AN INVESTIGATION OF THE TYPES OF BUTTERFLIES THAT COULD INHABIT A CERTAIN AREA OF KHAPPARWADA, DURG, CHHATTISGARH, INDIA

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ABSTRACT

An investigation of the types of butterflies that could inhabit a certain area of, Khapparwada village Chhattisgarh, India. Research on butterfly variety was carried out in the Khapparwada village in the Indian state of Chhattisgarh. At the several butterfly survey locations across the research region, a total of 135 individuals and 7 species of butterflies from 2 families were counted. Daganiya farmhouse and the Vishnudham Mandir Garden are two other locations. The most numerous families were Nymphalidae and Pieridae, with 60% and 40%, respectively, of all butterfly species documented in the research region. The most butterflies were found at the Vishnudham Mandir Garden with 57, while the fewest were found in the Daganiya Farmhouse with 48. There were ten distinct species of butterflies in the research region, of which four were common, two were common, and four were uncommon. The greatest Simpson Index of Diversity was found in the Vishnudham Mandir Garden. Because the study area is home to a wide variety of butterflies, more research may be conducted to learn more about this richness and to document it for the conservation and butterfly park.

Keywords: Butterfly, Garden, Diversity, Park. Farmhouse, Khapparwada village.

INTRODUCTION:

Butterflies come in a huge variety of sizes, hues, and shapes. They exist everywhere on earth, with the exception of a small area around the poles. 10% of the estimated 200.000 species in the lepidoptera order are butterflies. Based on their anatomical characteristics, these butterflies can be classified into six families: Pieridae, also known as whites and Sulphur; Papilionoidea, or swallow tails; Nymphalidae, which includes morphos, owl butterflies, and long wings; Hesperidae, or skippers; Libytheidae, or snout butterflies; and the small Lycaenida. Butterflies are useful indicators of climatic conditions, seasonal shifts, and ecological changes; as a result, conservation programs may use them. But decision-makers and conservation biologists have

mostly ignored them. Butterfly presence and plant evolution are hence interwoven, making butterflies crucial to the ecology (Ghazanfar et al., 2016).

Since insects account for more than half of all terrestrial biodiversity, they are one of the animal species groups with the most diversified species richness. Unlike the great majority of other insect species, butterflies are well-known, well-documented, and simple to identify. Butterflies respond fast to any change in their environment brought on by human-induced activities like intensive farming and extensive logging because they are well adapted to the landscape (Mora et al., 2011). Climate change has an effect on the diversity of species and is predicted to worsen ecosystems (Scott and Lemieux, 2005). Temperature changes, precipitation patterns, and occurrences of extreme weather, such as heat waves, protracted droughts, or heavy rain, must all be taken into consideration. Direct mortality is caused by host plant and nectar depletion.

The documentation of butterfly species from Khapparwada village is necessary to address the issues of environmental change brought on by seasonal variations. As a result, the current study's objective was to provide baseline information on the variety of butterflies in the study area as measured by the butterfly checklist.

SURVEY METHOD:

The research area had twice-weekly butterfly field surveys from January to March 2021. Through accidental observations obtained while travelling between the two sites that were chosen based on the habitats present in the study region from 6 am to 10 am, butterflies werefound in the research area. A camera was used to photograph the butterflies in the wild in order to identify them (Dey et al., 2017)

Sample site and study area: The present inquiry was carried out in the Indian state of Chhattisgarh's Khapparwada. The research area's latitude and longitude are 20.731133, and 81.202309. Balod is a town in central Chhattisgarh that is close to both Highway 930 and the Tandula River. It may be found in both Asia and the northern hemisphere. A lot of rain falls (rainy season) in the months of June, July, August, and September. In the research region, January through December are all dry months. March through April are all dry months. There were two locations for sampling in the study area: the Vishnudham Mandir Garden and the Daganiya Farmhouse.

Figure 1: Pictures showing the types of butterflies seen in the research location

Bluemoon Butterfly, Plain Tiger, Common Tiger, Common leopard, Common leopard

Identification of the species: Photographs of the insects were used to determine the butterfly species. Entomologist specialists utilized readily available literature, photos from (Sunil et al., 2016), as well as color patterns, sizes, and forms as well as their designs (Kumar et al., 2016) to identify the species of butterfly.

STATISTICAL ANALYSIS OF DATA

The Simpson index of diversity formula, which was adopted by Sunil et al. established in 2016, was used to analyze the detected butterfly species in the research region. (Ashok, 2017).

