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Butterfly diversity of Botanical garden of Sangameshwar College and Urban habitats, Solapur district, Maharashtra, India

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ABSTRACT

Butterflies are indicators to climate change and environmental degradation. They are important food chain components of birds, reptiles, spiders and predatory insects. They are valuable pollinators in the local environment and help in pollinating more than 50 economically important crops (Borges et al., 2003). This paper deals with made to document the diversity of butterflies in botanical garden of Sangameshwar College and urban habitats, Solapur district, Maharashtra, India. A total 23 species of butterflies were recorded during the study period. One species was recorded from super family Hesperioidea and 22 species were recorded from super family Papilionoidea. Among the super family Papilionoidea. Family Nymphalidae dominated the list with 10 species and one species was found to be listed under in wildlife (protection) Act, 1972. Followed by Papilionidae and Pieridae with 5 species and Lycaenidae with 2 species. The present study will encourage the conservation of butterfly species in an area.

Key words: Butterflies Biodiverstiy, Botanical garden, Sangameshwar College, urban habitats, Solapur.

INTRODUCTION

Butterflies are natural pollinators and good indicators of environmental quality. They belong to the order Lepidoptera of class insecta. Adult butterflies and it's caterpillars are fed by birds, lizards and some mammals and forming link in the food web. Biological diversity is the base for upholding the ecosystems and the functional aspects of the species that provide goods and services for human well-being (Wilson, 1997). Butterflies are one of the most amazing and magnificent elements of biodiversity (Ghazoul, 2002) .The faunistic survey of butterflies their occurance and characteristics provide crucial information on the ecology of a particular region (Ghazoul, 2002). Butterflies and moths (order Lepidoptera) offer good opportunities for studies on population and

community ecology (Pollard, 1991). 19,238 species have been documented from all over the world (Ghazoul, 2002) among them 1501 species of butterflies are recorded from India (Kunte et al ., 1999) out of which 962 species have been reported from North eastern part (Evans,1932) ,332 species from the Western Ghats (Ashish et al.,2002) and 150 form Eastern Ghats. Out of 332 species of Western Ghats, 37 species are endemic (Kunte, 2000 ; Prajapati 2010).

Being good indicators of climatic condition as well as seasonal and ecological changes, they can serve in formulating strategies for conservation. However, they have largely been ignored by conservation biologist and policy makers as well. It is hence encouraging that butterflies are now being included in biodiversity studies and biodiversity conservation prioritization programme (Gadgil, 1996). Diversity of butterflies were adversely affected by grass cutting, cutting of plants and unauthorized grazing and monoculture plantation (Ashish, 2007).

The present study document diversity of butterflies and encourage the conservation of butterfly species in an area with wide objectives of study.

MATERIAL AND METHODS

The findings presented here are based on field surveys carried out from September 2017 to May 2018. Observations were made during from 7.30 a.m. to 9.30 a.m. from botanical garden of Sangameshwar College, and urban habitats, Solapur during monsoon and post monsoon season (June to November and March to May).

The butterflies were recorded by direct visual observations and photographic evidence. Some small butterflies which are difficult to identify were caught following and closely observed after placing them in clear glass jar. Then they were released, however enough precautions were taken, so that the entire procedure did not cause any damage to the target specimen (Dayanada, 2014). The photographs were taken with a digital camera (Sony W520). The photographs were taken on the fields which were later identified using BNHS field guides Butterflies of India (ISAAC Kehimkar,2016) and common Butterflies of India (Gay et al., 2008).

RESULT AND DISCUSSION

During the survey a total 23 species of butterflies were recorded from botanical garden of Sangameshwar College and urban habitats, Solapur. Among it one species was recorded form superfamily Hesperioidea and 22 species were recorded from superfamily Papilionoidea. Family Nymphalidae dominated the list with 10 species and one species (Danaid eggfly) was found to be listed under in wildlife (protection) Act, 1972. Followed by Papilionidae and Pieridae with 5 species and Lycaenidae with 2 species. List of observed butterflies are given in Table 1 and photographs of the observed butterflies are given in Plate 1.

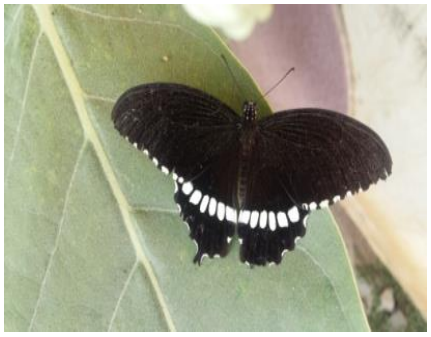
The flora in our garden urban habitats provide diverse habitat food and breeding sites for butterflies. Butterfly diversity varies with season. They are abundant for only a few months and rare or absent during other months of the year. (Wynter – Blyth ,1957) had identified two seasons as peaks, March-April and October for butterfly abundance in India. During the present study, the numbers of the butterflies were peaked during post-monsoon season (late August to October) which was similar to the findings of (Tiple et al., 2007; Tiple, 2012; Tiple and Khurad, 2009).

