

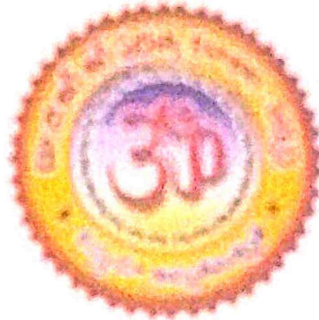
STUDENT STUDY PROJECT

ON

"A SURVEY ON BUTTERFLY FAUNA WITH SPECIAL EMPHASIS ON
DIVERSITY AND ABUNDANCE IN THE VICINITY OF DR. BURGULA
RAMAKRISHNA RAO GOVT. DEGREE COLLEGE, JADCHERLA TOWN OF
MAHABUBNAGAR DISTRICT, TELANGANA INDIA"

Department of Zoology

Dr. BRR Government College, Jadcherla
Mahabubnagar - 509001



Accredited by NAAC with "B" Grade//An ISO 9001-2015 Institution
Mahabubnagar (DIST), Telangana State, India-509001
Affiliated to Palamuru University

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STUDENT STUDY PROJECT

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A survey on Butterfly Fauna with Special Emphasis on Diversity and Abundance in the vicinity of Dr.Burgula Ramakrishna Rao Govt. Degree College, Jadcherla Town of Mahabubnagar district, Telangana India”

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CERTIFICATE

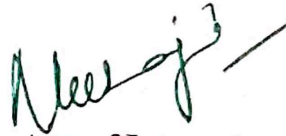
It is to certify that the project work entitled "A Survey on Butterfly Fauna with Special emphasis on Diversity and their Abundance in the vicinity of Dr. Burgula Ramakrishna Rao Govt . Degree College, Jadcherla" is a bonafide work done by P.Chaitanya, K.Shravani, Maheruba Begum (BZCs), Saifa Begum and Habeebunnisa, the students of B.Sc. (BZC) E/M, VI Semester students under my supervision in Zoology at the Department of Zoology Dr.BRR Government College Jadcherla during 2022-23 and the work has not been submitted in any other college or University either part or full for the award of degree.

Place:

Date:


DEPT. OF ZOOLOGY
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Signature of External examiner


Signature of Internal examiner

DECLARATION

We hereby declare that the project work entitled with "A Survey on Butterfly Fauna with Special phasis on Diversity and their Abundance in the vicinity of Dr. Burgula Ramakrishna Rao vt.Degree College, Jadcherla Town of Mahabubnagar District, Telangana, India" is a genuine work e by us under the supervision of Sri B.Ravinder Rao, Assistant .Professor, Department of Zoology, BRR Govt.degree College, and it has not been under the submission to any other Institute /University er in part or in full, for the award of any degree.

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We express deep sense of gratitude to Dr Appiya Chinnamma, Principal of Dr BRR Government degree college Jadcherla for permitting us to do this work and also for moral and technical support during the period of our project work. We offer our sincere thanks to Ms K.Neeraja, Asst.Professor of Zoology and .K.Subhashini, Asst.Professor of Zoology for their valuable suggestions.

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 these are under the threat of Urbanization for developmental activities and over exploitation of bio resources and greedy management of the Natural bio resources. Depletion of faunal diversity is an alarming concern 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 Pieridae (23%) with 11 species, Pieridae (21%) with 11 species, Papilionidae (11.5%) with 6 species, Lycaenidae (5.7%) with 3 species Out of these 53 species. 5 species are under the Indian Wildlife (Protection) Act, 1972.

Key words: Dr.Burgula Ramakrishna Rao Govt.College, Jadcherla, Faunal Diversity.

INTRODUCTION

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 and as indicators of biodiversity. 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 predator birds, lizards and also for frogs and toads. Ecosystem services such as nutrient cycles, and food sources cannot be completed without butterflies. As they are sensitive to environmental changes, the local 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. 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.

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 is 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 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 for study. Many butterfly species have showed population decline due to hunting, poaching and forest fires. As a result, many butterfly species are facing threat in natural ecosystems including protected areas. Hence, information on species composition, diversity, preferred host plants, food plants and distribution pattern of butterflies requires periodic updating in protected areas.

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 system and therefore treated as an important model group in understanding ecology of any landscape and 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 Dr. Burgula Lakshminarayana Rao Government Degree College, Jadcherla of Mahabubnagar district Telangana, India. It is a college committed to increase abundance of varieties of flowering plants in its garden. The results of this research exercise will help in understanding diversity of butterflies and similar geographical regions by understanding ecological role of these flying beauties.

Objectives:

1. To Document the abundance of Butterfly species in the vicinity of Jadcherla town of Mahabubnagar District
2. To study the status of butterfly diversity in Jadcherla Town of Mahabubnagar District
3. To take images of local butterflies and preserve in Zoology Library of the college.
4. To preserve the specimen in Zoology lab of the college.

MATERIAL AND METHODS

A. Study Area:

Jadcherla town is located in the south 85 KMs away from Hyderabad city and 17 KMs east of the city of Mahbubnagar Its geographical coordinates are 16° 46' 0" North, 78 9' 0" East. Dr.Burgula Ramakrishna Rao Government College Jadcherla established in the year 1963 is situated in this town and spread over 6 Ha, 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.

