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A preliminary checklist of butterflies at Tajpur, West Bengal, India

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Abstract

The present study was conducted to enlist a checklist of butterflies in the coastal belt of Purba Medinipur District, Tajpur of southern West Bengal during the period of January 2021 to December 2022. A total of 41 species of butterflies belonging to 35 genera under five families were recorded during entire study period. Family Nymphalidae (14 members) was the most dominant family followed by Lycaenidae (8 members), Pieridae (7 members), Papilionidae (6 members) and Hesperidae (6 members). Among 41 butterfly species 2 species were legally protected under the Wildlife (Protection) Act, 1972. During the study a total number of 32 plants from 19 families were documented. The present investigation results also provide a detailed idea about the butterfly diversity of coastal belt in southern West Bengal.

Keywords: Butterfly, checklist, coastal forest, diversity, Purba Medinipur

Introduction

The investigations on the diversity of insect are of great significant due to the prevalence of insects in both terrestrial and aquatic ecosystems and their important roles in ecosystem functions such as pollination, decomposition, controlling of pests and ecological maintenance [1, 2]. Among the Arthropods, butterflies (Lepidopterans) are the most attractive ones and are one of the most taxonomically identifiable group of insects [3, 4]. Butterflies are known to be biodiversity monitors, because their diversity and distribution can be altered with different geographical patterns [5, 6]. Being a valuable ecological indicator species, butterflies are extremely sensitive to any kind of changes to their surrounding abiotic and biotic parameters factors [7, 8]. Habitat specified butterflies those depend on particular plant species for oviposition, are more influenced by the anthropogenic activities [9]. Majority of the butterflies are plant pollinators of different wild plants and help to pollinate more than 50 economically important crop plants on which human-kind depends for their livelihoods [10, 11]. Biodiversity is now rapidly recognized as a vital parameter to detect global and local changes of environment and sustainability of developmental activities. Though the systematic study of non-chordates especially butterflies has not been accomplished from urban regions of West Bengal. It helps as a noticeable tool for conservational strategies of butterflies. Thus, it is worthy to prepare a zone-wise checklist of the butterfly diversity of West Bengal. The diversity of plants and butterflies are fully correlated each other [12], a change in vegetation structure may change in the butterfly diversity. An opportunistic foragers butterflies; visit variety of flowering plants and thereby perform one of the major important ecological processes called 'pollination' in ecosystems [13]. Host plant specificity was observed in female butterflies which are also related with time and space [14].

Thus, butterfly species and their dependence on locally available flora are well established at various habitats [15]. Further, certain butterfly species exhibit distinct floral preference that depends on floral parameters such as color, corollary depth, clustered flowers or florets [16] and chemical clues [17, 18] of flowers.

Materials and Methods

Purba Medinipur is one of the well sounded districts of southern part of West Bengal. This district is guarded by the Bay of Bengal in the south and the state Odisha is at the southwest. River Hoogly and South 24 Parganas district locate to the east, Howrah to the north-east, and Paschim Medinipur to the northwest.

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The Tajpur beach is situated at 22°57'38.1" N latitude and 88°31'05.9" E longitude on the shore of Bay of Bengal. The beach of Tajpur has a wide intertidal zone and the entire area is exposed during the low-tides. The temperature during hot summer days rises up to 42 °C and only in the evening the weather becomes favourable. Tajpur beach receives quite rainfall. The minimum temperature recorded during winters is 8 °C.

The present study was based on random surveys over a period of December 2021 to December 2022 using line transects of 50m long. The photographs of butterflies from different angles were clicked to obtain sufficient information with a digital camera for maximum identification. Each species was identified directly in the field on primary basis with the help of field guides followed by photography, and rarely by capture. Collection restricted specimens could not be identified directly. Those specimens were collected with handheld aerial sweep nets, followed by placing in an envelope and carried to the laboratory for further detailing with the help of a field guide.

