

Butterfly diversity of Bhurungamari upazila, Kurigram district of Bangladesh

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Abstract

The present investigation was carried out to make a list of butterflies at Bhurungamari upazila, Kurigram district during February 2018 to May 2019. A total 39 species of butterflies were recorded representing 28 genera and 7 families. The number of the identified species and their percentage were recorded Danaidae (4, 10.26%), Papilionidae (7, 17.94%), Pieridae (8, 20.51%), Nymphalidae (9, 23.08%), Satyridae (2, 5.13%), Lycaenidae (5, 12.82%) and Hesperidae (4, 10.26%). Total of 17 (43.59%) species were found very common, 11 (28.2%) species were common, 9 (23.08%) species were uncommon and 2 (5.12%) species were found rare from the Bhurungamari upazila during the study period.

Keywords: Butterfly, Bhurungamari upazila, habitat

Introduction

Butterflies attract the attention of peoples of different age and status. These insects play an essential role as pollinators and thus serve as a vital factor in fruit and crop production. The eggs, caterpillars and adults of butterflies are also important links of the food chain. Butterflies are important indicators of forest health and the healthiness of the environment.

Butterflies inhabit various environmental conditions (Robbins and Opler, 1997). The diversity and abundance of butterflies are rich in the tropical areas, especially in the tropical rainforests. Bangladesh with its humid tropical climate and unique geographic location is generally known to be rich in butterfly fauna (Larsen, 2004;

Chowdhury and Hossain, 2011). The authors also stated that Bangladesh in general and its eastern part in particular, in the past acted as the gateway of South Asian insect fauna to the greater part of eastern, northern and southern part of India. Larsen (2004) and Dasgupta (2006) commented that the butterfly species found in West Bengal should also be present in Bangladesh.

Published reports on the butterfly fauna of Bangladesh are scanty. Before 1971, very few reports were published, which provided useful information on the butterflies of Bangladesh region (Alam, 1962; Ameen & Chowdhury, 1968; Chaudery *et al.*, 1966). Later on, works have been done on the forest butterflies of Bangladesh by Zethner & Chowdhury

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((1971), Baksha & Choudhury, 1983, 1985), Chowdhury & Mohiuddin (2003), Shahjahan *et al.* (2008) and Islam *et al.* (2007, 2011). Anonymous (1998, 2000) reported butterflies of Bangladesh. List of butterflies have also been published by Alam & Raushan Ulla (1995) and Hossain *et al.* (2003) from the campus of Chittagong University and Jahangirnagar University respectively. Larsen (2004) published a checklist of the butterflies of Bangladesh. Chowdhury & Hossain (2011) published a pictorial handbook of butterflies of Bangladesh. Ahmad *et al.* (2009) annotated 148 species from Bangladesh. In recent years a few species were first time recorded from different regions of Bangladesh (Khan, 2014; Khan *et al.*, 2014; Rahman *et al.*, 2016; Neogi *et al.*, 2016). Several regional studies were conducted to annotate the regional diversity of butterflies (Alam and Ullah, 1995; Khan and Islam, 2011; Hossain *et al.* 2003; Mahdi *et al.* 2013; Khandokar *et al.* 2013; Chowdhury *et al.* 2014; Shihan, 2014 and Haidar *et al.* 2017). However, very few studies were done to annotate the butterflies of Rangpur region. The present study is undertaken to make a list of butterfly diversity of Bhurungamari upazila, Kurigram district of Rangpur division.

Material and methods

Study Area

Bhurungamari is the northern most Upazila of Kurigram district in the division of Rangpur, Bangladesh. Bhurungamari is located 26.1250°N 89.6833°E.

People of this area depends on agriculture and mostly interested on Horticulture. The major rivers are Brahmaputra, Dharla and Tista with minors are Dudhkumar, Phulkumar, Gangadhar, Jinjiram etc. Mainly, Dudhkumar and Phulkumar are situated beside this Upazila and rest of the areas is plain lands, crop lands and lowlands.

There are mainly three distinct seasons in the Bhurungamari upazila like elsewhere in Bangladesh: Summer (March–May), Rainy (June–October) and Winter (November– February).

Data Collection

The study on butterflies was conducted in the Bhurungamari for 15 months (February 2018 and May 2019). A total of 95 days' observation was done during this study period. The data were collected through Strip transect sampling (Buckland *et al.* 2001) and opportunistic findings have also been considered. Butterflies were searched through the existing roads, horticultural field and bridle paths used as transects and sometime sample were recorded randomly and caught by using sweeping

net preserve in a hard paper box. One full day in a week was spent for collecting data and sample throughout the study period. Butterflies were mostly available during summer season (March to May) and Monsoon season (June to August) but Lower in number during Post-monsoon (September to November) and Winter (November to February) seasons.

