

Reporting of *Discophora sondaica* (Lepidoptera : Papilionoidea : Nymphalidae) from Sundarbans, West Bengal, India along with an updated species list from the region

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Abstract

The present communication represents updated list of 126 species of butterflies under 85 genera belonging to 06 families from the Indian Sundarbans. During present survey, 30 species have been recorded, of which, a butterfly species, *Discophora sondaica* Boisduval, 1836 (Family Nymphalidae) has been reported for the first time from the mangrove ecosystem of this region. The family Lycaenidae represents 38 species followed by families Nymphalidae, Hesperidae, Pieridae, Papilionidae and Riodinidae with 37 species, 26 species, 14 species, 10 species and 01 species respectively.

Keywords: Mangrove Ecosystem, New Record, Protected Butterfly, Sundarbans

Introduction

Sundarbans is the deltaic region that is spreading over two districts of West Bengal, South 24-Parganas and North 24-Parganas. UNESCO inscribed the Indian Sundarban in the World Heritage List in the year 1987. Globally, Sundarban mangrove forests (contiguous landmass of both India and Bangladesh) have been considered as one of the seven most important wetlands based on biological diversity and this deltaic tidal swamps ecosystem is the largest unique area of the World for threatened Royal Bengal Tiger and third largest Mangrove formation after Indonesia and Australia (Chandra *et al.*, 2017). Several studies have been made on this mangrove ecosystem to inculcate the floral and faunal diversity. Mandal and Nandi (1989) were first to report 08 species of butterflies from this deltaic region. Thereafter, Chowdhury (2014) recorded a total of 76 species of butterflies from this region. Further, Mitra (2017) gave a comprehensive account of insect faunal diversity and their ecosystem services which revealed a total of 115 species of butterflies from this ecosystem. This present communication represents an updated butterfly list of 126 species under 85 genera belonging to 06 families from the Indian Sundarbans.

Material and Methods

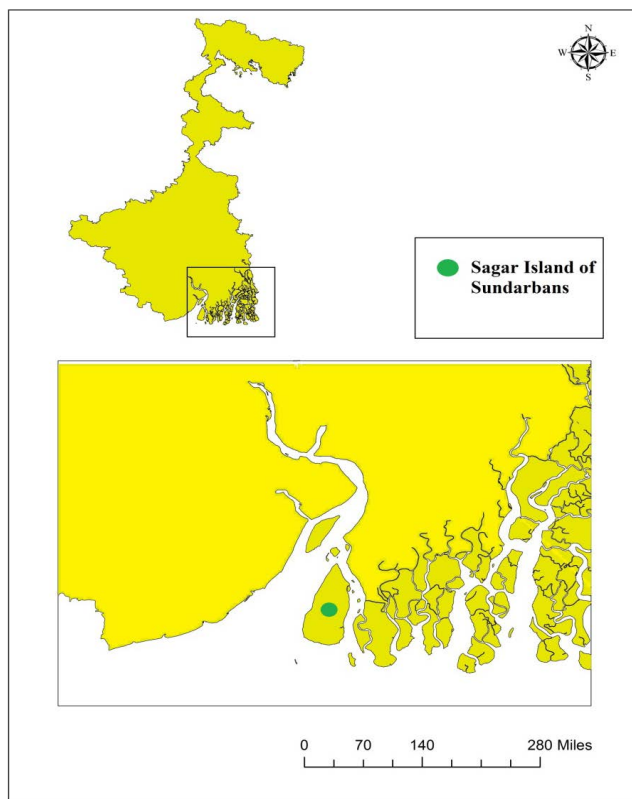
Study area

Indian Sundarbans stretched through two districts of West Bengal, North and South 24-Parganas. It lies between 21°40'04" N & 22°09'21" N latitude and 88°01'56" E & 89°06'01" E longitude. The grassland of Indian Sundarbans is broadly extended with its saline marshes and tropical wetlands. The present faunistic study was conducted in the year 2017 to one of the islands of Sundarbans, Sagar Island (21°43' 27.93" N, 88° 6' 35.30" E) for surveying the butterfly diversity in this mangrove ecosystem (Map. 1).

