International Journal of Entomology Research
ISSN: 2455-4758; Impact Factor: RJIF 5.24
Received: 12-11-2020; Accepted: 24-11-2020; Published: 13-12-2020
www.entomologyjournals.com
Volume 5; Issue 6; 2020; Page No. 189-192

Diversity of butterfly in selected pockets of Pattukkottai taluk, Thanjavur, Tamil Nadu, India

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Abstract
Biodiversity is the variation form within a given ecosystem, biomass or for the entire earth. Butterflies are the most beautiful and colorful creation on the earth and have a great aesthetic value. Butterfly plays an important role in the pollination of flower. In this butterflies fauna affected by many factors which include land use, deforestation and pesticide are major losses of butterflies' diversity. The present study conducted diversity Butterflies in Karambayam, Papanadu and Veerakkurichi of Pattukkotai taluk, Thanjavur district, TamilNadu, India. The end of the survey concluded Karambayam contain more number of species (31) followed by Pappanadu (30) and Veerakkurichi (25). The reason of the butterfly distribution Karambayam contain number of water source, flower garden, orchard planted areas, rescue centers and agricultural lands.

Keywords: Butterfly, diversity, lepidoptera

1. Introduction
Butterflies (Lepidoptera: Rhopalocera) are one of the most plant dependent group of insects [1]. Butterflies are beneficial as they serve as pollinators and indicators of environmental quality and appreciated for their aesthetic value [2, 3]. It is the most beautiful and colourful creatures on the earth. Totally 18,000 species recorded world wide of these 1800 species of butterflies are found in India. Butterflies are known to respond sensitively to the effects of urbanization [4-6] (Clark *et al*., 2007; Lee and Kwon, 2012; Lizee *et al*., 2012). Some species of butterfly play a key role in food chain as predator on the harmful insects.
The butterfly's fauna may be affected and become endangered by many factors which include land uses, forest cultivation, insecticides and pesticides [7, 7] (Sundarraj *et al*., 2016; Yosita, 2019) [7, 8]. In some cases only the application of pesticides to damage to forest trees is the major for loss butterfly diversity [9, 10] (Sharmila and Thatheyus, 2013; Biswas *et al*., 2017). The most important threat to butterfly diversity is urbanization. Even though parks, sanctuaries and other protected areas are specifically kept off limits for humans, the effect of pollution which is a direct result of urbanization nevertheless affects biodiversity. This is also evident from the fact the butterflies were most commonly seen near agricultural and the borders of forest areas and less in areas near human dwellings [11-13] (McKinney, 2002; 2006; 2008).
In this regards the present study conducted diversity of butterfly in selected pockets of Pattukkottai taluk, Thanjavur district, Tamil Nadu, India

2. Methodology
The survey was carried out during the day from 7 a.m. to 11 a.m. and 3 p.m. to 5 p.m. for a period of 03 months extending from November 2019 to January 2020 butterflies in Karambayam, Pappanadu, Veerakkurichi of Pattukkotai taluk Thanjavur district, Tamil Nadu, India. Butterflies were caught using a sweeping net outer areas, road sides, orchard planted areas, water reservoirs, rescue centers and agricultural lands. Pollard walking method was followed for observing butterflies [14] (Pollard, 1977) [14] and photographic documentation was done and the data was maintained. The collected Butterflies identified up to the species level using standard manual [15-17] Whnter-Blyth (1957), Gay *et al*., (1992), Kunte (2000) and Varshney (1983).

3. Results
The present study observed in three places of Pattukkottai taluk, Thanjavur district of these one of the place Veerakkurichi observed totally 25 species belonging to 4 families there are Papilionidae, Pieridae, Lycaenidae and Nymphalidae. Out of these 4 families Nymphalidae dominant with 14 species followed by Papilionidae 5 species, Pieridae 4 species, Lycaenidae 2 species Table 1.
30 species of butterflies were recorded from Pappanadu belonging to 5 families there are Papilionidae, Pieridae, Lycaenidae, Nymphalidae and Hesperidae. Among these families Nymphalidae dominant with 17 species followed by Papilionidae 5 species, Pieridae 4 species, Lycaenidae 2 species and Hesperidae 2 families Table 1.
Finally 31 species belonging to 4 families of butterflies recorded in Karambayam. Out of these 31 species Nymphalidae and Pieridae are represent by 12 species followed by Papilionidae is represented by 4 species and Lycaenidae is represented by 3 species Table 1.

