



E-ISSN: 2320-7078

P-ISSN: 2349-6800

www.entomoljournal.com

JEZS 2024; 12(2): 105-110

© 2024 JEZS

Received: 07-01-2024

Accepted: 17-02-2024

Pratibha Pahade

Assistant Professor, Department
of Zoology, Government
Autonomous Post Graduate
College, Chhindwara, Madhya
Pradesh, India

Study of butterfly biodiversity in Dharam Tekri Chhindwara (M.P.)

Pratibha PahadeDOI: <https://doi.org/10.22271/j.ento.2024.v12.i2b.9299>**Abstract**

The study of butterfly diversity in Dharam Tekri, Chhindwara, provides insights into the local ecosystems and serves as a foundation for effective conservation efforts. Butterflies, as diverse Lepidoptera insects, play a crucial role in ecological balance and serve as environmental indicators. The study aimed to document butterfly species and their status in Dharam Tekri through random surveys and photography. It identified 44 butterfly species from five families, with Nymphalidae being the most abundant. The findings contribute to understanding ecosystems, conservation, and promote ecotourism and environmental education. They provide valuable information for future research and conservation initiatives. The study's results have broader implications for butterfly conservation, informing policy-making and conservation programs at local, regional and national levels.

Keywords: Butterfly, diversity, nectar, pollination, conservation**Introduction**

Butterflies, belonging to the order Lepidoptera, are known for their beauty and diversity, making them one of the most attractive groups of insects. Their presence in ecosystems signifies a delicate balance between flora, fauna, and their habitats. Butterflies play a vital role in maintaining ecological balance and serve as indicators of environmental health (Thomas 2005; Bonebrake *et al.*, 2010) ^[14, 3]. They also contribute significantly to ecosystem functioning through pollination and interactions with plants and other organisms (Tiple *et al.* 2011; Tiple 2018) ^[15, 16]. By feeding on nectar and inadvertently transferring pollen from flower to flower, butterflies facilitate plant reproduction, crucial for maintaining plant biodiversity and supporting the food web. Additionally, butterflies serve as a food source for other animals, including birds and mammals, thereby contributing to overall ecological balance.

Globally, there are 17,200 documented species of butterflies, with India contributing 1504 (Gaonkar 1996; Kunte 2000; Tiple, 2011) ^[7, 12, 15]. In the Madhya Pradesh and Chhattisgarh State, 174 species of butterfly fauna have been recorded (Chandra *et al.* 2007) ^[4]. The Chhindwara district has 38 species belonging to six families (Bhowate and Kumar, 2020) ^[2]. However, environmental changes such as habitat loss, climate change, pollution, and pesticide use have detrimental effects on butterfly diversity and distribution as they are sensitive to such factors. Studying butterfly diversity provides insights into the impacts of environmental changes and aids in developing conservation and restoration strategies. Therefore, understanding and preserving butterfly diversity is crucial for the conservation of these insects and the overall health of ecosystems.

The objective of the study is to document different butterfly species and their status in and around the study area. The data collected will help create species checklists and distribution maps, contributing to our understanding of butterfly diversity in Dharam Tekri. Additionally, it will serve as a reference globally for researchers conducting further studies in this field.

Materials and Methods

Study area & survey Method: The study area is Dharam Tekri, situated at Ganesh Colony in the Chhindwara District of Madhya Pradesh, positioned at 22° 4' 38" N and 78° 57' 5" E. This hilly region is rich in green vegetation and provides diverse habitats, fostering a wide range of butterfly species.

Corresponding Author:**Pratibha Pahade**

Assistant Professor, Department
of Zoology, Government
Autonomous Post Graduate
College, Chhindwara, Madhya
Pradesh, India

The findings presented in this study are based on random surveys conducted between August 2021 and September 2022. Surveys were conducted from 9:00 A.M. to 4:00 P.M., both in the morning and evening.

During the surveys, butterflies were photographed extensively from various angles using a mobile camera with a 2x zoom lens, set to high picture quality (Redmi Note 9 Pro max). The aim was to capture sufficient photographs for positive species

identification.

