

STUDENT STUDY PROJECT

ON

**“A SURVEY ON BUTTERFLY DIVERSIFY OF FAUNA IN
SHANTHINAGAR TOWN, JOGULAMBA GADWAL DISTRICT,
TELANGANA STATE, INDIA”**

Department of Zoology

**Government Degree College, Shanthinagar,
Waddepally Mandal,
Jogulamba Gadwal Dist -509 126**



**Accredited by NAAC with “C” Grade// ISO 9001-2015 Institution
Jogulamba Gadwal (DIST), Telangana State, India-509 126
Affiliated to Palamuru University**

SUBMITTED BY:

B.Shilpa	IIBZC	20033089445002
B.Shireesha	IIBZC	20033089445003
E.Swetha	IIBZC	20033089445008
Kuruva Umamaheswari	IIBZC	20033089445015
N.Krishnaveni	IIBZC	20033089445019

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Academic Year 2022-23



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Affiliated to Palamuru University**

Dr.D.V.Siva Narayana
Assistant Professor of Zoology
Government Degree College
Shanthinagar-509 126
Jogulamba Gadwal District
Telangana State, India.

Email: dasarisivanarayana163@gmail.com
Mobile: 9441251515

CERTIFICATE

This is to certify that the project work entitled “A SURVEY ON BUTTERFLY DIVERSIFY OF FAUNA IN SHANTHINAGAR TOWN, JOGULAMBA GADWAL DISTRICT, TELANGANA STATE, INDIA” is a bonafide work done by **B.Shilpa,B.Shireesha,E.Swetha and N.Krishnaveni** , students of B.Sc. (BZC) E/M, VI semester students under my supervision in Zoology , Department of Zoology Government Degree College, Shanthinagar , Jobulamba Gadwal Dist. During academic year 2022-23 and this work has not been submitted in any other college or University either part or full for the award of any degree.

Place:

Dr.D.V.Siva Narayana

Date:

Assistant Professor of Zoology

Signature of External examiner

Signature of Internal examiner

DECLARATION

We hereby declare that the project work entitled with “A SURVEY ON BUTTERFLY DIVERSIFY OF FAUNA IN SHANTHINAGAR TOWN, JOGULAMBA GADWAL DISTRICT, TELANGANA STATE, INDIA” is a genuine work done by us under the supervision of **Sri Dr.D.V.Siva Narayana** Assistant Professor Department of Zoology, Government Degree College ,Shanthinagar and it has not been submission to any other Institute /University either in part or in full, for the award of any degree.

NAME OF THESTUDENT	CLASS	H.T.NUMBER	SIGNATURE
B.SHILPA	III BZC	20033089445002	
B.SHIREESHA	III BZC	20033089445003	
E.SWETHA	III BZC	20033089445008	
KURUVA. UMAMAHESWARI	III BZC	20033089445015	
N.KRISHANA VENI	III BZC	20033089445019	

CONTENTS

S.No.	Content	Page No.
1	Acknowledgements	
2	Abstract	
3	Introduction	
4	Objectives	
5	Study area	
6	Methodology	
7	Results and Discussions	
8	References	

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ABSTRACT

The most common flying Arthropods that delight us are butterflies the assemblages of these insects not only act as the promising pollinators but also the indicators of biodiversity. Much of the natural habitats of these are under the threat of Urbanization, and over exploitation of bio resources and greedy management of the Natural bio resources. Depletion of faunal diversity is an alarming sign for bio conservators. The present study is conducted from January 2023 to May 2023 to understand the abundance and diversity of butterfly species in the study area. The objective of the present survey is the assessment of the diversity of butterflies in relation to their host vegetation. During the present study, a total of 53 species belonging to 34 genera and 5 families were recorded. Nymphalidae was recorded as the most dominant family in terms of Number of species represented by 22 species (42.3%) followed by Lycaenidae(23%) with 11 species ,Pieridae (21%) with 11 species, Papilionidae (11.5%) with 6 species, Hesperidae (5.7%) with 3 species Out of these 53 species. 5 species are under the Indian Wildlife (Protection) Act, 1972.

Key words: Government Degree College, Shanthinagar, Faunal Diversity.

INTRODUCTION

Butterflies are the most popular fauna next to birds having significance in occurrence of specific plants and animals. Nature is always beautiful with its Biodiversity; Butterflies add a colour to its aesthetic value. Apart from their beauty in Nature their role in Pollination, food chain of specific predators (Aneesh et.al. 2013) and as indicators of plant biodiversity. The adults and caterpillars of butterflies are serving as prey for several flycatcher birds, lizards and also for frogs and toads.

Ecosystem services such as nutrient cycles, and food resources cannot be completed without butterflies (Abdullahi et al., 2019). As they are sensitive to environmental changes, the diurnal species of butterflies are preferred as bio indicators of habitat disturbance. But for the agriculturists butterfly larvae cause a major component of low yield due to their nature of pest activity.