During the present study dominance shown by members of the Nymphalidae family. Similar findings shown by (Parasharya, 2007). He noted the dominance shown by members of the Nymphalidae family in tropical region owing to its polyphagous nature which helps to inhabit all the habitats. They are also comparatively more strong, good and active fliers that can search a large area for resources (Eswaran and Pramod 2005; Krishnakumar et al., 2008; Raut and Pendharkar 2010; Padhye et al., 2006).

Presence of butterflies is an indicator of healthy ecosystem. Now a day's increasing pollution and urbanization effect on habitat of the butterflies. For their conservation we have to conserve their prime habitat and to increase the planting trees according to habitat of butterflies and maintenance of gardens for conservation of butterflies.

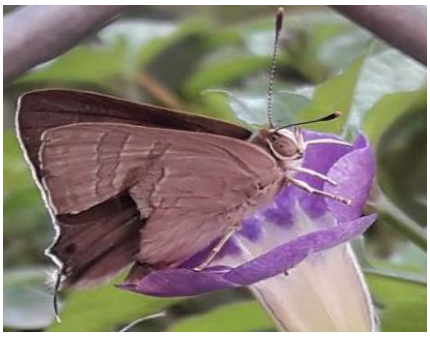
Table 1. List of butterflies observed

Sr. No.	Common Name	Scientific Name	Family
1	Common Mormon (male)	*Papilio polytes*	Papilionidae
2	Dark Evening Brown	*Melanitis phedima bethami*	Nymphalidae (Bursh footed butterfly)
3	Purple Swift	*Caltoris tulsi*	Hesperiidae
4	Black Rajah	*Charaxes solon*	Nymphalidae
5	Common mormon (Female)	*Papilio polytes*	Papilionidae
6	Rounded pierrot	*Tarucus nara*	Lycaenidae (Blues)
7	Lemon pansy	*Junonia lemonias*	Nymphalidae
8	Lime butterfly	*Papilio demoleus*	Papilionidae
9	Great eggfly (Female)	*Hypolimnas bolina jacintha*	Nymphalidae
10	Plain Tiger (Male)	*Danaus Chrysippus*	Nymphalidae
11	Danaid Eggfly	*Hypolimnas misippus*	Nymphalidae
12	Tawny Coster	*Acraea violae*	Nymphalidae
13	Common Evening Brown	*Melanitis leda*	Nymphalidae
14	White Orange Tip (Male)	*Ixias Marianne (cramer)*	Pieridae
15	Common Rose	*Pachliopta aristolochiae*	Papilionidae
16	Great Evening Brown	*Melonitis zitenius*	Nymphalidae
17	Common Albatross (Female)	*Appias albino*	Pieridae
18	Common Emigrant (Male)	*Catopsilia pomona*	Pieridae
19	Common Grass Yellow	*Eurema hecabe*	Pieridae
20	Common Crow	*Euploea core (cramer)*	Nymphalidae
21	Hill Jezebel	*Delias beliadonna*	Pieridae
22	Common Jay	*Graphium doson*	Papilionidae
23	Silver Forget me-not (male)	*Catochrysops panormus fabricus*	Lycoenidae

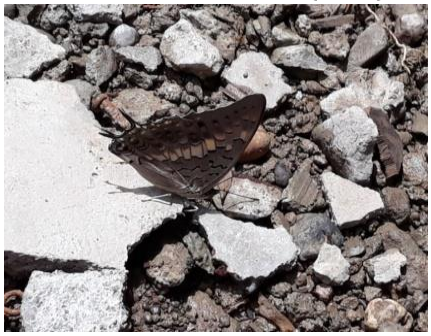


1.Common Mormon (Male)

