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DIVERSITY AND DISTRIBUTION OF ORDER LEPIDOPTERA IN KURAI AND BARGHAT BLOCKS OF SEONI DISTRICT, (M. P.)

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ABSTRACT:- The order Lepidoptera represents one of the most diverse groups of insects and plays an important role in ecosystem functioning, particularly in pollination, herbivory and food-web interactions. The present study focuses on the diversity and distribution of Lepidoptera in Kurai and Barghat blocks of Seoni district, Madhya Pradesh, India. The investigation aims to document butterfly and moth species, examine their family-wise distribution, estimate relative abundance and compare diversity across different habitats. The proposed survey includes forest ecosystems, agricultural fields, grasslands, gardens and residential areas. Standard sampling techniques, including line transect surveys, visual encounter methods, photographic documentation and light trapping, are considered for recording Lepidopteran fauna. Species richness, Shannon-Wiener diversity, Simpson's diversity and Pielou's evenness indices are used for ecological assessment. The study is intended to provide baseline information regarding Lepidopteran biodiversity and contribute to regional conservation planning and future entomological research in Seoni district.

KEYWORDS:- Lepidoptera, Butterfly, Moth, Species diversity, Distribution, Kurai, Barghat, Seoni, Madhya Pradesh.

INTRODUCTION:-

Lepidoptera is one of the largest orders of insects, comprising butterflies and moths. Members of this order are characterized by two pairs of wings covered with minute overlapping scales. They exhibit considerable diversity in morphology, colouration, behaviour, feeding habits and ecological adaptations.

Lepidopterans play significant ecological roles. Adult butterflies and moths contribute to pollination, while their larvae feed on different plant species and influence vegetation dynamics. They also serve as important food resources for birds, reptiles, amphibians and other insectivorous organisms.

Butterflies are particularly useful ecological indicators because their distribution and abundance are influenced by climatic conditions, vegetation composition, availability of larval host plants and habitat disturbance.

Madhya Pradesh supports diverse terrestrial ecosystems, including tropical deciduous forests, agricultural landscapes, grasslands and wetlands. Seoni district is ecologically important because of its forest ecosystems and association with the Pench landscape.

Kurai and Barghat blocks represent important geographical areas for investigating insect biodiversity. Differences in vegetation, land use, agricultural practices and habitat conditions may influence the diversity and distribution of Lepidopteran species.

Although previous investigations have documented butterflies and moths in different parts of Madhya Pradesh, detailed comparative information at the block level remains valuable.

Therefore, the present investigation aims to document the diversity, abundance and distribution of Lepidoptera in Kurai and Barghat blocks of Seoni district.

OBJECTIVES:-

1. To document the diversity of butterflies and moths in Kurai and Barghat blocks.
2. To identify different families and species of Lepidoptera.
3. To estimate species richness and relative abundance.

4. To compare Lepidopteran diversity between the two blocks.
5. To study habitat-wise and seasonal distribution.
6. To calculate biodiversity indices.
7. To identify important habitats for Lepidopteran conservation.

MATERIALS AND METHODS:-

Study area

The proposed study will be conducted in Kurai and Barghat blocks of Seoni district, Madhya Pradesh, India. The investigation will cover different habitat types:

- Forest and forest margins.
- Agricultural fields.
- Grasslands and open scrublands.
- Gardens and residential areas.
- Vegetation near water bodies.

Sampling locations should be selected from both blocks to ensure representative habitat coverage.

Sampling period

The study should cover twelve consecutive months to record seasonal variations.

Season	Months
Summer	March–June
Monsoon	July–September
Post-monsoon	October–November
Winter	December–February

Sampling techniques

Butterfly survey: The Pollard Walk method and fixed-line transect surveys will be used. Observations should preferably be conducted between 08:00 and 11:00 hours during suitable weather conditions.

Moth survey: Nocturnal moths will be recorded using light-trap observations and photographic documentation.

Photographic documentation: Digital photographs will be taken for identification and preparation of a photographic checklist.

Identification

Species identification will be carried out using standard taxonomic literature, field guides and expert verification.

Statistical analysis

The following indices will be applied:

Shannon-Wiener diversity index

$$H' = -\sum pi \ln pi \quad H' = -\sum pi \ln pi$$

Simpson's diversity index

$$1 - D = 1 - \sum pi^2 \quad 1 - D = 1 - \sum pi^2$$

Pielou's evenness index

$$J' = H' \ln S \quad J' = \ln SH'$$

Margalef's richness index

$$DMg = S - 1 \ln N \quad DMg = \ln NS - 1$$

Where:

S*S* = Number of species.

N*N* = Total number of individuals.

p*pi* = Proportion of individuals belonging to species i*i*.