Field observations were done throughout day but emphasis was given to sunny bright period of the day when butterflies are more active than other times to find them in their natural habitat. The habitats of butterflies were also observed and recorded (viz., Grass Land, Crop Land, garden, horticultural field).

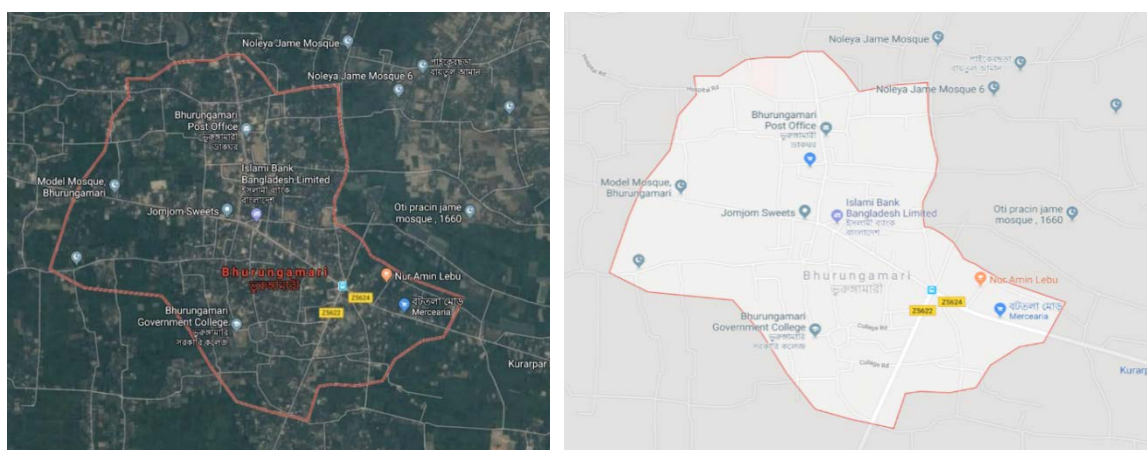


Fig. 1. Map of study area (Bhurungamari, Kurigram).

Species Identification and data analysis

During searching butterflies, the species were recorded in note book and specimens were photographed using camera (Nikon D3000) and most of the time butterflies were collected from the study area with handheld aerial sweep nets and killed immediately by pressing their thorax carefully for minimizing damages of the external organs (scales, legs and wing veins). The specimens were identified using the keys developed by Marshall and de Niceville (1882), Bingham (1905), Evans (1932) and Bashir (2014); and field guides (e.g.,

Chowdhury and Hossain, 2013; Kehimkar, 2013). In some cases, “nymphalid ground plan” are followed for identification as well as define under the group of family which is originally proposed by Schwanwitsch (1924).

The butterflies were assessed as Very Common (VC), those species were observed more than 35-40 times (>75% of the total observation days); Common (C), those species were observed 25 to 34 times (50–74% of the total observation days); Uncommon (UC), those species were observed 10 to 24 times (25–50% of the total observation days); Rare (R), those species were

observed 5 to 9 times (10–24% of the total observation days); and Very Rare (VR), those species were observed less than four times (<10% of the total observation days).

Results and Discussion

At Bhurungamari upazila total 39 species of butterflies were recorded representing 7 families and 28 genera are presented in Table 1 and Fig. 2-3. The number of the identified species and their percentage were recorded as: Danaidae (4, 10.26%), Papilionidae (7, 17.94%), Pieridae (8, 20.51%), Nymphalidae (9, 23.08%), Satyridae (2, 5.13%), Lycaenidae (5, 12.82%) and Hesperidae (4, 10.26%).

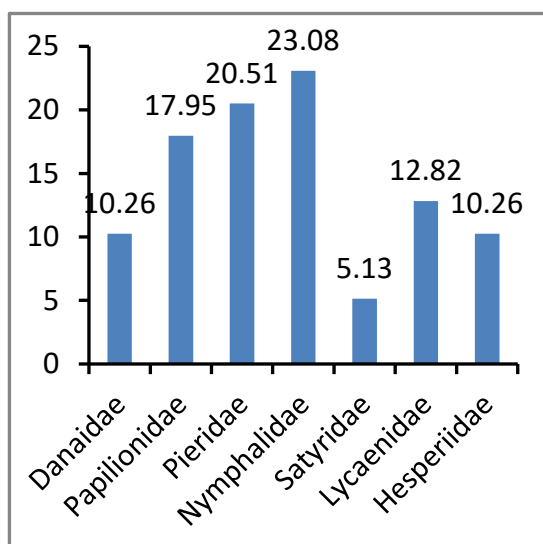


Fig. 2. Percentage of recorded butterflies

The habitats from where the butterflies were collected are mentioned in Table 1, and species status is shown in Fig. 2 and 3. From the direct observation a total of 17 (43.59%) species were found very common, 11 (28.2%) species were

