



Observation of diversity of *Butterflies* at campus of Govt.P.G.College Mhow, District Indore, M.P.

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Abstract

India has a large variety of *Butterflies*, which play a beneficial role in the environment. *Butterfly diversity* was observed and studied in the Mhow College campus. The study was conducted in 2024. During the study, a wide variety of beautiful and colorful *Butterflies* were observed in the college campus and observations were made during the pre-monsoon, monsoon, and post-monsoon seasons to capture temporal variations in abundance. Butterfly species belonging to *Nymphalidae*, *Lycaenidae*, *Pieridae*, *Papilionidae*, and *Hesperiidae* were observed. Species richness and encounter rates for most *Nymphalidae* and *Lycaenidae* species peaked during the monsoon and immediately post-monsoon months, reflecting the seasonal availability of pollen sources and larval host plants. Local threats include habitat fragmentation and conversion of agricultural landscapes due to pesticide use. The results primarily emphasize the conservation value of small natural areas and riparian corridors within the region and support management actions such as maintaining native host-plant communities, establishing pesticide-free buffer strips, and promoting habitat connectivity. This provides a basis for long-term monitoring of butterfly diversity at Mhow College and community-based conservation initiatives.

Keywords: *Butterflies*, environment, Mhow college, species, observations, diversity, abundance

Introduction

As we all know, *Butterflies* are one of the most fascinating and ecologically important insect groups, being pollinators and herbivores. *Butterflies* also serve as sensitive indicators of environmental health. Observing *butterfly* diversity in a particular area provides valuable information about local seasonal ecological changes, habitat quality, and local biodiversity. By systematically recording the abundance, richness, and behavior of butterfly species, the effects of climate and human disturbance on their populations can be assessed. The total number of species is low 7 on the *Western Ghats* compared with some other mountain ranges of the world, the diversity of elements involved in the total fauna makes the *Western Ghats* one of the most important and interesting endemic regions of the world. This complex history cannot be explained by traditional biogeographical ideas of "migration and dispersal" alone (Gaonkar Harish (1996)^[3].

This study conducted field observations of butterfly diversity to identify butterfly species and understand distribution patterns within the Mhow College campus. Such observations contribute to baseline data for conservation planning and raise awareness about the ecological importance of *Butterflies*. The findings can guide habitat management and promote community participation in biodiversity conservation. Furthermore, they can support future research on pollinator networks and ecosystem health.

Study area

I have selected the BLP Government PG College Mhow campus for these studies. It's located in the Indore district of Madhya Pradesh, India. Mhow is known as a cantonment area, because it is stand for military headquarters of war. The college was established in 1958. The BLP Government PG College campus spans 24,330 acres. Dr. Ambedkar University is located right next to the college.

Approximately 166 villages surround it. The college is nestled near the small hills of the Vindhyaal Mountains. The climate here is pleasant. Tourist attractions are also nearby, such as Bhim Janmabhoomi, the birthplace of Dr. Bhimrao Ambedkar, Patalpani Waterfall, Jana Paw Hill Temple, Christ Church and Jaam gate etc.

Methodology

This observation was completed during the pre rainy season, rainy session and post rainy season 2024. The study was based on observation with study area, suitable time and Camara. It is complete by species identification, counting, Behavior, microhabitat,(flower species) and weather.

Observation, Result and Discussions

During this study, the number of *Butterflies* was found to be higher at the end of the rainy season. During my study period I have seen the campus of Govt.P.G.College is very rich and abundant with a diversity of *Butterflies*.

A total of 61 individual *Butterflies* representing 15 species and 5 families were recorded during the observation period. During observation, pictures of some *Butterflies* appeared clear and pictures of some *Butterflies* appeared blurred because they have very little stability.

**Butterflies* in college Campus*

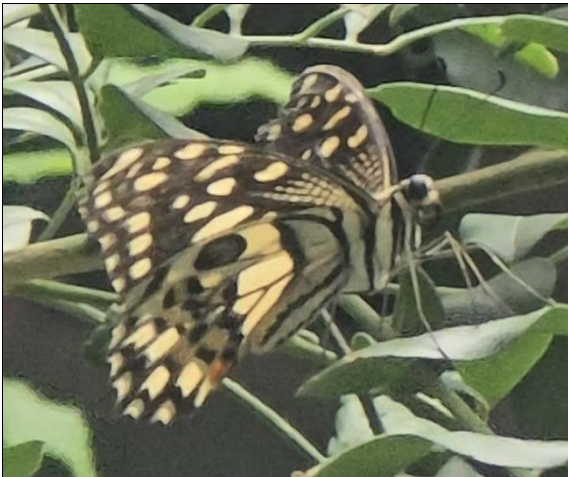
1. *Papilio demoleus*
2. *Hypolimnas bolina*(female)
3. *Hypolimnas bolina*(male)
4. *Delias eucheris*
5. *Junonia orthya*
6. *Catopsilia pomona pomona*
7. Common grass yellow (*eurema hecabe*)
8. Grey count (*tanaecia lepidea*)
9. Common grass yellow (*eurema hecabe*)
10. Common mormon-

