

Seasonal and relative abundance of butterflies in a scrub jungle habitat of Peraiyur Taluk, Madurai District, Tamilnadu.

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ABSTRACT:

The present investigation has been aimed to explore the biodiversity of butterflies in a open land habitat of Peraiyur Taluk. Totally 65 species of butterflies belonging to 8 Families were of order Lepidoptera were identified. The family Nymphalidae and Pieridae contribute more number of species with 15 and 14 respectively and followed by Lycaenidae (13 species), Papilionidae (9 species), Danaidae (6 species), Hesperidae (5 species), Satyridae (2 species) and Acraeidae (1 species).

Keywords:

Butterflies, Abundance, Seasonal Occurrence, Scrub jungle habitat.

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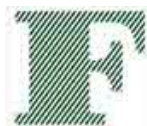
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INTRODUCTION

India harbors about 1,501 species of butterflies in which 285 species are found in the southern part of India of which 45 species are endemic to south India (Thomos, 1984). Most Lepidopteran species evidently visited a limited range of nectar plants, which may have implications for species conservation and selecting “butterfly plants” for gardening (Tooker *et al.*, 2002). Butterflies are generally fairly, readily and identifiable insects. There is a relatively good taxonomic knowledge of the group and they are also sensitive to environment changes in microsite and biotope characteristics (Ehrlich and Raven, 1964). Butterflies are important natural resources as they help in pollination, a key process in natural propagation, important ecological indicators, as they are closely associated with plants both as adults and as larvae, an enhances the aesthetic value of the environments by their exquisite wing colours. Hence, there is increasing global interest in conserving and managing butterflies (New *et al.*, 1995). Studies on butterflies in any area would help us to understand the status of the ecosystem and increasing human pressure on natural resources which require a reliable accounting of biodiversity (Kremen, 1992). The different life stages of the butterflies are exposed to a wide range of environmental influences including variation in temperature, humidity, light and disturbances (Murphy *et al.*, 1990). Hence, the present investigation has been carried out to explore the seasonal and relative abundance of butterflies in a scrub jungle habitat of Peraiyur Taluk, Madurai District, Tamilnadu.

MATERIALS AND METHODS

Study area

The study on the biodiversity of butterflies in a scrub jungle habitat was carried out in Salichandhai village. This village is located in between Peraiyur and Kumarapuram. This habitat includes weeds such as, *Leucas aspersa*, *Murraya paniculata*, *Lantana camera* and *Tridax procumbens* etc. The following shrubs are also found in this habitat. They are as follows *Calotropis* Sp., *Acacia* Sp., *Wendlandia thyrsoides* etc. The most dominant vegetation in this habitat is *Zizypus sps*, *Cassia sps* and *Acacia's* Sp.

Study period

The study was extensively carried out from May 2007 to April 2008 and it was divided into pre-monsoon (June, July and August), monsoon

(September, October and November), early post-monsoon (December, January and February) and late post-monsoon (March, April and May).

Methodology Adopted

The butterflies were observed from 07.00 hrs to 16.00 hrs. The butterflies were observed at a distance of 2m. Some butterflies could not be identified accurately upto the species level in the field as they were difficult to locate and identify in the field because of their smaller size and cryptic coloration (Lycaenidae and Hesperidae). The butterfly species were identified by using standard references such as, the field guide “Some south Indian Butterflies” (Gunathilagaraj *et al.*, 1998) and ‘India – a lifescape butterflies of peninsular India (Kunte, 2000). The phenology of some butterflies were also studied based on the observations.

RESULTS AND DISCUSSION

The list of butterflies observed in the scrub jungle habitat was presented in **Table 1**. Totally 65 species of butterflies belonging to 8 Families were identified. The family Nymphalidae and Pieridae contribute more number of species with 15 and 14 respectively and these two families are followed by Lycaenidae (5 species), Satyridae (2 species) and Acraeidae (1 species). The distribution of butterflies is dependant upon the availability of their food plants. Migrants move out of their breeding areas if they do not find suitable food plants source in the new localities as they will fail future generation (Uniyal, and Mehra, 1996). The abundance of butterfly species population in scrub jungle area may be due to the availability of ample food, optimum climate and a serene atmosphere (Ravindra *et al.*, 1996). The relative abundance of butterflies in present scrub jungle habitat was calculated and presented in the **Table 2**. This habitat comprises 65 species of butterflies under 8 families. Among these 8 families Nymphalidae and Pieridae were found to be the most dominant members with (23.07%) and (21.53%) respectively. These two families were followed by Lycaenidae (19.69%), Papilionidae (13.84%), Danaidae (9.23%) and Hesperidae (7.69%). The minimum number of species were also found in this habitat from the families such as, Satyridae (3.07%) and Acraeidae (1.53%). The seasonal occurrence and abundance of butterflies observed in the scrub jungle were presented in **Table 3**.