Methods

Butterflies were collected by insect nets and images were captured by Nikon D7000 during daytime. Collection and preservation processes like pinning, stretching etc. were done by following the methods given by Arora, (1986). Species were identified by following Evans (1932), Wynter-Blyth (1957) and Kehimkar (2008). Species names were updated by following the catalogue by Varshney and Smetacek (2015). For arranging the taxa under respective

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Map 1. Study area of Sundarbans, West Bengal.

families, the published classification of Lepidoptera by Nieuwerkerken *et al.*, (2011) has been followed.

Results

The present communication details 126 species of butterflies under 85 genera belonging to 06 families from the Indian Sundarbans. During the present faunistic survey 30 species (marked with * in Table 2) have been recorded of which Nymphalidae is the dominant family

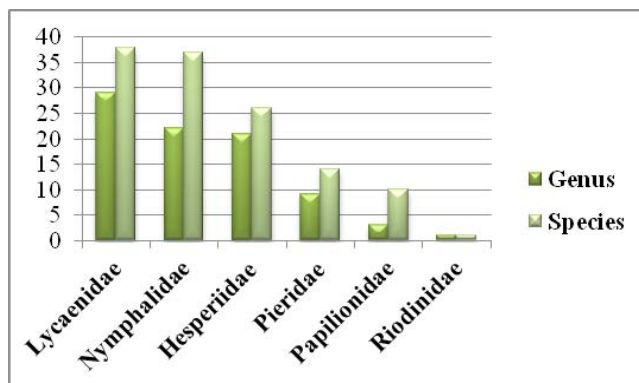


Figure 1. No. of genera & species in different families of butterflies.

(n=13) followed by family Pieridae (n=7), Lycaenidae (n=5), Hesperidae (n=3) and Papilionidae (n=2). Among the thirteen species of family Nymphalidae, *Discophora sondaica* Boisduval, (marked with # in Table 2 & Plate 2) is the new record from Sundarbans, West Bengal which was collected from a village named Phulbari (N 21°51'43.94" in latitude and E 088°07'46.32" in longitude) in Sagar Island.

Discussion

The present communication is the compilation of published literatures of the previous workers, Mandal & Nandi (1989), Chowdhury (2014), Kumar *et al.* (2014), Mitra (2017) and recent surveys during 2017. Mandal and Nandi (1989), initiated the surveys to the mangrove ecosystem of Sundarbans and reported 08 species of butterflies from the region for the first time. Further, Chowdhury (2014) reported 76 species of butterflies under 57 genera belonging to 05 families from Sundarban

Table 1. Family wise percentage composition of butterflies of Sundarbans

Family	Genera	Species
Lycaenidae	29 (34.1%)	38 (30.2%)
Nymphalidae	22 (25.9%)	37 (29.4%)
Hesperidae	21 (24.7%)	26 (20.6%)
Pieridae	09 (10.6%)	14 (11.1%)
Papilionidae	03 (3.5%)	10 (7.9%)
Riodinidae	01 (1.2%)	01 (0.8%)
Total: 06	85 (100%)	126 (100%)

