



# Preliminary Butterfly Survey

(IN AND AROUND MITHILA WILDLIFE TRUST)

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## Overview

In a joint initiative between Mithila Wildlife Trust (MWT) and Butterfly Watchers Nepal (BWN), a short-term butterfly diversity assessment was carried out in and around the premises of MWT, located in the lowland Terai region of Nepal. The aim of this preliminary survey was to assess the butterfly species richness and abundance to provide foundational understanding of the area's lepidopteran biodiversity, and to identify conservation priorities or future monitoring needs. The study was conducted through direct field observation, photographic documentation, and species identification by trained butterfly experts.

## METHODS

The research employed opportunistic visual encounter surveys during daylight hours, where observers walked through various habitats such as forest lands, open grasslands, forest edges, roadside vegetation, and cultivated lands. Standard butterfly watching techniques were followed, including the use of binoculars, photography, and field guides for accurate identification. The survey team recorded the total number of individuals observed for each species, and each individual was counted only once to avoid repetition. Google map was used to identify the trails and possible sites, though this survey does not include spatial mapping.



Species were identified in the field and verified post-survey through reference materials and expert consultations. Data were then compiled in the checklist format and analyzed using standard ecological diversity indices.

## COMMUNITY ENGAGEMENT AND AWARENESS

In addition to the scientific data collection, the study team emphasized environmental education and community involvement as part of the research initiative. A short butterfly watching and awareness program was organized at the Dhanusadham Botanical Garden. The event engaged staff members of Mithila Wildlife Trust as well as local school students, introducing them to butterfly



observation techniques, species identification, and the ecological importance of butterflies in local ecosystems.

This interactive session served not only as an outreach effort to raise awareness among youth and conservation personnel but also acted as a practical demonstration of citizen science in action. Participants were guided to observe butterfly behavior, distinguish between different species, and understand their role in pollination and biodiversity. This component of the study enriched the research by fostering interest in local biodiversity and promoting the value of in-situ conservation through education.



## RESULTS

A total of 51 species of butterflies were recorded, amounting to 461 individual butterflies observed during the assessment period. The species belonged to 5 families, including Nymphalidae, Lycaenidae, Pieridae, Papilionidae, and Hesperiidae. Among these, Nymphalidae was the most dominant family, contributing nearly half of the total individuals (47%). This was followed by Pieridae (19%) and Lycaenidae (18%), indicating a diverse butterfly presence in the surveyed area. The absence of Riodinidae may reflect either its natural scarcity in the region

or limitations in the enough research time period, temporal and spatial scale of this preliminary survey.

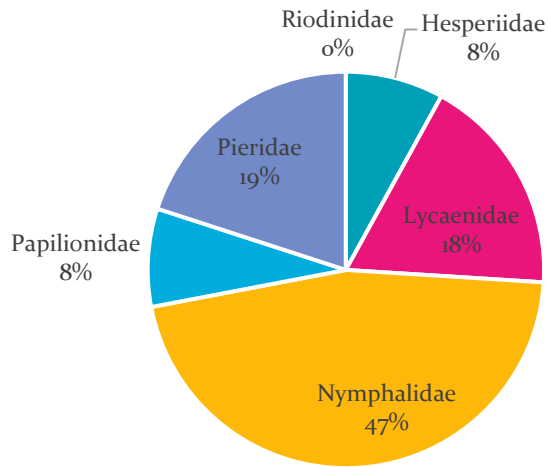


Figure 1. Butterfly families recorded

Gram Blue (*Euchrysops cnejus*) was the most abundant species with 62 individuals, followed by Common Emigrant (*Catopsilia Pomona*) with 39 individuals, and Common Grass Yellow (*Eurema hecabe*) with 28 individuals.

Several uncommon or less frequently observed species in the region, such as Moore's Ace, Yamfly, Yellow Orange Tip, Plain Tawny Rajah, and Commander, were also documented, indicating a mosaic of microhabitats that support diverse butterfly fauna.

