International Journal of Advance and Applied Research
www.ijaar.co.in
ISSN – 2347-7075 Impact Factor – 8.141
Peer Reviewed Bi-Monthly
Vol. 6 No. 18 March - April - 2025

A Study on Butterfly Diversity in Jagdamba Mahavidyalaya College Campus, Achalpur

Khadse T. A.[1], Misba Anjum[2] & Mohammad Owais[3]

Corresponding Author – Khadse T. A.

DOI - 10.5281/zenodo.14784834

Abstract:

A study on butterfly diversity was carried out in Jagdamba Mahavidyalaya Campus, Achalpur, Amravati district of Maharashtra, India. It is located in the northeastern part of Maharashtra state. The climate of the study area is characterized by hot summers with the maximum temperature of 47°C during May to June with an average of 14°C in January. The findings indicated that 13 butterfly species from 4 families were found in the study area. Nymphalidae was the richest family in the study area that comprised (5 and 38.46%) species of butterfly followed by Pieridae with (3 and 23.07%) species, Lycaenidae (3 and 23.07 %) and Papilionidae families were the lowest with (2 and 15.38 %) species. The study area is rich in butterfly diversity and further research could be conducted to obtain more details and documentation on butterfly diversity for the conservation and butterfly park.

Keyword:Butterfly, diversity ,Jagdamba Mahavidyalaya, Achalpur City

Introduction:

The variety of hues on butterflies wings contributes to the beauty of the world. Butterflies are one of the most conspicuous species of earth's biodiversity and are extremely responsive to any changes in their environment such as temperature, humidity, light and rainfall patterns. Butterflies are a well-studied category worldwide due to their beauty and ecological value. Because they are relatively conspicuous and more interesting to human than most other insects due to humans than most other insects due to their size and color structure, which encourages observation and collector butterflies are an essential component of the ecosystem and the perfect population of organisms for the study of insect phenology. Butterfly larvae feed on plant leaves for survival of (Shah et al., 2016). Therefore, its distribution depends on the accessibility of the host plant (Arya, 2014).

In the area of conservation making plans and management, butterflies are additionally considered as an umbrella species (Betrus et al., 2005).Butterflies are a good indicator of climatic conditions, seasonal and ecological changes . It also allows you to maintain a strategy for formulating strategies for conservation. However, they were largely ignored by conservation biologists and political makers. Therefore, butterflies play an important role in ecosystems and evolutionary relationships connecting you, plants and your life (Ghazanfar et al., 2016).The most researched group of insects is butterflies as pollinators and agents of energy transmission from herbivores to the next trophic level they are vital components of every natural ecosystem. Many butterfly species have tight seasonal preferences, favouring only specific types of environments Their usefulness stems from their diversity in distribution, specification type, fast responsiveness to perturbations taxonomic tractability Considerable abundance, and sampling. In 2002, Scott and Lemieux reported that

Climate change is expected to affect species and degrade ecosystems. Vu (2009) stated that the edges of the forest are more diverse with stronger exposure to open forests. Small changes in her habitat can lead to her migration or loss (Blair, 1999; Kunte, 2000; Mennechez et al., 2003). Due to their excessive sensitivity to environmental changes, abundance and advanced taxonomy, butterflies are recognized as best indicator taxa of habitat disturbance (Kocher and Williams, 2000; Bonebrake et al.,2010; Castro and Espinosa, 2015).

Leon-Cortes et al. (2019) reported that the most diverse type of butterfly in the testing area belongs to the Nympharidae family with (31) species, followed by Hesperidae (12), Pieridae (19) or Lycaenidae (16).

Material and Method:

Study Area:

The present study was conducted in Jagdamba Mahvidyalaya campus Achalpur (21°15'31"N 77°30'17"E) a city located in the northeast part of Maharashtra, India, within the Amravati district.The region experiences a climate that ranges from subtropical to tropical, with significant temperature variations throughout the year. Temperatures can reach as high as 47°C during the hottest summer months of May and June, while the average temperature in January is 14°C. The area typically receives between 850 and 1000 mm of rainfall annually. For the purposes of this research, two sampling locations were chosen: a botanical garden and the grounds of JMV campus.

Survey method:

The field surveys on butterflies were carried out in the study area three times a week for the period of four months from August to November, 2024. Butterflies were accessed in the study area from 9 am to 11 am in the morning by random observations during walking through the two selected sites based on habitats present in the study area. The butterfly photos were taken in the field with the help of a camera.

Identification of the species of butterfly:

The photographs of butterflies were used for the identification of the species of butterfly. Color patterns, size, shape, and design were considered as identification of butterfly species with the help of entomologist experts and available photographs and literature suggested by (Sunil et al., 2016), and (Kumar et al., 2016).