Table 2. Updated species list of butterflies of Sundarbans, West Bengal

Sl. No.	Common name	Species name
Family HESPERIIDAE		
1.	Bush Hopper	<i>Ampittia dioscorides</i> (Fabricius, 1793)
2.	Brown Awl	<i>Badamia exclamationis</i> (Fabricius, 1775)
3.	Paintbrush Swift	<i>Baoris farri</i> (Moore, 1878)
4.	Bevan's Swift	<i>Borbo bevani</i> (Moore, 1878)
5.	Rice Swift	<i>Borbo cinnara</i> (Wallace, 1866)
6.	Malabar Flat	<i>Celaenorrhinus ambareesa</i> (Moore, 1866)
7.	Giant Redeye	<i>Gangara thyrsis</i> (Fabricius, 1775)
8.	Moore's Ace	<i>Halpe porus</i> (Mabille, 1877)
9.	Common Awl	<i>Hasora badra</i> (Moore, 1858)
10.	Plain Banded Awl	<i>Hasora vitta</i> (Butler, 1870)
11.	Tree Flitter	<i>Hyarotis adrastus</i> (Stoll, 1780)
12.	Chestnut Bob	<i>Iambrix salsala</i> (Moore, 1866)
* 13.	Common Redeye	<i>Matapa aria</i> (Moore, 1866)
14.	Common Banded Demon	<i>Notocrypta paralysos</i> (Wood-Mason & de Niceville, 1881)
15.	Common Dartlet	<i>Oriens gola</i> (Moore, 1877)
16.	Ceylon Dartlet	<i>Oriens goloides</i> (Moore, 1881)
17.	Ceylon Swift	<i>Parnara bada</i> (Moore, 1878)
18.	Straight Swift	<i>Parnara guttatus</i> (Bremer and Grey, 1852)
19.	Variable Swift	<i>Pelopidas mathias</i> (Fabricius, 1798)
20.	Fulvous Pied Flat	<i>Pseudocoladenia dan</i> (Fabricius, 1787)
21.	Common Small Flat	<i>Sarangesa dasahara</i> (Moore, 1866)
22.	Indian Palm Bob	<i>Suastus gremius</i> (Fabricius, 1798)
23.	Suffused Snow Flat	<i>Tagiades japetus</i> (Stoll, 1781)
24.	Dark Palm Dart	<i>Telicota bambusae</i> (Moore, 1878)
* 25.	Common Palm Dart	<i>Telicota colon</i> (Fabricius, 1775)
* 26.	Grass Demon	<i>Udaspes folus</i> (Cramer, 1775)
Family LYCAENIDAE		
27.	Ciliate Blue	<i>Anthene emolus</i> (Godart, 1824)
28.	Pointed Ciliate Blue	<i>Anthene lycaenina lycambes</i> (Hewitson, 1878)
29.	Indian Oakblue	<i>Arhopala atrax</i> (Hewitson, 1862)
30.	Centaur Oakblue	<i>Arhopala centaurus</i> (Fabricius, 1775)
31.	Common Pierrot	<i>Castalius rosimon</i> (Fabricius, 1775)
32.	Forgetmenot	<i>Catochrysops strabo strabo</i> (Fabricius, 1793)
33.	Lime Blue	<i>Chilades lajus</i> (Stoll, 1780)
34.	Indian Sunbeam	<i>Curetis thetis</i> (Drury, 1773)
35.	Gram Blue	<i>Euchrysops cnejus</i> (Fabricius, 1798)
36.	Common Onyx	<i>Horaga onyx onyx</i> (Moore, 1858)
37.	Pointed Lineblue	<i>Ionolyce helicon</i> (C. Felder, 1860)
* 38.	Common Cerulean	<i>Jamides celeno</i> (Cramer, 1775)

