



BUTTERFLY SPECIES DIVERSITY FROM AKOLA DIST. OF MAHARASHTRA, INDIA

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Abstract: Butterflies are important bioindicators which should be protected to conserve the biodiversity and environment. The survey was conducted to prepare a preliminary checklist of butterflies in Murtizapur taluka of District Akola Maharashtra state. Climate of Murtizapur taluka is tropically wet and dry. Majority of the rainfall occurs between June and early October. Regular survey were conducted from July 2021 to January 2022 by visual observation. This short term study recorded 19 species of butterfly belonging to four families and five subfamilies were recorded over a period of seven months. Of the total butterfly species listed four belong to the family Papilionidae, six belong to Pieridae, single belong to Lycaenidae, seven belong to Nymphalidae and one not identified. This study will enlighten the information regarding the diversity of butterflies and forms a baseline data for future butterfly studies.

Key words: Butterflies, Nymphalidae, Murtizapur

Introduction:

Arthropods are good indicators of habitats biodiversity because they respond quickly to environmental changes, and are highly diverse taxon. Lepidoptera (Butterflies and moths) are the second largest order of arthropods and are most easily identified, making them particularly useful for biodiversity survey (**Erhardt, 1985; Kremen, 1994; Inoue, 2001; Tiple and Arun, 2009**).

Butterflies are the most provoking and striking creatures, among the insect group, they are often regarded as flagship species. The butterfly diversity is high in the tropics compared to temperate regions of the world. Their habitat ranges from Arctic to the great deserts of the world. The butterflies are divided into two super families' viz., Papilionoidea constitutes 11,100 species and Hesperioidea constitutes 3,650 species in the world (**Scott, 2001**).

Other than their aesthetic value, butterflies have important roles in the functioning of forest ecosystems. Because of their diversity, wide distribution, specificity to vegetation type, rapid response to perturbation, taxonomic tractability, statistically significant abundance and ease of sampling, they have been considered useful organisms to monitor environmental changes.

There are 16,823 species recorded from all over the world among them 1501 species of butterflies are recorded in from India (**Gaonkar, 1996**). Of the various butterfly habitats found in India, the Western Ghats is one of the most diversified areas containing a wide variety of species due to the typical eco-climatic and geographic features.

Butterflies are seasonal in their occurrence. They are common for only a few months and rare or absent in others. The seasons when they are rare or not active as adults are usually spent either as caterpillars or as pupae. The months when the adults are active are called the “flight period”. Distinct flight periods naturally imply seasonality of the early stages of butterflies as well. Thus occur in different seasons (**Kunte, 2000**). The review of literature available on the Indian butterfly species of Western Ghats is reviewed (**Raja Shakar, 1995**). In this paper an attempt is made to study diversity of status and occurrence of butterflies in Murtizapur taluka of district Akola Maharashtra state.

MATERIALS AND METHODS:

Study area:

The present study was carried out in Murtijapur taluka, Akola district of Maharashtra. In Murtijapur city, four sampling sites were selected for the present study viz. Queen’s Land Garden (QLG), Pundlikbaba Temple Garden (PTG), Ramkhed Agricultural Area (RAA) and Kanzara Agricultural Area (KAA). The tree plantation, ornamental plants of various gardens and nursery, flowering plants around fields, grasses and wild plant varieties spread all over area. It has created a very good habitat and source of attraction for many butterflies. Various host plants of caterpillars of butterflies as well as flowering plants which are used for the nectar by butterflies are present in the selected four sampling sites.

Butterfly collection:

Butterflies were sampled for a period of seven months from July 2021 to January 2022. Field observations were made once in a week. The survey was done every Sunday between 10.00 to 16.00 hours. Butterflies were listed by various methods. i.e. by actual observations, collection and photographic methods. The observations were done at a distance of 1 to 3 meter and identified by using physical features. In collection method, if needed the butterflies were collected with **specimen net**. The collected specimens were narcotized adding menthol crystals in the bottle and then air dried for identification. For maximum butterflies, photographic method was used. In Murtijapur city; four sampling sites were selected for the present study viz. Queen’s Land Garden (QLG), Pundlikbaba Temple Garden (PTG), Ramkhed Agricultural Area (RAA) and Kanzara Agricultural Area (KAA).

Butterflies have been collected now transferred to killing jar.

Determination of Abundance: The species were further divided into 4 categories: Very Common (VC), Common (C), Not Rare (NR) and Rare (R) on the basis of their count from the study area. Any species with count less than 10 times were placed in rare category, count between 10 and 15 were placed in not rare

category, count between 15 and 20 were categorized as common while species with count more than 20 times were placed in very common category.

