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Butterfly diversity of Jamtara Forest Division, Jamtara, Jharkhand, India

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Abstract

The butterfly fauna of Jamtara Forest Division (JFD) is poorly known, and little or no work has been done on it for decades. In the present study, butterflies were photographed through field surveys in four ranges of JFD in the year 2023. A checklist of 53 species of butterflies was made. The commonly seen species are the common sailor, plain tiger, common mormon, common lime butterfly, and striped pierrot. There are also some rarely-seen butterfly species in the study area; one of them is the brown awl. The present study highlights the butterfly diversity of JFD and draws attention to their conservation strategy.

INTRODUCTION

To know the biodiversity, its richness, and its status, there is a need to know the associated biological indicators for ecological balance, sustainability of bio-wealth, and their management (Kumar et al. 2022). Discovering new taxa is also helpful to know the rich biodiversity (Devi et al. 2023). In this aspect, insects play a vital role (Pradhan et al. 2023). Among the insect diversity, butterflies are beautiful creatures and the best indicators, as they

are high in number, have short lifecycles, have high sensitivity to climatic changes, and depend on flowers. About 16,000 butterfly species are reported globally out of the 1.4 million species on Earth (Bibi et al. 2022). They are the most common Insecta species. They are best for pollination and good for the health of our environment. Their beauty has also made them one of the better-studied families in the insect world. They belong to the order Lepidoptera, which means scaly-winged (van Huis 2019). The order includes butterflies and moths. Sometimes, it can be hard for beginners to separate butterflies and moths, especially butterflies of the group Hesperidae and day-flying moths. They are also the most familiar insects to mankind due to their variant size, brilliant coloration, sunshine-loving habits, and association with flowers of all types. Colours mean a lot of things to butterflies; some use them for camouflage, and some use them to convey necessary signals like mimicry. In the current scenario, they are potentially useful ecological indicators of urbanization due to their sensitivity to climatic changes at the microlevel. The loss of hedges and bushes and the promotion of monoculture have severely affected butterflies, as they require healthy and diverse habitats for growth. The collection of butterflies and their commercial exploitation as wall hangings and other artefacts have also led to a decline in their numbers. Keeping in mind the importance of butterflies and the lack of reports on them in Jharkhand, an attempt has been made to enumerate the butterfly diversity in Jamtara Forest Division, Jamtara, Jharkhand, to increase awareness about them.

METHODOLOGY

The field trips in four ranges of Jamtara Forest Division (JFD), Jharkhand, were undertaken in May 2023 to explore the butterfly diversity (Plate 2). In the study area, four ranges, namely Jamtara Range, Kundahit Range, Narayanpur Range, and Nala Range, were assessed for their diversity (Mishra et al. 2023). The photographs of most butterflies were taken, sighted, and identified in the field as per their morphological characteristics (Bibi et al. 2022). During the survey, none of the butterflies were harmed or killed.

RESULTS AND DISCUSSION

From the study in the survey areas, 53 species of butterflies were documented from Jamtara Forest Division (JFD), Jharkhand. Out of 53 species, commonly 11 butterfly species were found in the Jamtara Range, 16 species in the Kundahit Range, 16 species in the Narayanpur Range, and 10 species in the Nala Range. One species each was found belonging to the genus *Chilasa*, *Catopsilia*, *Pareronia*, *Elymnias*, *Lethe*, *Ypthima*, *Polyura*, *Acraea*, *Phalanta*, *Euripus*, *Neptis*, *Pantoporia*, *Moduza*, *Tanaecia*, *Tirumala*, *Euploea*, *Doleschallia*, *Lepotus*,

Castalius, *Tarucus*, *Freyeria*, *Celatrina*, *Chilades*, *Catochrysops*, *Arhopala*, *Curetis*, *Hasora*, *Badamia*, *Gerosis*, *Iambrix*, *Taractrocera*, *Parnara*, *Borbo*, and *Euthalia*. Two species each were found belonging to the genera *Graphium*, *Pachliopta*, *Papilio*, *Delias*, *Hypolimnas*, *Danaus*, *Pelopidas*, and *Spindasis*. Three species of the genus *Junonia* were also found in the study areas. It was noticed that in the all ranges, some butterflies are common. Mud puddling is also observed (Figure 1). Details are listed in Table 1. Butterflies are a very diverse family of insects in the class Insecta. Habitat and the surrounding landscape play a vital role in the diversity and abundance of butterfly species. In JFD, they are observed in grasslands, thorny & bushy shrublands, dry deciduous forests, Sal-associated forests, near waterbodies, open agricultural lands, and areas near human settlements associated with *Lantana camara*.