Table 1: Diversity of butterflies in selected pockets

Sl. no	Common name	Scientific name	Veerakkurichi	Pappanadu	Karambayam
		Hesperidae			
1	Common grass dart	*Taractrocera maevius*	-	+	-
2	Indian palm bob	*Suastus gremius*	-	+	-
		Papilionidae			
1	Common rose	*Pachliopta aristolochiae*	+	+	++
2	Crimson rose	*Pachliopta hector*	+	++	+
3	Common jay	*Graphium doson*	-	-	+
4	Tailed jay	*Graphium agamemnon*	+	-	-
5	Lime butterfly	*Papilio demoleus*	-	+	+
6	Malabar raven	*Papilio dravidarum*	+	+	-
7	Common mormon	*Papilio polytes*	+	+	-
		Pieridae			
1	Pioneer	Belenois aurota	-	-	+
2	Common emigrant	*Catopsilia pomona*	+	+	+
3	Mottled emigrant	*Catopsilia pyranthe*	+	+	+
4	Common gull	*Cepora nerissa*	-	-	+
5	Small salmon arab	*Colotis amata*	-	-	+
6	Crimson tip	*Colotis danae*	-	-	+
7	Plain orange tip	*Colitis euharis*	-	-	+
8	Small orange tip	*Colitis etrida*	-	-	+
9	Common jezebel	*Delias eucharis*	+	+	+
10	Common grass yellow	*Eurema hecabe*	+	+	-
11	Three spot grass yellow	*Eurema blanda*	-	-	+
12	Yellow orange tip	*Ixias pyrene*	-	-	+
13	Common wanderer	*Pareronia valeria*	-	-	+
		Nymphaliae			
1	Tawny costor	*Acraea terpsicore*	+	+	-
2			+	+	+
3	Angled castor	*Ariadne ariadne*	+	+	+
4	Joker butterfly	*Byblia ilithyia*	+	-	-
5	Plain tiger	*Danaus almanc*	-	+	-
6	Stripped tiger	*Danaus geutia*	+	+	+
7	Plain tiger	*Danus chrysippus*	-	-	+
8	Common crow	*Euploea core*	+	+	+
9	Great eggfly	*Hypolimnas bolina*	+	-	-
10	Danaid eggfly	*Hypolimnas misippus*	-	+	-
11	Peacock pansy	*Junonia almana*	+	+	+
12	Yellow pansy	*Junonia hierta*	+	+	+
13	Chocolate pansy	*Junonia iphita*	+	+	+
14	Blue pansy	*Junonia orithya*	+	+	+
15	Lemon pansy	*Juonia lemonias*	+	+	+
16	Common sailor	*Nepits hylas*	+	-	-
17	Common evening brown	*Melanitis leda*	-	+	-
18	Common bush brown	*Mycalesis perseus*	+	+	-
19	Long brand common bush brown	*Mycalesis visala*	+	+	-
20	Nigger	*Orsotrioena medus*	-	-	+
21	Common leopard	*Phalanta phalantha*	-	+	-
22	Blue tiger	*Tirumala limniace*	-	-	+
23	Dark blue tiger	*Tirumala septentrionis*	-	+	-
		Lycaenidae			
1	Common hedge blue	*Acytolepis puspa*	-	-	+
2			-	+	-
3	Common pierrot	*Castalius rosimon*	+	-	-
4	Plain cupid	*Chilades pandava*	-	-	+
5	Common cerulean	*Jamides celeno*	-	-	+
6	Rounded pierrot	*Tarucus extricatuss*	-	+	-
7	Lesser grass blue	*Zizina otis*	+	-	-