Pepilio polites, jungle dragon

- 11. Common evening brown (*melanities leada*)
 - 12. Red pierrot (*talicauda nyseus*)
 - 13. Common leopard (*p.phalenta*)
 - 14. *Graphium sarpedon* (common bluebottle)
 - 15. *Danaus chrysippus* (plain tiger)
- 16) *Hasora chromus chromus* (common banded owl)
Gandaca harina (Tree yellow butterfly), *Statira sulphur* (*aphrissa Statira*),
Small grass yellow, *Hypolimnas misippus* (Danaid Eggfly) and other Common Indian Butterflies are also observed in campus of BLP.Govt.P.G.College Mhow.



4. *Delias Eucheris*(Painted Jezebel)



1. *Papilio Demoleus*



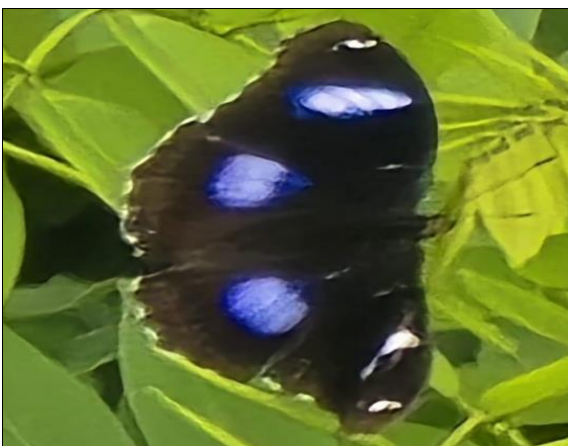
5. *Junonia Orthya* (Blue Pansy)



2. *Hypolimnas bolina* (Female)



6. *Catopsilia Pomona*



3. *Hypolimnas Bolina* (male)



7. Common Grass Yellow



8. Grey Count (*Tanaecia Lepidea*)



12. RED Pierrot (*Talicauda Nyseus*)



9. Common Grass Yellow (*Eurema Hecabe*)



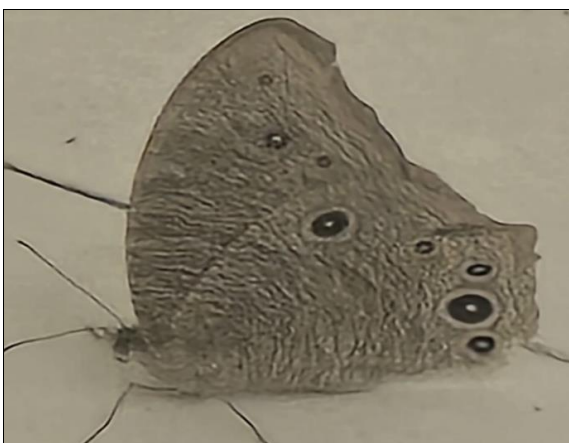
13. Common Leopard (*P. Phalanta*)



10. Common Mormon-Pepilio Polites, Jungle Dragon



14. *Graphium Sarpedon* (Common Bluebottle)



11. Common Evening Brown (*Melanities Leada*)

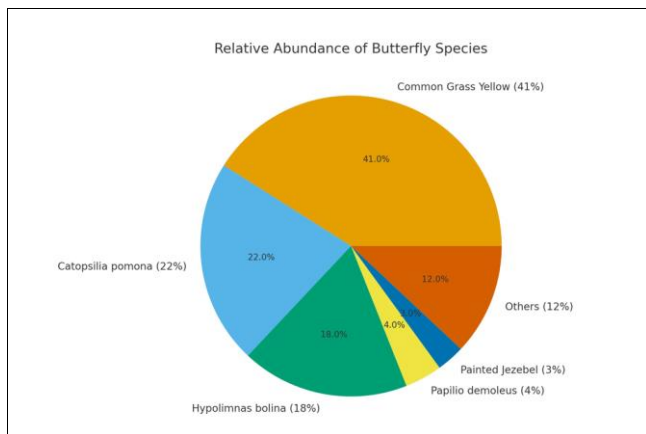


17) *Danaus Chrysippus* (Plain Tiger)



16. *Hasora Chromus Chromus* (Common Banded OWL)

Common and small grass yellow *Butterflies* 41 % of total individuals, *catopsilia pomona* 22 %, *hypolimnas bolina* 18%, *Papilio dominas* 4%, painted jezebel 3% and other are 12% observed in campus of BLP.Govt.P.G. College Mhow.