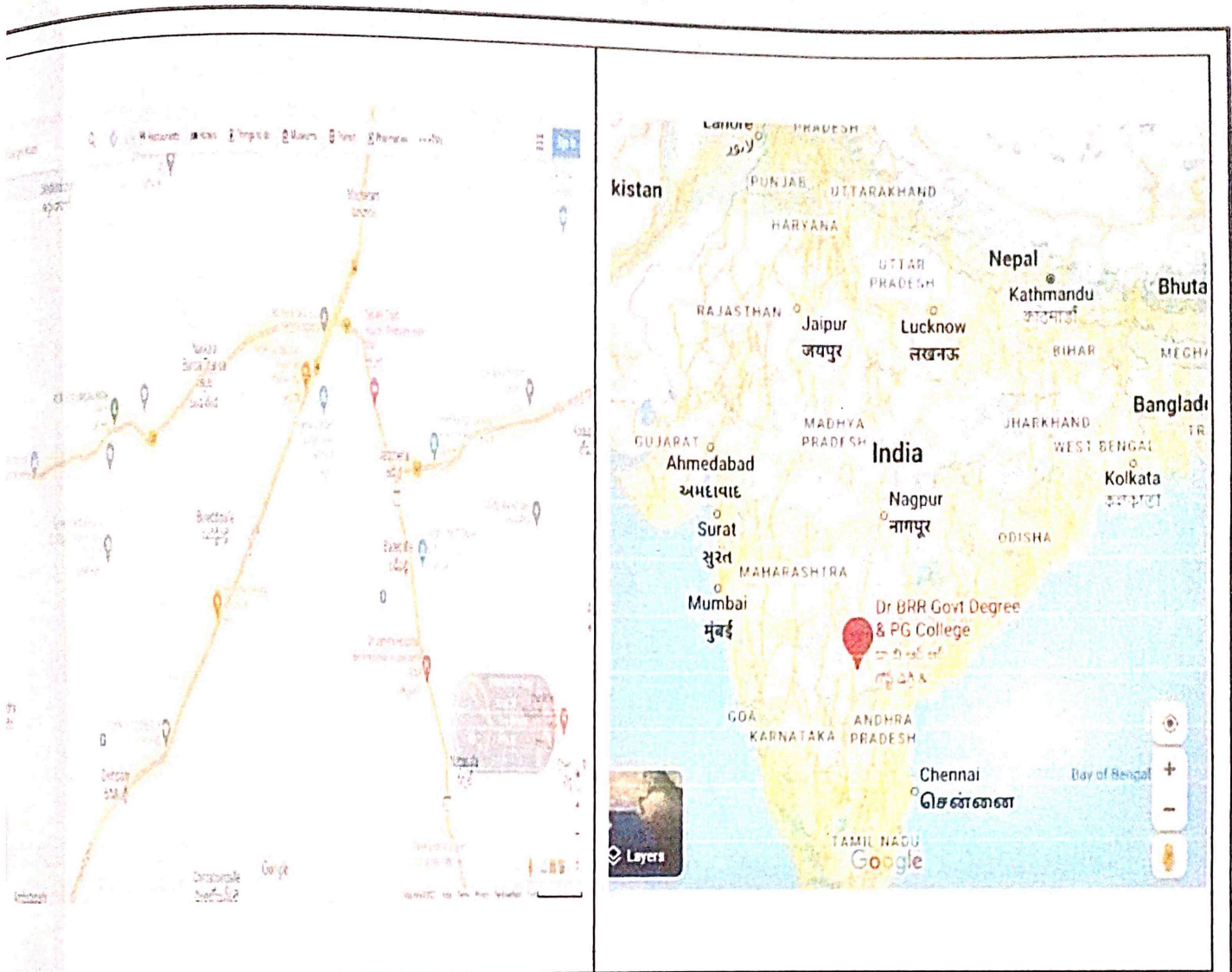


Fig.1: Map of Study Area- Jadcherla

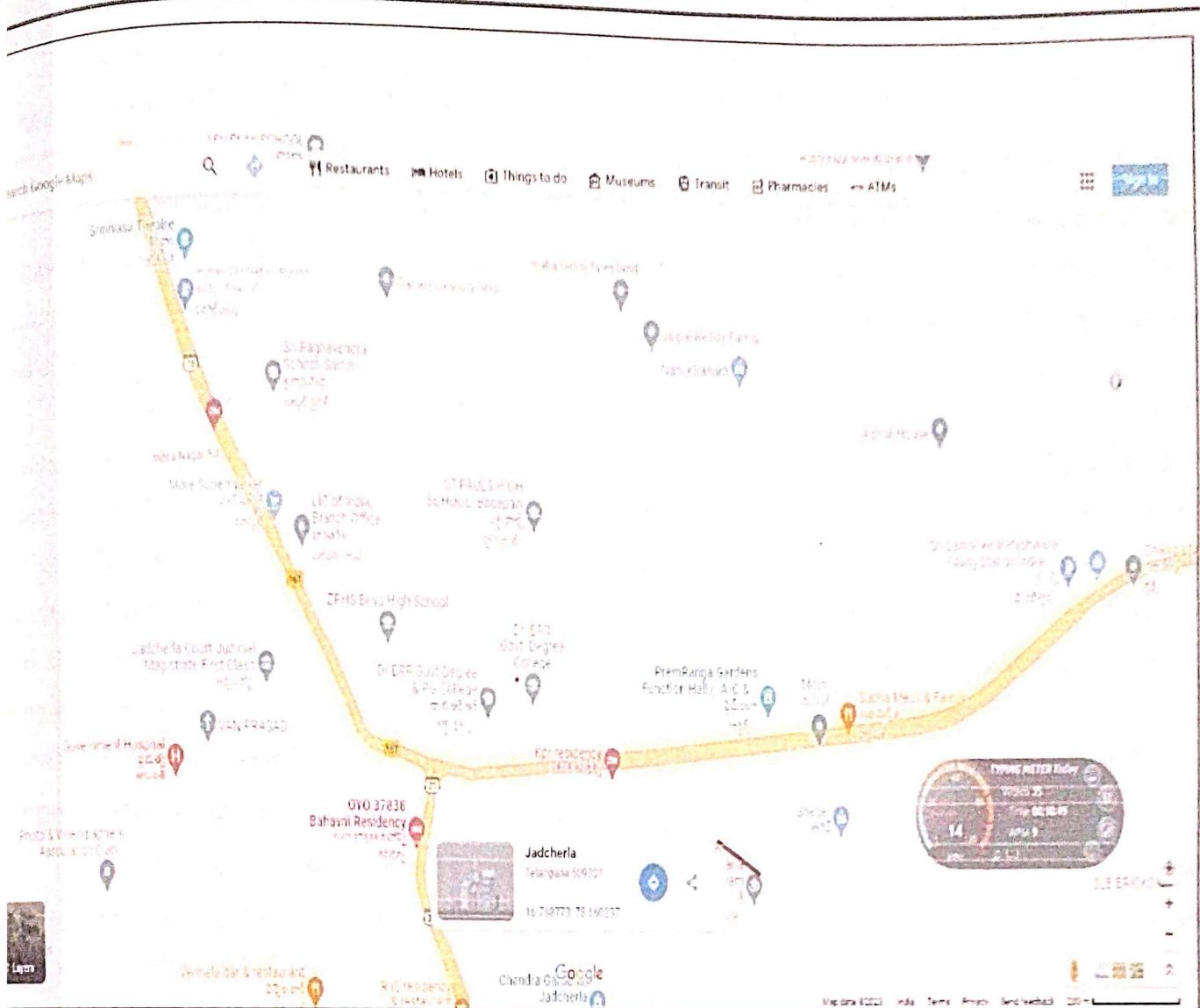


Fig.2: Map of Study Area-Dr.BRR Govt degree college, Jadcherla

Methodology:

The students studying biological science in Dr.BRR Government degree College Jadcherla 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 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 was made on diversity and their abundance in the vicinity of Dr.Burgula Ramakrishna Rao Government Degree College Jadcherla Town of Mahabubnagar 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 Jadcherla town carried out by the members of this group project during the year 2022-23