## STATISTICAL ANALYSIS AND INSIGHTS

To assess species diversity and distribution patterns, three ecological indices were calculated:

- Shannon Diversity Index ( $H'$ ) = 3.373

This value suggests high species diversity. Shannon's index increases with both the number of species and their even distribution. A value above 3 generally reflects a well-balanced butterfly community, indicating that no single species is dominating excessively. It signifies that the habitat offers suitable conditions for multiple species to coexist with some stability.

- Simpson's Diversity Index ( $D$ ) = 0.952

This value reflects the probability that two randomly selected individuals from the sample belong to different species. A Simpson's index closer to 1 indicates higher diversity. The recorded value of 0.952 confirms that the community is diverse and not only dominated by just a few species.

- Evenness (E) = 0.862

Evenness values range between 0 and 1, where values close to 1 denote that species are represented in relatively equal numbers. The calculated evenness of 0.860 indicates a fairly uniform distribution of individuals among species, with only a few disproportionate dominances.

The results of this preliminary study highlight that the area within and around Mithila Wildlife Trust supports a diverse and healthy butterfly population. The high diversity and evenness indices suggest that the landscape provides a variety of microhabitats, nectar sources, larval host plants, and ecological niches that can support butterflies across different families and functional groups.

The relatively high abundance of grassland and scrubland-associated species (such as Gram Blue and Common Grass Yellow) suggests the influence of open habitat mosaics, while the presence of forest-dependent species like the Bamboo Treebrown points to remnant forest patches or shaded areas. Additionally, the detection of migratory species like Common Emigrant reflects ecological connectivity and seasonal dynamics.

This diversity is indicative of a balanced ecosystem, although under anthropogenic influence due to habitat fragmentation, agriculture, and human settlement in the Terai landscape. Therefore, butterfly presence here can also serve as an early bioindicator of environmental health.

## CONCLUSION AND RECOMMENDATIONS

This preliminary survey has provided valuable insights into the butterfly diversity of the Mithila Wildlife Trust and surrounding landscape. The findings show that the site supports a rich butterfly assemblage with good species representation and even distribution.

It is recommended that:

- Long-term monitoring programs be developed to study seasonal variation, population dynamics, and habitat associations.

- Butterfly-friendly conservation practices, such as planting native nectar plants and conserving larval host plants, be promoted in surrounding communities.
- This baseline can serve as a reference point for future biodiversity studies or restoration initiatives in the area.

In conclusion, this preliminary study forms a crucial starting point for establishing the area as a potential butterfly conservation zone, public education hub, and ecotourism attraction under collaborative stewardship between Butterfly Watchers Nepal and Mithila Wildlife Trust.

### CHECKLIST

S.N.	Family	Common Name	Scientific Name
1	Hesperiidae	Moore's Ace	<i>Halpe porus</i>
2	Hesperiidae	Common Redeye	<i>Matapa aria</i>
3	Hesperiidae	Indian Skipper	<i>Spialia galba</i>
4	Hesperiidae	Straight Swift	<i>Parnara guttatus</i>
5	Lycaenidae	Ciliate Blue	<i>Anthene emolus</i>
6	Lycaenidae	Common Lineblue	<i>Prosotas nora</i>
7	Lycaenidae	Common Pierrot	<i>Castalius rosimon</i>
8	Lycaenidae	Common Silverline	<i>Spindasis vulcanus</i>
9	Lycaenidae	Dark Grass Blue	<i>Zizeeria karsandra</i>
10	Lycaenidae	Gram Blue	<i>Euchrysops cnejus</i>
11	Lycaenidae	Large Oakblue	<i>Arhopala amantes</i>
12	Lycaenidae	Pale Grass Blue	<i>Pseudozizeeria maha</i>
13	Lycaenidae	Yamfly	<i>Loxura atymnus</i>
14	Nymphalidae	Bamboo Treebrown	<i>Lethe europa</i>
15	Nymphalidae	Banded Treebrown	<i>Lethe confusa</i>
16	Nymphalidae	Commander	<i>Moduza procris</i>
17	Nymphalidae	Common Baron	<i>Euthalia aconthea</i>
18	Nymphalidae	Common Bushbrown	<i>Mycalesis perseus</i>
19	Nymphalidae	Common Castor	<i>Ariadne merione</i>
20	Nymphalidae	Common Duffer	<i>Discophora sondaica</i>
21	Nymphalidae	Common Indian Crow	<i>Euploea core</i>
22	Nymphalidae	Common Leopard	<i>Phalanta phalantha</i>
23	Nymphalidae	Common Sailer	<i>Neptis hylas</i>
24	Nymphalidae	Common Tiger	<i>Danaus genutia</i>
25	Nymphalidae	Glassy Tiger	<i>Parantica aglea</i>
26	Nymphalidae	Great Eggfly	<i>Hypolimnas bolina</i>
27	Nymphalidae	Grey Pansy	<i>Junonia atlites</i>

