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Preliminary studies on butterfly fauna of Narmada Nagar town, Dist. Khandwa M.P

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Abstract

Butterflies are highly diverse animals and most studied group of insects. Butterflies are easily identified and very useful to biodiversity survey, they are very sensitive and severely affected by environmental fluctuations. The Indian subcontinent bearing a diverse climate and host vegetations which gives support to nearly 1500 species of butterflies. Since eighteen century so many studies on butterflies have done in different parts of globe. According to different studies the population of butterflies and other insects is declining day by day, the diversity of butterflies was recorded in Narmada Nagar town dist. Khandwa during august 2022 to October 2022. A total of 621 individuals belong to 35 species from 4 families i.e. Nymphalidae, Papilionidae, Lycaenidae and Pieridae. Family nymphalidae was found dominant with 22 species while only 3 species recorded from family pieridae, both Lycaenidae and papilionidae families represented by 5 species each, grass yellow, common crow and lime pansy were found dominant species with highest number of individuals during the study period, the dominance of these species was because of presence of their larval host plants in this area. No previous studies were done in this area that's why we cannot calculate whether the butterfly fauna of this area is increasing or decreasing; the present study is the first attempt to determine the status and distribution of butterflies which were dwelling in and around the town Narmada Nagar, during the study period higher species richness and abundance of butterflies were recorded in the month of September while least number of butterflies was recorded in July.

Keywords: Narmada Nagar, nymphalidae, pollinators

Introduction

Butterflies are highly diverse animals and most studied group of insects, they quickly respond to environment and are good indicators of seasonal changes. Lepidoptera (Butterflies and Moths) is the second largest group of arthropods, more than 27000 species of butterflies found worldwide. One can easily identify them so they are very useful to biodiversity survey; butterflies are very colourful and attractive creatures on the earth and play very important part in pollination and serving as an important food chain component because birds, reptiles, amphibians and even predatory insects also like them as their food. The Indian subcontinent bearing a diverse climate and host vegetations which gives support to nearly 1500 species of butterflies. Indian cities are losing greenery and facing the pollution problem, birds, butterflies, and other sensitive animals are disappearing very fast from these areas. Since agriculture is not practiced in Narmada Nagar town & adjacent areas, pesticide & insecticide pollution is negligible here, making the life cycle of various insects & butterflies free from chemical hazards. This study has been taken to know the butterfly diversity and there distribution in this area, this is the first hand information about the butterfly fauna dwelling in and round the town Narmada Nagar. The study will open the doors of further researches for new generations.

Revive of Literature

Since eighteen century so many studies on butterflies have done in different parts of globe. Revised fauna of British India recorded the common butterflies of Indian region; (Evans, 1912) ^[31], published the book Identification of Indian butterflies, 962 species of butterflies from north eastern region of India recorded by him. A butterflies inventory of Chandigarh and Punjab were prepared by Rose and Siddhu (2001), the colour pattern on the butterflies wings that vary from species to species described by (Nijhout, 2001) ^[23], regarding distribution and

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diversity of butterflies numerous scientific records have been published by various workers (Arora 1994; Singh *et al.*, 2001)^[4, 32]; (Joshi *et al.*, 2007)^[18], (Bashar *et al.*, 2005)^[8]. studied and recorded 22 species of family pieridae, on the basis of wing venation, (Joshi and Ary, 2007)^[18]; (Kumar, 2008)^[33]; (Sharma and Joshi, 2009)^[27], studied a total of 41 species of butterflies from 5 families around Dholbaha dam dist. hoshiyarpur (Punjab). (Kumari and Pathania, 2016)^[20] collected 28 species from different parts of Himachal Pradesh, from vidarbha region (Tiple, 2011)^[29]; recorded 167 species and found most of the species were active in monsoon season and some remain active throughout the year. (Pandey *et al.*, 2012)^[34]; (Singh and Sodhi, 2016)^[28]; (Jagat and Tiple, 2020)^[17], and so many workers, studied the diversity and distribution of butterflies in different regions.