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; standard Key charts of insects are thoroughly verified. Identification varieties of butterflies on the basis of colour, size shape, Location, habitat was done. In this regard Kaufman Field Guide to Butterflies. A good online resource is butterflies and moths.org. Next, discover fascinating monarch butterfly facts were referred.

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,

D-Relative dominance.

ymphalidae	22/53	=	41.5%
ycanidae	11/53	=	20.7%
ieridae	11/53	=	20.7%
apilionidae	6/53	=	11.3%
esperidae	3/53	=	5.6%

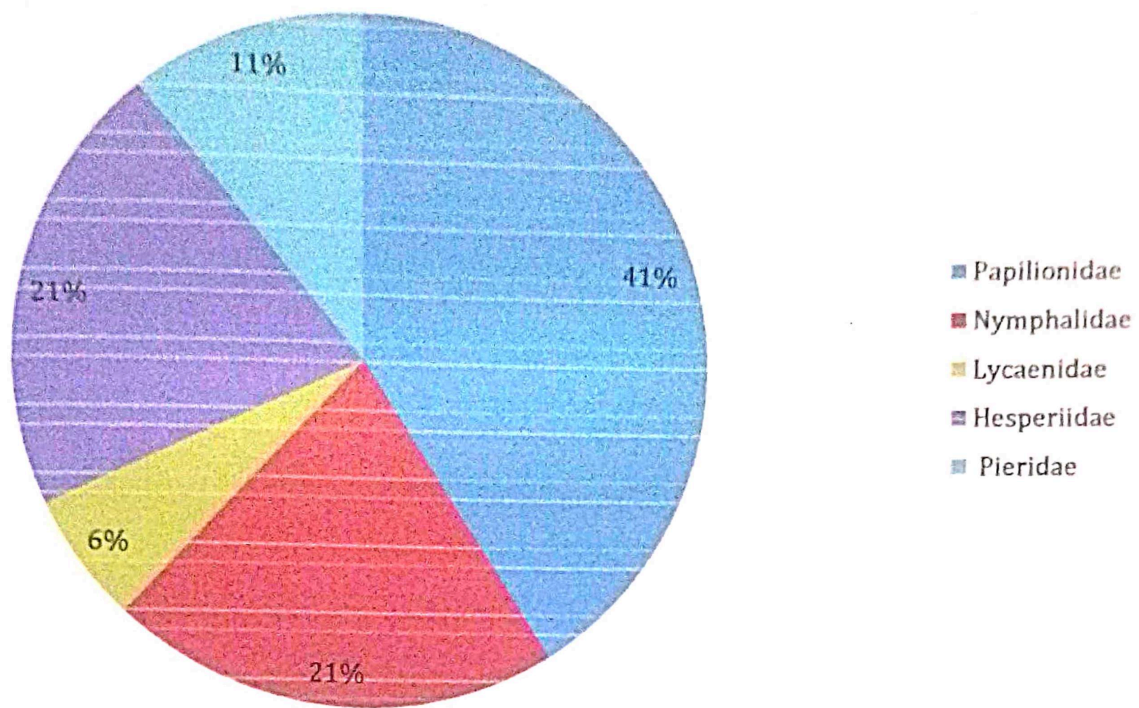
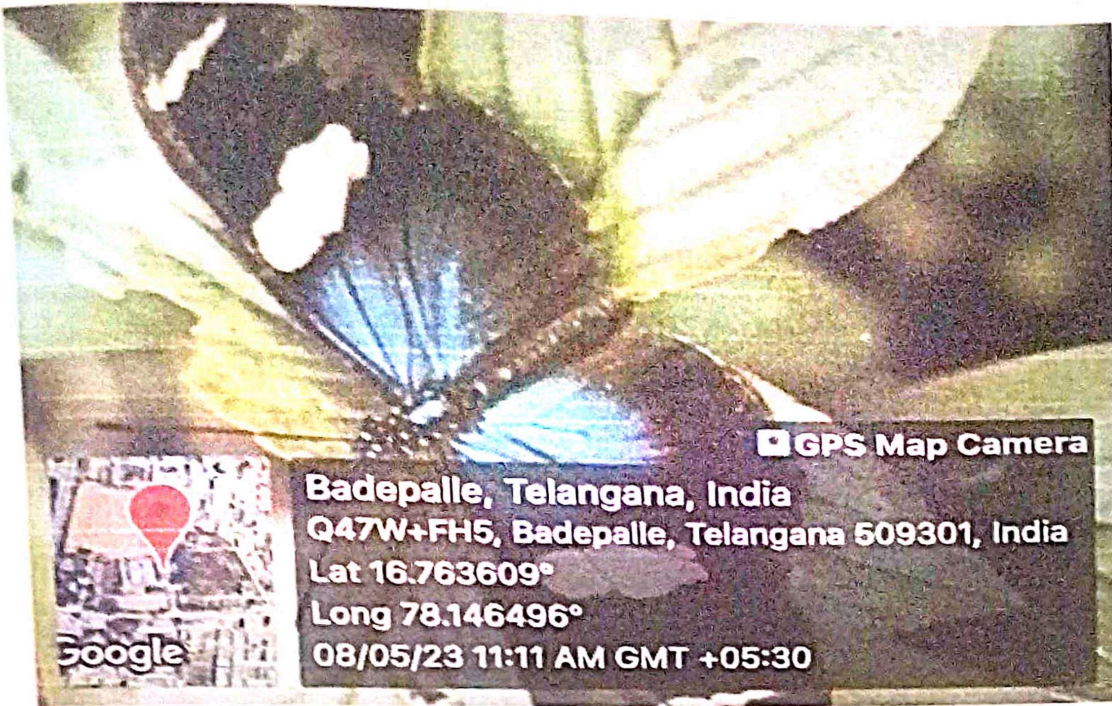
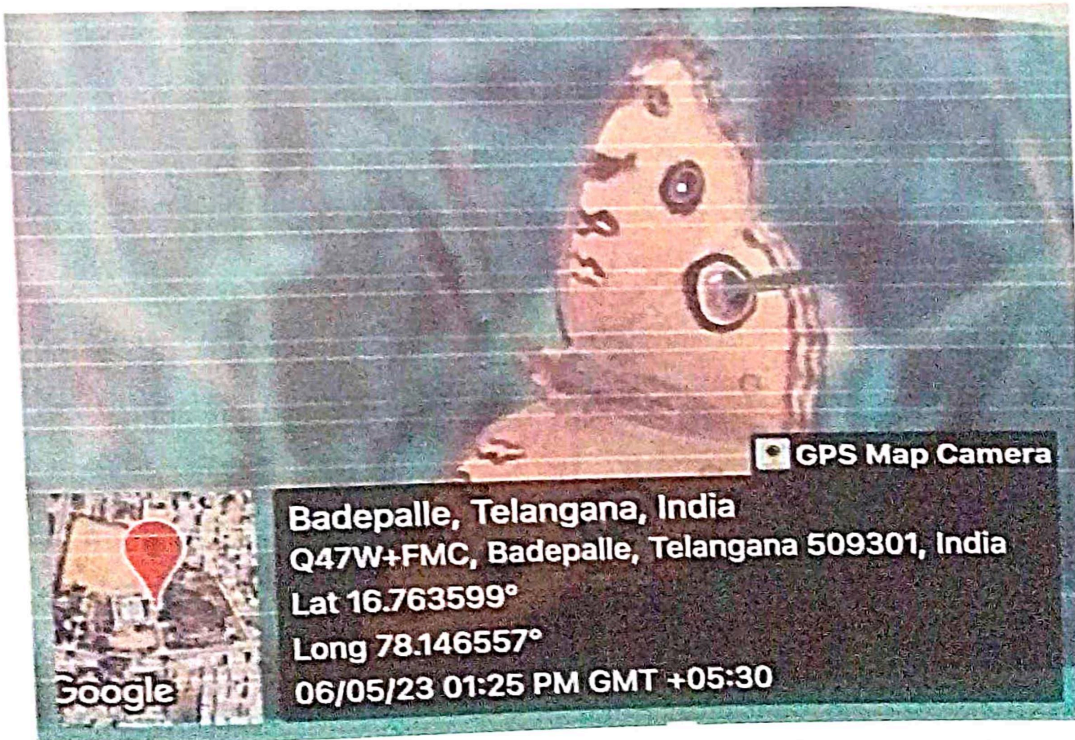


