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Biodiversity of Butterflies in Two Selected Habitats of Srivilliputtur Taluk, Virudhunagar District

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Abstract: ***A survey on the status and distribution of the butterflies was undertaken at two different selected habitats of Srivilliputtur Taluk, Virudhunagar district during the study period January 2016 to December 2016. In the present investigation 51 species of butterflies belonging to 8 Families, among these 47 species of butterflies recorded from scrub jungle habitat and 21 species of butterflies recorded from open land habitat. The Simpson's index, Evenness and Relative abundance also observed. In the present study, the member of the Family Nymphalidae was most dominant and Family Acraeidae was less dominant. The maximum numbers of butterfly species observed in scrub jungle habitat due to the majority of food plants are present.***
Keywords: Butterfly diversity, Simpson's index, Evenness index, Nymphalidae, Acraeidae.

I. INTRODUCTION

The term "Biological diversity" or its short-term "Biodiversity" is a synonym for the variety and variability within species, between species of an ecosystem [5]. India encompasses about 2.7% of total area of the land and one of the richest countries in the world in terms of biodiversity. Butterflies are the most beautiful and colorful creatures on the earth and have a great aesthetic value. More than 17000 species of butterfly are found all over world of these India is home to about 1501 species of butterfly which constitute 65% of total Indian fauna [2]. Butterflies are useful in the study of genetics, insect-plant interaction and co-evolution, the plants pollinated by Butterflies and they get their good from plants. Butterflies and ants are also mutually beneficial, Butterflies give sweet fluid to the ant and ants in turn protect them from natural enemies [10]. Human seldom hunt Butterflies, however, habitats destruction degradation, fragmentation, grazing, forest fires and applications of pesticides and weedicides can affect butterfly populations [6]. The present study deals with diversity of butterflies found within the study area concentrating the following objectives: To make a survey of butterflies in two ecologically different habitats such as, scrub jungle habitat and open land for a period of twelve months (January 2016 - December 2016). To study the relative abundance of butterflies with reference to different seasonal patterns such as Early-post monsoon (January, February, March), Late-post monsoon (April, May, June), Pre-monsoon (July, August, September), Monsoon (October, November, December). To create awareness about the diversity of butterflies.

II. MATERIALS AND METHODS

A. Study area

The study was carried out in two ecologically different habitats situated in Srivilliputtur Taluk area such as, scrub jungle habitat and open land habitat.



Fig 1: Showing the location of the study area in Srivilliputtur Taluk, Virudhunagar

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B. Study period

The study was extensively carried out from January 2016 to December 2016 and it was divided into Early-post monsoon (January, February, March), Late-post monsoon (April, May, June), Pre-monsoon (July, August, September) and Monsoon (October, November, December).

C. Survey and Identification of Butterflies species:

In present investigation, the survey of butterflies in two ecologically different habitats, such as scrub jungle habitat and open land area in a month during the study period from 7am to 11am on the days without heavy rain with clear weather.

Identification of the butterflies will be primarily made directly in the field. When identifying butterfly species by only photographs. No collection of specimens was done. Butterflies were photographed from different angles as often as possible to obtain sufficient photographs to enable positive identification of species, the key characters used for identification were colour patterns, wing span, mode of flight, etc., For further identification with the help of field guide "SOME SOUTTH INDIAN BUTTERFLIES" in Gunathilagaraj et al., 1998.

D. Data analysis

Raw data from the field were used to reveal species diversity (Simpson dominance index), Pielou's evenness index (Pielou 1969) and relative abundance (Michael, 1989) were observed.

III. RESULT AND DISCUSSION

In the present investigation 51 species (Table 1) of butterflies belonging to 8 Families of Order Lepidoptera were observed (Fig. 1). The 47 species are observed in scurb jungle habitat and 21 species are observed in open land habitat. The jungle habitat species diversity (Simpson's dominance intex) was 0.953, Pielou's evenness intex is 0.806975 and relative abundance was highly in Nymphalidae Family (23.41) and lesser in Acraeidae Family (2.13).

The open land habitat species diversity (Simpson's dominance intex) was 0.919, Pielou's evenness intex is 0.887675 and relative abundance was highly in Nymphalidae Family (38.10) and lesser in Acraeidae, Lycaenidae and Satyridae Family (4.76) showed in (Table 2).