39.	Pea Blue	<i>Lampides boeticus</i> (Linnaeus, 1767)
40.	Zebra Blue	<i>Leptotes plinius</i> (Fabricius, 1793)
41.	Yamfly	<i>Loxura atymnus</i> (Stoll, 1780)
42.	Plains Cupid	<i>Luthrodes pandava</i> (Horsfield, 1829)
43.	Falcate Oakblue	<i>Mahathala ameria</i> (Hewitson, 1862)
44.	Malayan	<i>Megisba malaya</i> (Horsfield, 1828)
45.	Quaker	<i>Neopithecops zalmora</i> (Butler, 1870)
46.	Common Lineblue	<i>Prosotas nora</i> (C. Felder, 1860)
* 47.	Pale Grass Blue	<i>Pseudozizeeria maha</i> (Kollar, 1844)
48.	Common Red Flash	<i>Rapala iarbus</i> (Fabricius, 1787)
* 49.	Slate Flash	<i>Rapala manea</i> (Hewitson, 1863)
50.	Common Flash	<i>Rapala nissa</i> (Kollar, 1844)
51.	Indigo Flash	<i>Rapala varuna</i> (Horsfield, 1829)
52.	Monkey Puzzle	<i>Rathindra amor</i> (Fabricius, 1775)
53.	Common Apefly	<i>Spalgis epius</i> (Westwood, 1852)
54.	Scarce Shot Silverline	<i>Spindasis elima</i> (Moore, 1877)
55.	Common Shot Silverline	<i>Spindasis ictis</i> (Hewitson, 1865)
* 56.	Common Silverline	<i>Spindasis vulcanus</i> (Fabricius, 1775)
57.	Peacock Royal	<i>Tajuria cippus</i> (Fabricius, 1798)
58.	Plains Blue Royal	<i>Tajuria jehana</i> (Moore, 1883)
59.	Red Pierrot	<i>Talicauda nyseus</i> (Guerin-Meneville, 1843)
60.	Striped Pierrot	<i>Tarucus nara</i> (Kollar, 1848)
61.	Common Tiger Blue	<i>Tarucus theophrastus</i> (Fabricius, 1793)
* 62.	Dark Grass Blue	<i>Zizeeria karsandra</i> (Moore, 1865)
63.	Lesser Grass Blue	<i>Zizina otis</i> (Fabricius, 1787)
64.	Tiny Grass Blue	<i>Zizula hylax</i> (Fabricius, 1775)
Family NYMPHALIDAE		
65.	Tawny Coster	<i>Acraea violae</i> (Fabricius, 1793)
66.	Angled Castor	<i>Ariadne ariadne</i> (Linnaeus, 1763)
* 67.	Common Castor	<i>Ariadne merione</i> (Cramer, 1777)
68.	Black Rajah	<i>Charaxes solon</i> (Fabricius, 1793)
69.	Common Yeoman	<i>Cirrochroa tyche</i> (C. & R. Felder, 1861)
* 70.	Plain Tiger	<i>Danaus chrysippus</i> (Linnaeus, 1758)
* 71.	Common Tiger	<i>Danaus genutia</i> (Cramer, 1779)
72.	White Tiger	<i>Danaus melanippus</i> (Cramer, 1777)
#* 73.	Common Duffer	<i>Discophora sondaica</i> (Boisduval, 1836)
* 74.	Common Palmfly	<i>Elymnias hypermnestra</i> (Linnaeus, 1763)
* 75.	Common Crow	<i>Euploea core</i> (Cramer, 1780)
76.	Spotted Black Crow	<i>Euploea crameri</i> (Lucas, 1853)
77.	King Crow	<i>Euploea klugii</i> (Moore, 1858)
* 78.	Common Baron	<i>Euthalia aconthea</i> (Cramer, 1777)
* 79.	Great Eggfly	<i>Hypolimnas bolina</i> (Linnaeus, 1758)