Fig.3: Percentage composition of butterfly Species in the study area-Family wise



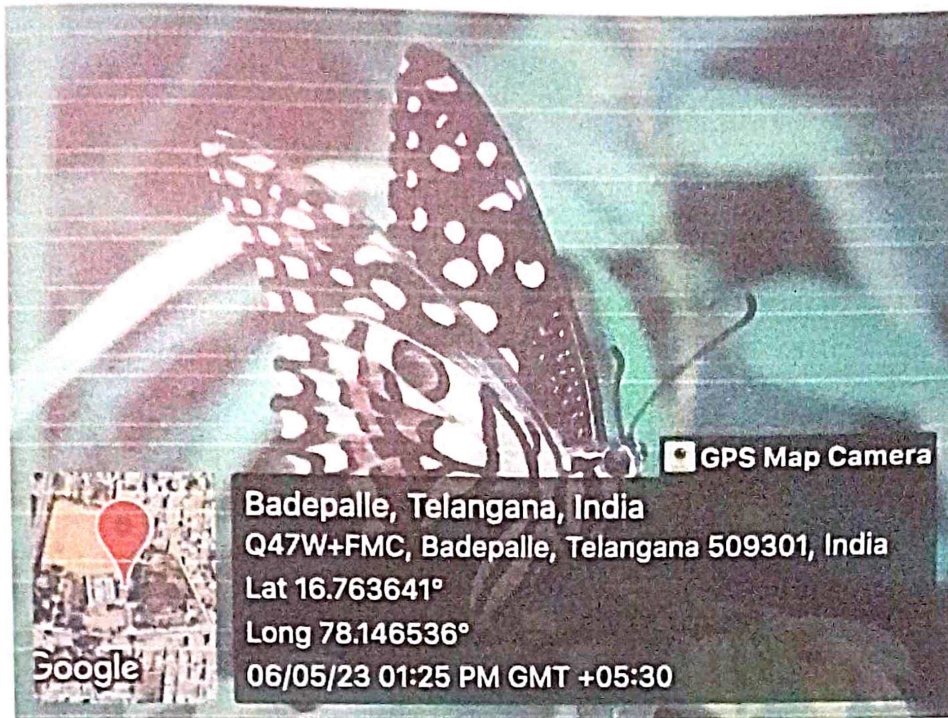
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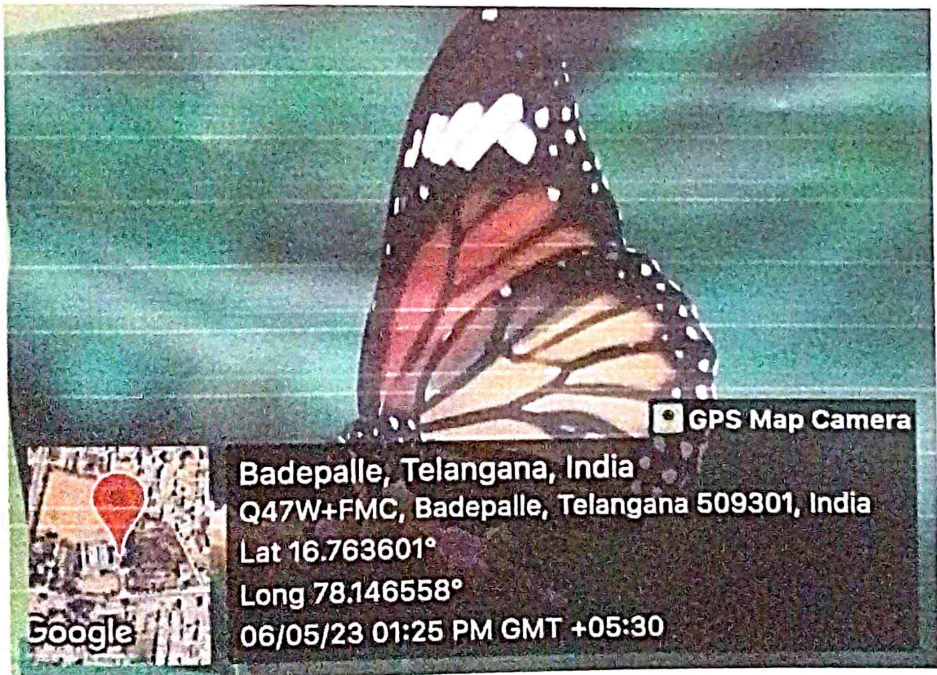