RESULTS:-

The following results tables illustrate how the actual findings should be presented. The numerical example is hypothetical and must not be interpreted as a field survey result.

Family-wise distribution of Lepidoptera

The order Lepidoptera includes several families of butterflies and moths. The following families are relevant to the proposed survey.

S. No.	Family	Group
1	Papilionidae	Butterfly
2	Pieridae	Butterfly
3	Nymphalidae	Butterfly
4	Lycaenidae	Butterfly
5	Hesperiidae	Butterfly
6	Erebidae	Moth
7	Noctuidae	Moth
8	Geometridae	Moth
9	Crambidae	Moth
10	Sphingidae	Moth

Illustrative comparative species richness-

The following example demonstrates the presentation of block-wise data.

Parameter	Kurai	Barghat
Total species	45	38
Total individuals	320	275
Butterfly species	30	26
Moth species	15	12
Number of families	10	9

These values are not verified observations and should not be used as actual research findings.

Illustrative family-wise species distribution

Family	Kurai	Barghat
Papilionidae	4	3
Pieridae	6	5
Nymphalidae	10	9
Lycaenidae	7	6
Hesperiidae	3	3
Erebidae	5	4
Noctuidae	3	2
Geometridae	2	2
Crambidae	3	2
Sphingidae	2	2
Total	45	38

Illustrative diversity indices

Diversity index	Kurai	Barghat
Shannon-Wiener index	3.45	3.18
Simpson's diversity (1-D)	0.96	0.94
Pielou's evenness	0.91	0.88
Margalef richness	7.63	6.58

Illustrative habitat-wise distribution

Habitat	Kurai	Barghat
Forest	28	15
Agriculture	20	24
Grassland	17	13
Residential	12	11

Illustrative species-habitat occurrence counts; species may occur in more than one habitat, so these figures should not be added to obtain total richness.

Illustrative seasonal distribution

Season	Kurai	Barghat
Summer	55	42
Monsoon	115	96
Post-monsoon	95	82
Winter	55	55
Total individuals	320	275

Illustrative seasonal abundance

Season's	Kurai	Barghat
Summer	55	42
Monsoon	115	96
Post-monsoon	95	82
Winter	55	55

DISCUSSION:-

The diversity and distribution of Lepidoptera are influenced by several ecological factors, including vegetation structure, host-plant availability, temperature, humidity, rainfall and habitat disturbance.

Forest ecosystems provide diverse microhabitats and host plants, which may support different butterfly and moth communities. Agricultural landscapes can also provide suitable feeding resources through flowering crops and associated vegetation. However, pesticide application, vegetation removal and habitat fragmentation may negatively affect Lepidopteran populations.

Seasonal changes are also important in determining butterfly abundance. During monsoon and post-monsoon periods, increased vegetation growth and flowering may improve nectar availability and larval host-plant resources.

Butterfly diversity should be assessed through repeated surveys under comparable weather and sampling conditions. Moth diversity requires separate nocturnal sampling, since daytime butterfly surveys cannot adequately document the entire order Lepidoptera. The present investigation can provide useful information for understanding regional insect biodiversity and identifying habitats that deserve conservation attention.

CONCLUSION:-

The study of Lepidopteran diversity in Kurai and Barghat blocks of Seoni district is important for understanding insect biodiversity in central India. Documentation of butterflies and moths across different habitats and seasons will help establish baseline information on species richness, abundance and distribution. Comparative biodiversity assessment using ecological indices can help determine differences between the two blocks and provide information useful for conservation planning. Further long-term investigations are recommended to monitor seasonal changes, habitat conditions and the ecological status of Lepidopteran populations.

REFERENCES:-

1. Chandra, K. and Nema, D.K. (2003). Moths of Pench Tiger Reserve, Seoni, Madhya Pradesh. Relevant regional literature for moth diversity.

2. Kunte, K. (2000). *India: A Lifescape – Butterflies of Peninsular India*. Universities Press, Hyderabad.
3. Pielou, E.C. (1966). The measurement of diversity in different types of biological collections. *Journal of Theoretical Biology*, 13, 131–144.
4. Pollard, E. (1977). A method for assessing changes in the abundance of butterflies. *Biological Conservation*, 12, 115–134.
5. Shannon, C.E. and Weaver, W. (1949). *The Mathematical Theory of Communication*. University of Illinois Press.
6. Simpson, E.H. (1949). Measurement of diversity. *Nature*, 163, 688.
7. Tiwari, U.K.L. et al. (2010). Study of butterflies of Pench Tiger Reserve, Madhya Pradesh. Regional literature on butterfly biodiversity.
8. Wynter-Blyth, M.A. (1957). *Butterflies of the Indian Region*. Bombay Natural History Society, Mumbai.

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