The Simpson Index of Diversity's mathematical formula has the following result: Where:

D stands for the Simpson Index of Diversity. Σ = sum of (Total)

n is the total number of individuals in each species.

N is the number of individuals in all species combined.

RESULTS

The findings revealed that 69 individuals overall and 7 species of butterflies from 2 families were discovered in the research region. In the study area, Pieridae had the fewest species of butterflies, whereas Nymphalidae had the most (Figs. 1 and 2).

According to Sayeswara's (2018) observations, the Nymphalidae family had the highest percentage of butterfly species (44.4%), followed by the Papilionoidea (22.2%), Lucanidae (8.33%), and Hesperidae (with the fewest species) in the study area. Further significant study is cited by Saurav et al. in 2017;

The Lycaenidae family, with a 34.9% butterfly species prevalence, is followed by the Hesperidae family, with a 28.1% butterfly species prevalence, and the Nymphalidae family, with a 28.1% butterfly species prevalence. Papilionoidea make up 6.6% of all species, Pieridae 9.43%, and Riodinidae 19.81%.

This result is in line with Koneri and Nangoy's (2019) investigation into the status of butterflies on Sangihe Island, which discovered that 53.81% of the species in the study area belonged to the Nymphalidae family, with the following four families comprising only 0.64% of the species in the study area. The results are in line with those of Seth et al. (2014), who claimed that the Nymphalidae family accounted for 42.5% of the population in the research region, followed by the Papilionoidea family (21.2%).

Table 1: Checklist of the species of butterfly recorded in the study area

S No	Family	Scientific Name	Common Name	No of Species Found
1	Nymphalidae	Danaus chrysippus	Plain Tiger	11
2	Nymphalidae	Danaus genutia	Commn tigher	10
3	Nymphalidae	Phalanta phalantha	Common Leopard	17
4	Pieridae	Eurema hecabe	Common grass yellow	30
5	Pieridae	Eurema andersoni	One spot grass yellow	18

No. of Species Found

■ Danaus chrysippus   ■ Danaus genutia   ■ Phalanta phalantha   ■ Eurema hecabe   ■ Eurema andersoni
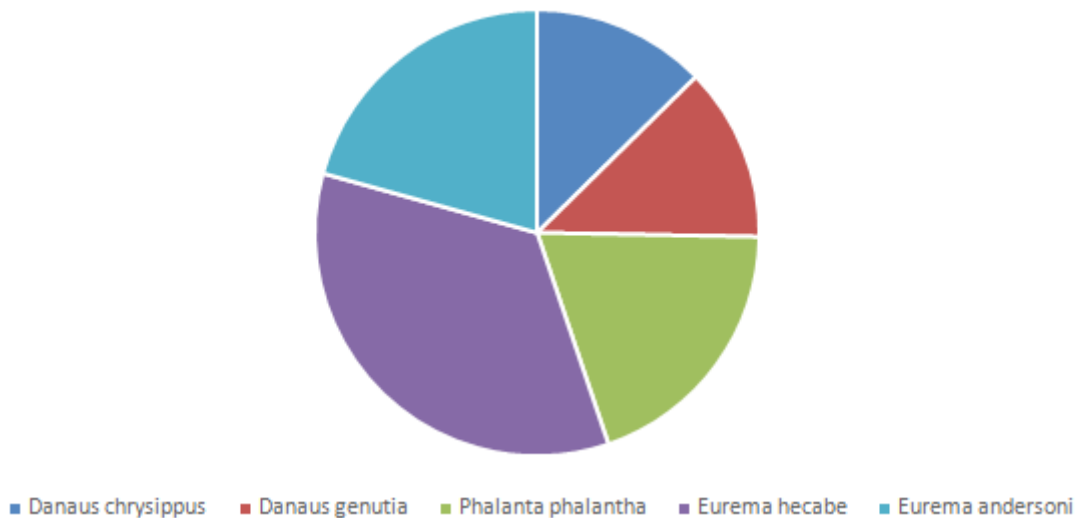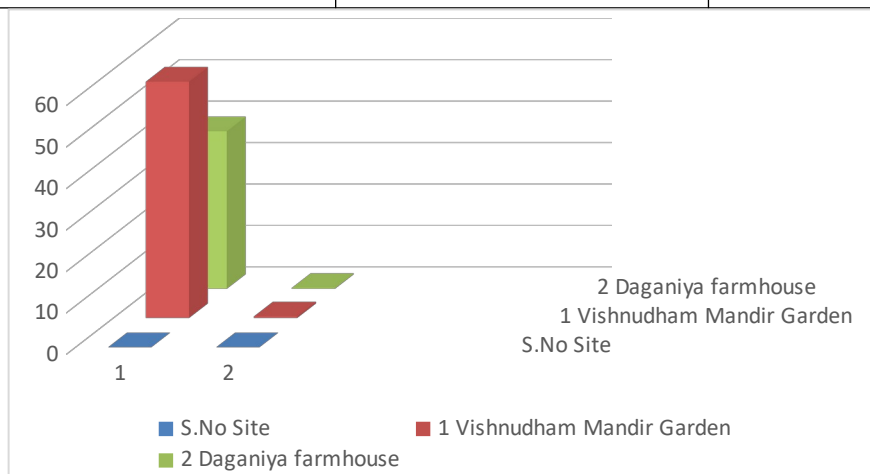
BUTTERFLY SPECIES DIVERSITY IN THE STUDY AREA