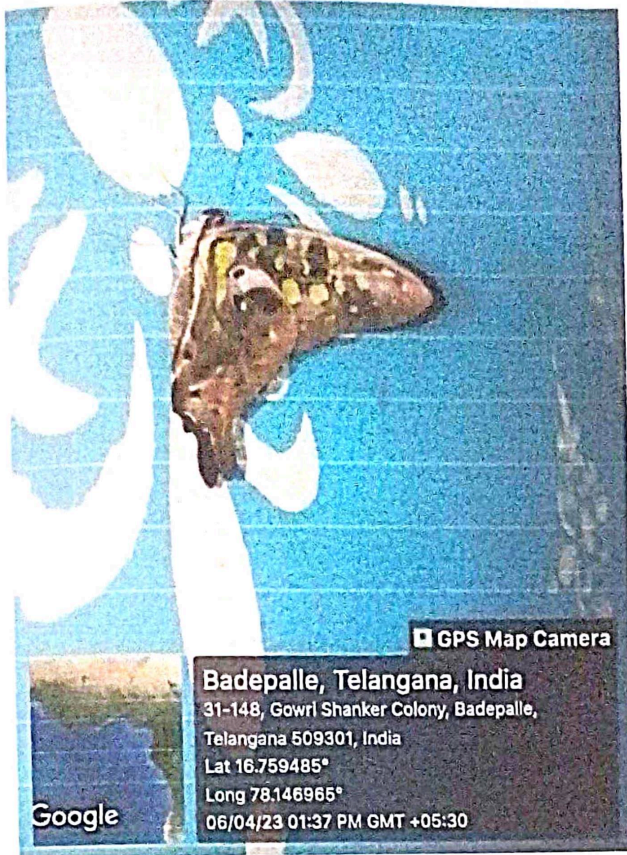
Tawny Coster,
Acraea terpsicore



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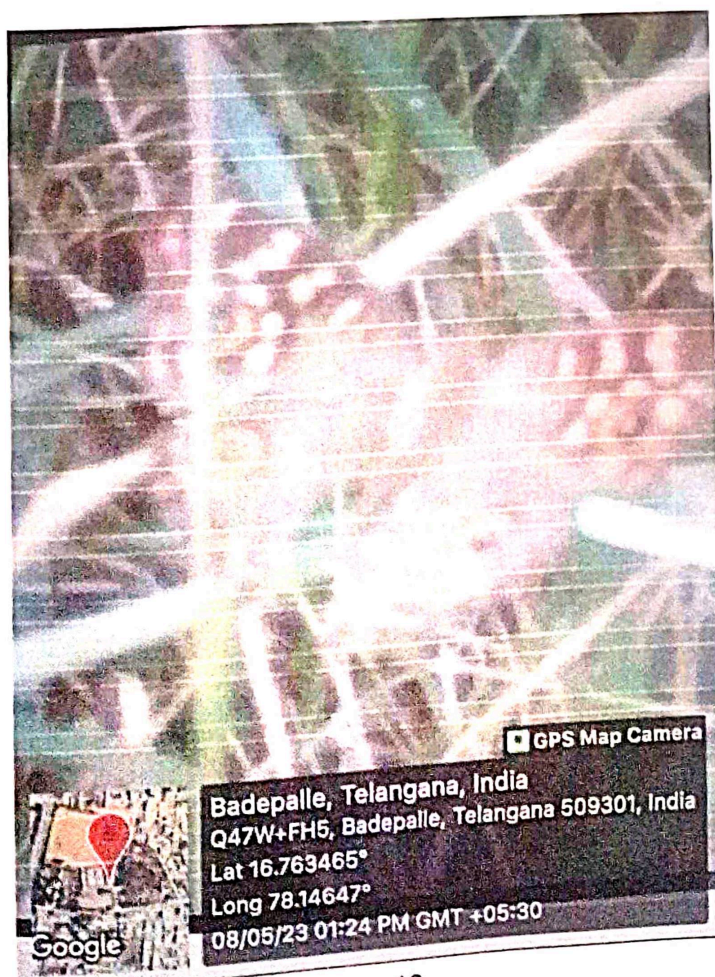