Identifications of butterflies:

The key characters used for identification were color pattern, wing span and mode of flight. Photographic images and collected specimens were examined carefully and identified using various references, Gey et al. (1992), Haribal (1992) ; Gunanthilagaraj et al. (1998) ; Kunte (2000) and internet references (<http://www.butterfliesandmoths.org/>)

All scientific names follow Varshney (1979, 1985 and 1990) and classifications with common English names are after Wynter-Blyth (1957).

Result and Discussion:

The diversity is niche time stability dependent meaning if a large number of niches are available higher diversity is found in General homogenous conditions yield lower diversity while heterogeneous Condition yield higher diversity. (Sanders, 1968; Gray, 1980). The present study is undoubtedly the first comprehensive effort to investigate the butterfly diversity in Akola district of Maharashtra in general and the area under investigation, Murtizapur taluka. In the present investigation, a total no. of 19 species of butterfly belonging to 4 families and 5 subfamilies were recorded over a period of seven months from July 2021 to January 2022. The total butterfly species observed is tabulated in table 1. Of the total butterfly species listed four belong to the family Papilionidae, six to Pieridae, seven to Lycaenidae, seven to Nymphalidae and one not identified. The family wise species composition of butterfly is shown in graph I.

As the work is restricted to a very short period i.e. 7 months and the occurrence of the butterfly shows seasonal prevalence and within a short period of 7 months. It is not possible to study the vast aspect like butterfly diversity. Out of 19 species of butterfly 4 species were very common i.e. their occurrence was recorded in all the sampling Station and their occurrence is also not restricted to a particular season and these species are lemon emigrant, common grass yellow, pea blue And danaid egg fly. Number of Butterfly species occurred at four different sampling Sites are shown in Graph 2.

Five species recorded were common to all the samplings station and these are lime butterfly, pioneer, common gull, common Castor and joker. Three species were abundant i.e. a large number of population Of the species was frequently noticed in study, these are common Marmon, lemon pansy, common Indian crow, the species of tailed Joy, crimson rose, common jezebel, painted lady, grate fly, blue Tiger and crimson tip were rare throughout the period of investigation And it observed only at once all the sites. Species occurrence at all the Sites is in table. grass yellow, eureka italic heave had high Population throughout the research period, depending on the site. They Also show some differentiation in dry and wet season wing patterns. Their occurrence all round the investigation period would perhaps be attributable to their polyphagous nature. Same observation was carried out by kunte (1997). However, the fact that their dry

season Forms were almost as numerous as the wet season forms, is unique. This may be one of their evolutionary advantages which make them Among the commonest butterflies in the world (Larsen, 1987). The present study show a low butterfly Diversity as compare to the other regional ecosystems in India Such as Bondla wildlife sanctuary of Goa, which is much larger and Diverse in habitats than the present investigation area. Bondla wildlife Sanctuary represents 91 species recorded over a period of one year. (Borkar and Komarpant, 2004). Ali and Basistha (2000) Recorded a total of 79 species butterflies from zoo-cum-botanical Garden of assam. This might be due to diversified habitats and vast Investigative area.

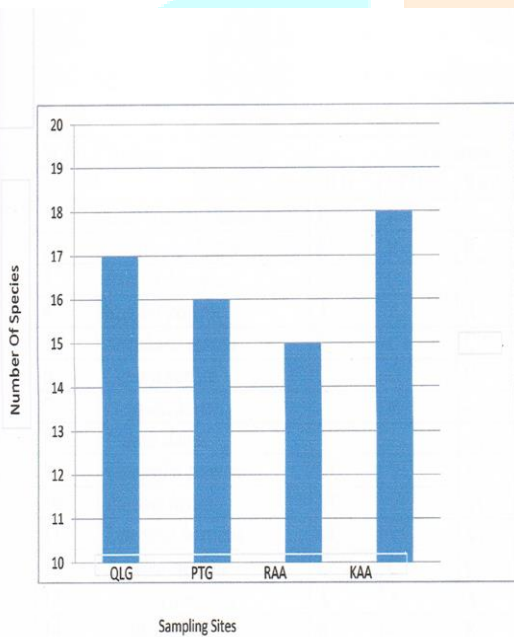
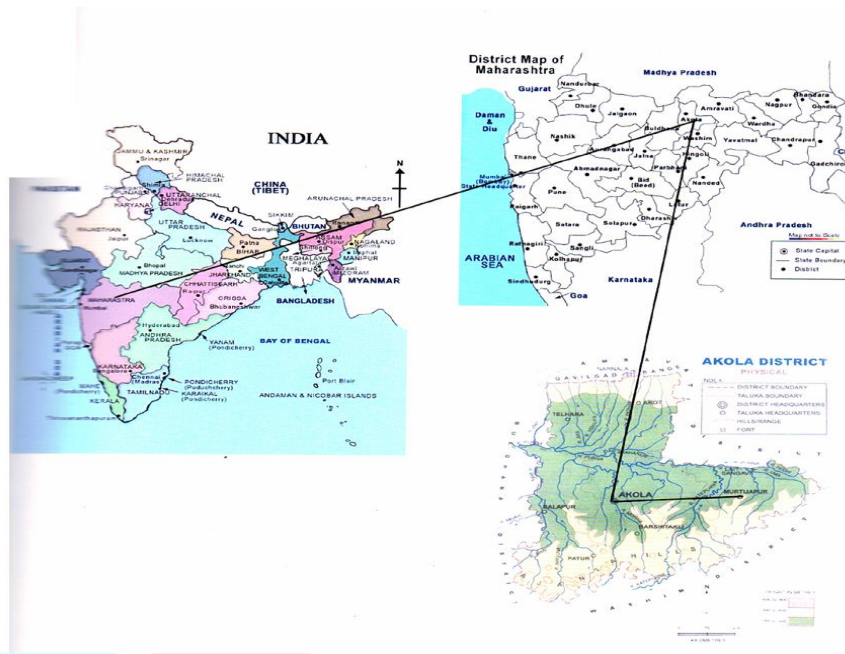
SUMMARY AND CONCLUSION:

