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BUTTERFLY DIVERSITY IN BHANDUP (WEST), MUMBAI, MAHARASHTRA, INDIA.

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Abstract : A study of butterfly diversity was carried out in the Bhandup (west), Mumbai Maharashtra. The area selected for the study was N.E.S.Ratnam College campus and Kukreja residential complex. Both the complexes are situated in highly populated suburb of Mumbai, but these two being the oldest establishments have more than 200 wild and cultivated plants. The study was carried out from October 2019 to February 2021 except for the rainy seasons. A total of 39 species of butterflies belonging to five families, Hesperidae, Lycaenidae, Nymphalidae, Papilionidae and Pieridae were recorded. Nymphalidae family is the dominating family with 14 species spotted in this period of study. The dominant butterflies in the area are *Euploea core*, *Moduza procris*, *Pachliopta hector*, *Rathinda amor*, *Udaspes folus*, *Delias ecucharis*, *Acraea violae*, *Pareronia hippia* and *Papilio polymnestor*. The area has cultivated and wild plants which serve as host plant for laying the eggs and nectar plants for nectar. The dominant plants in these two complexes are *Stachytarpheta indica*, *Lantana camara*, *Mangifera indica*, *Citrus limonia*, *Achras sapota*, *Ixora coccinea*, *Vinca rosea*, several species of *Tagetes*, *Cosmos*. The wild flora is dominated by species of *Cleome*, *Phyllanthus*, *Alternanthera*, *Capparis*, *Vernonia*, *Clitoria* and several species of grasses. There are trees older than 70 years like *Ficus benghalensis*, *Ficus religiosa*, *Couropita guanensis*, *Tamarindus indica*, *Caesalpinia sps*, etc.

Index Terms - Butterfly diversity, *Stachytarpheta*.

I. INTRODUCTION

Butterflies enhance earth's beauty due to their diverse colors on their wings (Sparks,1997)^[7]. Due to their beauty and ecological significance butterflies are a well-studied group throughout the world (Ghazoul,2002)^[2]. Butterflies are a vital part of the ecosystem, and they are the ideal population of organisms for exploration of insect phenology because they are relatively conspicuous and are of more interest to humans than most other insects because of their size and color structure which leads to observation and collection (Sparks,1997)^[7]. Among insects, butterflies are the most studied group (Ramesh,2010)^[6]. They are essential part of any natural ecosystem as pollinators and energy transferors from herbivore to the next trophic level (Sreekumar,2010)^[8]. Many species of butterflies are strictly seasonal, preferring only particular habitats (Kunte,2006)^[4]. Because of their diversity, wide distribution, specificity to vegetation type, rapid response to perturbation, taxonomic tractability, significant abundance, and ease of sampling, they are considered useful

organisms to monitor environmental changes (Gowda, 2011)^[3]. The diversity of butterflies is of great interest and hence an attempt was made to document the butterflies in these areas.