Table 1: Some common butterflies of Jamtara Forest Division (JFD), Jharkhand

Common name	Scientific name	Locations
Autumn leaf	<i>Doleschallia bisaltide</i>	NR2
Baronet (Plate 1d)	<i>Euthalia nais</i>	NR1
Brown awl	<i>Badamia exclamationis</i>	KR
Chestnut bob	<i>Iambrix salsala</i>	NR1
Chocolate pansy (Plate 1e)	<i>Junonia iphita</i>	NR1, NR2, KR, JR
Commander	<i>Moduza procris</i>	NR2, KR
Common awl	<i>Hasora badra</i>	NR1, NR2, KR, JR
Common crow	<i>Euploea core</i>	NR1, NR2, KR, JR
Common emigrant	<i>Catopsilia pomona</i>	NR1, NR2, KR, JR
Common grass dart	<i>Taractrocera maevius</i>	NR1
Common jay	<i>Graphium doson</i>	NR1, NR2, KR, JR
Common jezebel	<i>Delias eucharis</i>	NR1, NR2, KR, JR
Common lascar	<i>Pantoporia hordonia</i>	NR1, NR2, KR, JR
Common lime butterfly	<i>Papilio demoleus</i> (Plate 1b)	NR1, NR2, KR, JR
Common mime	<i>Chilasa clytia</i>	NR1, NR2, KR, JR
Common mormon	<i>Papilio polytes</i> (Plate 1f)	NR1, NR2, KR, JR
Common nawab	<i>Polyura athamas</i>	KR, NR1
Common pierrot	<i>Castalius rosimon</i>	NR1, NR2, KR, JR
Common rose (Plate 1a)	<i>Pachliopta aritolochiaie</i>	NR1, NR2, KR, JR
Common sailer	<i>Neptis hylas</i>	NR1, NR2, KR, JR

Common silverline	<i>Spindasis vulcanus</i>	NR1, NR2, KR, JR
Common treebrown	<i>Lethe rohria</i>	KR, NR1
Common wanderer	<i>Pareronia valeria</i>	NR1, NR2, KR, JR
Common yellow-breasted flat	<i>Gerosis bhagava</i>	NR1, NR2, KR, JR
Crimson rose	<i>Pachliopta hector</i>	KR, NR1
Danaid eggfly (Plate 1c)	<i>Hypolimnas misippus</i>	NR1, NR2, KR, JR
Dark blue tiger	<i>Tirumala septentrionis</i>	KR
Forget-me-not	<i>Catochrysops strabo</i>	NR1, NR2, KR, JR
Great eggfly	<i>Hypolimnas bolina</i>	NR
Grey count	<i>Tanaecia lepidea</i>	KR
Grey pansy	<i>Junonia atlites</i>	NR1
Indian oakblue	<i>Arhopala atrax</i>	NR1, NR2, KR, JR
Indian sunbeam	<i>Curetis thetis</i>	JR
Large branded swift	<i>Pelopidas subochracea</i>	KR
Lesser three-ring	<i>Ypthima inica</i>	NR1
Oriental grass jewel	<i>Freyeria putli</i>	NR1
Painted courtesan	<i>Euripus consimilis</i>	NR2
Painted jezebel	<i>Delias hyparete</i>	NR2, KR
Peacock pansy (Plate 1g)	<i>Junonia almana</i>	NR1, NR2, KR, JR
Plain hedge blue	<i>Celatrina lavendularis</i>	NR1
Plain tiger (Plate 1h)	<i>Danaus chrysippus</i>	NR1, NR2, KR, JR
Plains cupid	<i>Chilades pandava</i>	NR1, NR2, KR, JR
Plumbeous silverline	<i>Spindasis schistacea</i>	KR
Rice swift	<i>Borbo cinnara</i>	KR
Small branded swift	<i>Pelopidas mathias</i>	KR
Small leopard	<i>Phalanta alcippe</i>	KR
Spot swordtail	<i>Graphium nomius</i>	NR1
Straight swift	<i>Parnara guttata</i>	KR
Striped pierrot (Plate 1i)	<i>Tarucus nara</i>	NR1, NR2, KR, JR
Striped tiger	<i>Danaus genutia</i>	NR1, NR2, KR, JR
Tailed palmfly	<i>Elymnias caudata</i>	NR1