Results and Discussion

In the family Hesperidae, show maximum number of species

are documented as *Borbo cinnara* (12) followed by *Pelopidason junta* (7), *Parnara guttatus* (4) *Ancistroides folus* (3), *Matapa aria* (2) and *Spialia Galba* (1). In the family Papilionidae, maximum number of species are found in *Papilio demoleus* (12), followed by *Papilio polytes* (9) *Chilasa clytia* (2), *Graphium Sarpedon* (1), *Graphium Agamemnon* (1), *Atrophaneura aristolochiae* (1). In the family Pieridae *Leptosia Nina* (17) show maximum number than other species followed by *Catopsilia pyranthe* (13), *Eurema brigitta* (7), *Catopsilia Pomona* (7), *Delias eucharis* (2), *Eurema hecabe* (2), *Pareronia hippie* (2). In the Lycaenidae family *Neopithecops zalmora* (13), show maximum abundance, followed by *Castalius rosimon* (6), *Chilades lajus* (1), *Acytolepis puspa* (1), *Euchrysops cnejus* (1), *Leptotes plinius* (1), *Rapala manea* (1), *Tarucus Callinara* (2). In the family Nymphalidae *Acraea terpsicore* (15) exhibit maximum number followed by *Melanitis leda* (13), *Euploea core* (7), *Junonia almana* (6), *Elymnias hypermnestra* (5), *Phalanta phalantha* (5), *Junonia atlites* (4), *Danaus chrysippus* (3), *Junonia hierta* (2), *Tirumala limniace* (1), *Ypthima baldus* (1), *Moduza procris* (1), *Danaus genutia* (1), *Ariadne merione* (1).

Table 1: Shows the family and common name, scientific name

Family	Common name	Scientific name	Number	RA
Hesperidae	Rice Swift	<i>Borbo cinnara</i>	12	6%
	Common reddy	<i>Matapa aria</i>	2	1%
	Straight Swift	<i>Parnara guttatus</i>	4	2%
	Conjoined Swift	<i>Pelopidas conjuncta</i>	7	3%
	Grass Demon	<i>Ancistroides folus</i>	3	1.5%
Papilionidae	Indian Skipper	<i>Spialia galba</i>	1	0.5%
	Common rose	<i>Atrophaneura aristolochiae</i>	1	0.5%
	Common mime	<i>Chilasa clytia</i>	2	1%
	Tailed jay	<i>Graphium agamemnon</i>	1	0%
	Common blue bottle	<i>Graphium sarpedon</i>	1	0.005
Pieridae	Lime butterfly	<i>Papilio demoleus</i>	12	0.06
	Common Mormon	<i>Papilio polytes</i>	9	0.045
	Common emigrant	<i>Catopsilia pomona</i>	7	0.035
	Mottled emigrant	<i>Catopsilia pyranthe</i>	13	0.65
	Common jezebel	<i>Delias eucharis</i>	2	0.01
Lycaenidae	Small grass yellow	<i>Eurema brigitta</i>	7	0.035
	Common grass yellow	<i>Eurema hecabe</i>	2	0.01
	Psyche	<i>Leptosia nina</i>	17	0.086
	Common wanderer	<i>Pareronia hippie</i>	2	0.01
	Common hedge blue	<i>Acytolepis puspa</i>	1	0.005
Nymphalidae	Common pierrot	<i>Castalius rosimon</i>	6	0.03
	Lime blue	<i>Chilades lajus</i>	1	0.005
	Gram blue	<i>Euchrysops cnejus</i>	1	0.005
	Zebra blue	<i>Leptotes Plinius</i>	1	0.005
	Quaker	<i>Neopithecops zalmora</i>	13	0.065
Nymphalidae	Slate flash	<i>Rapala manea</i>	1	0.005
	Rounded pier rot	<i>Tarucus callinara</i>	2	0.01
	Tawny Coster	<i>Acraea terpsicore</i>	15	0.076
	Common castor	<i>Ariadne merione</i>	1	0.005
	Plain tiger	<i>Danaus chrysippus</i>	3	0.015
Nymphalidae	Striped Tiger	<i>Danaus genutia</i>	1	0.005
	Common palmfly	<i>Elymnias hypermnestra</i>	5	0.025
	Common crow	<i>Euploea core</i>	7	0.035
	Yellow pansy	<i>Junonia hierta</i>	2	0.01
	Grey pansy	<i>Junonia atlites</i>	4	0.02
Nymphalidae	Peacock pansy	<i>Junonia almanac</i>	6	0.03
	Lemon pansy	<i>Junonia lemonias</i>	2	0.01
	Common evening brown	<i>Melanitis leda</i>	13	0.065
	Commander	<i>Moduza Procris</i>	1	0.005
	Common leopard	<i>Phalanta phalantha</i>	5	0.025
Nymphalidae	Blue tiger	<i>Tirumala limniace</i>	1	0.005
	Common fevering	<i>Ypthima baldus</i>	1	0.005

Several authors have reported butterfly diversity in southern West Bengal. Ghosh & Siddique (2005) enlist 68 species in and around urban area of Kolkata ^[19]. Chowdhury & Chowdhury (2007) reported 33 species from the Medially Ecological Park in urban Kolkata ^[20]. Chowdhury & Das (2007) showed 64 species of butterflies from the Indian Botanical Garden of Howrah ^[21].