Species identification: It was accomplished with the assistance of several resources, including the Field Guide Manual Book by Gupta (2022)^[8], photographic guides by Kehimkar (2008)^[10] and Haribal (1992)^[9], as well as research papers, articles, and websites such as www.ifoundbutterflies.org and www.inaturalist.org.

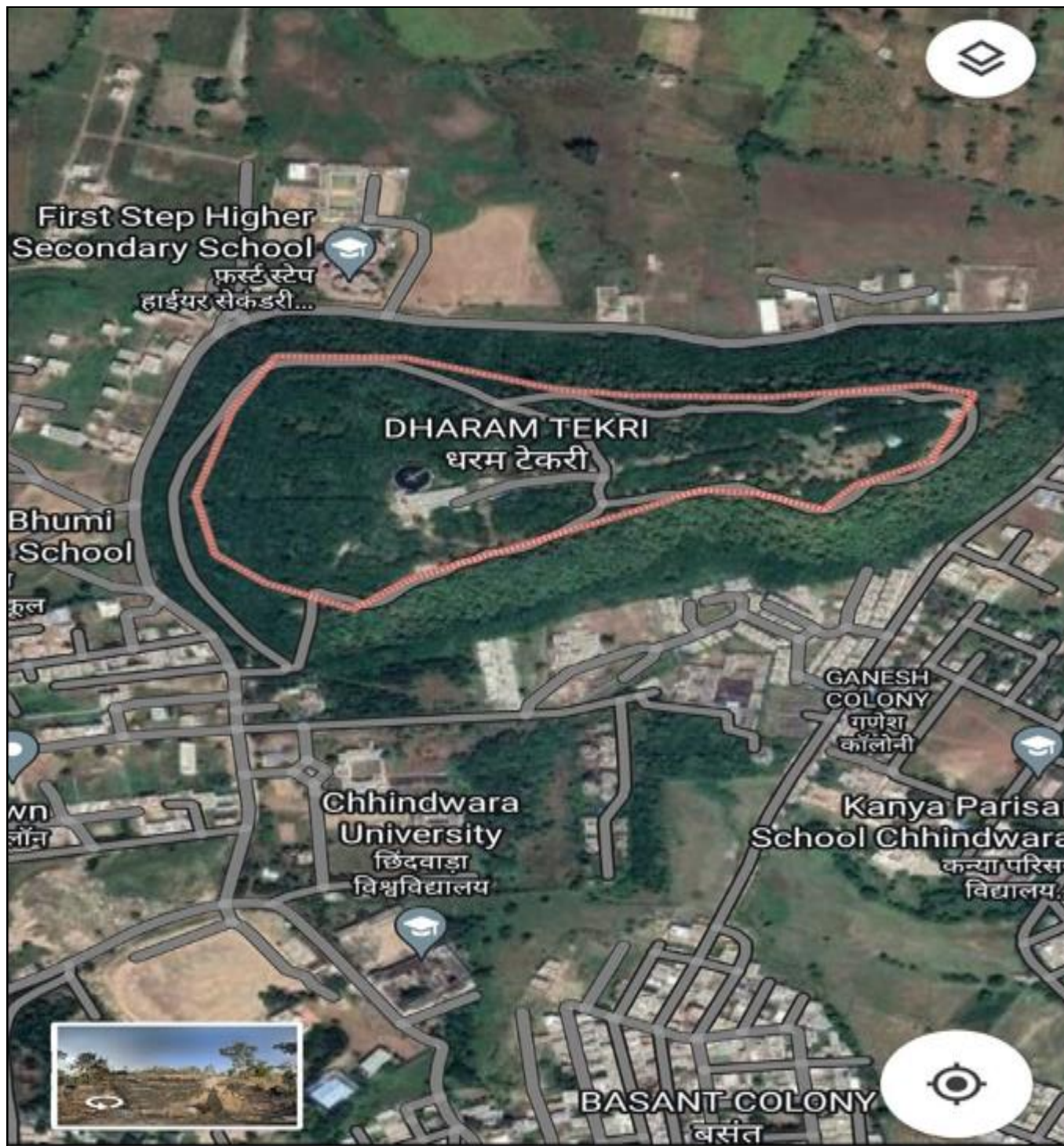


Fig 1: Google Map View of Study Area

Result and Discussion

During the study period, forty-four species of butterflies from five families were recorded (Table-1). The most abundant family was Nymphalidae, comprising 22 species (50%), followed by Lycaenidae with 10 species (23%), Pieridae with