There are about 28,000 species of butterflies living on this earth mostly in tropical regions. The Indian subcontinent with diverse terrain, climate and vegetation, hosting about 1,504 species of butterflies (Tiple. 2011). About 8.74% of total butterfly species of world are in India and their communities occupy almost 65% of total Indian fauna. About 173 species are observed in Telangana state.

Appropriate abiotic and biotic factors such as climate condition, temperature and wind exposure, availability of host and larval plants, food and vegetation, topographic features, habitat quality are some of the most important parameters to determine butterfly composition in a community (Barlow et al., 2007), (Ravindra et.al., 1996; Khan et al.. 2004; Jain & Jain, 2012; Kharat et.al., 2012; Kumaraswamy&Kunte, 2013), (Amala et. al., 2011). (Barlow et al., 2007).

As pollinators butterflies are valuable creatures in maintaining the population dynamics of floral composition of natural and man-made ecosystems. It was estimated that 35% of food use by human contributed from crop pollinated by insects (majorly by butterflies). As an integral part of prey-predator system they play major role in maintaining ecological balance in any type of ecosystem. As a bio-indicators, butterflies are useful in monitoring the ecological imbalance due to pollution, uncontrolled exploitation of natural resources, illegal encroachment and significant in studying the impact of rapid urbanisation on ecology in developing countries like India. Global climate change has detrimental effect on butterfly diversity and its distribution as they are very specific in ecological requirements such as temperature, humidity, food plants and egg-laying habitats.

Climate change, Urbanization, use of pesticides affects the diversity of species. The changes in parameters of rainfall patterns, temperature, and extreme weather conditions such as prolonged drought or excessive rainfall, heat waves have to be taken into consideration. Shrinking of nectar and desiccation of host plants cause direct mortality and induce migratory behaviour. Butterflies, being ectothermic, are highly sensitive to climatic variation and a short generation time which makes them an appropriate model organism

to study (Abdullahi et al., 2019). Many butterfly species have showed population decline due to hunting, poaching and forest fires (Grewal, 1996). As a result, many butterfly species are facing threat in natural ecosystems including protected areas (Ghazol, 2002; Solomon and Rao, 2002). Hence, information on species composition, diversity, preferred host plants, food plants and distribution pattern of butterflies requires periodic updating in protected areas (Basavarajappa et al., 2018).

Temperature and relative humidity are the important factors in distribution and assemblage of Butterfly species. Butterflies are considered as the best indicators of the health of any specified terrestrial ecosystem and therefore treated as an important model group in understanding ecology of any landscape and to draw strategies for conservation accordingly. They are key components in maintaining ecological dynamics of the protected areas and protected areas are major support systems for maintaining their diversities. Distribution and variation in butterfly diversity change in heterogeneous habitats with different ecological parameters.

This research exercise was aimed to estimate butterfly diversity in the vicinity of Government Degree College, Shanthinagar, Jogulamba Gadwal District, Telangana, India. It is a place committed to increase abundance of varieties of flowering plants in the garden. The results of this research exercise will help to understand the diversity of butterflies and similar geographical regions by understanding ecological role of these flying beauties.

OBJECTIVES OF THE STUDY:

The objective of the present survey is the assessment of the diversity of butterflies in relation to their host vegetation

By this study we understand that the Butterflies are the most popular fauna next to birds having significance in occurrence of specific plants and animals.

MATERIAL AND METHODS

A. Study Area:

Shanthinagar is located in the south 210 KMs away from Hyderabad city and 17 KMs north of the city of Kurnool. Its geographical coordinates are 15.94483° 'Latitude , 77.855886Longitudinal. Government Degree college, Shanthinagar 2014 is situated spread over 3 acres , of land with good vegetation in its ground with different varieties of flowering plants, a suitable habitat for attraction of different butterfly species.

This college offers under graduate courses to the students living in surrounding villages. And became a good platform for conducting Study projects.

