Some Butterflies of Kanak Durga Biodiversity Conservation Area of Jhargram In West Bengal

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Abstract- *Butterflies are social insects and they play a vital role in the ecosystem balance. The main role of butterflies is to maintain the pollination behaviour and to help the onset of fruits in plants. To maintain the phyto-sociological association, butterflies are important in any ecosystem. They help to other insects about feeding and a source of food for some birds. Highly and colourful butterflies are the attraction of many enthusiastic persons even the researchers and students who are workers in this field. Many biologists use these insects as an indicator species of environment.*

In this communication, a total 13 butterfly species were placed under different habitats of Chilkigarh Kanakaranya Biodiversity Heritage Site (KBHS) along with plants. The various habitats studied were grassland, agricultural sites, river belt, river pan, woodland, semi-dry grass land, shrubberies and in patch of sacred grove like Kanakaranya or Kanak Durga. We have recorded species like common emigrant, common mime, plain tiger, common wanderer, chocholate pansy, common gull, pioneer, common sailor, five ringed butterflies, small salmon Arab, common crow and common castor. Thirteen butterflies fall under three families in which family Nymphalidae showed highest species diversity during summer at Chilkigarh Kanakaranya in Jamboni Community Development Block.

Keywords- Butterflies, Kanak Durga Biodiversity Heritage Site, West Bengal

I. INTRODUCTION

Chilkigarh Kanak Durga area is famous as community protected sites in West Bengal under Jamboni Community Development Block (CDB). Biodiversity Heritage Sites (BHS) are notified areas of Biodiversity importance in India. West Bengal State Government and local authority of Jamboni Block, West Bengal notified the site Kanakaranya as BHS under the section 37 of Biological Diversity Act of 2002. Chilkigarh Kanakaranya was established as a BHS under this Act and considered as a Community based protected site in West Bengal. Chilkigarh Kanak Durga Sacred Grove is a remnant forest with traditional beliefs and taboos of local inhabitants and rich in biodiversity covering an area of 55.9 acres in Jhargram District of West Bengal (N. 926/EN/T-II-7/003-II/2003 dt 16th April, 2018)[1]. A few studies have been made by authors on some aspects till date but no studies on butterflies and host plants even forage plants have been found on the site. As it is under Environmental study so we took the site for preliminary study in and around the area.

All we know that butterflies are interesting creatures and help the ecosystem to run the process for production. Producers may produce any kind of product by their natural process by obviously triggered by climatic factors as well as biotic interactions. Insects and similar organisms play a vital role in pollination. Plants produce flowers and fruits in the presence of insects those who are directly cause pollination. In this ground butterfly play a crucial role. In forest, in agricultural lawns, in orchards and in vineyards they play a direct role to pollinate flowers and setup fruits. Some butterflies are used by many bird species as food like Asian Paradise Fly Catcher, red-whiskered bulbul etc. Frugivorous birds use fruits of wild and agricultural kind but they use insects and caterpillars though they discard wings too because of toxic materials they contain. Use of butterflies in butterfly garden is important because they use hoist plants as ornamentals and using those host plants they lay eggs and nurture caterpillars. Caterpillars use toxic leaves that contain alkaloids and tannins. It's a natural phenomenon that due to presence of toxic materials, enemies avoid such highly coloured butterflies.

Butterflies are used to prepare butterfly garden. Govt. and non-governmental agencies set up a large number of Butterfly Parks aboard the country. Now our College set up a butterfly park in the campus in the year 2016 during seminar organized by Botany Department, Lalgarh Govt. College in connection with the seminar fund received from West Bengal Biodiversity Board, Department of Environment, Govt. of West Bengal. The role of a butterfly garden is to document living form of butterflies and related forage and host plants that are used traditionally to develop the caterpillars. Species and genetic diversity may be preserved by this way and it broadcasts the aesthetic value in addition to the economic

return as a whole. Keeping these view in mind study was undertaken on butterflies found in a community based protected areas which is regarded as biodiversity conservation area in West Bengal.

II. OBJECTIVES

The main objective is to document butterflies of Chilkigarh Kanak Durga area in Jhargram District. Apart from the objective other objectives are to study butterflies of a community based ecosystem, their forage and host plants and some interactions on the said study area in relation to various insects.

III. STUDY AREA

Study area Chilkigarh is fall under Jamboni Community Development Block in Jhargram district of West Bengal. The village is situated on the metallic road Jhargram-Gidhni in Jamboni Mouza. The nearest point is Gidhni Railway station which is 5 km away from Chilkigarh Kanak Durga sacred grove and 18km from Jhargram town in West Bengal.

