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Check list of butterflies of the Sundarbans mangrove forest, Bangladesh

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ABSTRACT

A total 37 species of butterflies under 7 families were recorded during June 2011 to March 2013 in the Sundarbans mangrove forest of Bangladesh. Out of this total, 10 species were newly recorded. Among the 37 recorded butterflies, 8 species belong to Nymphalidae, 6 to Danaidae, 3 to Papilionidae, 5 to Pieridae, 8 to Lycaenidae, 5 to Satyridae, and 2 to Hesperidae family. Large numbers of butterflies were observed during summer season (April to June). The Crimson rose (*Pachliopta hector* Linnaeus, 1758) was the most abundant among all the recorded butterfly species in the Sundarbans. The present list of butterfly is not exhaustive and future exploration will be continued to update this checklist. Habitat destruction is the major threat to butterflies similar to other wild animals and some evidences of such activities were recorded during this study.

Keywords: Butterfly, Checklist, Abundance, Sundarbans.

1. Introduction

Sundarbans is the largest mangrove forest in the world. This mangrove forest is unique for its biodiversity, which is characterized by a wide range of flora and fauna. The faunal composition of the Sundarbans consists of a variety of wild animals namely the tigers, deer, wild boars, monkeys, otters, variety of birds, crocodiles, various snakes including python, lizards, amphibians, mollusks, crabs and so on [1, 2, 3, 4, 5]. Besides, it has been an important habitat for many invertebrate fauna including butterflies.

Sundarbans mangrove forest is very rich in honey producing plants which attract large number of birds and insects including butterflies. The major plant species include khulshi (*Algeciras corniculatum*), goran (*Ceriops decandra*), baen (*Avicennia officinalis*), keora (*Sonneratia apetala* and *S. acida*), gewa (*Excoecaria agallocha*) and passur (*Xylocarpus mekongenesis*). In addition, there are many herbs, shrubs and climbers such as baoli lata (*Sarcolobus globosus*), asam lata (*Mikania scandens*), swarpogandha (*Aristolochia* sp.), dodhi lata (*Tylophora indica*), akond (*Calotropris procera*), wedellia (*Wedelia chinensis*, *W. biflora)*, khulsi (*Aegiceras corniculatum*), hargoza (*Acanthus illicifolius*) and Ipomoea (*Ipomoea illustris*) which are also good attractants for various butterflies, particularly for nectar collection and egg laying. In the mangrove forest there is a few place of complete grassy lands, i.e. meadows that covers the wider areas from Katka to Kachikhali which is an ideal place for the butterfly. However, most of the butterflies found in this mangrove forest are in general periodic visitors that come from nearby places [6]. They come to sip nectar and get back again to the main land after foraging. Butterflies play a vital role in maintaining the mangrove ecosystem by pollination.

In Sundarbans, research on different aspects of [2, 8, 9] and vertebrate fauna have been conducted for a long time [4, 9, 10, 11]. On the other hand, research on the butterfly is scanty in this mangrove forest [6, 12]. Thus, as part of an ongoing inventory on butterfly of Sundarbans, a checklist has been prepared from this mangrove forest of Bangladesh. This result will provide an updated status for the butterflies those are associated with sundarbans and highlight the importance of the Sundarbans as a habitat that supports so many unique butterflies in Bangladesh.

2. Methods and Materials

2.1 Study area

The Sundarbans (21º 30' to 22º 30′ N, 88º 05′ to 89º 55′ E) the mangrove forest is extended across the areas of Bangladesh and India that covers 10,000 km^2 of which 6,017 km^2 falls in the Bangladesh territory. Study areas covered during this study included a number of places such as Karamjal, Katka, Kachikhali, Supati, Egg Island, Harbaria and some small channels that were encountered during expedition. Besides, mangrove forests are composed of taxonomically diverse and salt-tolerant trees (Khulshi, Goran, Baen, Keora, Gewa and Passur), including many herbs, shrubs, climbers and grasses.

2.2 Collection and identification

Butterflies were collected from various localities as mentioned by means of insect sweeping net. After collection, envelope was used for temporary storage, which was then carried to the Entomology laboratory of the Department of Zoology, Jahangirnagar University. The specimen was then stretched by a starching board and preserved in a wooden box for further taxonomic analysis. Identification of butterfly was done by using the keys developed and used by Marshall and de Niceville (1883), Bingham (1905, 1907), Evans (1932), Wynter-Blyth (1957) and Talbot (1978a, b) **[13, 14, 15, 16, 17, 18, 19]**.