9 species (20%), Papilionidae with 2 species (5%), and Hesperidae with 1 species (2%). Among these, 10 species (23%) were very common, 18 species (45%) were common, 3 species (7%) were occasional, 6 species (14%) were rare, and 5 species (11%) were very rare.

Nymphalidae emerged as the most abundant family, showcasing a diverse array of species in the study area, while Hesperidae was the least abundant family, displaying little to no variety during the study period.

The species most commonly observed on the study site included *Eurema hecabe*, *Catopsilia Pomona*, *Eurema brigitta*, *Eurema laeta*, *Leptosia nina*, *Catopsilia pyranthe*, *Acraea violae*, *Danaus chrysippus*, *Melanitis leda*, and *Euploea core*. Conversely, species that were very rarely encountered during the study period included *Delias eucharis*, *Dione vanilla*, *Tirumala septentrioionis*, *Charaxes solon*, and *Tilikota bambusae*.

Butterflies exhibit preferences for specific habitats, often

dictated by the availability of host and nectar plants. They play a crucial role in pollination by transporting pollen from flower to flower, thus aiding in the propagation of new plants. The study area of Dharam Tekri boasted various habitats such as gardens with diverse flowering plants, forests, water bodies, high mountains, and nursery areas. The diversity of butterfly species observed in this study is likely influenced by the types of vegetation and habitats present in the area. Furthermore, this study underscores the importance of raising awareness among students about flowering plants that serve as nectar sources for butterfly species and the need for conservation strategies.

Table 1: List of butterfly species recorded from Dharam Tekri, Chhindwara

S. N.	Family	Scientific Name	Common Name	Status
1	Pieridae	<i>Eurema hecabe</i>	Common Grass Yellow	VC
2		<i>Cepora nerissa</i>	Common Gull	C
3		<i>Catopsilia pomona</i>	Lemon Emigrant, Male	VC
4		<i>Catopsilia pomona</i>	Lemon Emigrant, Female	VC
5		<i>Eurema brigitta</i>	Small Grass Yellow	VC
6		<i>Paretonia hippia</i>	Indian Wanderer	C
7		<i>Eurema laeta</i>	Spotless Grass Yellow	VC
8		<i>Leptosia nina</i>	Psyche	VC
9		<i>Catopsilia pyranthe</i>	Mottled Emigrant	VC
10		<i>Delias eucharis</i>	Common Jezebel	VR
11	Nymphalidae	<i>Danaus genutia</i>	Common Tiger	C
12		<i>Ariadne merione</i>	Common Castor	C
13		<i>Junonia lemonias</i>	Lemon Pansy	C
14		<i>Acraea terpscire</i>	Tawny Coster	VC
15		<i>Hypolimnas bolina</i>	Blue Moon Butterfly	C
16		<i>Hypolimnas misippus</i>	Danaid Eggfly (Male)	C
17		<i>Hypolimnas misippus</i>	Danaid Eggfly (Female)	C
18		<i>Danaus chrysippus</i>	Plain Tiger	VC
19		<i>Mycalesis perseus</i>	Common Bushbrown, Pachmari Bushbrown	C
20		<i>Junonia almana</i>	Peacock Pansy	O
21		<i>Melanitis leda</i>	Common Evening Brown	VC
22		<i>Neptis hylas</i>	Common Sailor	C
23		<i>Euploea core</i>	Common Crow	VC
24		<i>Lethe europa</i>	Bamboo Treebrown	C
25		<i>Dione vanilla</i>	Gulf Fritillary	VR
26		<i>Euthalia nais</i>	Baronet	C
27		<i>Tirumala septentrioionis</i>	Dark Blue Tiger	VR
28		<i>Junonia iphita</i>	Chocolate Pansy	C
29		<i>Tirumala limniace</i>	Blue Tiger	C
30		<i>Junonia orithiya</i>	Blue Pansy	O
31	<i>Phalanta phalantha</i>	Common Leopard	R	
32	<i>Junonia hierta</i>	Yellow Pansy	R	
33	<i>Charaxes solon</i>	Pale Black Rajah	VR	
34	Lycaenidae	<i>Castalius rosimon</i>	Common Pierrot	C
35		<i>Jamides celeno</i>	Common Cerulean	C
36		<i>Leptotes cassius</i>	Cassius Blue	R
37		<i>Euchrysops cnejus</i>	Gram Blue	C
38		<i>Chilades pandava</i>	Plain Cupid or Cycad Cupid	C
39		<i>Chilades lajus</i>	Indian Lime Blue	C
40		<i>Acytolepis puspa</i>	Common Hedge Blue	O
41		<i>Zizina otis</i>	Oriental Lesser Grass Blue	R
42		<i>Lampides boeticus</i>	Pea Blue	R
43		<i>Freyeria putli</i>	Black-spotted Grass Jewel	R
44	Papilionidae	<i>Papilio polytes</i>	Common Mormon (Male)	C
45		<i>Papilio polytes</i>	Common Mormon (Female)	C
46		<i>Papilio demoleus</i>	Lime Butterfly	C
47	Hesperidae	<i>Tilikota bambusae</i>	Dark Palm Dart	VR