During pre monsoon period (June 2007 to August 2007) 87 butterflies belonging to 30 species were observed. Among these butterflies, *Catopsilia*



Table 1. Shows the occurrence of butterflies in scrub jungle habitat of Peraiyur Taluk.

S.No	Family	Zoological Name	Common Name
1.	Acraeidae	<i>Acraea violae</i>	Twansy castor
2.	Danaidae	<i>Danaus chrysippus chrysippus</i>	Plain tiger
3.	''	<i>Tirumala limniace exoticus</i>	Blue tiger
4.	''	<i>Euploea core core</i>	Common Indian crow
5.	''	<i>Idea malabarica</i>	Malabar tree
6.	''	<i>Parantica aglea agela</i>	Grassy blue tiger
7.	''	<i>Tirumala septentrionis dravidarum</i>	Dark blue tiger
8.	Hesperiidae	<i>Hasora chromus chromus</i>	Common banded owl
9.	''	<i>Lambrix salsala luteipennis</i>	Chestnut Bob
10.	''	<i>Suastus gremius gremius</i>	Indian balm Bob
11.	''	<i>Spialia galba galba</i>	Indian skipper
12.	''	<i>Ampittia dioscorides dioscorides</i>	Bush hopper
13.	Lycaenidae	<i>Azanus ubaldus</i>	Bright babul blue
14.	''	<i>Castalius rosimon rosimon</i>	Common pierrot
15.	''	<i>Pseudozizeeria maha</i>	Pale grass blue
16.	''	<i>Zizeeria karsandra</i>	Grass blue
17.	''	<i>Jamides alecto</i>	Metallic cerulean
18.	''	<i>Zizina otis</i>	Lesser grass blue
19.	''	<i>Rapala manea</i>	Slate flash
20.	''	<i>Leptotes plinius</i>	Zebra blue
21.	''	<i>Rapala jarbus</i>	Slate flash
22.	''	<i>Jamides celeno</i>	Common cerulean
23.	''	<i>Chilades pandava</i>	The plain cupid
24.	''	<i>Freyeria trochylus</i>	Grass jewel
25.	''	<i>Spindasis vulcanus</i>	Common silver line
26.	Nymphalidae	<i>Precis atlites</i>	Grey pansy
27.	''	<i>Precis iphita iphita</i>	Chocolate pansy
28.	''	<i>Polyura athamas athamas</i>	Common nawab
29.	''	<i>Precis almana almanac</i>	Peacock pansy
30.	''	<i>Hypolimnas misippus</i>	Danaid egg fly
31.	''	<i>Junonia lemonias</i>	Lemon pansy
32.	''	<i>Pantoporia hordonia</i>	The common lascar
33.	''	<i>Euthalia aconthea maridionalis</i>	Baron
34.	''	<i>Ariadne merione merione</i>	Common castor
35.	''	<i>Neptis hylas varmona</i>	Common sailer
36.	''	<i>Vindula erota</i>	Crusier
37.	''	<i>Argyreus hyperbius hybrida</i>	Indian fritillary
38.	''	<i>Moduza procris undifragus</i>	Commander
39.	''	<i>Hypolimns bolina jacintha</i>	Great egg fly
40.	''	<i>Ariadne ariadne</i>	Angeled castor



41.	Papilionidae	<i>Graphium doson</i>	Common jay
42.	''	<i>Pachliopta aristolochiae aristolochiae</i>	Common rose
43.	''	<i>Papilio polytes polytes</i>	Common mormon
44.	''	<i>Papilio polytes romulus</i>	Malabar Raven
45.	''	<i>Papilio polymnestor</i>	Blue mormon
46.	''	<i>Pachliopta hector</i>	Crimson rose
47.	''	<i>Papilio helenus</i>	Red helan
48.	''	<i>Papilio demoleus</i>	Lime butterfly
49.	''	<i>Troides minos</i>	Southern bird wing
50.	Pieridae	<i>Catopsilia crocale</i>	Common emigrant
51.	''	<i>Catopsilia florella</i>	African emigrant
52.	''	<i>Delias eucharis</i>	Common jezebel
53.	''	<i>Hebomoia glaucippe</i>	Great orange tip
54.	''	<i>Anaphaeis aurota</i>	The pioneer
55.	''	<i>Catopsilia pomona</i>	Lemon emigrant
56.	''	<i>Catopsilia pyranthe</i>	Mottled emigrant
57.	''	<i>Pareonia valeria hippie</i>	Common wanderer
58.	''	<i>Cepora nerissa nerissa</i>	Common gull
59.	''	<i>Colotis etrida</i>	Little orange tip
60.	''	<i>Eurema hecabe simulate</i>	Common grass yellow
61.	''	<i>Colias nilagiriensis</i>	Nilgiri clouded yellow
62.	''	<i>Ixias marianne</i>	White orange tip
63.	''	<i>Ixias pyrene</i>	Yellow orange tip
64.	Satyridae	<i>Melanitis leda leda</i>	Common evening brown
65.	''	<i>Mycalesis perseus typhlus</i>	Common bush brown