According to different studies the population of butterflies and other insects is declining day by day this declining will lead to adverse effects on different ecosystems, butterflies are one of the best bio indicators of any ecological and environmental surveys and their presence shows us the impact of climate change, change in land use and degradation of habitat. Therefore it is recommended to monitor the butterflies of a region continuously to protect its biodiversity. The results of this study give us an idea about the distribution of butterflies as well as how to protect the diversity of butterflies in different habitat of this region.

Material and Method

Dist. Khandwa (East Nimar) is one of the districts of central region of the India i.e. Madhya Pradesh, located on 21° 50' 0" North, 76° 20' 0" East geographical coordinates, Narmada Nagar township is located on 22°16'40"N 76°27'50"E in Punasa Tehsil of Khandwa district. It is situated 65km away from district headquarter Khandwa. This small town was established in around 1985, by Authority. Narmada Nagar is famous for the Indirasagar Dam, whose reservoir is amongst Asia's largest. Due to this dam Narmada Nagar is often referred to as "Punasa Dam". Narmada Nagar is less polluted than other cities of Madhya Pradesh, its temperature ranges from 18 degrees in Dec. Jan. to 45 degree in May and June, the average rainfall is 777.60 mm per year, the atmospheric conditions of the Narmada Nagar town of dist. Khandwa are quite favourable for the butterflies survival and growth. Punasa range of forest (dry deciduous forest of Teak and Sal trees) with large patches of open scrubs (Herbs and Shrubs) is also surrounds the town which is used by butterflies for feeding and breeding, both the purposes. The study sites were randomly selected in and around the city mainly where the greenery and water sources were available the butterflies were observed by traversing slowly and observed within three meter radius of the observer. Observations were made in the morning from 9.00am to 11.00am and in the evening from 3.30pm to 6.00pm., and photographs were also taken in most of the cases with the help of cannon camera and butterflies were identified by field guide "Butterflies of India" published by BNHS Mumbai and the book, Butterflies of Western Ghats written by Raju Kasambe.

Results and Discussion

Total 621 individuals belongs to 35 Species and four families were recorded and identified during the study of four months from August 2022 to November 2022. In terms of number of species composition Family Nymphalidae showed its dominance with 22 species while family Lycaenidae represented by only three species, Both Papilionidae and pieridae family have five species each in the study area, similar findings were observed by (Charm, 2015)^[12] from the forest strip Punjab. Sayeswara (2018)^[26] also recorded maximum number of species from study area. The counting of butterflies of different species shows the dominance of Common grass yellow with 68 individuals and Lemon pansy with 42 individuals. Open scrub which was least disturbed area found to have highest number of species(32 species) because of the abundance of larval host plants similar results reported by (Chowdhury, 2014)^[13], in sunder ban West Bengal. out of these 32 species eleven species of butterflies belongs to this area only, Dry deciduous area have moderate number of species (24Species)in which common emigrant, Mottled emigrant and northern swallow tailed were found in this area only,(Bashar *et al.*, 2005)^[8] also reported 22 species and noticed the association of some species with different plant species. The urban area has found lowest number of species (13 Species). In terms of percentage composition family nymphalidae constituted about 62.85% of total butterfly fauna, papilionidae and Lycaenidae both families constituted 14.28% each while family pieridae constituted least 8.5% in all, similar results were also recorded from various parts of India. The diversity of butterflies especially the families nymphalidae and papilionidae in Narmada Nagar indicates the presence of floral variety which is mixed as herbs and shrubs, flowering trees are lesser in number comparatively in urban area therefore the number of butterflies was declined in that area .Diversity and density peak of butterflies were recorded in September during the study period, these results can be concluded as the presence of host and larval plants, presence of more food resources in terms of nectar related to more flowering plants stimulated by high rainfall in monsoon season, similar results recorded by (Verma and Arya, 2018)^[30] and lowest number was found in august due to heavy rain fall. Open scrub and deciduous forest regions attract more species than the urban area, the lesser number of butterflies in urban areas was due to litter deposition, presence of weeds and high disturbance by human recreation activities. Many species (13) were commonly shared all, open scrub, deciduous forest and urban area, butterflies were significantly more abundant in open scrubs area than in the other habitats (i.e. higher densities in that habitat than in two of the three habitats). as because this is the first study regarding the presence of butterfly fauna in Narmada Nagar area we cannot calculate whether the butterfly fauna of this area is increasing or decreasing.