Data Collection:

Field observations were recorded during the period between August 2024 to November 2024 at the botanical gardens and JMV Campus.For species identification, the photographs of butterfly were taken. If subsequent observations occurred, repeated collections of the same samples were avoided to social scope and photographic documents were performed.The specimens were identified with the help of standard identification keys 121, 1, 19, 37. 12.411, The information on genera and species composition, species richness and relative abundance were tabulated.

Result:

Checklist of the species of butterfly in study area:

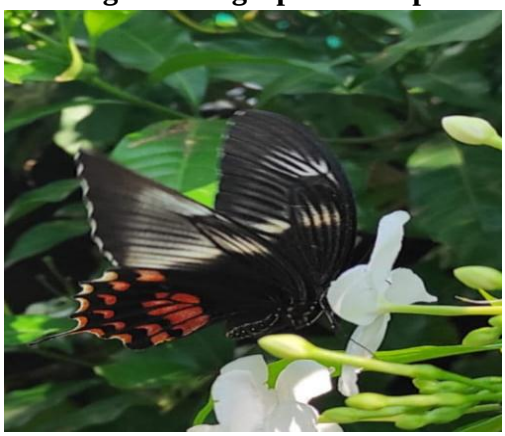
A checklist of butterfly species observed in the study area is shown in the table. (Table 1). The results showed that a total of 13 species of butterfly belong to 4 families were recorded in the study area. Nymphalidae was the richest family in the study area that comprised (5 and 38.46%) species of butterfly followed by Pieridae with (3 and 23.07%) species, Lycaenidae (3 and 23.07 %) and Papilionidae families were the lowest with (2 and 15.38 %) species each as indicated in (Fig.1).

Checklist of the species of butterfly in study area:

Table :1

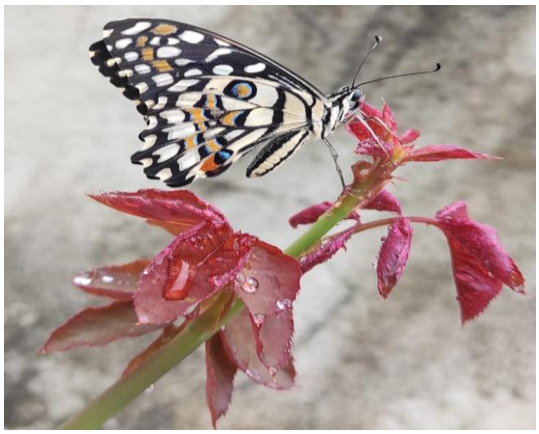
S/N	Common Name	Scientific Name	Family
1.	Common palmfiy	*Elymnias hypermnestra*	Nymphalidae
2.	Plain tiger	*Danaus chrysippus*	Nymphalidae
3.	Common evening brown	*Melanitis leda*	Nymphalidae
4.	Common castor	*Ariadne merion*	Nymphalidae
5.	Blue spotted crow	*Euploea midamus*	Nymphalidae
6.	Common gull	*Cepora nerissa*	Pieridae
7.	Caper white butterfly	*Belenois aurota*	Pieridae
8.	Plane orange tip	*Colotis aurora*	Pieridae
9.	Common Mormon	*Papilio polytes*	Papilionidae
10.	Lime butterfly	*Papilio demoleus*	Papilionidae
11.	Plains Cupid	*Chilades pandava*	Lycaenidae
12.	Gram blue	*Euchrysops cnejus*	Lycaenidae
13.	Tiny Grass Blue	*Zizula hylax*	Lycaenidae