Prior to prevail the skies, butterflies spend early days of its life as caterpillars, extremely dependent on a limited set of plants of their preference. Butterflies play a crucial ecological role in the ecosystem they inhabit. As adults, they visit a countless number of flowers and agriculture crops as they seek out nectar and during this time butterflies also gather pollen from plants of different species, assisting in those species' reproduction and growth.

The delicate deep relationship between butterflies and their host plants is irretrievable, and the abundance of caterpillars is strongly influenced by the distribution of their host plants-if the plant hosts disappear, the butterflies will disappear too.

A total 32 plant species under 19 families were documented during field visit in the coastal belt. 5 species were found

under Fabaceae family followed by Rutaceae (4), Apocynaceae and Lamiaceae each having 3 species, Arecaceae (2) and other family having 1 species. Table 2 shows the family and respective host plants for above listed butterflies. Chowdhury & Soren (2011) showed 96 species in the Chintamani Kar Bird Sanctuary in suburban Kolkata and 74 species were recorded from the East Calcutta Wetlands, Kolkata ^[22]. Jana *et al.* (2013) reported 27 species from the adjacent coastal region of Purba Medinipur district ^[23]. Nair *et al.* (2014) found 49 species in the Sarojini Naidu College campus of Kolkata ^[24]. Chowdhury (2014) reported 76 species from the Indian Sundarban Biosphere Reserve ^[25]. Hajra *et al.* (2015) documented 46 species from Contai region in Purba Medinipur district ^[26]. Mukherjee *et al.* reported 96 species in and around Kolkata ^[27]. Ghosh & Saha (2016) reported 51 species from Taki, North 24 Parganas ^[28]. Mukherjee *et al.* found 54 species in Kolkata metropolis ^[29]. Payra *et al.* reported 112 butterfly species from the coastal belt of Purba Medinipur ^[30]. Mandal *et al.* enlightened up about 70 species from the Rice Research Station and adjoining locality in Chinsurah, Hooghly ^[31].

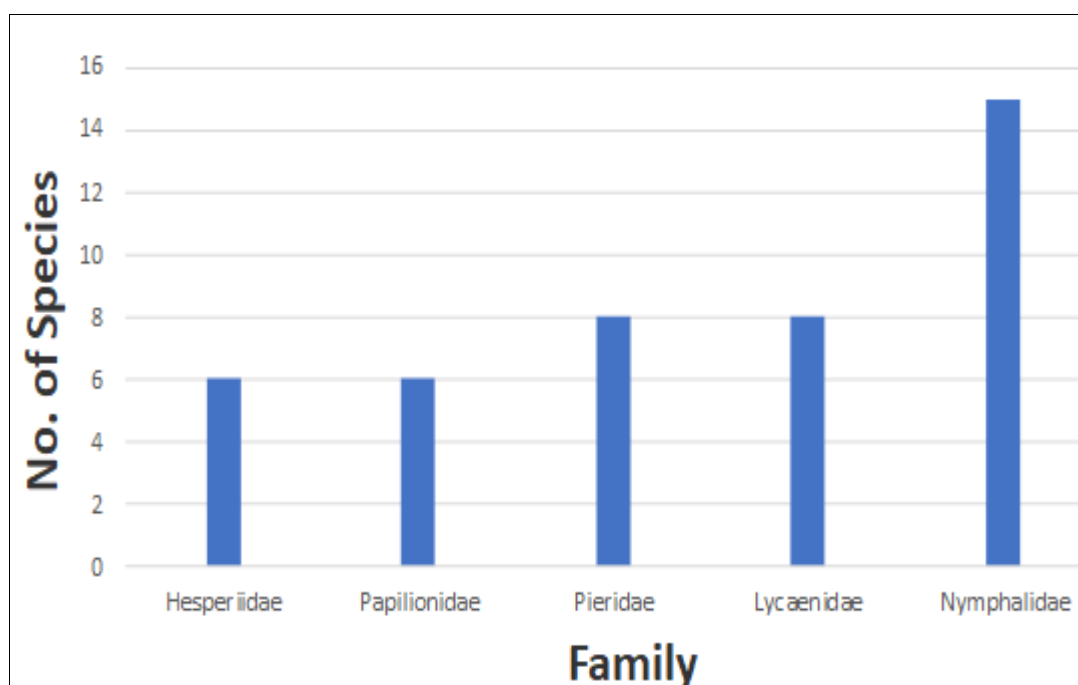


Fig 1: Show Family and No of Species

Table 2: Shows the family and respective host plants for above listed butterflies