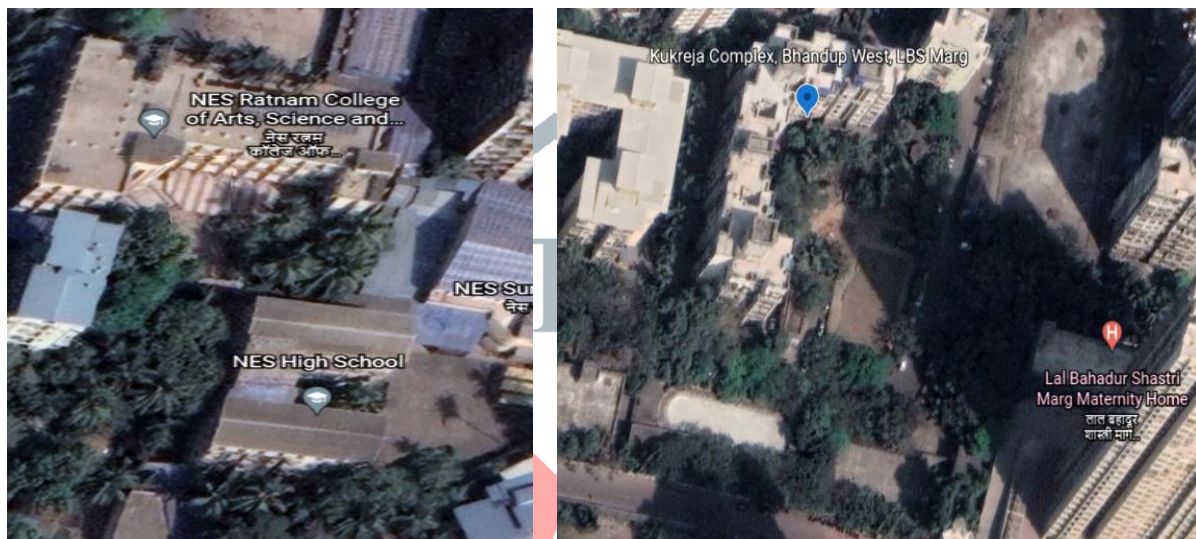
II. MATERIALS AND METHODS

2.1 Study area

Bhandup West, Mumbai. 19° 8' 59.6400" N and 72° 55' 52.0932" E.

N.E.S.Ratnam College – 19.1494627,72.9355029

Kukreja Complex - 19.1501782,72.9391655



Google Earth photos of the two study sites

2.2 Sampling

The visiting time was 7am to 11 am and 3pm to 6 pm. Different species of butterflies were active at different hours of the day. Sampling was done by opportunistic sampling. Photographs were taken by mobile phones. Sometimes video was taken and photo captured from video. All butterflies could not be photographed.

2.3 Identification

The butterflies observed were identified upto species level and tabulated. Colour patterns, sizes and shapes as well as their designs were considered in identification of the species of butterfly .

Butterflies were identified by referring to the websites(i,ii,iii)^[10] as mentioned in the reference section and Raju Kasambe, 2018^[5].

III. RESULTS AND DISCUSSION

39 species of butterflies were observed during the sampling period as listed in Table 1. Fig.2 shows some species of butterflies which could be photographed. Family Nymphalidae dominated the area with 14 species, followed by family Hesperidae with 10 species.

Every species of butterfly has a liking for a specific plant. Female butterflies are lured to host plants by a combination of chemical cues released from the plant. Once they locate a host, they begin laying eggs. Butterflies are more selective about the plants where they lay their eggs than the plants from which they suck nectar. The rich diversity of butterflies in these areas is due to the good assemblage of flora, especially

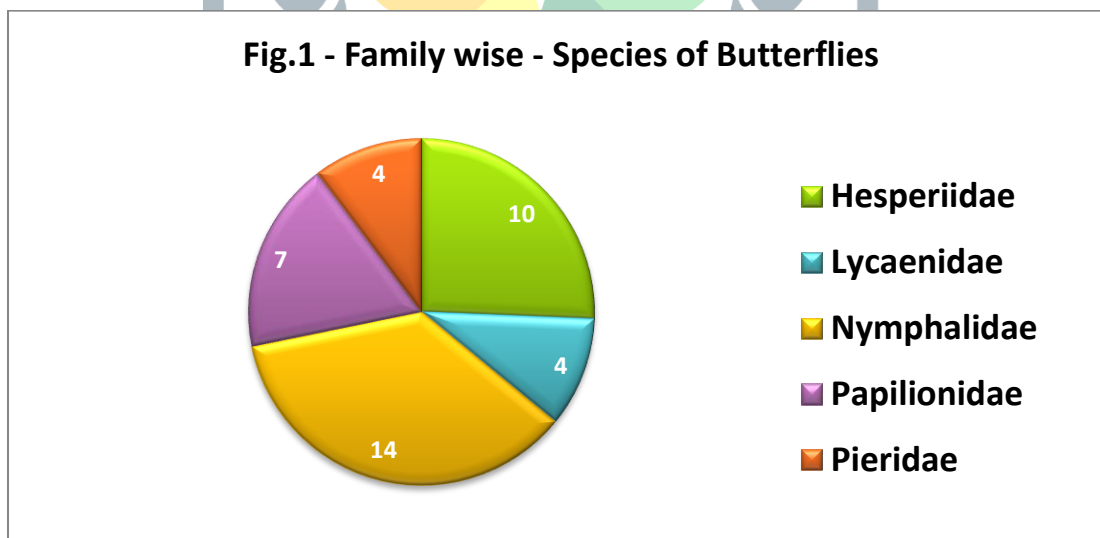
Stachytarpheta indica, which constitutes mutualism in which the butterflies obtain nourishment, while the plant is pollinated by the butterflies. *Stachytarpheta indica* flowers attract papilionid, pierid, nymphalid and hesperiid butterflies. Nymphalid and Pierid butterflies are relatively more diverse in species and collect nectar consistently during the entire period of the flowering season (Vara Lakshmi and A. J. Solomon Raju,2011)^[9]. Among nectar-rich flowers, *Stachytarpheta* and *Lantana* dominated the area. In our study butterflies belonging to family Nymphalidae were maximum in number as these flies love to forage on *Stachytarpheta*. Similar results were obtained by Vara Lakshmi and A. J. Solomon Raju,2011^[9] in *Stachytarpheta jamaicensis*. Butterflies are the leading pollinators of both wild and cultivated plants. With the increasing need of comforts of the growing human population in India, natural habitats of the butterflies are declining (Atul et.al, 2020)^[11]. Efforts are required to conserve the rich biodiversity of butterflies.
