Butterflies behave like opportunistic foragers during nectar gathering, but their choice of flowers is not random, often they possess species specific flower preferences. Habitat preference and of butterfly species in a habitat is directly related to the availability of larval host plants and adult nectar sources.

Nectar resources for adults are likely important limiting factors and may shape community patterns. 40 visits of butterflies are more frequent to flowers of herbs and shrubs, rather than to the flowers of trees [3].

Availability of larval food plants, habitat quality appeared to be one of the most important parameters to determine butterfly community.

Abundance of butterfly species is due to favourable tropical climate conditions, availability of host plants, food and vegetation [8] topographic features [1] absence of predators, parasitoids and non- prevalence of diseases [7].

Butterflies are one of the conspicuous insects, these are particularly useful in monitoring changes in both ecological and economic terms, and butterflies are useful in pollination. Butterflies are an excellent choice in terms of indicator organisms for biodiversity studies [9].

Similar results, Wynter-Blyth (1957) predicted Shannon-Weiner diversity index (H' = 3.37), Evenness index (J = 0.9), Species richness showed maximum values during post monsoon (R = 6.23), summer (R = 5.77) followed by monsoon (R = 4.85) and winter (R = 3.38), Simpson's Dominance index is highest for winter (D = 0.87), Sorensen's index is also highest for summer-post monsoon (0.84) and lowest between monsoon and winter (0.42).

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Table 1: Showing different butterflies in two selected habitats in Srivilliputtur taluk:

S.No	Family	Zoological Name	Common name
1	Acraeidae	Acraea violae (Fabricius)	Tawny coster
2	Danaidae	Euploea core core (Cramer)	Common crow
3	Danaidae	Danaus genutia genutia (Cramer)	Striped tiger
4	Danaidae	Danaus chrysippus chrysippus (Linnaeus)	Plain tiger
5	Danaidae	Tirumala septentrionis dravidarum Fruhstorfer	Dark blue tiger
6	Hesperiidae	Badamia exclamationis (Fabricius)	Brown awl
7	Hesperiidae	Coladenia indrani Moore	Tri colour flat
8	Hesperiidae	Spialia galba galba (Fabricius)	Indian skipper
9	Hesperiidae	Suastus gremius gremius (Fabricius)	Indian palm bop
10	Lycaenidae	Azanus ubaldus Cramer	Bright babul blue
11	Lycaenidae	Castalius rosimon rosimon (Fabricius)	Common pierrot
12	Lycaenidae	Curetis thetis	Indian sunbeam
13	Lycaenidae	Discolampa ethion vavasanus Fruhstorfer	Banded blue pierrot
14	Lycaenidae	Jamides celeno aelianus (Fabricius)	Common cerulean
15	Nymphalidae	Ariadne merione merione Cramer	Common castor
16	Nymphalidae	Charaxes solon solon (Fabricius)	Black rajah
17	Nymphalidae	Byblia ilithyia (Drury)	Joker
18	Nymphalidae	Cirrochroa thais thais (Fabricius)	Tamil yeoman
19	Nymphalidae	Hypolimnas bolina jacintha (Drury)	Great eggfly
20	Nymphalidae	Hypolimnas misippus (Linnaeus)	Danaid eggfly
21	Nymphalidae	Neptis hylas varmona (Moore)	Common sailer
22	Nymphalidae	Phalanta phalantha phalantha (Drury)	Common leopard
23	Nymphalidae	Polyura athamas athamas Drury	Common nawab
24	Nymphalidae	Precis lemonias lemonias (Linnaeus)	Lemon pansy
25	Nymphalidae	Precis iphita iphita (Cramer)	Chocolate pansy
26	Nymphalidae	Precis hierta hierta (Fabricius)	Yellow pansy
27	Nymphalidae	Precis orithya (Linnaeus)	Blue pansy
28	Nymphalidae	Precis almana almana (Linnaeus)	Peacock pansy
29	Papilionidae	Papilio polytes polytes Linnaeus	Common mormon
30	Papilionidae	Papilio polymnestor (Cramer)	Blue mormon
31	Papilionidae	Papilio demolius Linnaeus	Lime butterfly
32	Papilionidae	Papilio polytes Romulus Cramer	Common mormon
33	Papilionidae	Papilio crino Fabricius	Common banded peacock
34	Papilionidae	Pachliopta hector (Linnaeus)	Crimson rose
35	Papilionidae	Graphiym Agamemnon menides Felder & Felder	Tailed jay
36	Pieridae	Anaphaeis aurota (Fabricius)	Pioneer
37	Pieridae	Appias albina	Common albatross
38	Pieridae	Cepora nerissa nerissa (Fabricius)	Common gull
39	Pieridae	Catopsilia pyranthe (Linnaeus)	Mottled emigrant
40	Pieridae	Colotis danae danae (Fabricius)	Crimson tip
41	Pieridae	Colotis eucharis eucharis (Fabricius)	Plain orange tip
42	Pieridae	Delias eucharis (Drury)	Common jezebel
43	Pieridae	Eurema hecabe simulate Moore	Common grass yellow
44	Pieridae	Ixias Marianne (Cramer)	White orange tip
45	Pieridae	Ixias pyrene sesia Fabricius	Yellow orange tip
46	Pieridae	Pareronia valeria hippie (Fabricius)	Common wanderer
47	Pieridae	*Pieris brassicae*	Cabbage white
48	Satyridae	Mycalesis mineus polydecta Cramer	Dark brand bushbrown
49	Satyridae	Mycalesis perseus typhlus Fruhstorfer	Common bush brown
50	Satyridae	Melanitis leda leda (Drury)	Common evening brown
51	Satyridae	Ypthima ceylonica (Hewitson)	White fourring