Family	Scientific name of the plants
Amaranthaceae	<i>Gomphrena serrata</i>
Anacardiaceae	<i>Mangifera indica</i>
Annonaceae	<i>Polyalthia longifolia</i>
Apocynaceae	<i>Calotropis gigantea</i>
	<i>Catharanthus roseus</i>
	<i>Pergularia daemia</i>
Arecaceae	<i>Phoenix Sylvestris</i>
	<i>Cocos nucifera</i>
Boraginaceous	<i>Heliotropium indicum</i>
Cleomaceae	<i>Cleome viscosa</i>
Convolvulus	<i>Ipomea sagittifolia</i>
	<i>Evolvulus nummularius</i>
Euphorbiaceae	<i>Jatropha gossypifolia</i>
Fabaceae	<i>Mimosa pudica</i>
	<i>Crotalaria pallida</i>
	<i>Senna occidentalis</i>

	<i>Senna alata</i>
	<i>Aeschynomene indica</i>
Lamiaceae	<i>Vitex negundo</i>
	<i>Ocimum americanum</i>
	<i>Leucas aspera</i>
	<i>Ficus benghalensis</i>
Moraceae	<i>Boerhavia diffusa</i>
Nyctaginaceae	<i>Bambusa sp.</i>
Poaceae	<i>Ziziphus mauritiana</i>
Rhamnaceae	<i>Citrus limon</i>
Rutaceae	<i>Glycosmis pentaphylla</i>
	<i>Murraya koenigii</i>
	<i>Aegle marmelos</i>
	<i>Lantana camara</i>
Verbenaceae	<i>Phyla nodiflora</i>
	<i>Curcuma longa</i>
Zingiberaceae	

Conclusion

A total 41 species of butterflies are recorded in this area. This results emphasize the significance of that particular area. The present study is short and compact in nature, with relevant reports on diversity of butterflies and will contribute in effective conservation measures in Tajpur, a coastal habitat of East Medinipur of West Bengal.

Habitat destruction due to deforestation and expansion of urbanization can be potential threat to this area and is suggested to be the reason for the reduction of abundance of butterflies in the study area. A long-term study is continuously portraying butterfly as an indicator taxa for habitat alteration can be carried out to develop effective conservation measure for coastal landscape.

References

1. Losey JE, Vaughan M. The economic value of ecological services provided by insects. *Bioscience*. 2006;56:311-323.
2. Losey JE, Vaughan M. Conserving the ecological services provided by insects. *American Entomology*. 2008;54:113-115.
3. Honda K, Kato Y. *Biology of Butterflies*. University of Tokyo Press, Tokyo; c2005. p. 626.
4. Kim SS, Lee CM, Kwon TS, Joo HZ, Sung JH. Korean butterfly atlas 1996-2011. Research Note 461, Korea Forest Research Institute, Korea Disabled Human Good Life Pub. Co, Seoul, in Korean; c2011.
5. Erhardt A. Diurnal Lepidoptera: Sensitive indicators of cultivated and abandoned grassland. *Journal of Applied Ecology*. 1985;22:849-862.
6. Thomas JA, Simcox DJ, Wardlaw JC, Elmes WG, Hochberg ME, Clark RT. Effects of latitude, altitude and climate on the habitat and conservation of the endangered butterfly *Maculinea arion* and its *Myrmica* ant host. *Journal of Insect Conservation*. 1998;2(1):39-46.
7. Rutowski RL, Demlong MJ, Leffingwell T. Behavioral thermoregulation at mate encounter sites by male butterflies (*Asterocampa*, *Nymphalidae*). *Animal Behaviour*. 1994;48:833-841.
8. Ribeiro DB, Freitas AVL. Differences in thermal responses in a fragmented landscape: Temperature affects the sampling of diurnal, but not nocturnal fruit-feeding Lepidoptera. *The Journal of Research on the Lepidoptera*. 2010;42:1-4.
9. Clark PJ, Reed JM, Chew FS. Effects of urbanization on butterfly species richness, guild structure, and rarity. *Urban Ecosystems*. 2007;10:321-337.
10. Borges RM, Gowda V, Zacharias M. Butterfly pollination and high contrast visual signals in a low density distylous plant. *Oecologia*. 2003;136:571-573.
11. Boriani L, Burgio G, Marini M, Genghini M. Faunistic study on butterflies collected in Northern Italy rural landscape. *Bulletin of Insectology*. 2005;58(1):49-56.
12. Leps J, Spitzer K. Ecological determinants of Butterfly communities (*Lepidoptera*, *Papilionoidea*) in the Tam Dao Mountains, Vietnam. *Acta Entomologica Bohemoslovaca*. 1990;87 (3):182-194.
13. Sharma M, Sharma N. Nectar resource use by Butterflies in Gir-Wildlife Sanctuary, Sasan, Gujarat. *Biol. Forum. J* 2013;5(2):56-63.
14. Weiss MR, Papaj DR. Center for Insect Science, Tucson Color learning in two behavioral contexts: How much can a butterfly keep in mind? *Animal. Behave*. 2003;65:425- 434.
15. Kunte K. *Butterflies of Peninsular India*. Universities Press, Hyderabad, India; c2000.
16. Tiple AD, Deshmukh VP, Dennis RLH. Factors influencing nectar plant resource visits by butterflies on a Uni. Campus: Implications for conservation. *Nota Lepida*. 2006;28(3/4):213-224.
17. Hern A, Edwards-Jones GA, Mckinlay RG. A review of the pre-oviposition behaviour of small cabbage white butterfly, *pieris rapae* (Lepidoptera: Pieridae). *Annals of Applied Biology*. 1996;128(2):349-371.
18. Hooks CR, Johnson MW. Broccoli growth parameters and level of head infestations in simple and mixed plantings: Impact of increased flora diversification. *Annals of Applied Biology*. 2001;138(3):269-280.
19. Ghosh S, Siddique S. Butterfly diversity in and around urban Kolkata. *Records of the Zoological Survey of India*. 2005;104(3-4):111-119.
20. Chowdhury D, Chowdhury S. *Butterfly Fauna in Mudialy Ecological Park, Kolkata, West Bengal*. Bionotes. 2007;9(1):25.
21. Chowdhury S, Das RP. Diversity of Butterflies in the Indian Botanic Garden, Howrah, West Bengal. Bionotes. 2007;9(4):131-132.
22. Chowdhury S, Soren R. Butterfly (Lepidoptera: Rhopalocera) Fauna of East Calcutta Wetlands, West Bengal, India. *Check List*. 2011;7(6):700-703.
23. Jana D, Giri S, Tamili DK, Chakraborty SK. Diversity of Lepidopteran Insects in the Coastal regions of Midnapur (East), West Bengal, India. *Indian Journal of Biological Sciences*. 2013;19:32-41.
24. Nair AV, Mitra P, Aditya S. Studies on the diversity and