VC- Very Common, C- Common, O- Occasional, R-rare, VR- Very Rare



Eurema hecabe
(Common Grass Yellow)



Cepora nerissa
(Common Gull)



Catopsilia pomona
(Lemon Emigrant, Male)



Catopsilia pomona
(Lemon Emigrant, Female)



Eurema brigitta
(Small Grass Yellow)



Pareronia hippia
(Indian Wanderer)



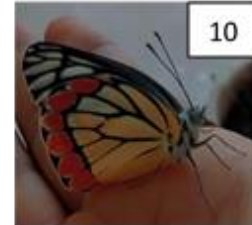
Eurema laeta
(Spotless Grass Yellow)



Leptosia nina
(Psyche)



Catopsilia pyranthae
(Mottled Emigrant)



Delias eucharis
(Common Jezebel)



Danaus genutia
(Common Tiger)



Ariadne marione
(Common Castor)



Junonia lemonias
(Lemon Pancy)



Acrea terpscire
(Towmy Coster)



Hypolimnas bolina
(Blue Moon Butterfly)



Hypolimnas missipus
(Danaid Eggfly, Male)



Hypolimnas missipus
(Danaid Eggfly, Female)



Danaus chrysippus
(Plain Tiger)



Mycalesis perseus
(Pachmari Bushbrown)



Junonia almana
(Peacock Pancy)



Melantis leda
(Common Evening Brown)



Neptis hylas
(Common Sailor)



Euplea core
(Common Indian Crow)



Lethe europa
(Bamboo Tree Brown)



Dione vanilla
(Gulf fritillary)



Euthalia nais
(Baronet)



Tirumala septentrionis
(Dark Blue Tiger)



Junonia iphita
(Chocolate Pancy)



Tirumala limniace
(Blue Tiger)



Junonia orithya
(Blue Pancy)