Table 1. Check list of butterflies in the study area

	Family	Common name of butterfly	Scientific name of butterfly
1	Hesperiidae	Common grass dart	<i>Taractrocera maevius</i>
2		Indian palm bob	<i>Suastus gremius</i>
3		Grass demon	<i>Udaspes folus</i>
4		Sahayadri conjoined swift	<i>Pelopidas conjuncta narooa</i>
5		Sahayadri black swift	<i>Caltois kumara kumara</i>
6		Tawny spotted grass dart	<i>Taractrocera ceramas</i>
7		Oriental common banded awl	<i>Hasora chromus</i>
8		Common redevye	<i>Matapa aria</i>
9		Rice swift	<i>Borbo cinnara</i>
10		Baorini swift	<i>Baorini spp</i>
11	Lycaenidae	Pea blue	<i>Lampidies boeticus</i>
12		Red pierrot	<i>Talicauda nyseus</i>
13		Common silver	<i>Spindasis vulcanus</i>
14		Monkey puzzle	<i>Rathinda amor</i>
15	Nymphalidae	Commander	<i>Moduza procaris</i>
16		Tawny coster	<i>Acraea violae</i>
17		Blue tiger	<i>Tirumala limniace</i>
18		Common crow	<i>Euploea core</i>
19		Plain tiger	<i>Danaus chrysippus</i>
20		Grey pansy	<i>Junonia atlites</i>
21		Common palm fly	<i>Elymnias hypermnestra</i>
22		Common sailor	<i>Neptis hylas</i>

23	Nymphalidae	Stripped tiger	<i>Danaus genutia</i>
24		Indian wanderer	<i>Pareronia hippia</i>
25		Gaudy baron	<i>Euthalia lubentina</i>
26		Common Barron	<i>Euthalia aconthea</i>
27		Bamboo tree brown	<i>Lethe europa</i>
28		Glassy tiger	<i>Parantica aglea</i>
29	Papilionidae	Common mormon	<i>Papilio polytes</i>
30		Tailed jay	<i>Graphium agamemnon</i>
31		Blue mormon	<i>Papilio polymnestor</i>
32		Common rose	<i>Pachliopta aristolochiae</i>
33		Crimson rose	<i>Pachliopta hector</i>
34		Sword tail	<i>Graphium nomius</i>
35		Lime	<i>Papilio demoleus</i>
36	Pieridae	Yellow orange tip	<i>Ixias pyrene</i>
37		Common jezebel	<i>Delias eucharis</i>
38		Common grass yellow	<i>Eurema hecabe</i>
39		Psyche	<i>Leptosia nina</i>