pomona of family Pieridae was found to be a dominant member (5 numbers) followed by *Delias eucharis* (5 numbers), *Tirumala limniace exoticus* (4 numbers), *Chilades pandava* (4 numbers), *Pachliopta hector* (4 numbers) and *Catopsilia florella* (4 numbers). During monsoon period (September 2007 to November 2007) 181 butterflies belonging to 65 species were observed. Among these butterflies, *Papilio polytes polytes* of Papilionidae was found to be a dominant member (8 numbers) followed by *Papilio romulus* (6 numbers) *Delias eucharis* (6 numbers), *Tirumala limniace exoticus* (5 numbers), *Euploea core core* (4 numbers), *Moduza procris*

undifragus (4 numbers), *Papilio polymnestor* (4 numbers), *Colotis etrida* (4 numbers) and *Ixias Marianne* (4 numbers). During early post monsoon (December 2007 to February 2008) 156 butterflies belonging to 58 species were observed. Among these butterflies, *Papilio demoleus* of family Papilionidae was found to be a dominant member (5 numbers) followed by *Chilades pandava* (4 numbers), *Jamides alecto* (4 numbers), *Euthalia aconthea meridionalis* (4 numbers), *Pachliopta hector* (4 numbers), *Papilio helenus daksha* (4 numbers) and *Ixias marine* (4 numbers).

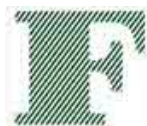
Table 2. Shows relative abundance of butterflies in the scrub jungle habitat of Peraiyur Taluk.

S.No	Family	Number of Species	Relative Abundance
1.	Acraeidae	01	1.53%
2.	Danaidae	06	9.23%
3.	Hesperiidae	05	7.69%
4.	Lycaenidae	13	19.69%
5.	Nymphalidae	15	23.07%
6.	Papilionidae	09	13.84%
7.	Pieridae	14	21.53%
8.	Satyridae	02	3.07%
	Total	65	100%



Table 3. Shows the seasonal occurrence of butterflies in the scrub jungle habitat of Peraiyur Taluk.

S.No	Family and species of Butterflies	Pre Monsoon	Monsoon	Early Post Monsoon	Late Post Monsoon
	I. Acraecidae				
1.	<i>Acraea violae</i>	-	2	2	2
	II. Danidae				
2.	<i>Danaus chrysippus chrysippus</i>	2	3	2	-
3.	<i>Euploea core core</i>	3	4	2	-
4.	<i>Idea malabarica</i>	-	3	2	1
5.	<i>Parantica agela agela</i>	-	2	2	-
6.	<i>Tirumala limniace exoticus</i>	4	5	3	-
7.	<i>Tirumala septentrionis dravidarum</i>	-	2	2	-
	III. Hesperidae				
8.	<i>Ampittia dioscorides dioscorides</i>	3	1	1	-
9.	<i>Azonus ubaldus</i>	-	2	2	-
10.	<i>Hasora chromus chromus</i>	2	2	2	2
11.	<i>Lambrix salsala luteipennis</i>	2	2	1	1
12.	<i>Spialia galba galba</i>	1	1	-	-
13.	<i>Suastus gremius gremius</i>	1	2	-	-
	IV. Lycaenidae				
14.	<i>Castalius rosimon rosimon</i>	3	1	3	3
15.	<i>Chilades pandava</i>	4	-	4	2
16.	<i>Freyeria trochylus</i>	-	2	1	-
17.	<i>Jamides alecto</i>	-	3	4	-
18.	<i>Jamides celeno</i>	-	2	3	2
19.	<i>Leptotes plinius</i>	-	2	3	-
20.	<i>Rapala jarbus</i>	-	2	-	-
21.	<i>Rapala manea</i>	-	3	-	-
22.	<i>Spindasis vulcanus</i>	-	2	3	3
23.	<i>Zizeeria karsandra</i>	-	2	3	-
24.	<i>Pseudozizeeria maha</i>	2	2	-	-
25.	<i>Zizina otis</i>	-	3	2	-
	V. Nymphalidae				
26.	<i>Argyreus hyperbius hybrida</i>	-	2	2	-
27.	<i>Ariadne ariadne</i>	2	2	-	-
28.	<i>Ariadne merione merione</i>	3	3	3	-
29.	<i>Euthalia aconthea meridionalis</i>	3	2	4	-
30.	<i>Hypolimnas bolina jacintha</i>	-	2	2	-
31.	<i>Hypolimnas misippus</i>	-	3	2	2
32.	<i>Juonia lemonias</i>	3	3	2	-
33.	<i>Moduza procris undifragus</i>	-	4	3	-
34.	<i>Neptis hylas varmona</i>	2	3	4	2
35.	<i>Pantoporia hordonia</i>	-	3	3	-
36.	<i>Polyura athamas athamas</i>	-	2	2	-
37.	<i>Precis almana almanac</i>	2	3	3	3
38.	<i>Precis atlites</i>	3	2	3	-
39.	<i>Precis iphita iphita</i>	3	3	4	2
40.	<i>Vindula erota saloma</i>	-	2	3	-