It is a natural site enclosed by agricultural land and some river basins filled with various tree species. One dominated pond and many small water bodies are available nearby along with some canals. The site is dominated by many big trees like *Bombax ceiba, Ceiba pentandra, Holoptelia integriufolia, Tamarindus indica, Adina cordifolia, Schleichera oleosa, Albizzia lebbek, Samanea saman, Ficus religiosa, Ficus benghalensis, Bambusa bamboos, Bambusa balcua, Terminalia crenulata, Borassus flabellifer, Phoenix sylvestris, Ficus glomerata, Streblus asper, Anthocephalus cadamab, Tectona grandis, Azadirachta indica, Ziziphus jujuba, Trema orientalis, Dalbergia sissoo, Psidium guajava, Syzygium cumuni, Bauhinia racemosa, Bauhinia vahlii, Aphanomyxix polystachya, Peltophorum ferrugenum* etc. The entire village and around the cultivable land mass, river banks along with mud flat of river was taken in to consideration.

IV. MATERIALS AND METHODS

1. Identification of Butterflies:

Basic principles for butterfly identification depend upon exo-morphological characters. Before going to identification one should know the different parts of the butterfly and obviously should be knowledgeable on systematic position of the butterfly. Following is the systematic position of the butterfly. Literature used to identify the butterflies mentioned in the bibliography part[2-9].

Systematic Position:

Phyllum: Arthropoda

Sub-Phyllum: Mandibulata

Class: Insecta/Hexapoda

Sub-Class: Pterigota

Section: Endopterigota

Order: Lepidoptera

Super Family: Papilionoidea (True butterflies)

Skippers or Hesperioidea

True Super family is being sub-divided in to 10 families. These are –Danaidae, Satyridae, Amathusidae, Nymphalidae, Acreidae, Erycinidae, Lycaenidae, Papilionidae, Pieridae and Hesperiidae. Lepidopterist (who studies butterflies) follows structural diversity to identify the butterfly. Structurally the insect has different body parts like- Antennae, Compound eye, Proboscis, Legs, Thorax, Abdomen, Cell, Veins, Hind wings, Forewings, Under side and Upper side of the butterfly (Fig. 1). Cell is important because it can help to identify different groups of butterflies.

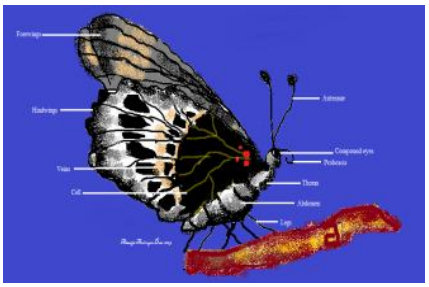

Fig.1 External morphology of a Butterfly for basic identification through colour of various parts (Photo Courtesy –Atmaja Avirupa Das, Member, IBCN, Mumbai, 2018)

2. Monitoring of Butterflies:

Monitoring of butterflies are based on the line transect method. Butterfly census method Protocol was developed by Pollard in 1960[2]. To standardize, butterfly census followed by UKBMS (UK Butterfly monitoring Scheme) protocol which is essential first to establish a fixed transact approximately 2 to 4 km in length. The study area should be with full of habitats which are in partial shade and or full sunshine. In dark or heavily shade areas flying insect density are low. Temperature should be within limit. Wind is also important and butterflies are not usually counted where the wind speed is greater than force 5 (small trees in leaf begins to sway). In case of transact method, 15 sections should be made to count butterfly numbers separately for each

section. By doing this we can compile information relating to local habitat differences. For our study we have standardized a method in terms of our time and pace of the project in the study area. Therefore, the following is the method in details to study butterfly in Kanak Durga Biodiversity Heritage Site.

A line of 2000m was divided in to 6 equal parts and each has 250m only. From the starting point to the 6th point (except the 2000m point) a total 6 study stations have been demarcated. Walking distance was probably meant for 250m which was traversed and at each point number of butterfly species was calculated. After studying all points a complete number was count as per the standard method. Mobile camera, temperature meter, Camera, binocular, pen, record books and data sheet was used. A general identification manual[9] was used which was collected from Central Library of Lalgarh Govt. College, Jhargram. Other literatures used here are mentioned in bibliography part[2-9]. Some plants associated with butterflies were recorded from study site. Morning was done from 7 a.m. to 9 a.m. as per literature of our area to study at the specific study area.