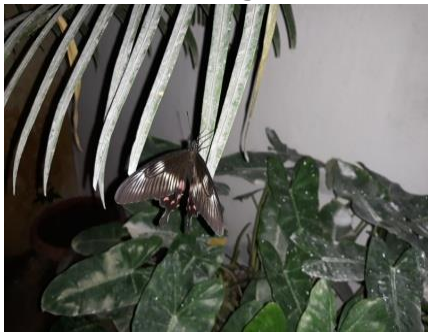
2. **Dark Evening Brown**



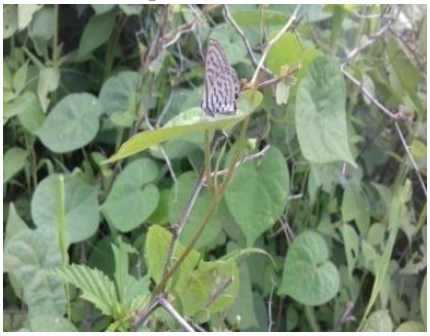
3. **Purple Swift**



4. Black Rajah



5. Commom Mormon (Female)

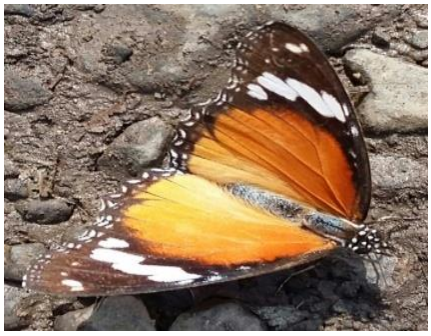


6. Rounded Pierrot

7.Lemon Pansy

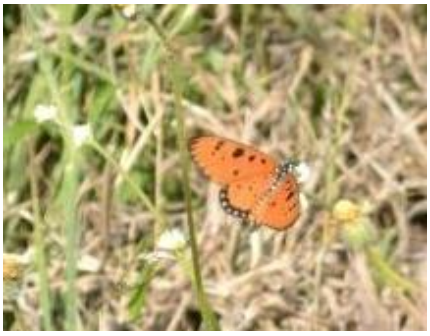
8. Lime Butterfly

9. Great eggfly(female)

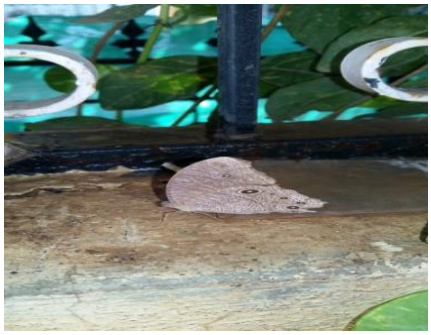


10. Plain Tiger (Male)

11. Danaid Eggfly

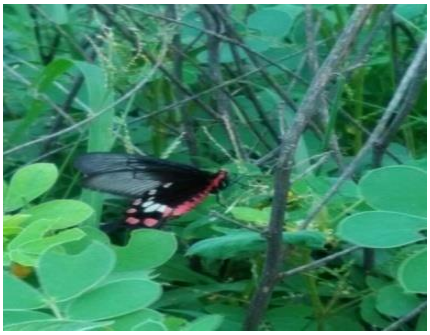


12. Tawny Coster



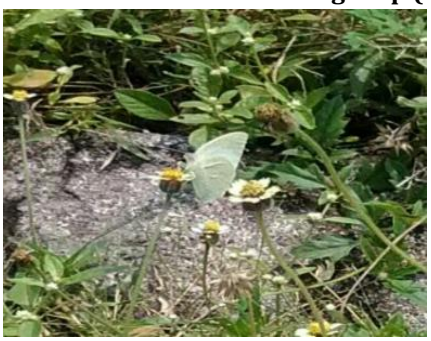
13.Common Evening Brown

14. White Orange Tip (Male)



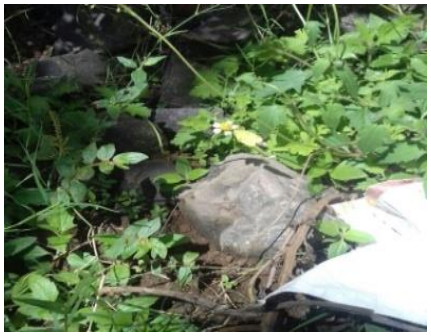
15. Common Rose

16.Great Evening Brown

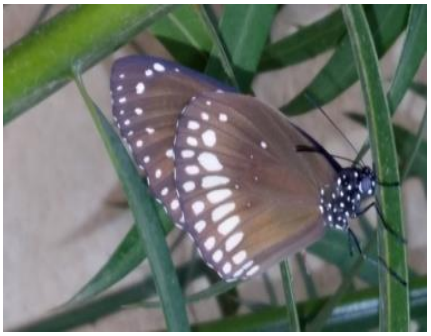


17.Common Albatros(female)

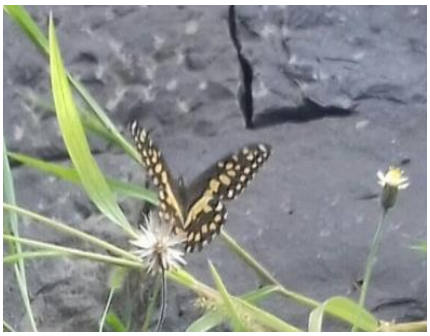
18. CommonEmigrant(male)



19.Common Grass Yellow

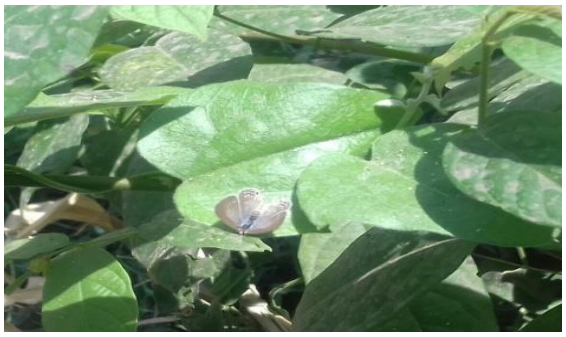


20.Common Crow



21.Hill Jezebel

22.Common Jay



23. Silver Forget me not (male)

CONCULSION

In urban ecosystems, monitoring species diversity can be used as a tool to reduce human mismanagement and pollution in urbanized industrial rural and managed area (Wilson, 1997).

The finding of the present study underline the importance of institutional garden and urban habitats as a preferred habitat for butterflies. Maintenance of gardens and planting of tress in urban habitats are carefully planned , the diversity of butterflies may increase. This study would be useful to conserve the butterfly species in an area.

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