3. Results

A total number of 37 species of butterflies, under 7 families, viz. Danaidae, Papilionidae, Pieridae, Nymphalidae, Lycaenidae, Hesperiidae and Satyridae were recorded in the Sundarbans, Bangladesh during June 2011 to March 2013 (Table-1).

Table 1: Checklist of butterflies in the Sundarbans, Bangladesh

Family	English Name	Scientific Name	Location
Nymphalidae			
	Common leopard*	*Phalanta phalantha* Drury, 1773	Kachikhali
	Peacock pansy	*Junonia almana* Linnaeus, 1758	Karamjal
	Grey pansy	*Junonia atlites* Linnaeus, 1763	Kachikhali
	Blue pansy	*Junonia orithya* Linnaeus, 1758	Katka
	Great eggfly	*Hypolimnas bolina* Linnaeus, 1758	Kachikhali
	Tree nymph	*Idea agamarschana* Felder & Felder, 1865	Katka
	Leopard lacewing	*Cethosia cyane* Drury, 1770	Harbaria
	Chestnut streaked sailor	*Neptis jumbah* Moore, 1857	Harbaria
Danaidae			
	Plain tiger*	*Danaus chrysippus* Linnaeus, 1758	Kachikhali
	Striped tiger*	*Danaus genutia* Cramer, 1779	Kachikhali
	White tiger	*Danaus melanippus indicus* Fruhstorfer, 1899	Kachikhali
	Blue tiger	*Tirumala limniace* Cramer, 1775	Katka
	Common crow	*Euploea core* Cramer, 1780	Harbaria, Kachikhali
	Sundarbans crow	*Euploea crameri nicevillei* Moore, 1890	Harbaria
Papilionidae			
	Crimson rose	*Pachliopta hector* Linnaeus, 1758	Katka, Kachikhali
	Common rose	*Pachliopta aristolochiae* Fabricius, 1775	Katka, Kachikhali
	Lime	*Papilio demoleus* Linnaeus, 1758	Supati
Pieridae			
	Common grass yellow	*Eurema hecabe hecabe* Linnaeus, 1758	Karamjal, Supati
	Common jezebel*	*Delias eucharis* Drury, 1773	Karamjal, Harbaria, Supati
	Red spot jezebel*	*Delias descombesi* Boisduval, 1836	Harbaria
	Common emigrant*	*Catopsilia pomona* Fabricius, 1775	Katka, Kachikhali
	Mottled emigrant	*Catopsilia pyranthe* Linnaeus, 1758	Katka, Kachikhali
Lycaenidae			
	Tiny grass blue*	*Zizula hylax* Fabricius, 1775	Harbaria
	Scarlet flash	*Rapala dieneces dieneces* Hewitson, 1878	Kachikhali
	Common cerulean	*Jamides celeno celeno* Cramer, 1775	Kachikhali
	Common pierrot	*Castalius rosimon* Fabricius, 1775	Kachikhali
	Lesser grass blue	*Zizina otis otis* Fabricius, 1787	Kachikhali
	Dark grass blue*	*Zizeeria karsandra* Moore, 1865	Kachikhali
	Shot silverline*	*Spindasis ictis* Hewitson, 1865	Harbaria
	Common ciliate blue	*Anthene emolus* Godart, 1823	Harbaria
Satyridae			
	Common evening brown	*Melanitis leda* Linnaeus, 1758	Kachikhali
	Dark-branded bushbrown	*Mycalesis mineus* Linnaeus, 1758	Supati
	Common bushbrown*	*Mycalesis perseus blasius* Fabricius, 1798	Supati
	Common fourring	*Ypthima huebneri* Kirby, 1871	Supati
	Common palmfly	*Elymnias hypermnestra* Drury, 1773	Kachikhali
Hesperidae			
	Common awl	*Hasora badra badra* Moore, 1857	Katka
	Obscure branded swift	*Pelopidas agna agna* Moore, 1865	Katka

*Newly recorded species from the Sundarbans

Out of this total, 10 species were newly recorded. Among the 37 recorded butterflies, 8 species belong to Nymphalidae, 6 to Danaidae, 3 to Papilionidae, 5 to Pieridae, 8 to Lycaenidae, 5 to Satyridae and 2 to Hesperidae family. Large numbers of butterflies were observed during summer season (April to June). Among the identified species, Crimson rose (*Pachliopta hector*) found in abundance in the Sundarbans (data not shown).