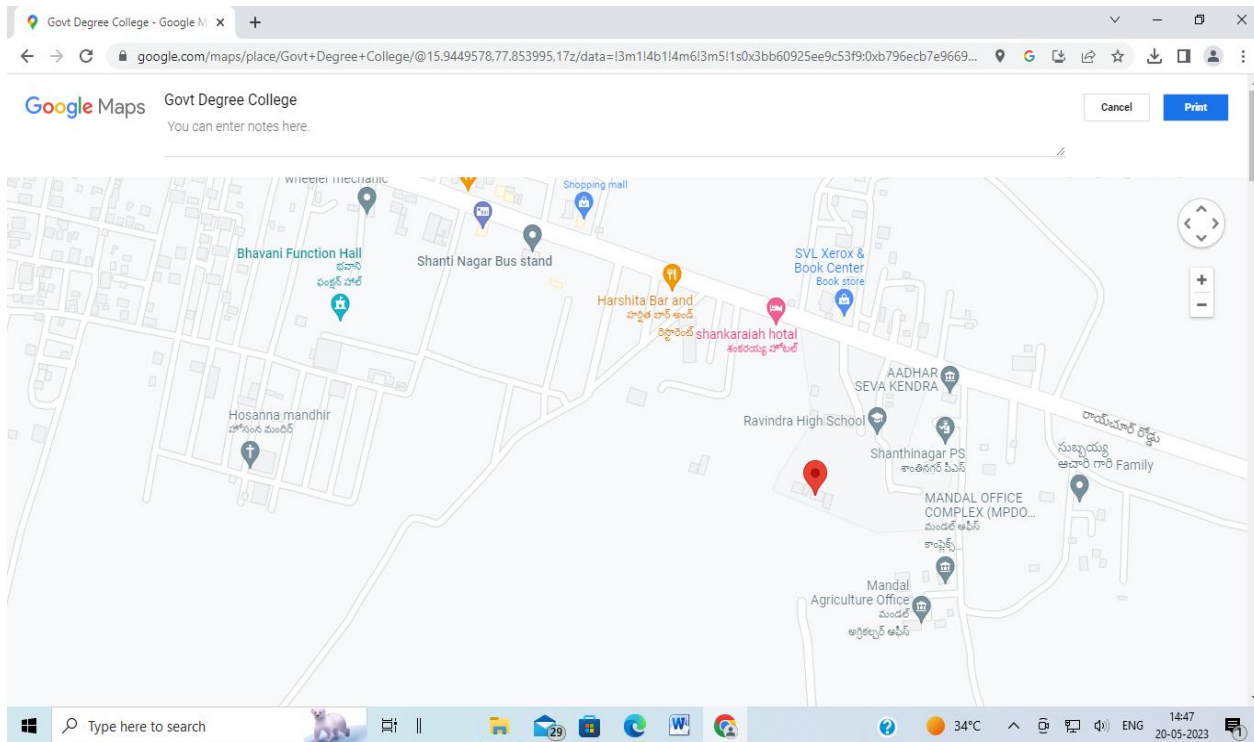
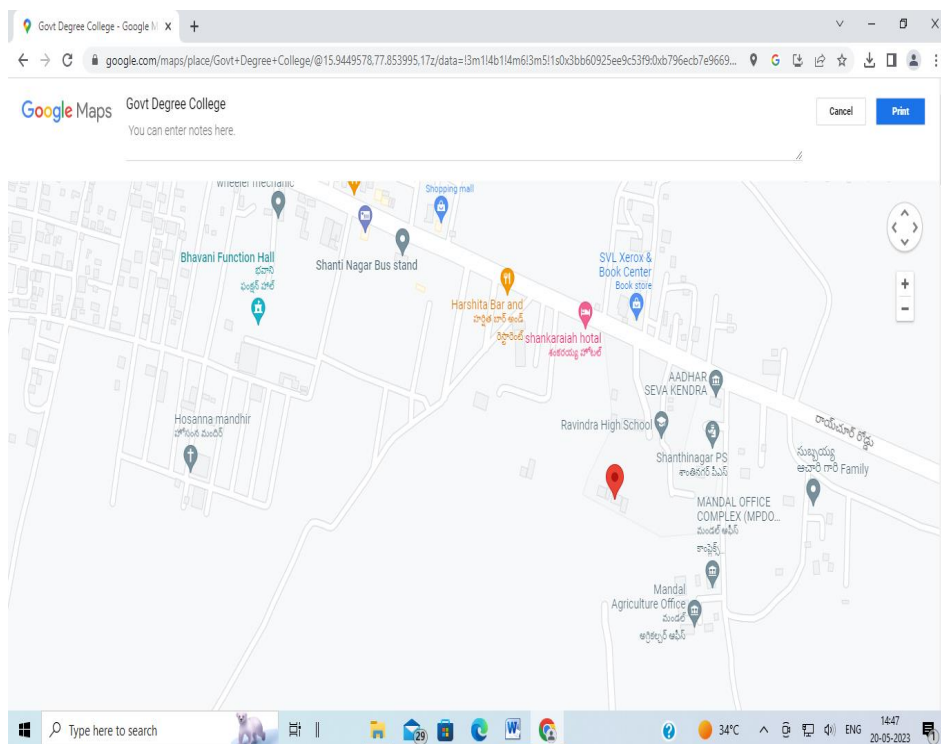


Fig.2: Map of Study Area-Govt Degree college, Shanthinagr



B.Methodology:

The students studying biological science in this college are having a habit of preparing Animal albums with locally inhabiting faunal species to submit for their Practical examinations. In the present study project, the data of butterfly species is collected from the Animal albums of the Department of Zoology of GDC shanthinagar and compared with the available check list of Butterfly diversity.