Fig .1 Photograph of the species of butterfly observed in the study area



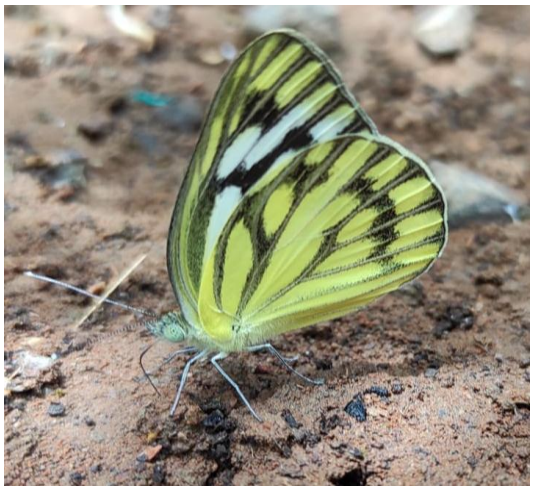
1. **Common Mormon**

2.Caper white butterfly

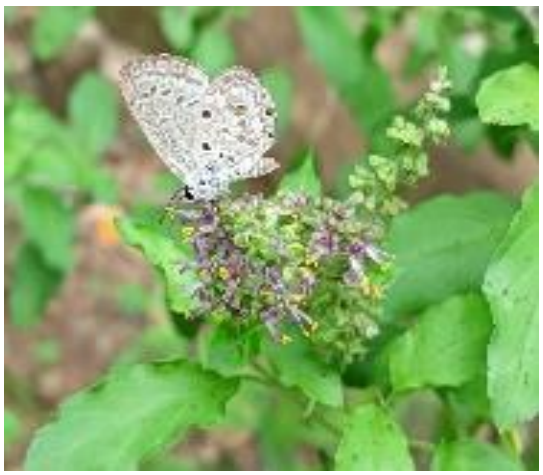


3. Lime butterfly

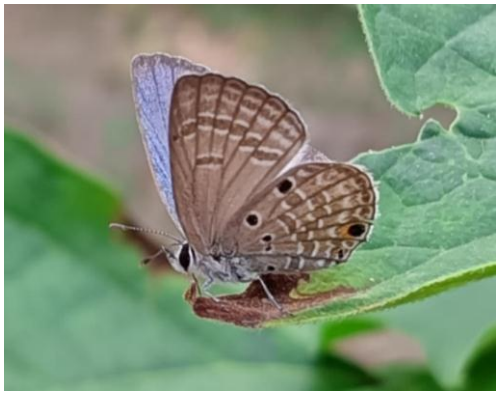
4. Plain Tiger

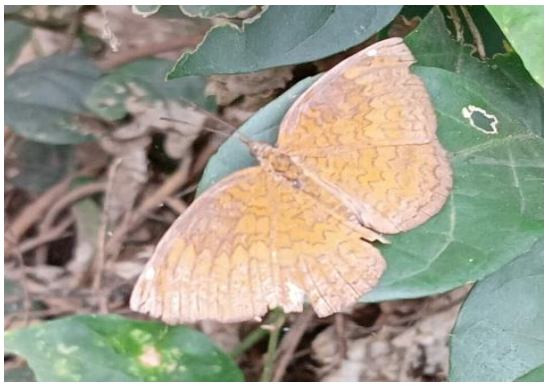


5.Common Gull

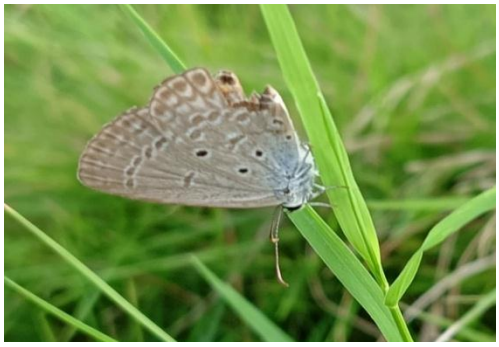


6.Tiny Grass Blue

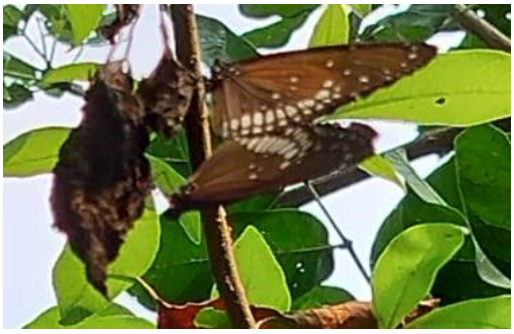




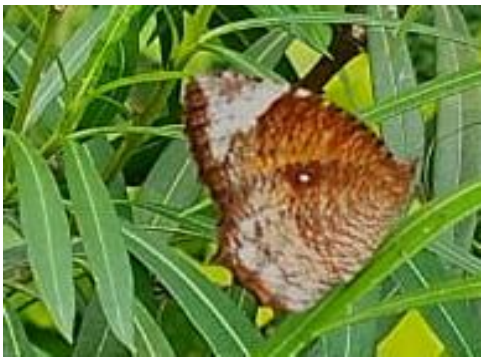
7.**Plains Cupid**



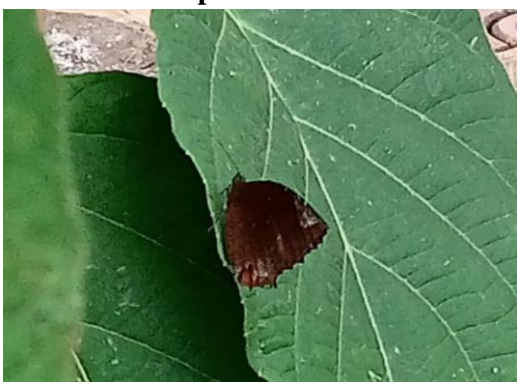
8. Common Castor



9.Gram Blue



10. Blue spotted crow



11. Common Palmfly

12. Common evening brown

13. Plane orange tip

Conclusion

The butterfly diversity of Achalpur, Amravati districts was studied from August 2024 to November 2024 over a period of 4 Months. A total of 13 species of butterflies were recorded, out of which 5 species belonged to the family Nymphalidae, 3 species to the family Pieridae, 3 species to the Lycaenidae and 2 species to the family Papillonidae. Based on the results obtained from in the study area, Nymphalidae family was found maximum in number and percentage of the species of butterfly among all the families. Also Jagdamba Mahavidyalaya botanical garden and campus was found highest among the other sites in terms of individual number of butterflies and Simpson index of diversity. Hence, it is concluded that the think about range is wealthy in butterfly diversity and encourage investigate might be conducted to get subtle elements and documentation on butterfly differing qualities for the preservation and butterfly park.

References:

1. Arya, M.K., 2014. Species richness and diversity of butterflies in and around Kumaun University, Nainital,

Uttarakhand, India. J. Ent. Zool. Stud., 2: 153-159.
2. Betrus, C. J., Fleishman, E. and Blair, R. B. 2005. Cross taxonomic potential and spatial transferability of an umbrella species index. Journal of Environmental Management ,74: 79-87.
3. Blair, R.B., 1999. Birds and butterflies along an urban gradient: Surrogate taxa for assessing biodiversity. Ecol. Applic., 9: 164-170.
4. Bonebrake, T. C., Ponisio, L. C., Boggs, C. L. and Erlich, P. R. 2010. More than just indicators: A review of tropical butterfly ecology and conservation. Biological Conservation ,43: 1831-1841.
