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Diversity of Butterfly Species in Science College Campus, Nanded, Maharashtra, India

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Abstract: *Butterflies serve as best biological signals of habitat quality as well as general environmental health, as most butterflies are strictly seasonal preferring only particular type of habitats. Urbanization going around the globe leads to the habitat destruction of these insects. Survival of these butterflies is now under threat. Many countries have employed butterflies as a crop pollinator. The study of biodiversity in India especially is limited to the protection and conservation of habitats. The present survey is deals with made to document the butterflies' diversity in Science College Campus, Nanded, Maharashtra, India. A total 27 species of butterflies belonging to six families were recorded and identified from Science College Campus. The present study will help the conservation of butterfly species in an area.*

Key Words: *Butterfly, Species, Biodiversity, Science College, Nanded.*

1. INTRODUCTION:

The butterflies, with their hues and vivid wing patterns, attract all. They are slender, the wings are vertical when at sitting motion less, and the antennae are at the tips of the head slender in shape and having a clubbed shaped tip. They are active during day and found in particular niches the area they cover their population, abundance and diversity are the key biological elements (1). The history of butterfly study in relation to diversity, ecology, biogeography, evolution and conservation has been done by (2, 3, 4, 5, 6).

The study of biodiversity in India especially is limited to the protection and conservation of habitats. It is like protecting the house or dwelling places instead of the detailed study of the organisms. India is amongst the twelve mega diversity areas of the world comprising of about 1,439 species of butterflies out of which 100 species share endemism and 26 taxa are today globally threatened as per the IUCN (1990) Red List of threatened fauna and Lepidoptera (7). The studies by (8) states 1,501 species of butterflies in India, of which Indian peninsula hosts 350 and 331 by the Western Ghats. Recent studies by (9) states that there are 1,318 species are present. Butterflies make up an important elements of the rich diversity apart from their charm they also perform the function of pollination. As butterflies are readily affected by various agents and are susceptible to changes in environment so they are in great need and priority of defending against the slightest change (10).

The present study document diversity of butterflies and encourage the conservation of butterfly species in a Science College campus.

2. MATERIALS & METHOD:

Study was conducted in Science college campus, which is surrounded by diverse habitat. Campus is located near Agri College, Nanded, surrounded by a mosaic of concrete buildings. Science College campus is located at North latitude 19˚10'29˚ and East latitude 77˚18'01˚and having 378 meters elevation above sea level. It is blessed with lush green vegetation having large trees, shrubs, herbs and long grasses which serves as shelter to the butterflies. Core area of observation was a plant garden which is located in the campus.

The findings presented here are based on field surveys carried out from July 2019 to February 2020. The site was visited in morning and evening hours to note maximum species of butterflies. The period of study is short hence random observation were carried out. The timing of observations were morning and evening twice a week. The observations were made with the help of binocular (Olympus 8-16X40) and capture photo by using digital cameras (Sony cyber-shot 16.2 megapixels, 16x optical zoom with 24mm wide-angle Sony lens). The photographs were taken on the fields which were later identified using BNHS field guides Butterflies of India (11) and common Butterflies of India (12).

For observation Pollard Walk method (13, 14) was followed for observing butterflies that is walking along the fixed paths while recording these species.

3. RESULT & DISCUSSION:

A total of 27 species of butterflies belonging to 21 genera and 6 families were observed from Science College Campus. Of these, Nymphalidae was the largest family represented by 7 genera and 10 species (37%) followed by Pieridae with 6 genera and 7 species (26%), Danaidae with 3 genera and 4 species (15%), Papilionidae with 2 genera and 3 species (11%), Lycaendae with 2 genera and 2 species (7%) and least was Satyridae family with 1 genera and 1 species (4%). The list of butterflies collected or observed during the study period was represented with the common name, scientific names and family in the Table No. 1. The butterflies were categorized into four groups (Table no. 2) such as: very common -5 species (19%), common-15 species (56%), occasional-4 species (15%) and rear-3 species (10%).

The flora in Science college campus habitats provides diverse habitat food and breeding sites for butterflies. Butterfly diversity varies with season. They are abundant for only a few months and rare or absent during other months of the year. Identified two seasons as peaks, March- April and October for butterfly abundance in India (15). During the present study, the numbers of the butterflies were peaked during post-monsoon season (late August to October) which was similar to the findings of (16, 17, 18). During the present study dominance shown by members of the Nymphalidae family. Similar findings shown by (19). He noted the dominance shown by members of the Nymphalidae family in tropical region owing to its polyphagous nature which helps to inhabit all the habitats. They are also comparatively more strong, good and active fliers that can search a large area for resources (20, 21, 22, 23).

