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Study On Butterfly Fauna(Lepidoptera) Of Sacred Grove In Nattika,Thrissur District,Kerala

¹Savitha Nandanan and ²Asha Anand. T

¹Assistant Professor, ²PG student

Department of Zoology, Sree Narayana College, Nattika, Thrissur, Kerala, India

Abstract

Butterflies are one of the most conspicuous species of earth's biodiversity. Being extremely responsive to any changes in their environment, namely, temperature, humidity, light, and rainfall patterns, these insects are identified as useful bioindicators. Sacred grove represents a traditional form of community-based conservation. The biodiversity rich sacred groves are of immense ecological significance. The present study was conducted to estimate the diversity and occurrence of butterfly community of a scared grove in Nattika, a coastal region of Thrissur district, Kerala, India. Data collection was done by transect counting method and species relative abundance was also calculated. In Sacred grove of Nattika, 28 species of butterfly belonging to 4 different families- Nymphalidae, Pieridae, Papilionidae and Lycaenidae were recorded. Family Nymphalidae recorded dominant with 13 species, 512 individuals and *Junonia atlites* being highest in number and the least number of species was observed in family Lycaenidae.

Keywords: Sacred grove, Nattika, Nymphalidae, Pieridae, Papilionidae, Lycaenidae and *Junonia atlites*.

Introduction

Biodiversity is a measure that combines richness and evenness across the species. It is often measured because high biodiversity is perceived a synonymous with ecosystem health. Butterflies are one of the most conspicuous species of earth's biodiversity. Being extremely responsive to any changes in their environment, namely, temperature, humidity, light, and rainfall patterns, these insects are identified as useful bioindicators. Butterflies play a major role in the ecosystem as they interact with the environment as pollinators, predators and prey. Butterflies are helpful to natural ecosystems by pollinating different plant species. Many butterfly species are facing threat in natural ecosystems including protected areas (Ghazoul,2002). Hence information on species composition, diversity, preferred host plants, food plants and distribution pattern of butterflies requires periodic updating in protected areas.

Sacred groves represent a traditional form of community-based conservation. The biodiversity rich sacred groves are of immense ecological significance. Throughout the ages, they have been protected for several generations for a variety of reasons including religious practices or ceremonies (Blench *et.al.*, 2004; Malhotra *et.al.*, 2007). They also play an important role in the conservation of several rare and threatened species. The present study was conducted to estimate the diversity and occurrence of butterfly community of sacred grove in Nattika, a coastal region of Thrissur district in Kerala, India.

Methodology

Data collection was done by transect counting method known as "Pollard Transects" or "Pollard Walks" (Pollard, 1977). Butterflies were identified to the species level using field guides of Krushnamegh Kunte (Butterflies of Peninsular India, 2000) and Issac David Kehimkar (The book of Indian Butterflies, 2008) and number of individuals were counted. This study was conducted for 6 months from August 2019 to January 2020. Three different transects were surveyed in sacred grove during the study. Attempt was also made to photo document the species of butterflies. Relative species abundance was calculated as percent composition of an organism of a particular kind relative to the total number of organisms in the area.

Result and Discussion

In sacred grove of Nattika, a total of 28 species belonging to 4 different families were recorded. The family Nymphalidae is the most dominant family with 13 species followed by Papilionidae (6), Pieridae (5) and Lycaenidae (4). Nymphalidae (46.42%) is the most dominant family and it is followed by family Papilionidae (21.42%) & Pieridae (17.85%) and the least number of species observed in family Lycaenidae (14.28%) (Table:1). Sacred grove supported maximum number of butterflies (512 individuals) belonging to 28 species with *Junonia atlites* (71 individuals) being dominant. The highest number of individuals of family Nymphalidae was reported in December and January (106 individuals) and least in August and September (74 individuals). The highest number of individuals of family Papilionidae was reported in December and January (25 individuals) and least in August and September (17 individuals). The highest number of individuals of family Pieridae was reported in December and January (54 individuals) and least in August and September (43 individuals). The number of individuals of family Lycaenidae was highest December and January (9 individuals) and least in August and September (5 individuals) (Table:1). Monthly variations of relative abundance of butterflies were also calculated and plotted in graph (Table:2, Graph:1).

In Nattika (Sacred Grove), the butterfly diversity and abundance is declining from August to January. This may be because Nattika is a terrain with lot of anthropogenic disturbances going on. Most of the reviewed studies (Kaneria and Kushwah, 2013, Panicker *et.al.*, 2016, Khyade and Jagtap, 2019) showed that Nymphalidae is the most dominant family. The least abundance of family Lycaenidae may be either due to lesser availability of habitat or limited monitoring time (Kunte, 1999). The

observations also agreed with the findings of Priya *et.al.*, (2017), Panicker *et.al.*, (2016) and Arya and Verma, (2020). Ramesh *et.al.*,(2010) also reported that habitat disturbances are harmful to the butterfly diversity in terms of species richness leads to a potential loss of endemism and endangerment.