28	Nymphalidae	Lemon Pansy	<i>Junonia lemonias</i>
29	Nymphalidae	Peacock Pansy	<i>Junonia almana</i>
30	Nymphalidae	Plain Tawny Rajah	<i>Charaxes psaphon</i>
31	Nymphalidae	Plain Tiger	<i>Danaus chrysippus</i>
32	Nymphalidae	Ring Sp	<i>Ypthima sp</i>
33	Nymphalidae	Rustic	<i>Cupha erymanthis</i>
34	Nymphalidae	Sailer sp	<i>Neptis sp</i>
35	Nymphalidae	Short-banded Sailer	<i>Phaedyma columella</i>
36	Nymphalidae	Tawny Coster	<i>Acraea violae</i>
37	Nymphalidae	Yellow Pansy	<i>Junonia hierta</i>
38	Papilionidae	Common Bluebottle	<i>Graphium sarpedon</i>
39	Papilionidae	Common Mime	<i>Papilio clytia</i>
40	Papilionidae	Common Mormon	<i>Papilio polytes</i>
41	Papilionidae	Lime Butterfly	<i>Papilio demoleus</i>
42	Pieridae	Common Emigrant	<i>Catopsilia pomona</i>
43	Pieridae	Common Four Ring	<i>Ypthima huebneri</i>
44	Pieridae	Common Grass Yellow	<i>Eurema hecabe</i>
45	Pieridae	Common Gull	<i>Cepora nerissa</i>
46	Pieridae	Common Jezabel	<i>Delias eucharis</i>
47	Pieridae	Grass Yellow	<i>Eurema sp</i>
48	Pieridae	Indian Wanderer	<i>Pareronia hippia</i>
49	Pieridae	Mottled Emigrant	<i>Catopsilia pyranthe</i>
50	Pieridae	Psyche	<i>Leptosia nina</i>
51	Pieridae	Yellow Orange Tip	<i>Ixias pyrene</i>