The butterflies were observed from the study sites for a period during 2022-2023. During the survey on Butterfly Fauna with special emphasis on Diversity and their Abundance in the vicinity of Government Degree College Shanthinagar Town of Jogulamba Gadwal District, Telangana India. Butterflies were accessed in the study area from 9am to 11am in the morning by random observations during walking through the college garden based on habitats present in the study area. In the field, photographs of the butterflies were taken with the aid of camera for the identification purpose during good weather periods.

The findings presented here are based on a bi-weekly random survey in and around areas of Shanthinagar town carried out by the members of this group project during the year 2022-

C. Species Identification:

After detection, a butterfly was photographed in field of our college garden and identified with the help of visible structural features, for identification and comparative studies of observed specimens.

D. Data analysis :

Species occurrence analysis was carried out by Microsoft excel program with using the following formulas. We calculated as $[RD=N_i \times 100/N_t]$

where,

N_i is number of individuals of species and

N_t is total number of individuals of all species,

RD -Relative dominance.

Nymphalidae	22/53	=	41.5%
Lycaenidae	11/53	=	20.7%
Pieridae	11/53	=	20.7%
Papilionidae	6/53	=	11.3%
Hesperidae	3/53	=	5.6%

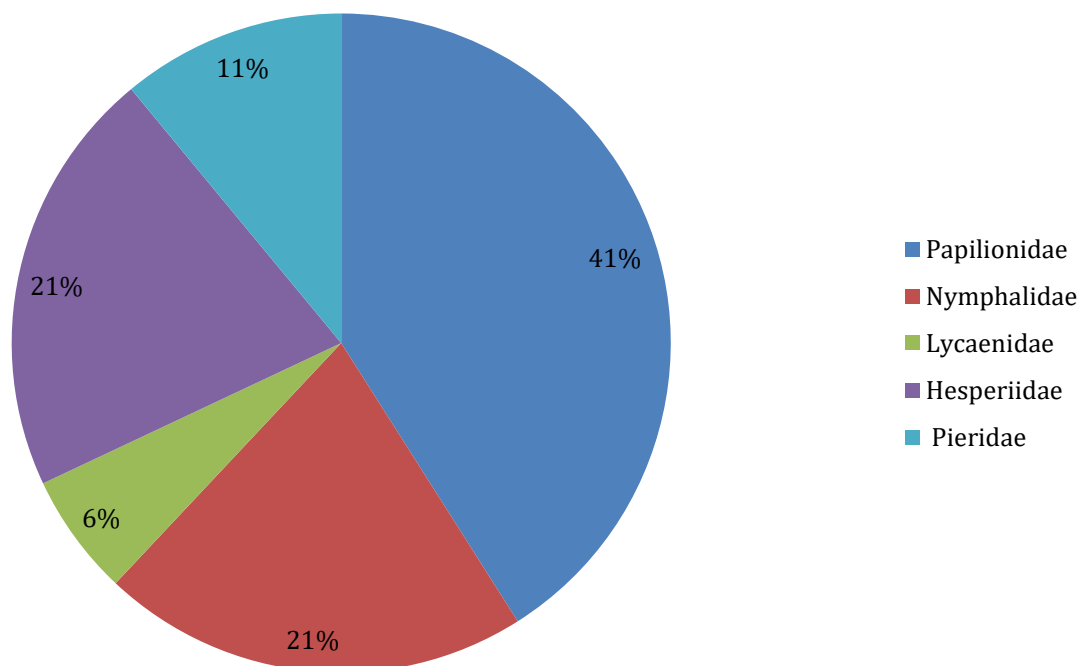



Fig.3: Percentage composition of butterfly Species in the study area-Family wise





 GPS Map Camera



Shanthinagar, Telangana, India

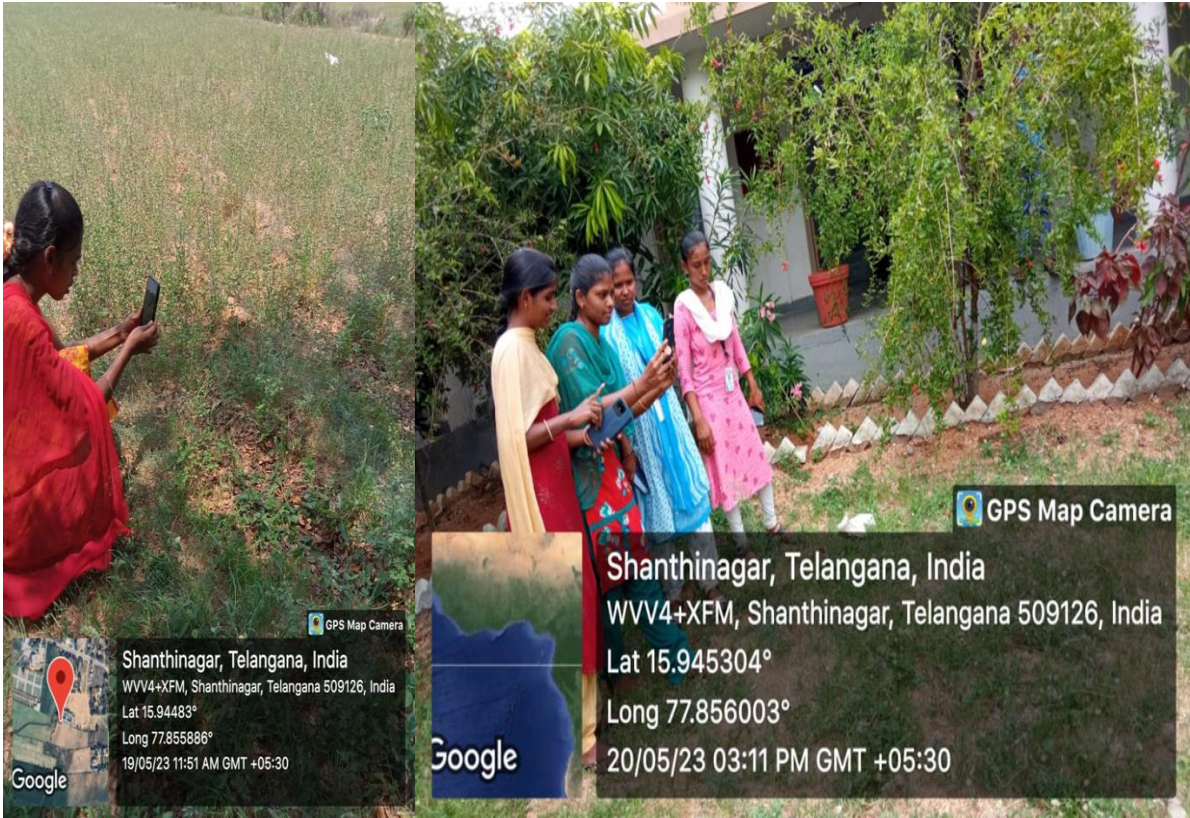
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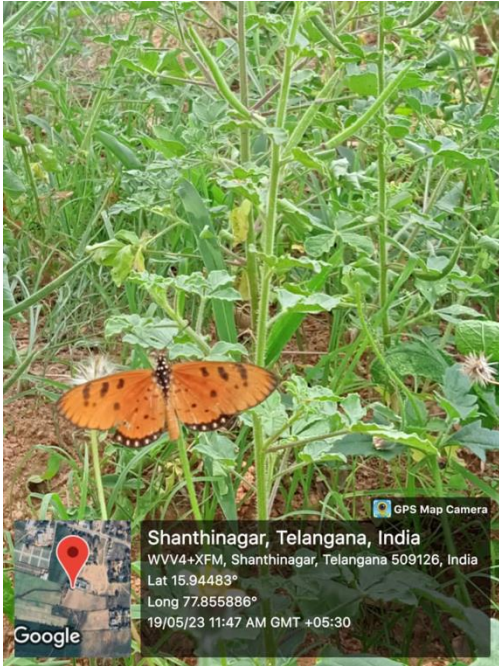
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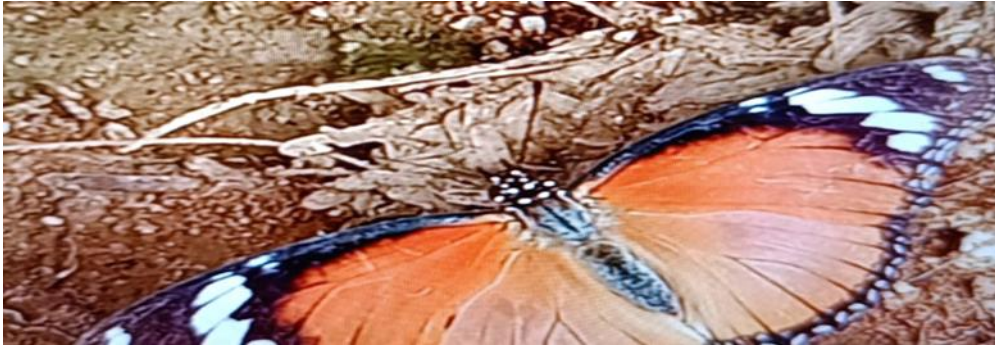
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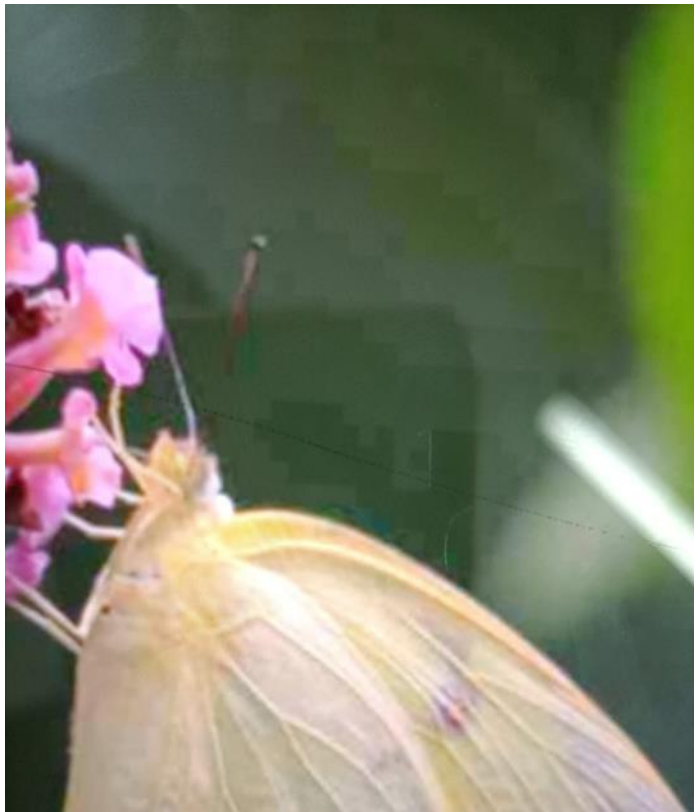