Table1: No. individuals of different butterfly families in sacred grove of Nattika during the study period

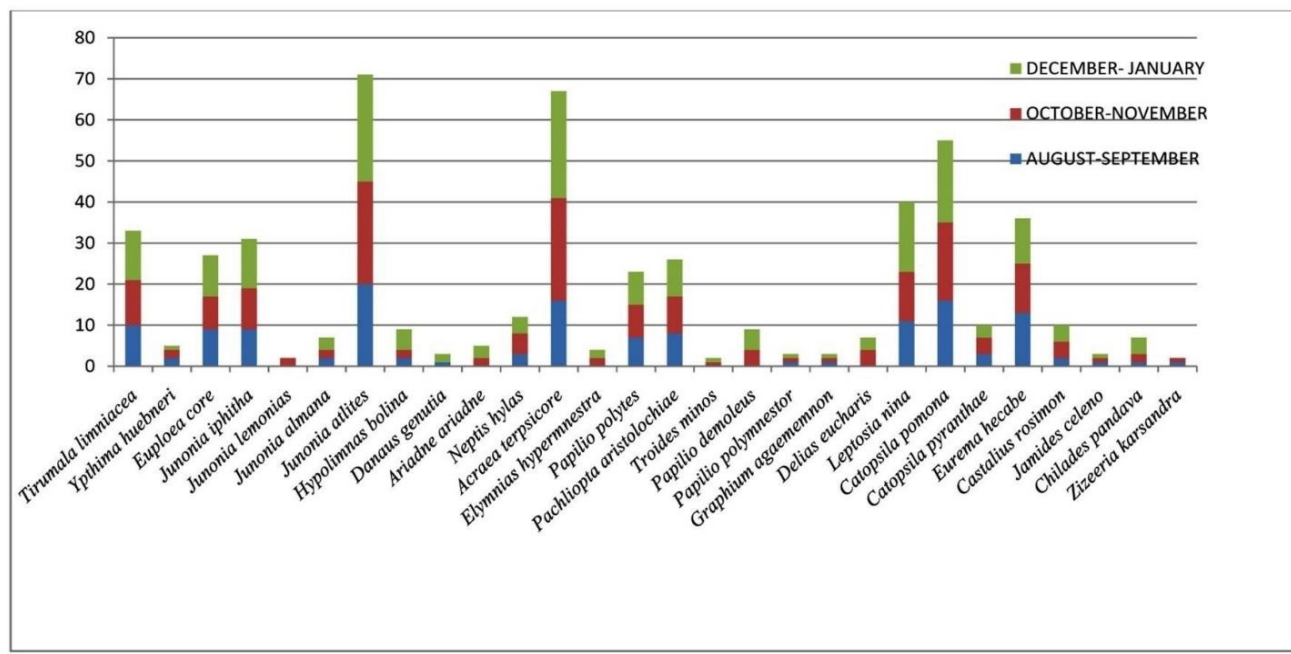
SL. NO	FAMILIES	AUGUST-SEPTEMBER	OCTOBER-NOVEMBER	DECEMBER-JANUARY
1	NYMPHALIDAE (46.42%)	74	96	106
2	PAPILIONIDAE (21.42%)	17	24	25
3	PIERIDAE (17.85%)	43	51	54
4	LYCAENIDAE (14.28%)	5	8	9
	TOTAL	139	179	194

Table2: Monthly variation in species abundance of butterfly in sacred grove of Nattika during the study period

SL. NO	SPECIES	AUGUST-SEPTEMBER	OCTOBER-NOVEMBER	DECEMBER-JANUARY	TOTAL	RELATIVE ABUNDANCE
1	<i>Tirumala limniace</i>	10	11	12	33	6.44
2	<i>Ypthima huebneri</i>	2	2	1	5	0.97
3	<i>Euploea core</i>	9	8	10	27	5.27
4	<i>Junonia iphita</i>	9	10	12	31	6.05
5	<i>Junonia lemonias</i>	0	2	0	2	0.39
6	<i>Junonia almana</i>	2	2	3	7	1.36
7	<i>Junonia atlites</i>	20	25	26	71	13.86
8	<i>Hypolimnas bolina</i>	2	2	5	9	1.75
9	<i>Danaus genutia</i>	1	0	2	3	0.58
10	<i>Ariadne ariadne</i>	0	2	3	5	0.97
11	<i>Neptis hylas</i>	3	5	4	12	2.34