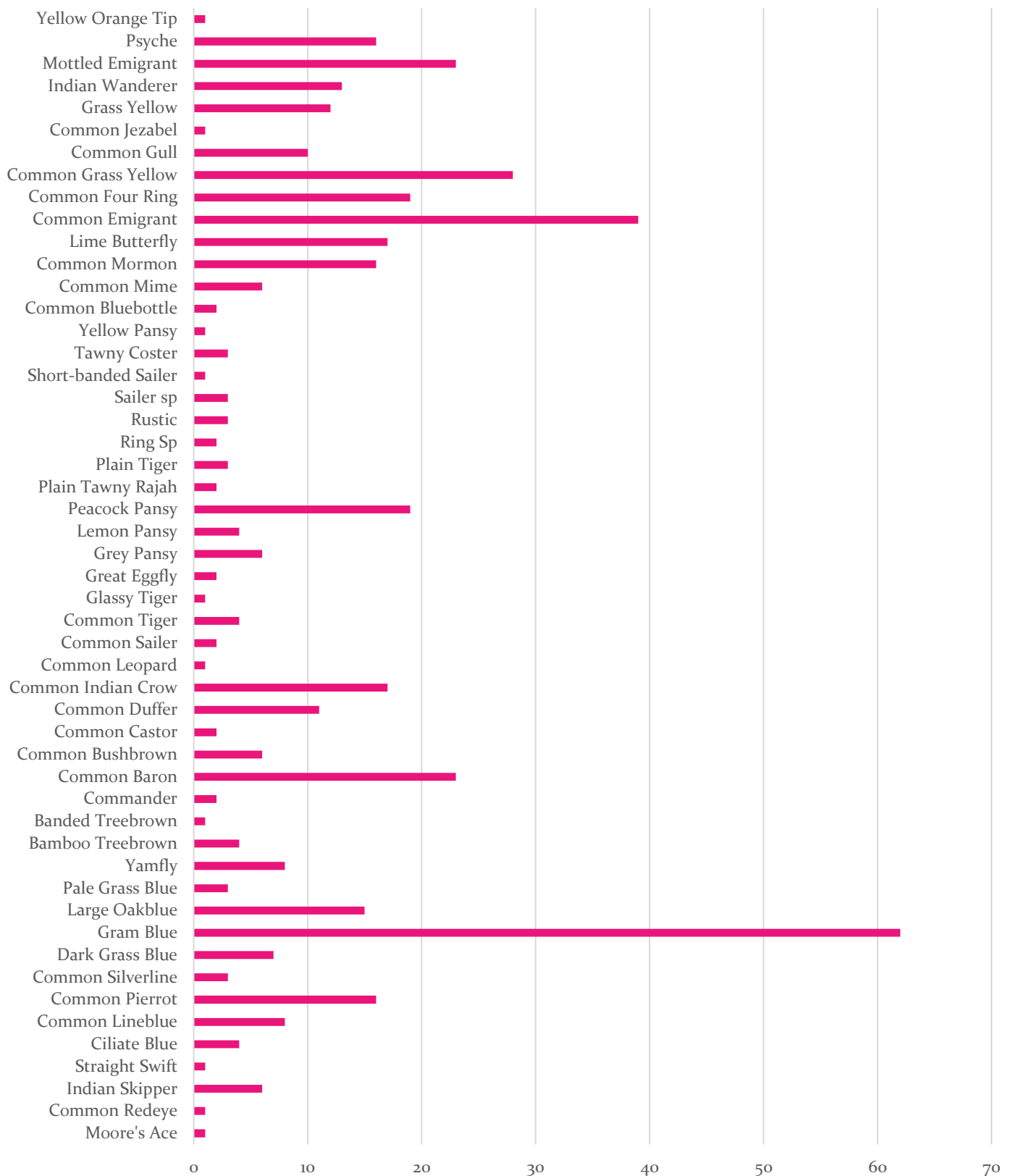


Figure 2. Total number of butterfly individuals recorded.



# BUTTERFLIES OF MITHILA WILDLIFE TRUST AND SURROUNDINGS



MOORE'S ACE



COMMON REDEYE



INDIAN SKIPPER



STRAIGHT SWIFT



CILIATE BLUE



COMMON LINEBLUE



COMMON PIERROT



COMMON SILVERLINE



DARK GRASS BLUE



GRAM BLUE



LARGE OAKBLUE



YAMFLY



BAMBOO TREEBROWN



COMMANDER



COMMON BARON



COMMON BUSHBROWN



COMMON DUFFER



COMMON INDIAN CROW



COMMON LEOPARD



SHORT-BANDED SAILER



GREAT EGGFLY



GREY PANSY



LEMON PANSY



PEACOCK PANSY



PLAIN TAWNY RAJAH



PLAIN TIGER



TAWNY COSTER



YELLOW PANSY



COMMON MIME



COMMON MORMON



LIME SWALLOWTAIL



COMMON EMIGRANT



COMMON FOURRING



COMMON GRASS YELLOW



COMMON GULL



INDIAN WANDERER



PSYCHE