80.	Danaid Eggfly	<i>Hypolimnas misippus</i> (Linnaeus, 1764)
81.	Burmese Tree Nymph	<i>Idea agamarschana</i> (C. & R. Felder, 1865)
* 82.	Peacock Pansy	<i>Junonia almana</i> (Linnaeus, 1758)
* 83.	Grey Pansy	<i>Junonia atlites</i> (Linnaeus, 1763)
84.	Yellow Pansy	<i>Junonia hierta</i> (Fabricius, 1798)
85.	Lemon Pansy	<i>Junonia lemonias</i> (Linnaeus, 1758)
86.	Blue Pansy	<i>Junonia orithiya</i> (Linnaeus, 1758)
87.	Bamboo Treebrown	<i>Lethe europa</i> (Fabricius, 1775)
* 88.	Common Evening Brown	<i>Melanitis leda</i> (Linnaeus, 1758)
89.	Dark Evening Brown	<i>Melanitis phedima</i> (Cramer, 1780)
90.	Commander	<i>Moduza procris</i> (Cramer, 1777)
91.	Common Bushbrown	<i>Mycalesis perseus</i> (Fabricius, 1775)
92.	Dark-brand Bushbrown	<i>Mycalesis mineus</i> (Linnaeus, 1758)
93.	Long-brand Bushbrown	<i>Mycalesis visala</i> Moore, 1858]
94.	Common Sailer	<i>Neptis hylas</i> (Linnaeus, 1758)
* 95.	Chestnut-streaked Sailer	<i>Neptis jumbah</i> (Moore, 1858)
96.	Short-banded Sailer	<i>Phaedyma columella</i> (Cramer, 1780)
97.	Common Leopard	<i>Phalanta phalantha</i> (Drury, 1773)
98.	Common Nawab	<i>Polyura athamas</i> (Drury, 1773)
* 99.	Blue Tiger	<i>Tirumala limniace</i> (Cramer, 1775)
100.	Common Fivering	<i>Ypthima baldus</i> (Fabricius, 1775)
101.	Common Fourring	<i>Ypthima huebneri</i> (Kirby, 1871)
Family PAPILIONIDAE		
102.	Tailed Jay	<i>Graphium agamemnon</i> (Linnaeus, 1758)
103.	Common Jay	<i>Graphium doson</i> (C. & R. Felder, 1864)
104.	Spot Swordtail	<i>Graphium nomius</i> (Esper, 1799)
105.	Common Bluebottle	<i>Graphium sarpedon</i> (Linnaeus, 1758)
* 106.	Common Rose	<i>Pachliopta aristolochiae</i> (Fabricius, 1775)
107.	Crimson Rose	<i>Pachliopta hector</i> (Linnaeus, 1758)
108.	Common Mime	<i>Papilio clytia</i> (Linnaeus, 1758)
109.	Lime Butterfly	<i>Papilio demoleus</i> (Linnaeus, 1758)
110.	Blue Mormon	<i>Papilio polymnestor</i> (Cramer, 1775)
* 111.	Common Mormon	<i>Papilio polytes</i> (Linnaeus, 1758)
Family PIERIDAE		
112.	Common Albatross	<i>Appias albina</i> (Boisduval, 1836)
* 113.	Striped Albatross	<i>Appias libythea</i> (Fabricius, 1775)
* 114.	Common Emigrant	<i>Catopsilia pomona</i> (Fabricius, 1775)
115.	Mottled Emigrant	<i>Catopsilia pyranthe</i> (Linnaeus, 1758)
* 116.	Common Gull	<i>Cepora nerissa</i> (Fabricius, 1775)
* 117.	Small Salmon Arab	<i>Colotis amata</i> (Cramer, 1775)
118.	Common Jezebel	<i>Delias eucharis</i> (Drury, 1773)
* 119.	Three-spot Grass Yellow	<i>Eurema blanda</i> (Boisduval, 1836)

120.	Small Grass Yellow	<i>Eurema brigitta</i> (Stoll, 1780)
* 121.	Common Grass Yellow	<i>Eurema hecabe</i> (Linnaeus, 1758)
122.	White Orange Tip	<i>Ixias marianne</i> (Cramer, 1779)
123.	Yellow Orange Tip	<i>Ixias pyrene</i> (Linnaeus, 1764)
* 124.	Psyche	<i>Leptosia nina</i> (Fabricius, 1793)
125.	Common Wanderer	<i>Pareronia valeria</i> (Cramer, 1776)
Family RIODINIDAE		
126.	Plum Judy	<i>Abisara echerius</i> (Stoll, 1790)

Biosphere Reserve. In 2014, Kumar *et al.*, reported 117 species of butterflies under 85 genera belonging to 05 families from Sunderban Biosphere Reserve, West Bengal. Mitra (2017) inventorised a total 210 species of Lepidoptera under 161 genera belonging to 24 families. Of which, 115 species under 81 genera belonging to 06 families were butterflies and rest were moths. Kumar *et al.*, (2014) listed four species and subspecies of family Hesperidae, *Parnara naso* (Fabricius, 1798), *Parnara naso bada* (Moore, 1878), *Telicota ancilla* (Herrich-Schäffer, 1869) and *Telicota ancilla bambusae* (Moore, 1878) which was updated by Mitra (2017) as two species, *Parnara bada* (Moore, 1878) and *Telicota bambusae* (Moore, 1878). The present report is the updated list of 126 species under 85 genera belonging to 06 families (Table 2) of butterflies obtained from review of above published works and the species recorded during the present survey. During present survey one nymphalid species *Discophora sondaica* Boisduval belongs to Schedule I under Indian Wildlife (Protection) Act, 1972 has been recorded. This critically endangered species is earlier reported from Darjeeling and Kolkata in West Bengal by Gupta (1997).