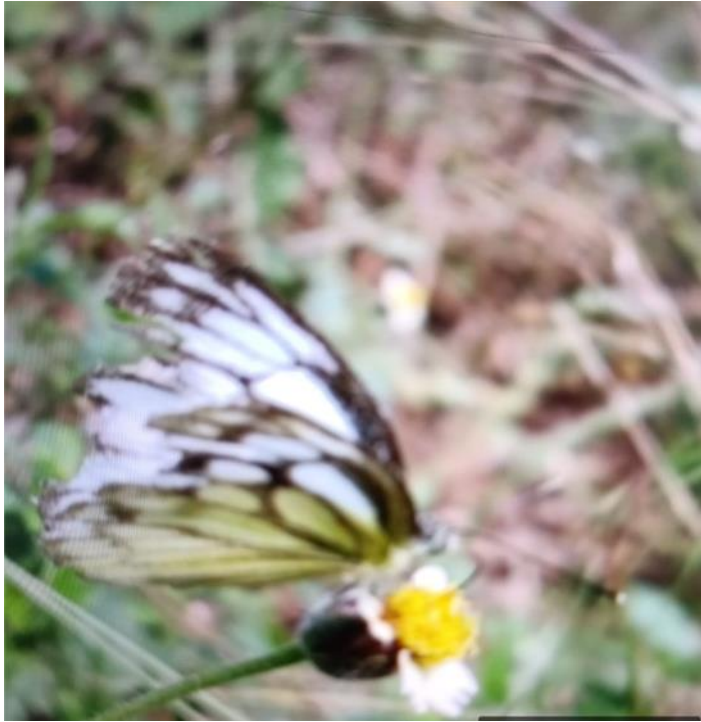


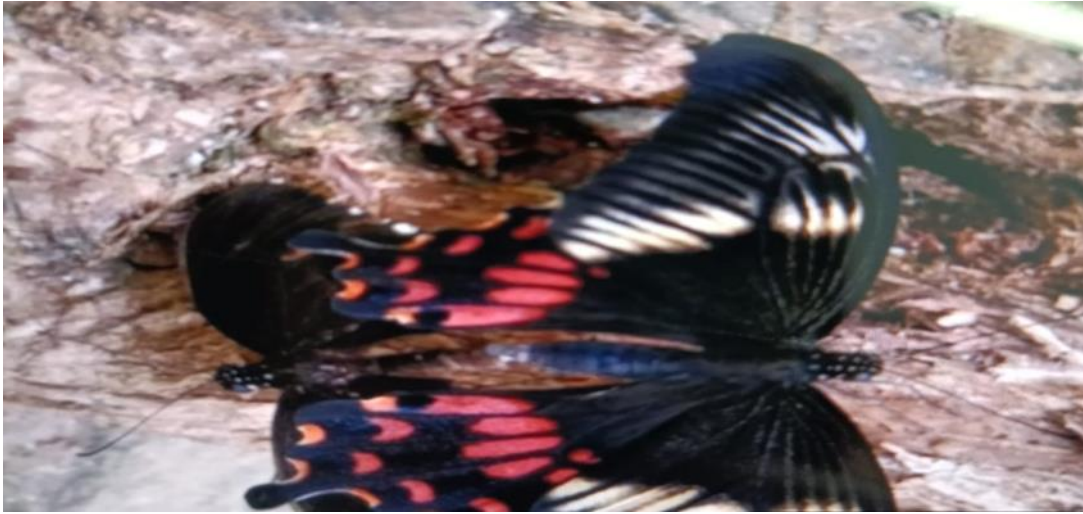














Result and Discussion

Butterflies are considered as the best indicators of the health of any specified terrestrial ecosystem. They are key components in maintaining ecological dynamics of the protected areas and protected areas provides major support systems for maintaining their diversities.