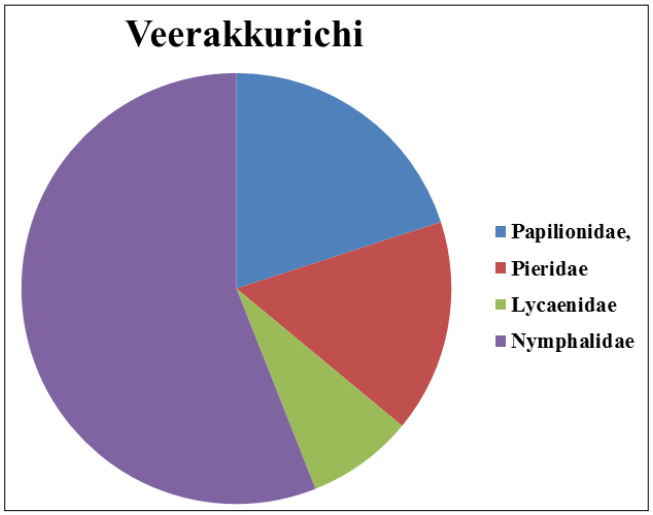

Fig 1: Percentage composition of butterfly species in Veerakkurichi

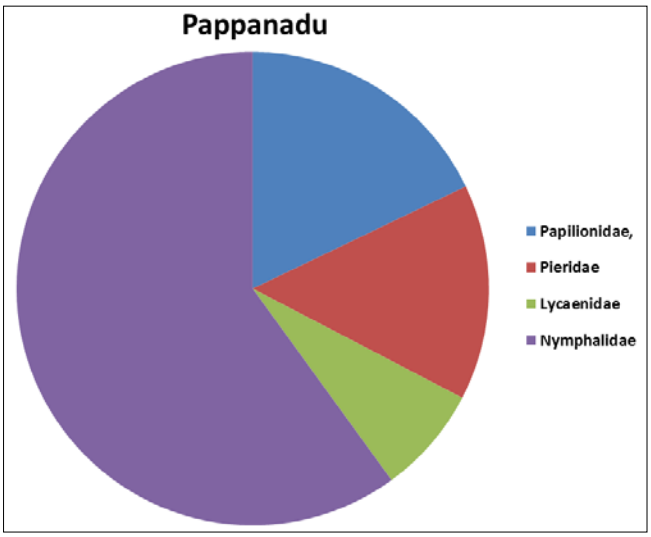

Fig 2: Percentage composition of butterfly species in Pappanadu

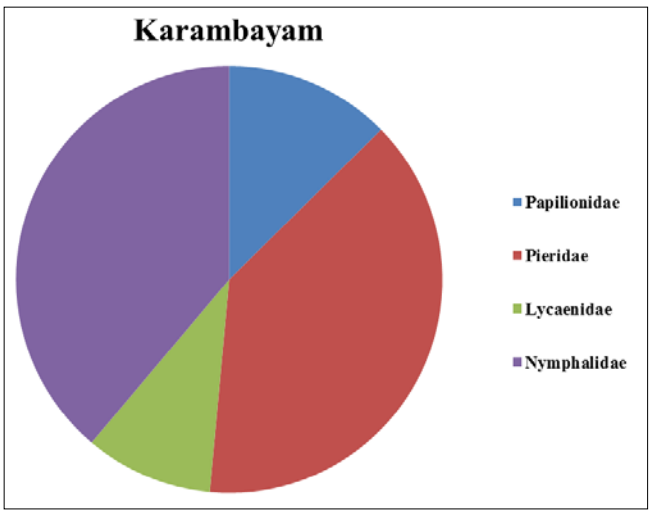

Fig 3: Percentage composition of butterfly species in Karambayam

4. Discussion

Butterflies are one of the best taxonomical studied groups of insect. They are the most beautiful pleasing and charming creatures relives stress and occupy a seat in all human being. Thanjavur district sumptuous water resources these butterflies occupy all surrounding. Even though numerous available in this area due to the availability of rain fall, water source and flowering plants. Hence verity of butterflies observed in these area. Among the three study sites Karambayam contain more number of species (31).

Numbers of study reported support to the present study. Clark *et al.*, 2007 [4], reported that increased human activities were associated with decreased butterfly species and claimed that the rich, rare and specialized species were the most affected butterfly diversity [4]. The studies carried out at various places showed a varied pattern the Lakkavalli range of Bhadra Wildlife Sanctuary, Karnataka with 54 species, west Singhbhum in Jharkand revealed 71 species [18] (Arun, 2010).

Sundaraj *et al.*, 2016 surveyed 64 butterfly species belonging to 5 families namely Papilionidae (12), Pieridae (15), Nymphalidae (18), Lycaenidae (11) and Hesperiidae (8) in Nilgiri hills, Southern Western Ghats [7].

A Total 33 species of butterflies belonging to 24 genera and 05 families namely, Hesperiidae, Lycaenidae Nymphalidae, Papilionidae and Pieridae were recorded from different habitats.

5. Conclusion

The study conducted there site of Pattukkottai taluk, Thanjavur district of these three sites indicate Karambayam recorded 31 species belonging to 4 families of butterflies recorded in Karambayam followed by 30 species of butterflies were recorded from Pappanadu belonging to 5 families and 25 species belonging to 4 families there are Papilionidae, Pieridae, Lycaenidae and Nymphalidae are recorded in Rajah Serfoji College Campus. The end of the survey concluded Karambayam area contain more number of species (31) followed by Pappanadu (30) and Veerakkurichi (25). The reason of the butterfly distribution Karambayam contain number of water source, flower garden, orchard planted areas, rescue centers and agricultural lands followed by Pappanadu and Veerakkurichi. The butterflies occur only for that places.

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