Tawny coster	<i>Acraea violae</i>	NR1, NR2, KR, JR
Zebra blue	<i>Lepotus plinius</i>	KR

(JR: Jamtara Range; KR: Kundahit Range; NR1: Narayanpur Range; NR2: Nala Range)

Some other researchers have also studied butterfly diversity in Jharkhand state like Verma (2009) reported 39 species of butterflies at Dalma Wildlife Sanctuary, Jharkhand, India, with 20 species belonging to the family Nymphalidae, 9 species of the family Pieridae, 6 species of the family Lycaenidae, and 4 species of the family Papilionidae. Hembrom and Sinha (2012) then reported 27 species of butterflies from reclaimed OBDs in the Kathara coalmine area of Jharkhand. Sambath (2014) also worked in Dalma Wildlife Sanctuary in Jharkhand and reported 77 species of butterflies, out of which 7 species belonged to the Family Hesperidae, 12 species to the Family Lycaenidae, 32 species to the Family Nymphalidae, 9 species to the Family Papilionidae, and 17 species to the Family Pieridae.



Figure 1: Mud puddling in Jamtara Forest Division, Jharkhand



Plate 1: Some common butterflies of Jamtara Forest Division, Jharkhand; a) *Pachliopta aritolocheia*, b) *Papilio demoleus*, c) *Hypolimnas misippus*, d) *Euthalia nais*, e) *Junonia iphita*, f) *Papilio polytes*, g) *Junonia almana*, h) *Danaus chrysippus*, i) *Tarucus nara*

Singh and Ahmad (2017) then reported 30 species of butterflies under 26 genera, with 19 species belonging to the family Nymphalidae, 5 species from the family Papilionidae, 2 species from the family Lycaenidae, 3 species from the family Pieridae, and 1 species from the family Riodinidae from Palkot Wildlife Sanctuary, Jharkhand. Garg (2020) recorded for the first time the banded royal butterfly *Rachana jalindra* of the family Lycaenidae from Jharkhand, India. Choudhary and Basu (2022) then reported 50 butterfly species belonging to 28 genera and 5 families, of which 20 species were found widespread, 15 species were common, 7 species were found occasionally, and 8 species were rare in and around Dalma Wildlife Sanctuary, Jharkhand, India. Among them, 17 species belonged to the family Nymphalidae, 12 species to the family Lycaenidae, 10 species to the family Pieridae, 8 species to the family Papilionidae, and 3 species to the family Hesperidae.



Plate 2: Field survey for documentation of butterflies in Jamtara Forest Division, Jharkhand

RECOMMENDATIONS

From the survey work as well as the vegetation and habitat study of butterflies was done in Jamtara Forest Division, Jharkhand, some recommendations were made for the conservation of butterflies and restoration of their habitat.

- Protection and restoration of wetland areas in JFD.
- Conservation of shrubland, particularly in Jamtara Range, JFD.
- Removal of invasive species from Ladhna Dam, Jamtara Range and Naryanpur Range.
- Development of butterfly gardens using native nectar and fodder plants.

CONCLUSION

The results of the present study indicate the diversity of butterflies and their important habitat in Jamtara Forest Division that will be helpful to make the conservation plan. The study highlights the relationship of available butterflies with local bioresources in the division for better understanding of their ecological link and role in ecological balance for a healthy forest and environment. It also brings attention on observed threats and suggest the mitigation measures.

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