V. RESULTS AND DISCUSSION

In total, 13 butterfly species were found in different habitats of Chilkigarh Kanakaranya site along with plants (Table 1, 2). The various habitats found there was grassland, agricultural sites, river belt, river pan, woodland, semi-dry grass land, shrubberies and in patch of sacred grove like Kanak Durga. We have seen species like common emigrant, common mime, plain tiger, common wanderer, chocholate pansy, common gull, Pioneer, Common sailor, Five ringed butterflies, small salmon Arab, Common crow and Common Castor. Thirteen butterflies fall under three families in which family Nymphalidae showed highest species during investigation at Chilkigarh Kanakaranya, Jamboni in the summer (Fig. 1)

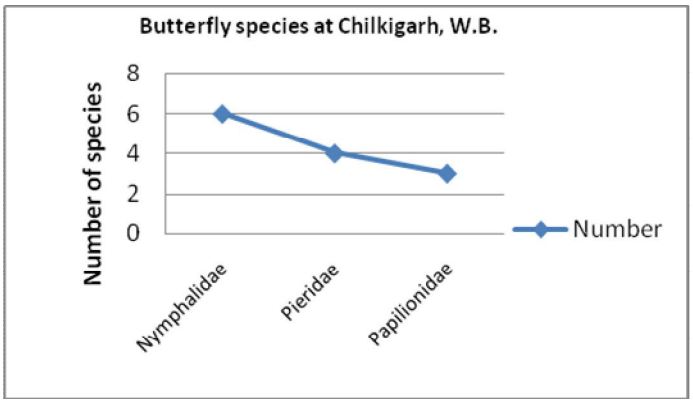

Fig. 1 Butterfly species at Chilkigarh

We have recorded weed plants used by butterflies as forage plants. These are Tridax, *Euphorbia, Sida, Tephrosia, Urena, Indigofera, Ionidium, Lippia* and *Leucas* spp. Other species of shrubby kinds found there were *Lantana, Vitex, Eupatorium* and *Jatropha* spp. Forage tree species used by butterflies were *Tabernemontana, Tectona,* and *Samanea* spp. In forest area, most common plant used by the butterflies was *Combretum decundrum*. Plants under the families viz. Rubiaceae, Asteracec, Verbenacae, Fabaceae were important used by butterflies during their forage.

Table 1 List of the butterflies studied in field during nature trail at Kanak Durga, Jhargram district

Sl. No.	Name of the Butterflies	Scientific Name	Different points of study (Study point 1, 2, 3, 4, 5 and 6)						Total
			1	2	3	4	5	6	
1	Chocolate Pansy	*Junonia iphita* (Family- Nymphalidae)	I	I				I	3
2	Common Castor	*Ariadne merione* (Family-Nymphalidae)					II		2
3	Common Crow	*Euploea core* (Family-Nymphalidae)						I	1
4	Common Emigrant	*Catopsilia Pomona* (Family-Pieridae)					I		1
5	Common Gull	*Cepora nerissa* (Family- Pieridae)			I				1
6	Common Mime	*Papilio clytia* (Family- Papilionidae)	I	I		IIII I	II	I	11
7	Common Sailor	*Neptis hylas* (Family- Nymphalidae)				IIII IIII	I	I	12
8	Common Wanderer	*Pareronia valeria* (Family- Pieridae)	I	I	I		II		5
9	Common Five-ring	*Ypthima baldus* (Family- Nymphalidae)		I					1
10	Pioneer	*Belenois aurota* (Family-Pieridae)			I			I	2
11	Plain Tiger Or African Queen	*Danaus chrysippus* (Family-Nymphalidae)				I	I		2
12	Small salmon Arab	*Colotis amata* (Family- Pieridae)		I					1
13	Common Rose	*Pachliopta aristolochiae* (Family-Papilionidae)					I	I	2
Total	Species 13	Family: 3							44

Table 2 Diversity of Species in the Butterfly Family

Serial No.	Butterfly family	Number
1.	Nymphalidae	6
2.	Pieridae	4
3.	Papilionidae	3

PHOTOGRAPHS ON BUTTERFLIES

Fig. 2 Stripped Tiger (*Danaus genutia*)

Fig. 3 Common Gull (*Cepora nerissa*)

PHOTOGRAPH ON FORAGE PLANT

Fig. 4 *Urena lobata* L. (Beng.- Banokra)

Fig. 7. Entrance of BHS, Chilkigarh, W.B.

VI. CONCLUSION

We should study butterflies round the year as per study frame of the project. We should be interested on butterfly studies because it helps us to think about nature, and play a key role in pollination everywhere. We can feel happy to see the colourful butterflies in nature. It may be a source of income generation, if behave as experts or owner of Butterfly garden (Govt. or Private). Say for example, Varsey in Sikkim and Singba Rhododendron Sanctuary is famous for butterfly species and BNHS has its own butterfly garden. Similarly in Jharkhali of Sunderban, North 24 Pgs District, West Bengal, we have butterfly garden which has been set up by Forest Department. BNHS, Mumbai has introduced a course on butterfly studies in their curriculum. Keeping these points in mind, we should take care to protect our pollinator forever and even will do something about the conservation of nature and natural resource. The mass movement from our corner can lead many people to do something about the conservation strategies in local areas and obviously will enrich our data bank that is now very poor. Start your action now to do something with us for conserving nature from our home to big and bigger areas globally. Think personally and feel homely but work globally to reach appoint.

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