Peak abundance occurred in the early morning (08:00-11:00) and late afternoon (04:00-05:30). Species richness was highest in the monsoon months (July-September), correlating with flowering plant. The highest numbers were observed in the morning (08:00-11:00) and late afternoon (04:00-05:30). The number of species was highest during the monsoon months (July-September), which was associated with flowering plants. The high numbers of Common and Small Grass Yellow *Butterflies* are generally associated with a combination of ecological, climatic, and biological factors. Grass Yellow *Butterflies* lay their eggs on plants of the Fabaceae family (e.g., Cassia, Senna, Crotalaria). If these plants are abundant - especially after rainfall - the butterfly population increases rapidly. These *Butterflies* thrive in warm temperatures, high humidity, and the post-monsoon season when vegetation is lush. These conditions facilitate a rapid breeding cycle and abundant nectar sources. They have a rapid breeding cycle, with multiple generations per year, allowing the population to increase rapidly when resources are available. Open grassland, and the open grassy patches on my college campus, are naturally dominated by these species. They are not very selective about nectar sources and can feed on many common flowers. This increases their chances of survival in disturbed or semi-urban habitats.

The higher numbers during the monsoon coincide with higher humidity and host-plant growth, a pattern consistent with other studies in central India. The number of *Nymphalidae* suggests that open shrubby and garden habitats provide abundant nectar from flowering shrubs. Species richness was higher in areas with mixed vegetation and less disturbance. The 57 butterfly species surveyed belonged to 9 families. There was a correlation between temperature and butterfly species diversity and abundance (Pollard, E. and Yates, T.J., 1993) [9]. The presence of indicator species such as *Papilio demoleus* and *Eurema hecabe* highlights the importance of conserving native nectar plants and reducing pesticide use to maintain pollinator populations.

High abundance of Butterflies

A high abundance of *Butterflies* are generally considered a good ecological indicator, but they can also reflect specific environmental conditions. Here are the main indications of high butterfly numbers: Healthy Ecosystem, Good Habitat Quality, Stable Climatic Conditions, High Plant Biodiversity, Indicator of Pollinator Activity, Seasonal Peaks, Ecological Balance. Although *Butterflies* were distributed evenly across both sites, MMWS recorded the highest diversity and abundance of *Butterflies* during both seasons (Bonebrake *et al.*, 2010) [1].

Ecological Impact (What These Butterflies Do on Campus)

Mhow College is surrounded by lush agriculture fields and hills where adult *Butterflies* visit flowers for nectar and transfer pollen between plants. These *Butterflies* contribute to the pollination of many wild and cultivated flowering plants—facilitating seed formation, genetic mixing, and plant community resilience. This abundance of nectar-feeding species helps maintain flowering shrubs, ornamental beds, and native wildflowers in the campus green areas. Butterfly diversity and relative abundance respond rapidly to habitat changes (landscape fragmentation, vegetation structure, pesticide use, microclimate). Conversely, the presence of species like *Hypolimnas bolina* indicates nearby patches of shrubland/forest that provide shelter and host plants. A healthy butterfly community supports these predators and thus helps maintain the complexity of the local food web and nutrient cycling (leaf consumption → feces → soil nutrients). High abundance of particular species can influence which host plants experience greater local herbivory. Common Grass Yellow (*Eurema hecabe*)—often associated with open grassy/edge habitats and uses a wide variety of host plants; It is common where there are lawns/grasses/shrub edges. *Catopsilia pomona* (Oriental Lemon Emigrant) — Larvae feed on Cassia, Bauhinia, Butea, and similar legumes/trees; their abundance suggests the presence (or planting) of such host trees around campus. Promoting these trees increases this species' ability to complete its life cycle. *Hypolimnas bolina* (Great Eggfly) — Characterizes open, lightly wooded, and shrubby habitats; its presence indicates nearby understory woody vegetation or sheltered gardens. Regional and global studies suggest that butterfly populations are declining due to habitat loss, pesticide use, and climate stressors — these consequences

will reduce the pollination and bioindicator services provided by *Butterflies*. At the local level, regular harvesting, heavy pesticide use, or removal of host plants can rapidly reduce populations and species numbers.

Conclusion

Butterflies are not only beautiful insects but also vital ecological contributors. They support pollination, serve as indicators of environmental quality, sustain food webs, and help maintain ecosystem functioning.

Overall, the species composition suggests that the campus sustains a moderately rich butterfly community dominated by generalist species typical of semi-urban landscapes. Maintaining native vegetation, increasing floral diversity, and minimizing habitat disturbance could further enhance butterfly richness and contribute to long-term ecological stability within the campus. The dominance of grass yellows and other pierid species suggests the presence of open, sunlit habitats and abundant larval host plants that support their population. The diversity and distribution patterns observed indicate that the campus provides a moderately suitable habitat for *Butterflies*, reflecting a healthy level of floral resources and microhabitats. However, the relatively low representation of specialist species also highlights the need for increased habitat complexity, such as adding more native flowering plants, host plants, and undisturbed green patches.

Overall, the study establishes a baseline for future monitoring programs and emphasizes the ecological importance of conserving and enhancing green spaces within educational institutions. Continuous assessment of butterfly diversity can serve as a reliable indicator of the campus's environmental health and contribute to broader biodiversity conservation efforts in the Mhow-Indore region.

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