Butterflies are the most popular fauna next to birds having significance in occurrence of specific plants and animals. The adults and caterpillars of butterflies are serving as prey for several flycatcher birds, lizards and also for frogs and toads. As per the estimate of The Telangana State Biodiversity Board, about 173 species are observed in Telangana state. In this study the team observed 53 species in an around areas of Shanthinagar . 06 species of butterflies belong to the Family Hesperidae. It is observed that the butterfly species of from the Family Nymphalidae, 11 species are from the Family Lycaenidae and 03 species of Nymphalidae dominate in number in this area and the Family Hesperidae represents with fewer (3) members.

The butterflies are the ecologically important organisms that serves as indicators of environmental conditions . Observations on the butterfly diversity provide the information about variations in the species richness and the abundance in relation to the vegetation and associated landscapes . In this context, the diversity of butterflies species in and around areas of Shanthinagar government degree college was studied. Butterflies show co-evolutionary relationship with the plants and perform prominent roles in pollination. This area is promising to preserve and conserve the vegetation composition to protect the butterfly diversity for a long term sustainability. Butterflies are considered as an important model group in understanding ecology of a particular landscape. This will help exercise research in understanding ecology of this protected

area and prove to be the important biological tool in devising the strategies for sustainable conservation of wildlife of this protected area and similar geographical region.

Table 1: List of butterfly Species observed in the study area(Shanthinagar)

S.No	Family	Scientific Name	Common Name	Status
1	Pieridae (11)	<i>Belenoisaurorotaaurota</i> (Fabricius, 1793)	Indian Pioneer	Abundance
2		<i>Catopsiliapomona</i> (Fabricius, 1775)	Common Emigrant	A
3		<i>Catopsiliapyranthe</i> (Linnaeus, 1758)	Motteld Emigrant	O
4		<i>Ceporanerissa</i> (Fabricius, 1775)	Common Gull	A
5		<i>Colotisdanae</i> (Fabricius, 1775)	Crimson-tip	C
6		<i>Delias eucharis</i> (Drury, 1773)	Indian Jezebel	O
7		<i>Euremahecabe</i> (Linnaeus, 1758)	Common Grass Yellow	A
8		<i>Euremalaeta</i> (Boisduval, 1836)	Spotless Grass Yellow	C
9		<i>Ixias Marianne</i> (Cramer,1779)	White Orange-tip	C
10		<i>Ixias pyrene</i> (Linnaeus,1764)	Yellow Orange-tip	C
11		<i>Pareroniavalera</i> (Cramer,1776)	Indian Wanderer	A
12	Papilionidae(6)	<i>Graphium nomius</i> (Esper, 1799)	Spot Swordtail	O
13		<i>Graphium agamemnom</i> (Linnaeus,1758)	Tailed Jay	R
14		<i>Papiloidemoleus</i> (Linnaeus,1758)	Common Lime	A
15		<i>Papiliopolytes</i> (Linnaeus, 1758)	Common Mormon	A
16		<i>Pachliopta aristolochiae</i> (Fabricius,1775)	Common Rose	C
17		<i>Pachliopta hector</i> (Linnaeus, 1758)	Crimson Rose	C
18		<i>Acraea terpsicore</i> (Linnaeus, 1758)	Tawny Coster	A

19	Nymphalidae (22)	Ariadne merione (Cramer,1777)	Common Castor	C
20		Charaxesathamas (Drury, 1773)	Common Nawab	O
21		Charaxes solon (Fabricius, 1793)	Black Rajah	R
22		Danauschryseippus (Linnaeus,1758)	Plain Tiger	A
23		Danausgenutia (Cramer, 1779)	Striped Tiger	A
24		Euploea core (Cramer,1780)	Common Crow	A
25		Hypolimnasbolina (Linnaeus, 1758)	Great Eggfly	C
26		Hypolimnasmisippus (Linnaeus, 1764)	Danaid Eggfly	C
27		Junoniaalmana (Linnaeus,1758)	Peacock Pansy	C
28		Junoniaatlites (Linnaeus,1763)	Grey Pansy	O
29		Junoniahierta (Fabricius, 1798)	Yellow pansy	A
30		Junoniaiphita (Cramer, 1779)	Chocolate pansy	C
31		Junonialemonias (Linnaeus,1758)	Lemon pansy	A
32		Junoniaorithya (Linnaeus,1758)	Blue pansy	A
33		Melanitiseda (Linnaeus,1758)	Common evening brown	C
34		Neptishylas (Linnaeus,1758)	Common Sailer	R
35		Paranticaaglae (Stoll, 1782)	Glassy Tiger	O
36		Phalantaphalantha (Drury, 1773)	Common Leopard	C
37		Symphaedranais (Forster, 1771)	Baronet	O
38		Tirumala limniace (Cramer, 1775)	Blue Tiger	C
39		Tirumala septentrionis (Butler, 1874)	Dark blue tiger	R
40		Cletadecidia (Hewitson, 1876)	Angled Pierrot	R
41	Castaliusrosimon (Fabricius,1775)	Common pierrot	A	
42	Catochrypsstrabo (Fabricius,1793)	Forget-me-not	C	
43	Chiladeslajus (Stoll,1780)	Lime Blue	A	
44	Chiladesparrahasius (Fabricius, 1793)	Small Cupid	C	