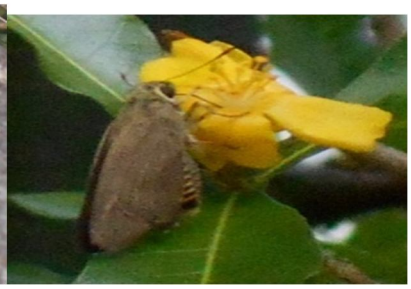
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Table 2: Species diversity (Simpson dominance index), Pielou's evenness index) and relative abundance of butterflies from Jungle habitat and open land habitat:

Family		Study site	
		Jungle habitat	Open land habitat
Acraeidae		1	1
Danaidae		4	2
Hesperiidae		3	2
Lycaenidae		5	1
Nymphalidae		11	8
Papilionidae		7	2
Pieridae		12	4
Satyridae		4	1
Simpson dominance index		0.953	0.919
Pielou's evenness index		0.806975	0.887675
Relative abundance	Nymphalidae (high)	23.41	38.10
	Acraeidae (low)	2.13	4.75


Euploea core core (Cramer)


Danaus genutia genutia (Cramer)


Badamia exclamationis (Fabricius)


Azanus ubaldus Cramer


Castalius rosimon rosimon (Fabricius)

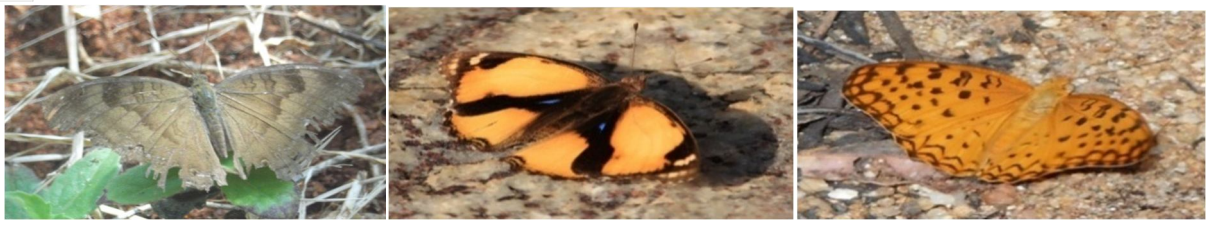

Precis orithya (Linnaeus)


Cirrochroa thais thais (Fabricius)


Precis lemonias lemonias (Linnaeus)


Precis almana almana (Linnaeus)

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Precis iphita iphita (Cramer) | Precis hierta hierta (Fabricius) | Phalanta phalantha phalantha (Drury)



Papilio Polymnestor (Cramer) | Pachliopta hector (Linnaeus) | Eurema hecabe simulata Moore



Anaphaeis aurota (Fabricius) | Colotis danae danae (Fabricius) | Ixias pyrene sesia Fabricius



Mycalesis mineus polydecta Cramer | Mycalesis perseus typhlus Fruhstorfer | Melanitis leda leda (Drury)

Fig. 1 Some of butterflies recorded in two different habitats of Srivilliputur Taluk during January 2016 – December 2016

IV. CONCLUSION

In the present investigation 51 species of butterflies belonging to 8 Families, among these butterflies, 47 species of butterflies recorded from scrub jungle habitat and 21 species of butterflies recorded from open land habitat. In the present study, calculated the diversity indices is high value in scrub jungle habitat such as, Simpson's index = 0.9299, Evenness = 0.90253 followed by open land habitat. In the present study, *Nymphalidae* Family was most dominant and *Acraeidae* Family was less dominant. The maximum numbers of butterfly species observed in scrub jungle habitat due to the majority of food plants are present.