Fig.1 - Family wise - Species of Butterflies



 <p><i>Papilio polymnester</i></p>	 <p><i>Danaus genutia</i></p>	 <p><i>Tirumala limniace</i></p>
 <p><i>Danaus chrysippus</i></p>	 <p><i>Lethe europa</i></p>	 <p><i>Papilio polytes</i></p>
 <p><i>Iamnedis boeticus</i></p>	 <p><i>Caltoris kumara</i></p>	 <p><i>Matana aria</i></p>
 <p><i>Eurema hecabe</i></p>	 <p><i>Leptosia nina</i></p>	 <p><i>Delias eucharis</i></p>
 <p><i>Graphium agamemnon</i></p>	 <p><i>Euploea core</i></p>	 <p><i>Talicada nyseus</i></p>

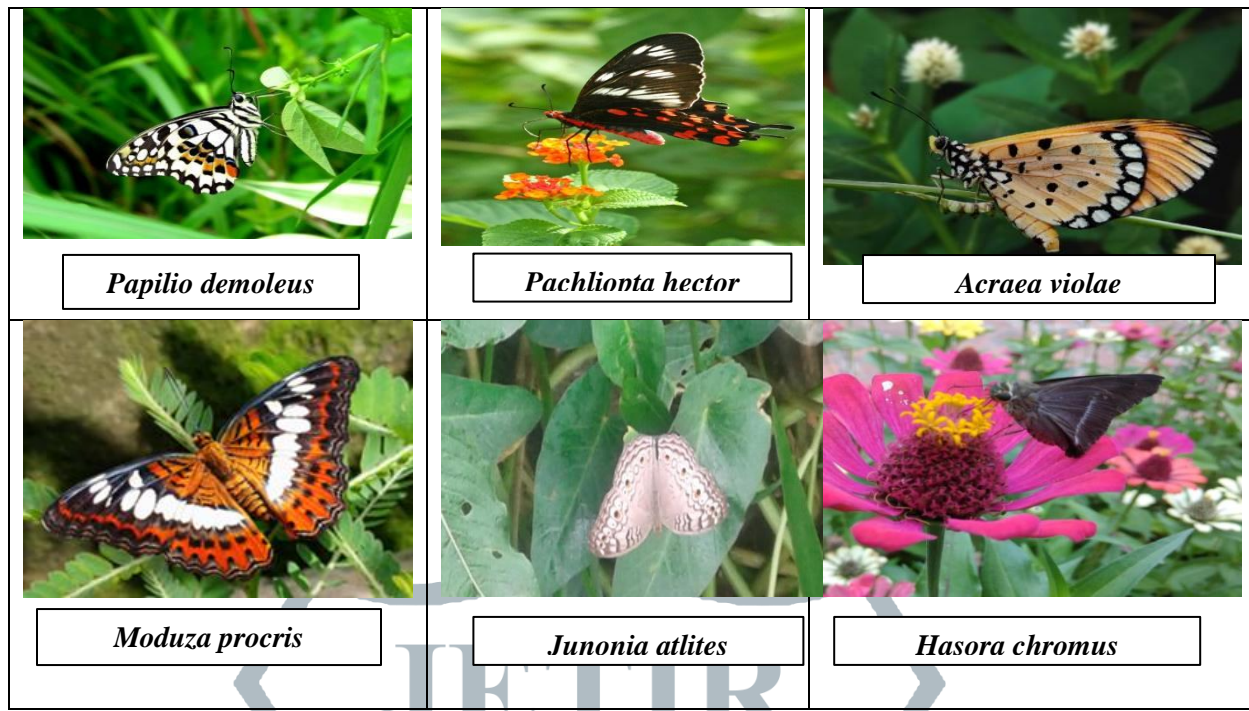


Fig.2 Photos of the Butterflies from the study area

IV. CONCLUSION

The two complexes have a rich biodiversity of cultivated and wild plants. More than 200 plants are there to host and feed the butterflies. A total of 39 species of butterflies were recorded, out of which 14 species belonged to family Nymphalidae, 10 species to family Hesperidae, 7 species to Papilionidae and 4 each to Lycaenidae and Pieridae. Plants like *Stachytarpheta indica*, *Lantana camara*, *Mangifera indica*, *Citrus limonia* and grasses play a significant role in the life cycle of butterfly fauna.

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<https://owlcation.com/stem/butterfly-identification>