12	<i>Acraea terpsicore</i>	16	25	26	67	13.08
13	<i>Elymnias hypermnestra</i>	0	2	2	4	0.78
14	<i>Papilio polytes</i>	7	8	8	23	4.49
15	<i>Pachliopta aristolochiae</i>	8	9	9	26	5.07
16	<i>Troides minos</i>	0	1	1	2	0.39
17	<i>Papilio demoleus</i>	0	4	5	9	1.75
18	<i>Papilio polymnestor</i>	1	1	1	3	0.58

19	<i>Graphium agamemnon</i>	1	1	1	3	0.58
20	<i>Delias eucharis</i>	0	4	3	7	1.36
21	<i>Leptosia nina</i>	11	12	17	40	7.81
22	<i>Catopsilia pomona</i>	16	19	20	55	10.74
23	<i>Catopsilia pyranthe</i>	3	4	3	10	1.95
24	<i>Eurema hecabe</i>	13	12	11	36	7.03
25	<i>Castalius rosimon</i>	2	4	4	10	1.95
26	<i>Jamides celeno</i>	1	1	1	3	0.58
27	<i>Chilades pandava</i>	1	2	4	7	1.36
28	<i>Zizeeria karsandra</i>	1	1	0	2	0.39
	TOTAL	139	179	194	512	100

Graph 1: Monthly variation of species abundance of butterflies in sacred grove of Nattika**Conclusion**

The present investigation helped to understand the butterfly diversity of sacred grove of Nattika which can be used in monitoring ecosystem health, stability and functioning. In this region the butterfly diversity and abundance is declining from August to January and it may be because Nattika is a terrain with lot of anthropogenic disturbances going on. This study is quite significant and it emphasizes the importance of sacred groves in the conservation of biological diversity of an area and by conserving butterflies, we are indirectly maintaining the ecological balance of a region.

References

- [1] Arya, M. K. and Verma, A. 2020. Patterns in distribution of butterfly assemblages at different habitats of Corbett Tiger Reserve, Northern India. *Tropical Ecology*, 3: 1-7.
- [2] Blench, R., Dendo, M. and Road, G. 2004. Cultural and biological interactions in the Savannah Woodlands of Northern Ghana: sacred forests and management of trees. In conference *Trees, Rain and Politics* in Africa, Oxford university, 5: 20-50.
- [3] Ghazoul, J. 2002. Impact of logging on the richness and diversity of forest butterflies in a tropical dry forest in Thailand. *Biodiversity Conservation*, 91: 223-229.
- [4] Issac David Kehimkar. 2008. The Book of Indian Butterflies. *Bombay Natural History Society*.
- [5] Kaneria, M. and Kushwah, V. 2013. Diversity of butterflies (Lepidoptera) in Bilaspur district, Chhattisgarh, India. *Asian Journal of Experimental Biology Science*, 4(2):282-287.
- [6] Khyade, V. B. and Jagtap, S. G. 2019. Diversity of butterflies (Order: Lepidoptera) in Mayureshwar Wildlife Sanctuary of Baramati Tehsil Dist. Pune (India). *International Academic Journal of Innovative*

- [7] Kunte, K. 1999. Patterns of butterfly, bird and tree diversity in the Western Ghats. *Current Science*, 24: 577-586.
- [8] Kunte, K. 2000. Butterflies of Peninsular India. University Press.
- [9] Kunte, K. 2000. Butterflies of Peninsular India. Universities Press (Hyderabad) and Indian Academy of Sciences (Bangalore), P: 254.
- [10] Malhotra, K. C., Gokhale, Y., Chatterjee, S. and Srivastava, S., 2007. Sacred groves in India. New Delhi, India: Aryan Books International, New Delhi. P.55.
- [11] Panicker, V. P., Anuraj, R., Shankar, G., Aswathy, S., Gopalakrishnan, A., & Biju, S. 2016. Studies on the diversity of butterfly (Lepidoptera: Rhopalocera) fauna in college of Veterinary and animal sciences campus, Mannuthy, Thrissur, Kerala, India. *Journal of Entomology and Zoology Studies*, 4(5), 933-936.
- [12] Pollard, E.1977. Monitoring butterfly numbers. Monitoring for ecology and conservation. P. 87-211.
- [13] Priya, L., Krishnaraj, V. and Janaranjini, S. 2017. Studies on butterfly diversity in Adichanalloor Village, Kollam District, Kerala. *International Journal of Biodiversity and Conservation Vol, (2)*. 4:75-85.
- [14] Ramesh, T., Jahir Hussian, K., Selvanayagam, M., Satpathy, K. K. and Prasad, M.V.R. 2010. Patterns of diversity, abundance and habitat associations of butterfly communities in heterogenous landscape of the department of atomic energy campus at Kalppakam, South India. *International Journal of Biodiversity and Conservation Vol, (2)*. 4:75-85.