V. ACKNOWLEDGEMENT

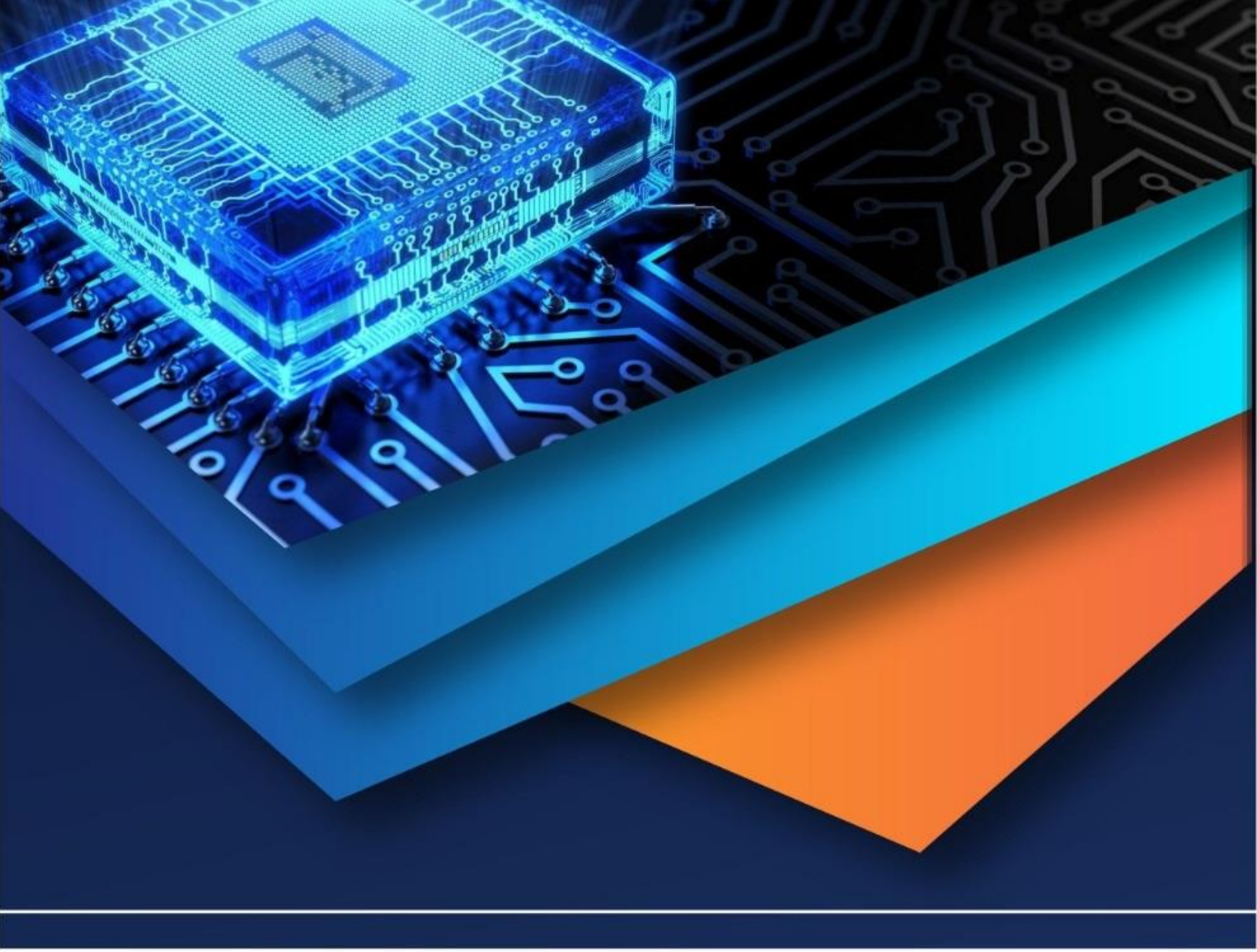
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