Here, Lycaenidae is the most speciose family with 38 species (30.2%) under 29 genera (34.1%). This is followed

by family Nymphalidae with 37 species (29.4%) under 22 genera (25.9%), family Hesperidae with 26 species (20.6%) under 21 genera (24.7%), family Pieridae with 14 species (11.1%) under 09 genera (10.6%), family Papilionidae with 10 species (7.9%) under 03 genera (3.5%) and family Riodinidae with 01 species (0.8%) under 01 genus (1.2%) (Figure 1 & Table 1).

Conclusion

The present communication deals with 126 species of butterflies including a new record of a nymphalid species *Discophora sondaica* Boisduval from the mangrove ecosystem of Sundarbans. The species is critically endangered and belongs to Schedule I under Indian Wildlife (Protection) Act, 1972. The results obtained on butterflies from mangrove ecosystem of Sundarbans, West Bengal highlights that further studies in this area might give such results of many more species.

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Plate 1. Field photographs of few butterflies

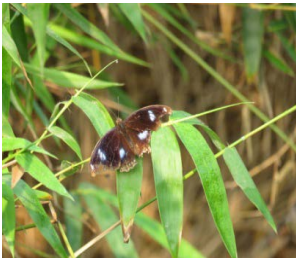

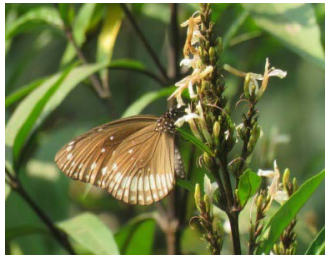

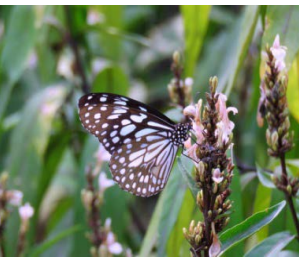

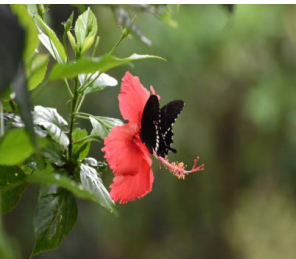
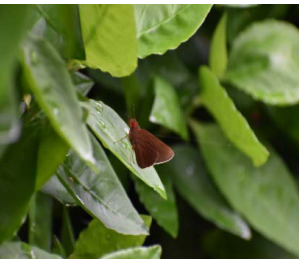

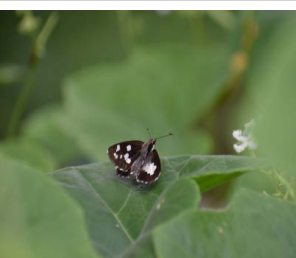
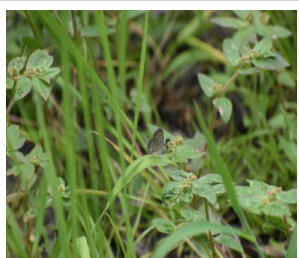

		
<i>Hypolimnas bolina</i> (Linnaeus)	<i>Junonia almana</i> (Linnaeus)	<i>Euploea core</i> (Cramer)
		
<i>Danaus genutia</i> (Cramer)	<i>Tirumala limniace</i> (Cramer)	<i>Elymnias hypermnestra</i> (Linnaeus)
		
<i>Papilio polytes</i> (Linnaeus)	<i>Matapa aria</i> (Moore)	<i>Leptosia nina</i> (Fabricius)
		
<i>Udaspes folus</i> (Cramer)	<i>Pseudozizeeria maha</i> (Kollar)	<i>Zizeeria karsandra</i> (Moore)

Plate 2. New record (*Discophora sondaica* Boisduval) from Sundarbans, West Bengal

