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Lepidopteran diversity around Vaibhavawadi tahasil, Dist. Sindhudurg, (M.S.) India.

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Abstract- **The present study documents the diversity of butterflies (Order: Lepidoptera) in Vaibhavwadi Tahsil, Sindhudurg District, Maharashtra, India, conducted during January 2025 – December 2025. The study area lies in a transitional ecological zone between the Sahyadri foothills of the northern Western Ghats and the Konkan coastal plains, characterized by heterogeneous habitats such as lateritic plateaus, forested slopes, riparian zones, and agricultural landscapes. Field surveys were conducted to assess family-wise composition of butterflies occurring in the region.**

"A total of 54 butterfly species belonging to five families were recorded. Nymphalidae was the most dominant family with 16 species, followed by Lycaenidae (15), Papilionidae (8), Hesperiidae (8), and Pieridae (7). At the subfamily level, Polyommatinae (13 species) and Satyrinae (5 species) showed higher representation."The richness and composition of butterfly fauna observed in Vaibhavwadi Tahsil reflect the ecological significance of this transitional landscape. The present checklist provides baseline data for future monitoring, ecological studies, and conservation planning in the region, emphasizing the need to preserve diverse habitats to sustain Lepidopteran diversity.

Keywords— **Lepidoptera, species richness, biodiversity, Vaibhavwadi, Sindhudurg, Western Ghats.**

I. Introduction

Lepidopterans, comprising butterflies and moths, are ecologically significant insects that act as pollinators and bioindicators of ecosystem health. Butterflies, in particular, are sensitive to environmental changes and are widely used to assess biodiversity, habitat quality, and the impacts of anthropogenic activities. Documenting their diversity provides critical insights into local ecology and aids in conservation planning.

The present study was conducted in Vaibhavwadi Tahsil, Sindhudurg District, Maharashtra, India, from January 2025 to December 2025. Geographically, Vaibhavwadi lies between the Sahyadri foothills of the northern Western Ghats and the Konkan coastal lowlands, forming a transitional ecological zone. This unique positioning results in a varied topography, including undulating lateritic plateaus, forested slopes, riparian corridors, and cultivated valleys, which together create a mosaic of habitats supporting diverse butterfly fauna.

The present study documents total of 54 butterfly species belonging to five families were recorded. Nymphalidae was the most dominant family with 16 species, followed by Lycaenidae (15), Papilionidae (8), Hesperiidae (8), and Pieridae (7). At the subfamily level, Polyommatinae (13 species) and Satyrinae (5 species) showed higher representation. This diversity highlights the ecological heterogeneity of the study area and its capacity to support multiple butterfly guilds. This study provides a comprehensive baseline of Lepidopteran diversity in Vaibhavwadi Tahsil, documented during January–December 2025, contributing to regional biodiversity knowledge and highlighting the importance of habitat conservation.

By providing a systematic checklist with scientific and common names, this study aims to contribute baseline data on butterfly diversity that can support future ecological assessments, long-term monitoring, and conservation planning. Such inventories are essential for detecting changes in species composition over time, identifying species of conservation concern, and understanding the impacts of habitat alteration on lepidopteran communities.

II. Study Area

The study was conducted in Vaibhavwadi Tahsil, Sindhudurg District, Maharashtra, India, **during January–December 2025**. The area lies between the Sahyadri foothills of the northern Western Ghats and the Konkan coastal plains, forming a transitional ecological zone. The topography comprises undulating lateritic plateaus, forested slopes, riparian corridors, and cultivated valleys.

Vaibhavwadi experiences a tropical monsoon climate with heavy rainfall and moderate temperature fluctuations. Annual precipitation ranges between 3000–4500 mm, predominantly during the southwest monsoon (June–September). Winter temperatures average around 18°C, while summer temperatures may reach 34°C. High humidity and dense vegetation further influence microclimatic conditions across different habitats.

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III. Materials Used

- Digital camera / Mobile camera
- Field notebook and pen
- Binoculars (optional)
- Standard butterfly identification books and guides

IV. Methodology

Butterflies were surveyed using random walks in selected habitats of the study area **from January 2025 to December 2025**. Observations were made during morning hours (8:00 a.m.–12:00 noon) when butterfly activity was high. Butterflies were recorded by direct visual observation and photography without disturbing their natural habitat.

Species identification was done in the field whenever possible. Photographs were later compared with standard field guides and taxonomic literature for confirmation. Butterflies were identified up to family, subfamily, and species level.