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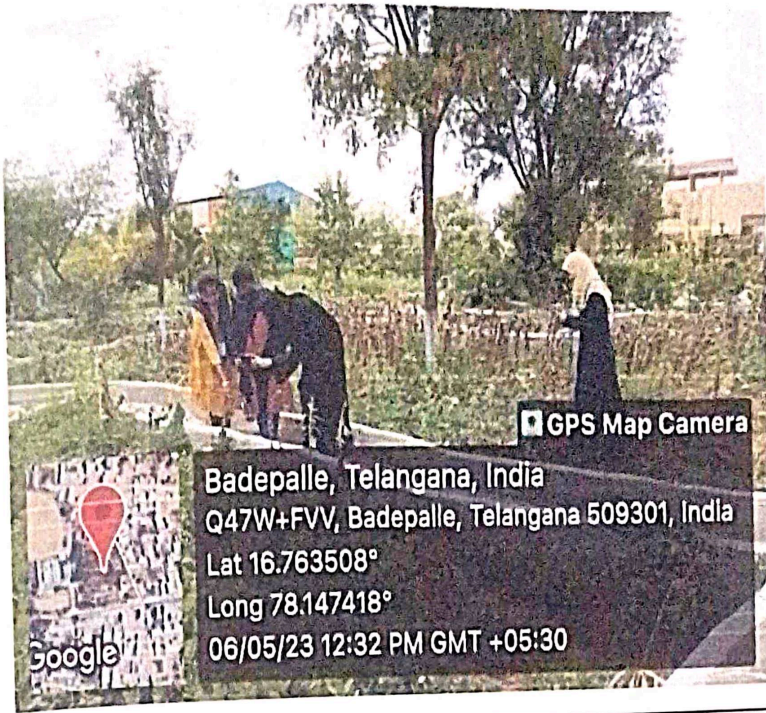




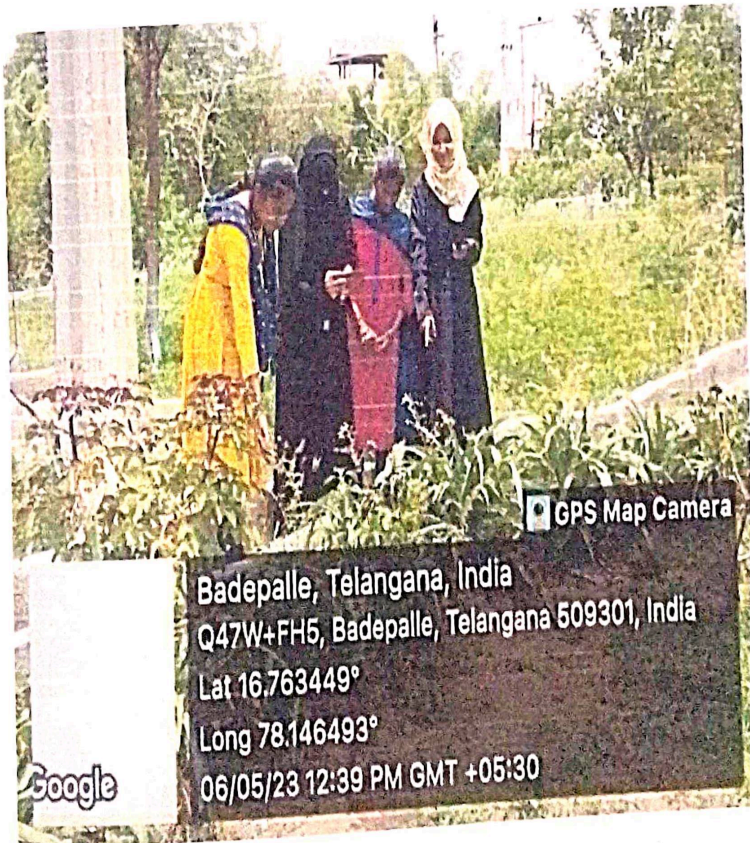
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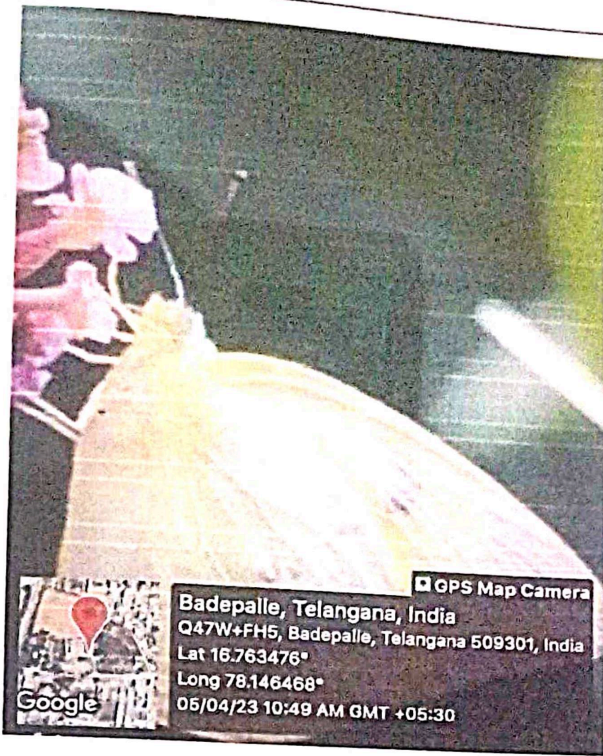