Butterfly diversity of Akola district in general and Murtizapur taluka in particular was investigated over a period of 7 Months that is from July 2021 to January 2022. The specimens were collected by sweep net from Queen's Land Garden, Pundlic Baba Temple Garden, Ramkhed Agricultural Area and Kanzara Agricultural Area of Murtizapur taluka. A total of 19 species of 4 families and 5 sub families were identified. The occurrence of butterfly species shows variation in relation to season and habitat. Relatively low butterfly diversity in the Murtizapur taluka does not mean that the habitat studied is of no conservation importance. The presence of all these species (Garden and Agricultural) suggest that the study area might be a stepping stone for these species. However it is suggested that diversity of butterflies in the area should be studied exclusively. Longer term study is needed to identify significant changes in butterfly Diversity, permitting the timely adjustment of scientific management Activities to prevent undesired trends.

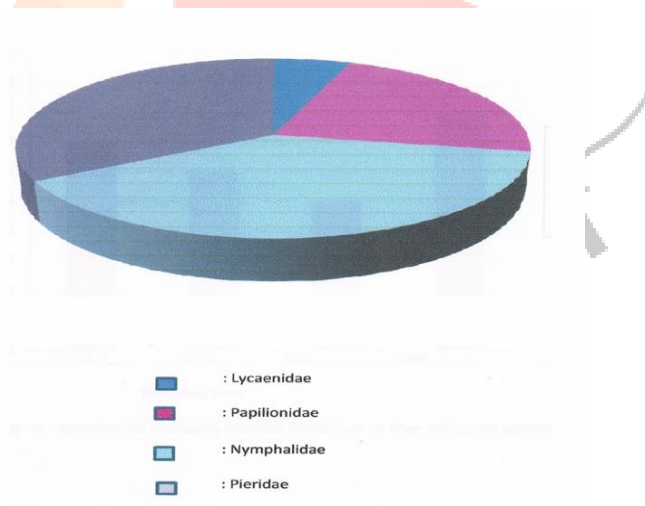
Sitewise occurrence of Butterfly species

Sr.No.	Species	Occurance			
		QLG	PTG	RAA	CAA
1	<i>Graphium agamemnon</i>	R	R	-	-
2	<i>Pachliopta hector</i>	R	R	R	R
3	<i>Papilio demoleus</i>	C	C	C	C
4	<i>Papilio polytes</i>	A	A	A	A
5	<i>Anaphaeis aurota</i>	C	C	C	C
6	<i>Cepora nerissa</i>	C	C	C	C
7	<i>Delis eucharis</i>	-	R	-	R
8	<i>Calotis danae</i>	-	-	-	R
9	<i>Catopsilia pomona</i>	VC	VC	VC	VC
10	<i>Euroma hecabe</i>	VC	VC	VC	VC
11	<i>Lampides boeticus</i>	VC	VC	VC	VC
12	<i>Ariadne merione</i>	C	C	C	C
13	<i>Junonia lemonias</i>	A	A	A	A
14	<i>Cynthia cardui</i>	R	-	R	R
15	<i>Hypolamnas misippus</i>	VC	VC	VC	VC
16	<i>Hypolamnas bolina</i>	R	R	R	R
17	<i>Tirumala limniace</i>	R	-	-	R
18	<i>Euploea core</i>	A	A	A	A
19	<i>Byblia ilithyia</i>	C	C	C	C