The Table 1 given below is showing the Scientific as well as common name with the family of observed species of butterflies.

Table 1: List of Butterflies Recorded In Narmada Nagar

S. No	Family	Scientific Name	Common Name	Status
01	Lycaenidae	<i>Zizeeria karsandra</i>	Dark Grass Blue	C
02		<i>Spindasisvulcanus</i>	Common Silver line	UC
03		<i>Luthrodes pandava</i>	Plain cupid	VC
04	Nymphalidae	<i>Ariadne merione</i>	Common Castor	VC
05		<i>Danaus chrysippus</i>	Plain Tiger	VC
06		<i>Danaus genutia</i>	Striped Tiger	C
07		<i>Euploea core</i>	Common Crow	VC
08		<i>Hypolimnas bolina</i>	Great Egg fly	C
09		<i>Hypolimnas misippus</i>	Danaid Egg fly	C
10		<i>Junonia almanac</i>	Peacock Pansy	C
11		<i>Junonia hierta</i>	Yellow Pansy	C
12		<i>Junonia lemonias</i>	Lemon Pansy	VC
13		<i>Parantica aglea</i>	Glassy Tiger	UC
14		<i>Polyura athamas</i>	Common Nawab	UC
15		<i>Tirumala limniace</i>	Blue Glassy Tiger	C
16		<i>Tirumala septentrionis</i>	Dark Blue Tiger	UC
17		<i>Charaxes solon</i>	Black Rajah	UC
18		<i>Byblia ilithyia</i>	Joker	UC
19	<i>Ypthimabaldus</i>	Common Fivering	C	
20	<i>Euploea midamus</i>	Blue Spotted Crow	UC	
21	<i>Euploea klugii</i>	Brown King Crow	C	
22	<i>Thaumantidioreas</i>	Jungle Glory	UC	
23	<i>Melanitis leda</i>	Common Evening Brown	C	
24	<i>Mycalesis perseus</i>	Common Bush Brown	C	
25	<i>Phalanta</i>	Common Leopard	C	
26	Papilionidae	<i>Graphium doson</i>	Blue Jay	C
27		<i>Papiliodemoleus</i>	Lime Butterfly	C
28		<i>papiliopolytes</i>	Common Mormon	C
29		<i>Papilio demoleus</i>	Northern Lime wallowtail	C
30		<i>Graphium gamemnon</i>	Tailed Jay	C
31	Pieridae	<i>Catopsilia Pomona abricious</i>	Common Emigrant	VC
32		<i>Eurema sari</i>	Chocolate Grass Yellow	V
33		<i>Catopsilia pyranthe Linnaeus</i>	Mottled Emigrant	C
34		<i>Pareronia valeria</i>	Common Wanderer	C
35		<i>Eurema hecabe</i>	Common Grass yellow	VC

VC = VeryCommon, C =Common, UC = Uncommon,





Fig 1: Images of the Butterflies found in Narmada Nagar during the study period

Conclusion and Recommendations

The present study underline the importance of Narmada Nagar area as preferred habitat for the butterflies, if the maintenance of the area carefully planned, the diversity of butterflies can definitely be improved. this was the first effort to explore the butterfly wealth of this area, There is a need for giving conservation education to the local communities and the forest officials on the impact of conserving biodiversity resources, The present study of butterfly species is not conclusive, more detailed study with more sampling techniques is recommended in the area in both wet and dry seasons.

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