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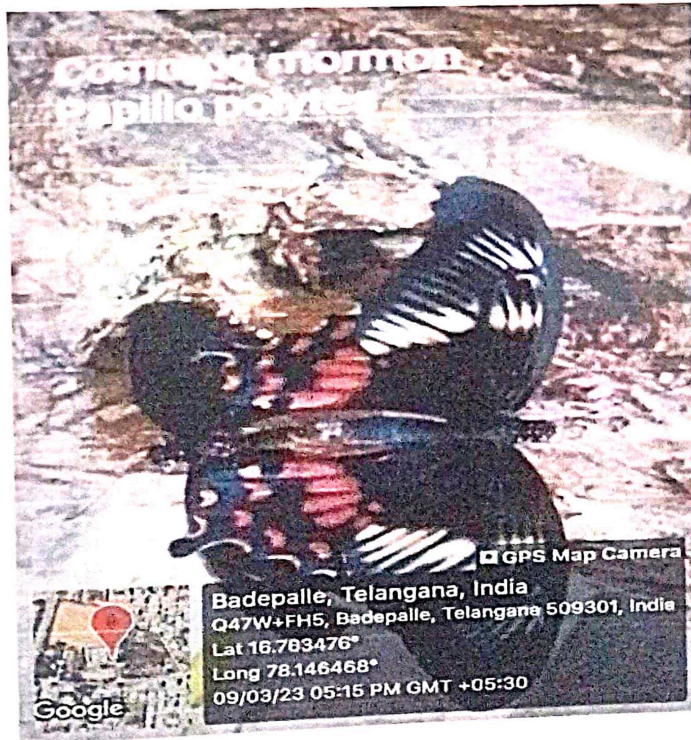


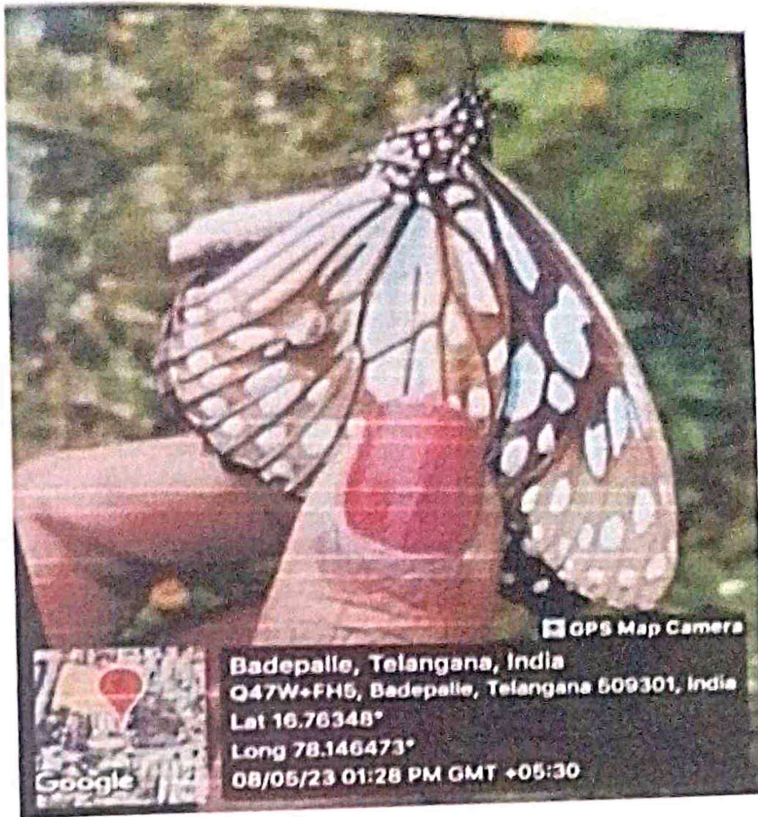


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and Discussion

Butterflies are considered as the best indicators of the health of any specified ecosystem. They are key components in maintaining ecological dynamics of the protected areas. Protected areas provide 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 snakes, as well as for frogs and toads. As per the estimate of The Telangana State Biodiversity Board, about 173 species of butterflies are observed in Telangana state. In this present study the team observed 53 species in and around the area of Jadcherla town. 6 species of butterflies are of the family Papilionidae, 11 species belongs to the family Pieridae, 22 species from the family Nymphalidae, 11 species are from the family Lycaenidae and 3 species of butterflies belongs to the family Hesperidae. It is observed that the butterfly species of the family Nymphalidae dominate in number in this area and the family Hesperidae represents with fewer (3) species.

The butterflies are the ecologically important organisms that serve as indicators of environmental conditions. Observations on the butterfly diversity provide the information about variations in species richness and the abundance in relation to the vegetation and associated landscapes. In this study, the diversity of butterfly species in and around areas of Dr.BRR 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 (Jadcherla)

Family	Scientific Name	Common Name	Status
Pieridae (11)	Belenoisaurorataurota (Fabricius, 1793)	Indian Pioneer	Abundance
	Catopsiliapomona (Fabricius, 1775)	Common Emigrant	A
	Catopsiliapyranthe (Linnaeus, 1758)	Motteld Emigrant	O
	Ceporanerissa (Fabricius, 1775)	Common Gull	A
	Colotisdanae (Fabricius, 1775)	Crimson-tip	C
	Dellias eucharis (Drury, 1773)	Indian Jezebel	O
	Euremahecabe (Linnaeus, 1758)	Common Grass Yellow	A
	Euremalaeta (Boisduval, 1836)	Spotless Grass Yellow	C
	Ixias Marianne (Cramer, 1779)	White Orange-tip	C
	Ixias pyrene (Linnaeus, 1764)	Yellow Orange-tip	C
	Pareroniavalera (Cramer, 1776)	Indian Wanderer	A
Papilionidae(6)	Graphium nomius (Esper, 1799)	Spot Swordtail	O
	Graphium agamemnom (Linnaeus, 1758)	Tailed Jay	R
	Papiloidemoleus (Linnaeus, 1758)	Common Lime	A
	Papiliopolytes (Linnaeus, 1758)	Common Mormon	A
	Pachliopta aristolochiae (Fabricius, 1775)	Common Rose	C
	Pachliopta hector (Linnaeus, 1758)	Crimson Rose	C
	Acraea terpsicore (Linnaeus, 1758)	Tawny Coster	A
Ariadne merione (Cramer, 1777)	Common Castor	C	
Charaxesathamas (Drury, 1773)	Common Nawab	O	