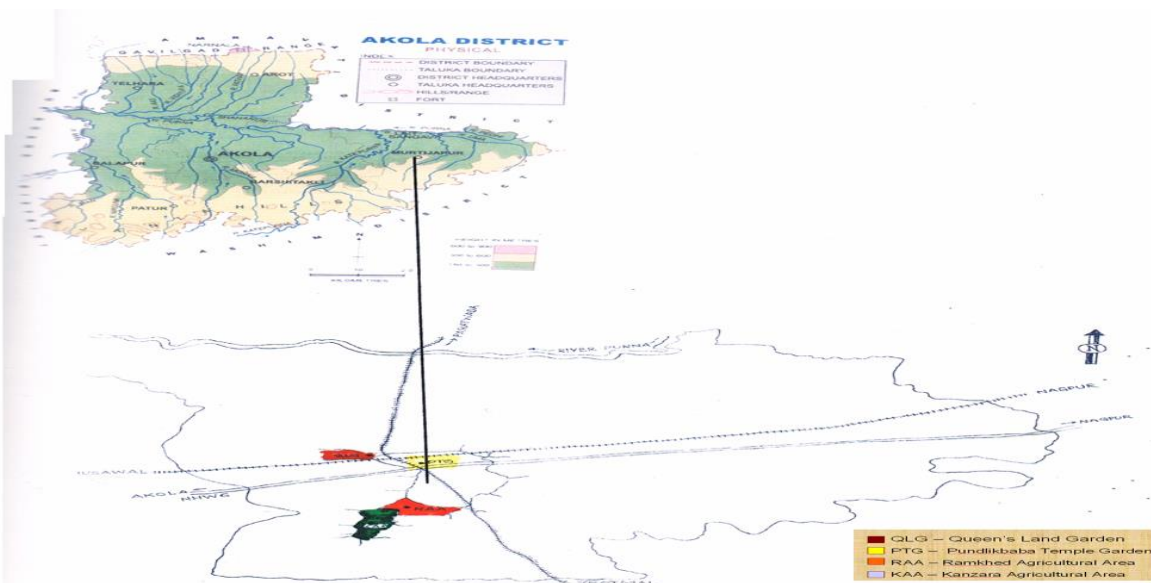
R : Rare
 C : Common
 VC : Very Common
 A : Abundant



Graph -II : Number of Butterfly Species Occurred at four different sampling sites.



Species Richness by Family



Sr.No.	family	Sub.Family	Common Name	Genus	Species	Site	Present in (Month)
1	Pailoinidae	-----	Tailed Jay	Graphium	agamemnon	QLG,PTG	July – Oct.
2	----- -----	-----	Crimson Rose	Pachliopta	hactor	QLG,PTG,RAA, KAA	Oct. – Jan.
3	----- -----	-----	Lime Butterfly	Papilio	demoleus	QLG,PTG,RAA, KAA.	July – Jan
4	----- -----	-----	Common Mormon	Papilio	polytes	QLG,PTG,RAA, KAA.	Oct – Jan
5	Paeridae	Pierinae	Pioneer	Anaphaeis	aurota	QLG,PTG,RAA, KAA.	July – Oct
6	----- -----	----- -----	Common Gull	Cepora	nerissa	QLG,PTG,RAA, KAA.	Oct – Dec
7	----- -----	----- -----	Common Jazelbel	Delis	eucharis	PTG,KA A	Oct –Jan
8	----- -----	coliadinae	Crimson Tip	Caiotis	donae	KAA.	Sep – Jan
9	----- -----	----- -----	Lemon Emigrant	Catopsilio	pomona	QLG,PTG,RAA, KAA.	Sep – Jan
10	----- -----	----- -----	Common Grass Yellow	Eurema	hecabe	QLG,PTG,RAA, KAA.	Aug – Jan
11	Lycaenidae	Polyommatinae	Pea Blue	Lampides	boeticus	QLG,PTG,RAA, KAA.	Sep –Feb
12	Nymphanidae	Nymphalinae	Common Caster	Ariadne	merione	QLG,PTG,RAA, KAA.	Sep – Jan
13	----- -----	----- -----	Lemon Pansy	Junonia	lemonias	QLG,PTG,RAA, KAA.	Sep _ Jan
14	----- -----	----- -----	Painted Lady	Cynthia	cardui	QLG,PTG,RAA, KAA.	Nov –Dec

15	----- -----	----- -----	Danaid Eggfly	Hypolamn as	misippus	QLG,PT G,RAA, KAA.	Oct _ Jan
16	----- -----	----- -----	Great Eggfly	Hypolyam nas	bolina	QLG,PT G,RAA, KAA.	Oct – Jan
17	----- -----	----- -----	Blue Tiger	Tirumala	limniace	QLG,K AA	Aug – Jan
18	----- -----	----- -----	Common Indian Crow	Euploea	core	QLG,PT G,RAA, KAA.	July – Jan.
19	----- -----	----- -----	Joker	Byblia	iliythyia	QLG,PT G,RAA, KAA.	Sept. – Dec.

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