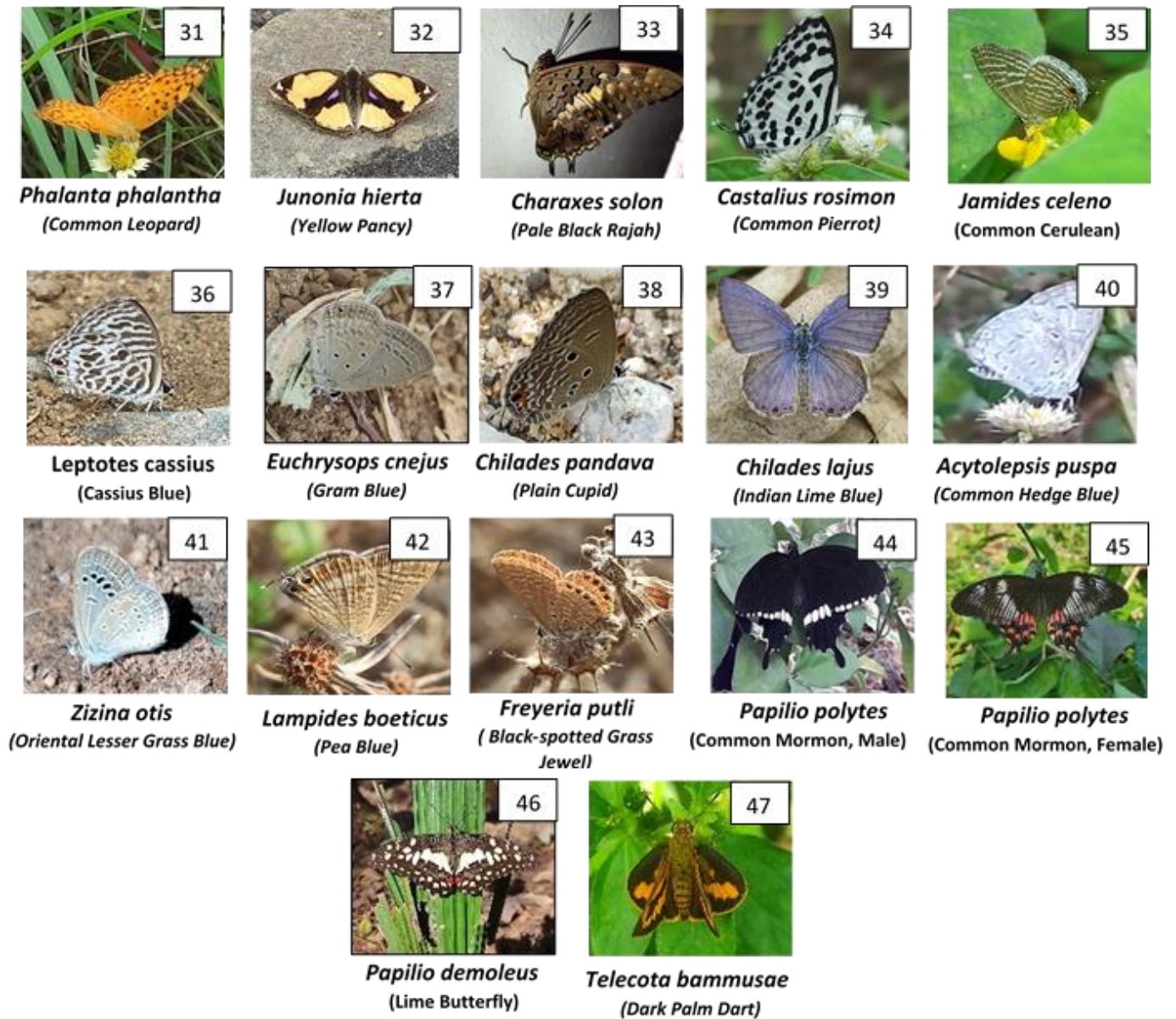


Fig 2: Photographs of the butterflies observed at Dharam Tekri

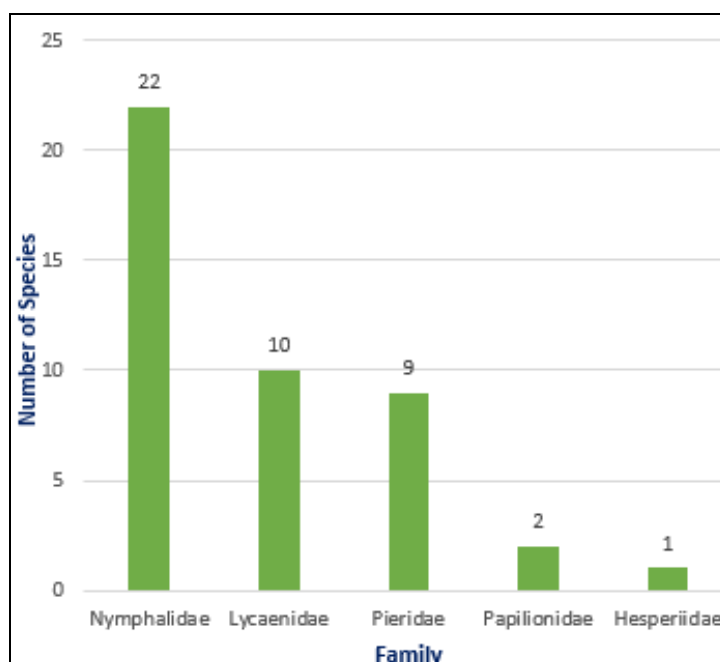


Fig 3: Number of species of butterfly in various family

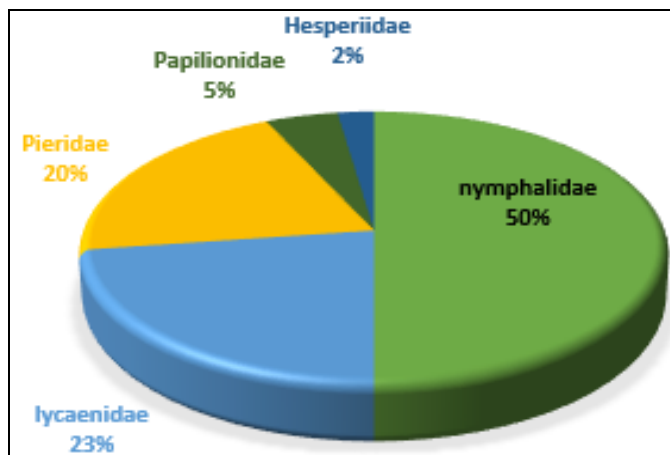


Fig 4: Family wise percentage of butterfly Fauna

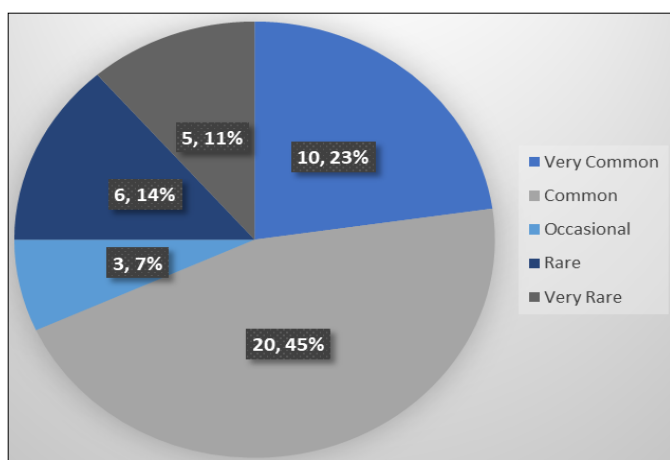


Fig 5: Status of butterfly species in Dharma Tekri Chhindwara

Conclusion

The study of butterfly diversity in Dharam Tekri, Chhindwara, will not only enhance our understanding of local ecosystems but also provide valuable insights into the overall health and biodiversity of the region. By documenting and analyzing the presence and abundance of various butterfly species, this research will contribute to the assessment of ecological health and the identification of potential threats or changes in the ecosystem. Furthermore, the study will play a crucial role in promoting ecotourism and environmental education. The diverse array of butterflies found in Dharam Tekri can serve as a powerful attraction for nature enthusiasts, students, and tourists. By highlighting the importance of butterfly conservation, the study can raise awareness among individuals and communities, encouraging responsible and sustainable tourism practices that prioritize the protection of butterfly habitats.