Nymphalidae (22)	Charaxes solon (Fabricius, 1793)	Black Rajah	R
	Danauschryseippus (Linnaeus, 1758)	Plain Tiger	A
	Danausgenutia (Cramer, 1779)	Striped Tiger	A
	Euploea core (Cramer, 1780)	Common Crow	A
	Hypolimnasbolina (Linnaeus, 1758)	Great Eggfly	C
	Hypolimnasmisippus (Linnaeus, 1764)	Danaid Eggfly	C
	Junoniaalmana (Linnaeus, 1758)	Peacock Pansy	C
	Junoniaatlites (Linnaeus, 1763)	Grey Pansy	O
	Junoniahierta (Fabricius, 1798)	Yellow pansy	A
	Junoniaiphita (Cramer, 1779)	Chocolate pansy	C
	Junonialemonias (Linnaeus, 1758)	Lemon pansy	A
	Junoniaorithya (Linnaeus, 1758)	Blue pansy	A
	Melanitisleda (Linnaeus, 1758)	Common evening brown	C
	Neptishylas (Linnaeus, 1758)	Common Sailer	R
	Paranticaaglae (Stoll, 1782)	Glassy Tiger	O
	Phalantaphalantha (Drury, 1773)	Common Leopard	C
	Symphaedranais (Forster, 1771)	Baronet	O
	Tirumala limniace (Cramer, 1775)	Blue Tiger	C
	Tirumala septentrionis (Butler, 1874)	Dark blue tiger	R
Lycaenidae (11)	Caletadecidia (Hewitson, 1876)	Angled Pierrot	R
	Castaliusrosimon (Fabricius, 1775)	Common pierrot	A
	Catochrypsstrabo (Fabricius, 1793)	Forget-me-not	C
	Chiladeslajus (Stoll, 1780)	Lime Blue	A
	Chiladesparrahasius (Fabricius, 1793)	Small Cupid	C
	Euchryopsnejeus (Fabricius, 1798)	Gram Blue	A

	Jamidesceleno (Cramer,1775)	Common Cerulean	C
	Leptotesplinius (Fabricius, 1793)	Zebra Blue	O
	Spindasisvulcanus (Fabricius, 1775)	Common Silverline	O
	Talicananyseus (Guerin-Meneville,1843)	Red Pierrot	C
	Zizulahlax (Fabricius,1775)	Tiny Grass Blue	A
Hesperiidae (3)	Hasorachromus (Cramer,1780)	Common Banded Awl	O
	Spialagalba (Fabricius, 1793)	Indian Grizzled Skipper	A
	Telicotabambusae (Moore, 1878)	Dark Palm-Dart	O

Butterfly Diversity in Jadcherla town

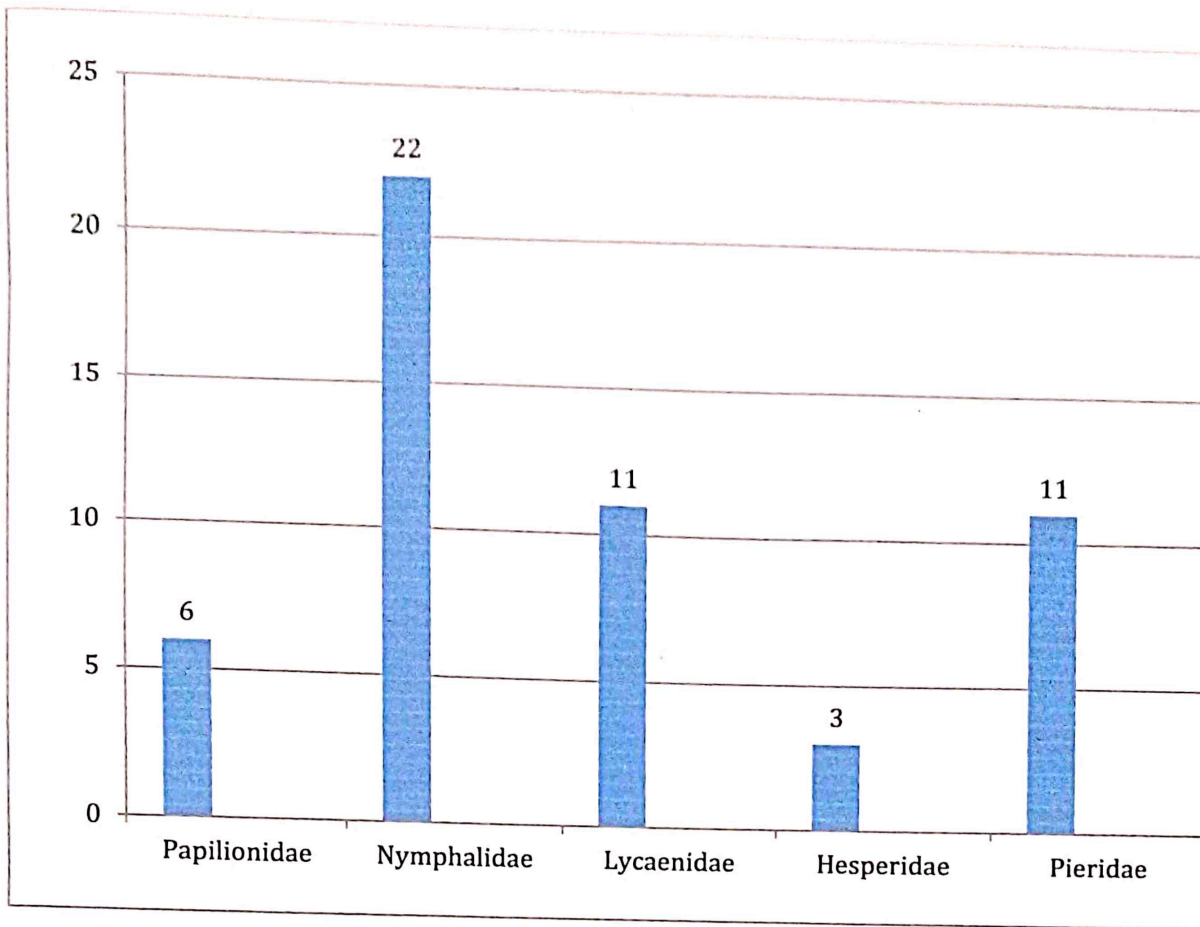


Fig.4: Number of butterfly Species – Family wise – in the study area.

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