5. Castro, A. and Espinosa, C. I. 2015. Seasonal diversity of butterflies and its relationship with woody-plant resources availability in an Ecuadorian tropical dry forest. Tropical Conservation Science 8 (2): 333-351
6. Ghazanfar, M., Malik, M.F., Hussain, M., Iqbal, R. and Younas, M. 2016. Butterflies and their contribution in ecosystem: A review. Journal of Entomology and Zoology Studies,4(2): 115-118.
7. Kumar, A., Mishra, S. and kanaujia, A. 2016. Butterfly fauna of Katernia Ghats Wildlife sanctuary, Uttar Pradesh. International Journal of Species, 17(56): 119 – 130.
8. Kocher, S. D. and Williams, E. H. 2000. The diversity and abundance of North American butterflies vary with habitat disturbance and geography. Journal of Biogeography,27(4): 785-794.
9. Kunte, K., 2000. India- A life scape: Butterflies of Peninsular, India. Universities Press, Indian Academy of Sciences, Bangalore, pp. 270.
10. Kumar, P., Ramarajan, S. & Murugesan, A.G. 2017. Diversity of butterflies in relation to climatic factors in environmental center campus of Manonmaniam Sundaranar University, Tamil Nadu India. Journal of Entomology and Zoology Studies, 5(2): 1125 1134.
11. Leon-Cortes, J.L., Caballero, U., Miss Barrera, I.D. and Giron-Intzin, M. 2019. Preserving butterfly diversity in an ever expanding urban lands cape? A case study in the highlands of Chiapas, Mexico. Journal of Insect Conservation, 23: 404-418.
12. Mennechez, G., Schtickzelle, N. and Baguette, M., 2003. Metapopulation dynamics of the bog fritillary butterfly: comparison of demographic parameters and dispersal between a continuous and a highly fragmented landscape. Landsc. Ecol., 18: 279-291.
13. Scott, D. and Lemieux, C.2005. Climate change and protection area policy and planning in Canada. The Forestry Chronicle, 81: 696-763.
14. Shah, S.W., Rafi, M.A. and Zia, A., 2016. Biology of Pontia daplidice (Lepidoptera: Pieridae) on its new host plant Lepidium pinnatifidium from Potohar Region, Pakistan. J. Ent. Zool. Stud., 4: 178-182.
15. Sunil, K., Deepti, M., Priyanka, V.L. and Lily, S.N. 2016. Butterfly diversity of the Gangetic plain (Doaba) at Allahabad, U.P, India. Journal of Entomology Studies, 4(6): 268-271
16. Vu, L.V. 2009. Diversity and similarity of butterfly's communities in five different habitat types at Tom Dao National park Vietnam. Journal of Zoology, 2(7): 15-22.