45	Lycaenidae (11)	Euchrysops cnejus (Fabricius, 1798)	Gram Blue	A
46		Jamides celeno (Cramer, 1775)	Common Cerulean	C
47		Leptotes plinius (Fabricius, 1793)	Zebra Blue	O
48		Spindasis vulcanus (Fabricius, 1775)	Common Silverline	O
49		Talica danyseus (Guerin-Meneville, 1843)	Red Pierrot	C
50		Zizula hylax (Fabricius, 1775)	Tiny Grass Blue	A
51	Hesperiidae (3)	Hasorachromus (Cramer, 1780)	Common Banded Awl	O
52		Spialia galba (Fabricius, 1793)	Indian Grizzled Skipper	A
53		Telicotabambusae (Moore, 1878)	Dark Palm-Dart	O

Butterfly Diversity in Shanthinagar town

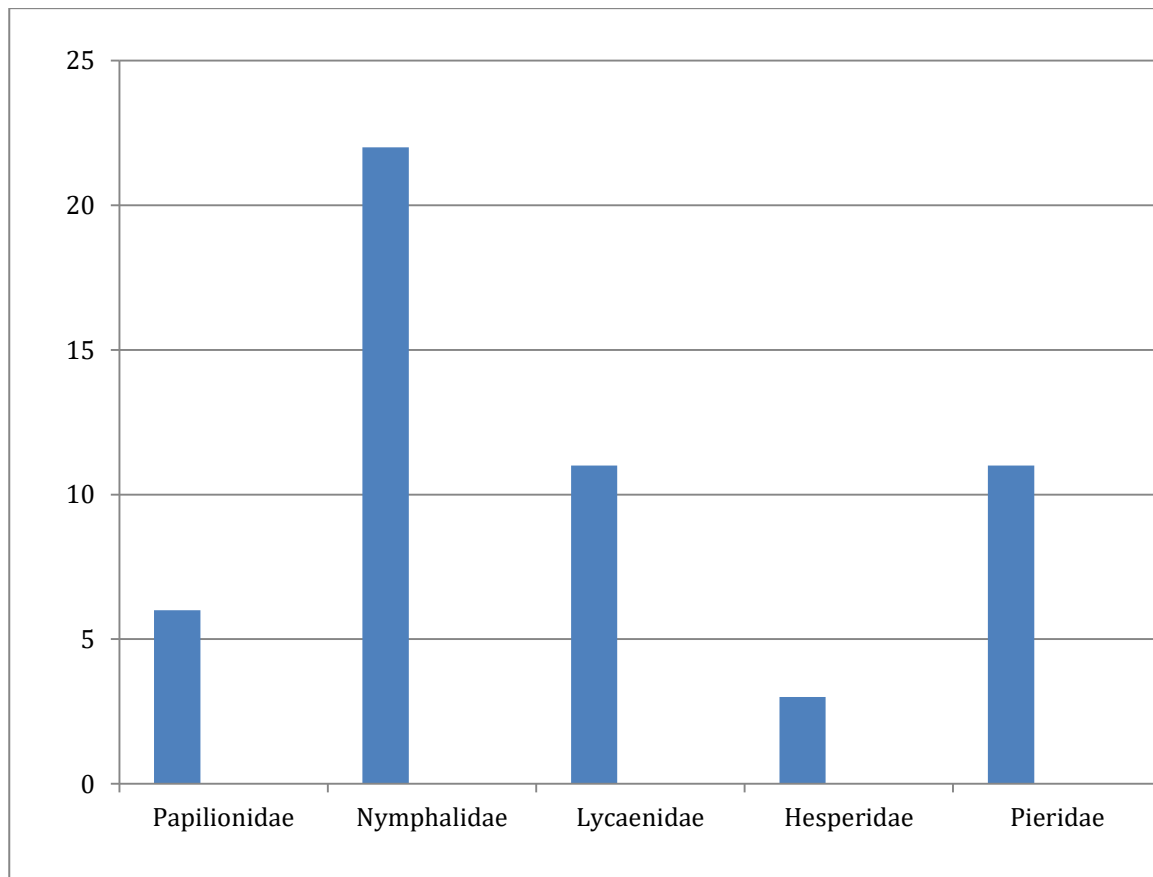


Fig.4: Number of butterfly Species – Family wise – in the study area.

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