Only 7 out of the 37 recorded species, namely Sundarban crow (*Euploea crameri nicevillei*), Common crow (*Euploea core*), White tiger (*Danaus melanippus*), Plain tiger (*Danaus chrysippus*), Striped tiger (*Danaus genutia*), Crimson rose (*Pachliopta hector*) and Common rose (*Pachliopta aristolochiae*) were found mating inside the Sundarbans. They mostly congregate themselves in the north-west and the northern parts of the mangrove forest that includes Katka, Jamtala and Kachikhali. These areas, covered by grasses, were rich in Plain tiger (*Danaus chrysippus*), Striped tiger (*Danaus genutia*), White tiger (*Danaus melanippus indicus*), Blue tiger (*Tirumala limniace*), Crimson rose (*Pachliopta hector*), Common rose (*Pachliopta aristolochiae*), Common leopard (*Phalanta phalantha*), Grey pansy (*Junonia atlites*), Great eggfly (*Hypolimnas bolina*), Common emigrant (*Catopsilia pomona*), Common cerulean (*Jamides celeno*), Lesser grass blue (*Zizina otis*), Dark grass blue (*Zizeeria karsandra*) and Common evening brown (*Melanitis leda leda*) (Table-1). Besides, Common jezebel (*Delias eucharis*), Common grass yellow (*Eurema hecabe*), Lime butterfly (*Papilio demoleus*) and Common bush brown (*Mycalesis perseus*) were captured from Karamjal and Supati (Table-1). On the other hand, Sundarban crow (*Euploea crameri niceville*), Common crow (*Euploea core*), Common jezebel (*Delias eucharis*) Leopard lacewing (*Cethosia cyane*) and Chestnut streaked sailor (*Neptis jumbah*) were captured from Harbaria. Brightly colored nymphalids enjoy fermenting fruits as well as dung. The members of Lycaenidae were seen in grassy lands in Kachikhali and Harbaria. Capturing Lycaenid was very difficult because of the throne and spines in the underbrush. The Hesperiids are small sized butterflies and performed very rapid and jerky style flight. Only two species, Common awl (*Hasora badra*) and Obscure branded swift (*Pelopidas agna)* were recorded under this family in Katka (Table-1). The members of Satyridae are dull brown butterflies and rather prefer shady areas in Kachikhali and Supati. They prefer to sip rotten fruits and usually fly at low elevation in the forest.

4. Discussion

The Sundarbans mangrove forest is unique for biodiversity especially for its picturesque ecosystem, wild animals and vegetations. Very few research focusing butterflies exits for this mangrove forest. In Bangladesh, 300 species have so far been put on record [6, 12, 20, 21, 22, 23, 24, 25, 26, 27, 28] while so far only 27 species were recorded from the Sundarbans [6]. A total of 37 species of butterfly have been recorded during the present study, which is higher than Larsan's (2004) [6] record. The additional new species includes Common leopard (*Phalanta phalantha*), Plain tiger (*Danaus chrysippus*), Striped tiger (Danaus genutia), Common jezebel (*Delias eucharis*), Red spot jezebel (*Delias descombesi*), Common emigrant (*Catopsilia pomona*), Tiny grass blue (*Zizula hylax*), Dark grass blue (*Zizeeria karsandra*), Shot silverline (*Spindasis ictis*) and Common bushbrown (*Mycalesis perseus*) (Table-1). My observations indicate that the present list is not exhaustive and hope to identify many more species through comprehensive survey in future.

The loss of habitats is the main threat to butterflies. Butterfly heavily depends on the specific species of plants such as nectar and larval host plants for completing their lifecycle or their survival. Therefore vegetation damage, commercial logging, human settlement or any other destructive activities in the habitat should be stooped by any means for the conservation of butterfly. The 'Sundarban crow (*Euploea crameri nicevillei*)', a unique butterfly which is found only in the Sundarbans of Bangladesh [12, 29] needs specific larval host plants that may be extinct if proper conservation measures are not taken soon. Considering all, necessary measures should immediately be taken to conserve the ecosystem of this mangrove forest.

5. Conclusion

A total of 37 species of butterflies were recorded during the present study. Among them, 10 species were newly recorded from the Sundarbans. The present list of butterfly is not exhaustive and future exploration will be continued to update this checklist.

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