The findings of this research will not only benefit the local area but also have broader implications for butterfly conservation at regional and national levels. The data collected and the insights gained from this study can be utilized to inform policy-making, land management decisions, and the implementation of conservation programs aimed at preserving butterfly populations and their habitats across various landscapes.

In conclusion, the study of butterfly diversity in Dharam Tekri, Chhindwara, holds immense significance for ecosystem understanding, conservation efforts, ecotourism promotion, and environmental education. Its findings will guide future

research endeavors, shape conservation strategies, and help ensure the long-term survival of these captivating and ecologically important insects.

References

- Alleppa R, Shrivastava S. The butterfly diversity in Bhilai Mahila Mahavidyalaya College Campus. *Open Science Journal*. 2016;1(2):1-9.
- Bhowate S, Kumar P. Diversity and abundance of butterfly fauna of Chhindwara district, Madhya Pradesh. *International Journal of Entomology Research*, 2020;5(6):121-124.
- Bonebrake TC, Ponisio LC, Boggs CL, Ehrlich PR. More than just indicators: a review of tropical butterfly ecology and conservation. *Biological conservation*. 2010;143(8):1831-1841.
- Chandra K, Sharma RM, Singh A, Singh RK. A checklist of butterflies of Madhya Pradesh and Chhattisgarh States, India. *Zoos' Print Journal*. 2007 Oct 17;22(8):2790-2798.
- Dabhadkar S, Prajapati R. A study of butterfly species diversity in MN College Campus, Visnagar, Mehsana district, Gujarat, India. *International Journal of Research in Engineering, Science and Management*. 2020;3(12):98-104.
- Daniel JA, Sankararaman H, Hegde DR. Butterfly diversity in Tamil Nadu agricultural university campus, Coimbatore, Tamil Nadu, India. *Journal of Entomology*. 2018;16:1354-1361.
- Gaonkar H. Butterflies of Western Ghats, India including Sri Lanka; A biodiversity assessment of threatened mountain system. A report submitted to Centre for Ecological Sciences IISc, Bangalore. 1996; p 86.
- Gupta IJ, Majumdar M. Handbook on Diversity in Some of the Indian Butterflies (Insecta: Lepidoptera). *Zoological Survey of India*. 2022.
- Haribal M. The Butterflies of Sikkim Himalaya and their Natural History. Sikkim: Nature Conservation Foundation, Gangtok; 1992. p. 217.
- Kehimkar I. The Book of Indian Butterflies. Bombay Natural History Society and Oxford University Press; c2008. p. 1-497.
- Kunte K, Sondhi S, Roy P (Chief Editors). *Butterflies of India*, v. 4.18. Indian Foundation for Butterflies. Available from: <https://www.ifoundbutterflies.org>.
- Kunte K. Butterflies of Peninsular India. Hyderabad: Universities Press and Bangalore: Indian Academy of Sciences; c2000. p. 254.
- Shrivastava S, Alleppa R. The Butterfly Diversity in Bhilai Mahila Mahavidyalaya College Campus. *Open Science Journal*. 2016.
- Thomas JA. Monitoring change in the abundance and distribution of insects using butterflies and other indicator groups. *Philosophical Transactions of the Royal Society B: Biological Sciences*. 2005;360(1454):339-357.
- Tiple AD. Butterflies of Vidarbha region Maharashtra, India; a review with implications for conservation. *Journal of Threatened Taxa*. 2011;3(1):1469-1477.
- Tiple AD. Butterflies (Lepidoptera Rhopalocera) of the Bor wildlife sanctuary, Wardha, Maharashtra, Central India. *Biodiversity Journal*. 2018;9(3):171-80.
- Tiple AD, Deshmukh VP, Dennis RL. Factors influencing nectar plant resource visits by butterflies on a university campus: implications for conservation. *Nota lepidopterologica*. 2005;28(3/4):213.