Presence of butterflies is an indicator of healthy ecosystem. Now a day's increasing pollution and urbanization effect on habitat of the butterflies. For their conservation we have to conserve their prime habitat and to increase the planting trees according to habitat of butterflies and maintenance of gardens for conservation of butterflies.

4. CONCLUSION:

In urban ecosystems, monitoring species diversity can be used as a tool to reduce human mismanagement and pollution in urbanized industrial rural and managed area (24). The findings of the present study underline the importance of institutional garden and urban habitats as a preferred habitat for butterflies. Maintenance of gardens and planting of tress in urban habitats are carefully planned, the diversity of butterflies may increase. This study would be useful to conserve the butterfly species in an area.

Table No. 1: List of Butterflies observed

Sr. No.	Common Name	Scientific Name	Family	Relative Abundance
1	Grey pansy	*Precis atlytes atlites (Johanssen, 1764)*	Nymphalidae	C
2	Peacock pansy	*Precis almanac (Linn, 1758)*	Nymphalidae	C
3	Lemon pansy	*Precis lemonias lemonias (Linn, 1758)*	Nymphalidae	V
4	Common leopard	*Phalanta phalantha (Drury, 1770)*	Nymphalidae	C
5	Great egg fly	*Hypolimnas bolina (Linn, 1758)*	Nymphalidae	C
6	Danaid egg fly	*Hypolimnas missippus (Linn, 1764)*	Nymphalidae	C
7	Painted lady	*Cynthia cardui (Linn, 1758)*	Nymphalidae	C
8	Common caster	*Aariadne menone assama (Evans)*	Nymphalidae	C
9	Angled caster	*Ariadne pallidor (Frusthorfer)*	Nymphalidae	O
10	Common baron	*Euthalia aconthea suddhodana (Frusthorfer)*	Nymphalidae	O
11	Common grass yellow	*Eurema hecabe contubemalis (Moore, 1886)*	Pieridae	V
12	Common jezebel	*Delias eucharis (Drury, 1773)*	Pieridae	C
13	Common emigrant	*Catopsilia Pomona (Fabncius, 1775)*	Pieridae	C
14	Salmon arab	*Colotis amata (Fabicius, 1793)*	Pieridae	O
15	Yellow orange tip	*Lxias pyrene familians (Butleer, 1898)*	Pieridae	C
16	Mottled emigrant	*Catopsilia pyranthe (Linn., 1758)*	Pieridae	R
17	Common wonderer	*Pareronia vatena hippie (Fabncius, 1787)*	Pieridae	C
18	Common crow	*Euploea core (Carmer, 1790)*	Danaidae	C
19	Plain tiger	*Danaus chrysippus (Linn, 1758)*	Danaidae	C
20	Blue tiger	*Tirumala limniace leopardus (Butter, 1866)*	Danaidae	V
21	Striped tiger	*Danaus genutla (Cramer, 1779)*	Danaidae	V

22	Common jay	*Graphium doson axion (Felder, C& R, 1864)*	Papilionidae	C
23	Lime butterfly	*Pinceps demoleus (Linn, 1758)*	Papilionidae	R
24	Common mormon	*Pinceps polyets roomulus (Cramer, 1775)*	Papilionidae	V
25	Tiny grass blue	*Zizula hylax*	Lycaendae	O
26	Gram blue	*Euchrysops cnejus (Fabncius, 1798)*	Lycaendae	C
27	Bamboo tree brown	*Lethe europa niladana (Frushthorfer, 1911)*	Satyridae	R

Table No. 2: Status of Butterflies observed from Science College Campus

Sr. No.	Status	No. of Species	% of Species
1	Very Common	5	19
2	Common	15	56
3	Occasional	4	15
4	Rare	3	10
Total		**27**	**100**

Table No. 3: Distribution of genera and species of Butterflies in respective families from Science College Campus

Sr. No.	Family	No. of Genera	No. of Species
1	Nymphalidae	7	10
2	Pieridae	6	7
3	Danaidae	3	4
4	Papilionidae	2	3
5	Lycaendae	2	2
6	Satyridae	1	1
Total		**21**	**27**

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