	VI. Papilionidae				
41.	<i>Graphium doson</i>	-	4	3	3
42.	<i>Pachliopta hector</i>	4	6	4	-
43.	<i>Papilio polytes romulus</i>	3	7	3	2
44.	<i>Papilio crino</i>	1	3	4	-
45.	<i>Papilio demoleus</i>	3	4	5	-
46.	<i>Papilio helenus daksha</i>	-	3	4	3
47.	<i>Papilio polymnestor</i>	-	4	3	3
48.	<i>Papilio polytes polytes</i>	-	8	4	1
49.	<i>Troides minos</i>	-	3	3	-
	VII. Pieridae				
50.	<i>Anaphaeis aurota</i>	2	3	-	2
51.	<i>Catopsilia florella</i>	4	2	3	3
52.	<i>Catopsilia crocale</i>	-	2	2	-
53.	<i>Catopsilia pomona</i>	5	3	3	3
54.	<i>Catopsilia pyranthe</i>	3	2	-	2
55.	<i>Cepira nerissa nerissa</i>	-	3	2	2
56.	<i>Colias nilagiriensis</i>	3	3	2	-
57.	<i>Colotis etrida</i>	-	4	3	-
58.	<i>Delias eucharis</i>	5	6	2	4
59.	<i>Eurema hecabe simulate</i>	-	4	3	-
60.	<i>Hebomoia glaucippe</i>	-	1	4	3
61.	<i>Ixias marianne</i>	-	4	3	2
62.	<i>Ixias pyrene</i>	-	2	4	-
63.	<i>Pareronia valeria</i>	-	3	2	2
	VIII. Satyridae				
64.	<i>Melanitis leda leda</i>	-	1	2	-
65.	<i>Mycalesis perseus typhlus</i>	2	2	1	-
	Total no. of Individuals	87	181	156	60
	Total no. of Species	30	65	58	26

During late post – monsoon period 60 butterflies belonging to 26 species were observed. Among these butterflies, *Delias eucharis* of family Pieridae was found to be a dominant member (4 numbers) followed by *Castalius rosimum rosimum* (3 numbers), *Spindasis vulcanus* (3 numbers), *Pracis almana almanac* (3 numbers), *Graphium doson* (3 numbers), *Papilio helenus daksha* (3 numbers), *Papilio polymnestor* (3 numbers), *Catopsilia florella* (3 numbers), *Catopsilia Pomona* (3 numbers) and *Hebomoia glaucippe* (3 numbers). The quality of water has been reported to affect the abundance of butterflies. The males however, often crowd in hundred besides river or mineral springs. Possibly they were attracted by dissolved salts; those found near rivers usually congregate at drinking place where animals have urinated on the sand (Mathews and Carrington, 1970). The butterflies as most others Lepidoptera, show distinct patterns of habitat association. The nature of vegetation, sunshine availability of water

etc., are the factors that determine the survival of a given species in a particular habitat (De Vries, 1987).

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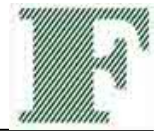
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