V. Result

Table 1.
Lepidopteran species recorded during the study period (January 2025 – December 2025) in Vaibhavwadi tahsil, Sindhudurg district, Maharashtra, India

Sr. No.	Family	Subfamily	Common Name	Scientific Name
1	Nymphalidae	Danainae	Plain Tiger	*Danaus chrysippus*
2			Common Tiger / Striped Tiger	*Danaus genutia*
3			Blue Tiger	*Tirumala limniace*
4			Dark Blue Tiger	*Tirumala septentrionis*
5		Satyrinae	Common Evening Brown	*Melanitis leda*
6			Dark Evening Brown	*Melanitis phedima*
7			Common Bushbrown	*Mycalesis perseus*
8			Glad-eye Bushbrown	*Mycalesis patnia*
9			Common Five-ring	*Ypthima baldus*
10		Nymphalinae	Peacock Pansy	*Junonia almana*
11			Lemon Pansy	*Junonia lemonias*
12			Chocolate Pansy	*Junonia iphita*
13			Blue Pansy	*Junonia orithya*
14		Heliconiinae	Common Leopard	*Phalanta phalantha*
15			Common Cruiser	*Vindula erota*
16		Charaxinae	Common Nawab	*Charaxes athamas*
17	Pieridae	Pierinae	Common Jezebel	*Delias eucharis*
18			Common Albatross	*Appias albina*
19			Common Gull	*Cepora nerissa*
20		Coliadinae	Common Grass Yellow	*Eurema hecabe*
21			Three-spot Grass Yellow	*Eurema blanda*
22			Common Emigrant	*Catopsilia pomona*
23			Mottled Emigrant	*Catopsilia pyranthe*
24	Papilionidae	Papilioninae	Common Mormon	*Papilio polytes*
25			Blue Mormon	*Papilio polymnestor*

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26			Lime Butterfly	*Papilio demoleus*
27			Common Rose	*Pachliopta aristolochiae*
28			Crimson Rose	*Pachliopta hector*
29			Tailed Jay	*Graphium agamemnon*
30			Common Jay	*Graphium doson*
31			Common Yellow Swallowtail	*Papilio machaon*
32	Lycaenidae	Polyommatinae	Zebra Blue	*Leptotes plinius*
33			Pea Blue	*Lampides boeticus*
34			Tiny Grass Blue	*Zizula hylax*
35			Grass Jewel	*Chilades trochylus*
36			Common Cerulean	*Jamides celeno*
37			Indian Cupid	*Everes lacturnus*
38			Gram Blue	*Euchrysops cnejus*
39			Plains Cupid	*Chilades pandava*
40			Plain Hedge Blue	*Celastrina lavendularis*
41			Red Pierrot	*Talicada nyseus*
42			Common Lineblue	*Prosotas nora*
43			Tailless Lineblue	*Prosotas dubiosa*
44			Common Pierrot	*Castalius rosimon*
45		Theclinae	Common Silverline	*Spindasis vulcanus*
46			Yamfly	*Loxura atymnus*
47	Hesperiidae	Hesperiinae	Common Grass Dart	*Taractrocera maevius*
48			Indian Skipper	*Parnara ganga*
49			Dark Palm Dart	*Telicota ancilla*
50			Straight Swift	*Parnara guttatus*
51			Conjoined Swift	*Pelopidas conjuncta*
52		Pyrginae	Common Snow Flat	*Tagiades japetus*
53			Common Small Flat	*Sarangesa dasahara*
54			Malabar Spotted Flat	*Celaenorrhinus ambareesa*

VI. Discussion

The study recorded 54 butterfly species from five families in Vaibhavwadi Tahsil during January–December 2025. The observed diversity reflects the ecological richness of the study area, which lies in a transitional zone between the Western Ghats foothills and the Konkan coastal plains. Ecotonal regions are known to support high species diversity due to varied habitats and host plants.

Among the recorded families, Nymphalidae was the most dominant, represented by 16 species. Members of this family are known for their adaptability to a wide range of habitats, including forest edges, open lands, and agricultural areas**.** Papilionidae, comprising 8 species, included large and visually prominent butterflies typically associated with forested and semi-forested habitats, such as *Papilio polymnestor* and *Graphium agamemnon*.

Lycaenidae exhibited high diversity with 15 species, particularly within the subfamilies Polyommatinae and Theclinae, many of which show close ecological associations with specific larval host plants and, in several cases, ant mutualisms. Pieridae (**7** species) and Hesperiidae **(**8 species) were commonly observed in open habitats, grasslands, and along roadsides, reflecting their preference for disturbed and sunlit environments.

The overall butterfly diversity is comparable to similar studies in agro-forest landscapes of the Konkan and Western Ghats. However, increasing anthropogenic activities such as agricultural expansion and habitat modification may threaten butterfly populations. Continuous monitoring and habitat conservation are essential to sustain Lepidopteran diversity.

VII. Conclusion

This study provides a preliminary checklist of butterfly species from Vaibhavwadi Tahsil, documenting 54 species across five families during January–December 2025. Findings highlight the ecological importance of the region, which supports diverse Lepidopteran fauna due to heterogeneous habitats. The study serves as baseline data for future biodiversity assessments, long-term monitoring, and conservation planning. Protecting natural habitats and raising awareness about butterfly conservation are crucial for maintaining ecological balance.

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