(Table 2) provides specifics on the diversity of butterfly species seen in the research area. The research revealed that the Vishnudham Mandir Garden location, which is followed by Daganiya farmhouse, had the greatest Simpson index of diversity (0.8) and the most butterflies (114), respectively.

Table 2: Diversity index and butterfly population in the research area.

S.No	Site	Number of Butterflies	Simpson Index of Diversity
1.	Vishnudham Mandir Garden	57	0.4
2.	Daganiya farmhouse	38	0.2

DISCUSSION

Checklist of butterfly species: Based on the family composition of the checklist, the majority of the butterfly species observed in the study area belonged to the Nymphalidae family. The percentage of each butterfly species compared to the other families may reflect the species' preference for a particular habitat and adaptation. Similar studies on an initial checklist of the species of butterflies that have been identified are from groups and families were published by Singh and Chib (2014).

CONCLUSION:

The Nymphalidae family of butterflies has the biggest number and proportion of species among all the other families, according to the findings of the study on the diversity of butterflies in the study area. Additionally, compared to the other places, it was found that the Vishnudham Mandir Garden had the highest Simpson index of variety and individual butterfly number. So, it can be claimed that there are many different kinds of butterflies in the study area, and more study may be conducted to understand more about this diversity and to record it for butterfly parks and conservation.

REFERENCES;

1. Butterfly families – Wikipedia. Retrieved on December 19, 2018. From Wikipedia: http://en.wikepedia.org/w/index/butterfly - families=755477507.

2. Charn, K. (2015). Checklist of butterfly diversity dwelling in the forest strip along Sirhind canal mainline in Punjab, India. International Journal of Research Studies in Biosciences, 3(1): 169- 173.

3. Sayeswara, H.A. (2018). Butterfly species diversity, occurrence and abundance in Gandhi Park of Shivamogga, Karnataka, India. International Journal of Engineering Science Invention, 7(9): 67-75.

4. Kunte K (1997). Seasonal patterns in butterfly abundance and species diversity in four tropical habitats in northern Western Ghats. Journal of Bioscience 22:593-603.

5. Kunte K (2000). India - A Lifescape: Butterflies of Peninsular India. Indian Academy of Science, Bangalore: University Press P 270.

6. Kunte K (2001). Butterfly diversity of Pune city along the human impact gradient. Journal of Ecological Society 13-14:40-45

7. Watson EY (1890). A preliminary list of butterflies of Mysore. Journal of Bombay Natural History Society 5(1):28-37.

8. Williams CB (1930). The migration of butterflies. Edinburg and London, UK: Oliver and Boyd pp. 440-448.

9. 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.

10. P SmetacekSmetacek, P. 2017. A naturalist's guide to the butterflies of India. Prakash books India Pvt. Ltd., 113 A Ansari Road, Daryaganj, New Delhi-110002, India.

11. Kehmikar, I. 2008. The book of Indian Butterflies. Oxford University Press, Walton Street, Oxford OX2 6DP.

12. Gupta, I.J. and MondaI, D.K. 2005. Red Data Book (Part-2) -Butterflies of India: xv + 1-535. Published by the Director, Zool. Surv. India, Kolkata.

13. Clark, J. A., & May, R. M. (2002). Taxonomic bias in conservation research. *Science, 297*, 191–192.

14. Gogoi, M. J. (2013). A preliminary checklist of butterflies recorded from Jeypore-Dihing forest, eastern Assam, India. *Journal of Threatened Taxa 5*, 3684–3696.

15. Wilson, E. O. (1997). Introduction. In M. L. Reaka-Kudla, D. E. Wilson, & E. O. Wilson (Eds.), *Biodiversity II* (pp. 1–3). Henry Press