
10. Das N. A Checklist of Butterfly Fauna at Borajan-Bherjan Podumani Wildlife Sanctuary, Tinsukia District, Assam. Inventum Biologicum: An International Journal of Biological Research,2023:3(4):91-98.
11. Champion HG, Seth SK. Survey of the Forest Types of India. The Manager of Publication, New Delhi, 1968.
12. Kehimkar I. The book of Indian butterflies. Bombay Natural History Society, New York, 2011, 497.
13. A Biodiversity Atlas- India website, WWW.ifoundbutterflies.org
14. Shannon, CE, Weaver W. The Mathematical Theory of Communication. Urbana: University of Illinois Press, 1949.
15. Gogoi R, Chetry A, Bhuyan A. Diversity and species richness of butterfly in Soraipung range of Dehing Patkai National Park, Assam, India. The Journal of Basic and applied zoology,2023:84(6):1-9.
16. Dutta MP, Gogoi S & Puzari M. Diversity analysis of butterflies in Dibrugarh University campus, Assam of North-East India. NeBIO, 2020, 11(1).
17. Baruah C, Saikia PK. Abundance and Diversity of Odonates in Different Habitats of Barpeta District, Assam, India, International Research Journal of Biological Sciences,2015:4(9):17-27.