- abundance of butterfly (Lepidoptera: Rhopalocera) fauna in and around Sarojini Naidu college campus, Kolkata, West Bengal, India. *Journal of Entomology and Zoology Studies*. 2014;2(4):129-134.
25. Chowdhury S. Butterflies of Sundarban Biosphere Reserve, West Bengal, eastern India: A preliminary survey of their taxonomic diversity, ecology and their conservation. *Journal of Threatened Taxa*. 2014;6(8):6082-6092;
<http://dx.doi.org/10.11609/JoTT.o3787.6082-92>.
26. Hajra K, Mandal P, Jana S, Jana S, Sahoo A. Diversity of Butterfly in Contai and its adjoining areas Purba Medinipur, West Bengal, India, *International Journal of Current Research and Academic Review*. 2015;3(6):246-258.
27. Mukherjee S, Banerjee S, Saha GK, Basu P, Aditya G. Butterfly diversity in Kolkata, India: An appraisal for conservation management. *Journal of Asia Pacific Biodiversity*. 2015;8(3):210-221.
<http://dx.doi.org/10.1016/j.japb.2015.08.001>
28. Ghosh S, Saha S. Seasonal diversity of butterflies with reference to habitat heterogeneity, larval host plants and nectar plants at Taki, North 24 Parganas, West Bengal, India. *World Scientific News*. 2016;50:197-238.
29. Mukherjee S, Aditya G, Basu P, Saha GK. Butterfly diversity in Kolkata metropolis: A synoptic check list. *Check List*. 2016;12(2):1858.
<http://dx.doi.org/10.15560/12.2.1858>
30. Payra A, Mishra KR, Mondal K. Butterflies (Lepidoptera - Rhopalocera) Of Coastal Areas Of Purba Medinipur District, Southern West Bengal, India, *Academia Journal Of Biology*. 2017;39(3):276-290.
31. Mandal S. Butterflies of the Rice Research Station and adjoining locality in Chinsurah, West Bengal, India. *Journal of Threatened Taxa*. 2016;8(5):8804-8813.
32. Ponmanickam P, Gowsalya K, Rajagopal T, Muniasamy S, Sundaram KK. Biodiversity of butterflies in Ayya Nadar Janaki Ammal College Campus, Sivakasi, Tamil Nadu, India. *International Journal of Entomology Research*. 2022;7(5):175-82.