Islam *et al.* (2011) recorded 158 species from Savar area, Mahdi *et al.* (2013) reported 88 butterflies from Rajshahi University campus area, Shihan (2014) recorded 49 species from Chuadanga district, Chowdhury *et al.* (2014) recorded 71 species from Dinajpur district and Hossain (2014) reported 37 species of butterflies from Sundarban mangrove forest. In the present study 3 genera belongs to Danaidae and Hesperidae, 4 genera belong to Papilionidae and Lycaenidae, 6 genera of butterflies belong to the family Pieridae and Nymphalidae, and family Satyridae has 2 genera.

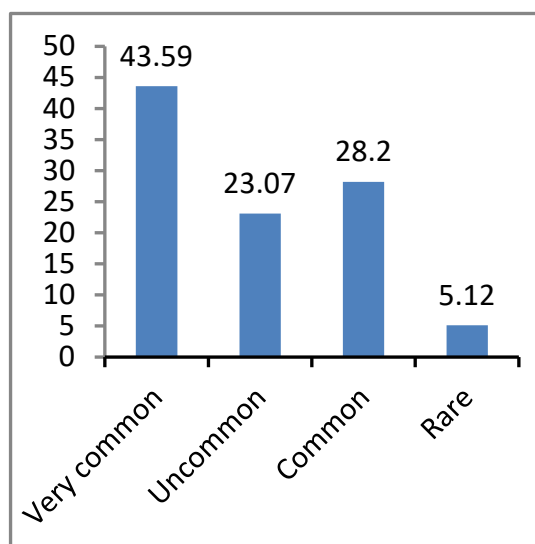


Fig. 3. Percentage of butterflies' abundance

common, 9 (23.08%) species were uncommon and 2 (5.12%) species were rare observed from the study area during the study period (Fig. 1). The rare butterflies *Junonia orithya* is under the family Nymphalidae and *Tarcus callinara*

is under the family Lycaenidae. These two rare species are reported by (Chowdhury and Hossain, 2011) in Bangladesh. Out of these 39 observed species 13 species viz., *Danaus chrysippus*, *Tirumala limniace*, *Euploea core*, *Papilio demoleus*, *Chilasa clytia clytia*, *Pachliopta aristolochiae*, *Eurema simulatrix*, *Eurema hekabe*, *Delias hyparete*, *Junonia lemonias*, *Phalanta phalantha*, *Euthalia aconthea* and *Melanitis leda*, are found in Grassland with mixed vegetation and 9 species viz., *Danaus genutia*, *Papilio polynestor*, *Graphium Agamemnon*, *Catopsilia pyranthe*, *Catopsilia Pomona*, *Hypolimnas misippus*, *Junonia atlites*, *Junonia orithy*, and *Aridne merione*, were found in Flowering bush and vines. Rest of the 17 species were recorded from flower garden, garden, crop land, forest and its edges. Butterfly diversity is strongly related to the availability of food plants for the larvae which are very species specific, and those of the adults (Vickery, 1988).

Identification of butterflies up to species level is difficult chiefly due to their polymorphic nature (Scoble, 2009; Allen *et al.*, 2011). A number of butterfly species have different morphs for dry and rainy seasons, for example *Appias libythea olferna* (Stripped Albatross), and even for different localities of their

geographic range (Smart, 1975; Chowdhury and Hossain, 2011). Some of the butterfly species are mimic to other species of the same order, and some others are quite indistinguishable without examining the finer structural characteristics like genitalia (Nielsen, 1989). The seasonal changes have great influence on butterfly morphs (Yata, 1974). Yata and Tanaka (1979) reported that the day-length also affects the morph of *Catopsilia pyranthe* (Mottled Emigrant) and *C. pomona* (Common Emigrant).

Larsen (2004) reported that there are 427 species of butterflies in Bangladesh. Chowdhury and Hossain (2011) reported only 179 species in their book. The present investigation is the first attempt in this area and the study area should be continuously monitored to observe the complete butterfly's diversity. The study reflects the baseline information on these beautiful groups of Bhurungamari upazila, Kurigram sistrict.

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Table 1. List of Butterflies and their habitats of Bhurungamari Upazilla, Kurigram

Sl. No.	Family	Scientific name	Common name	Habitat	Status
1.	Danaiidae	<i>Danaus chrysippus</i> (Linn. 1758)	Plain Tiger	Grassland with mixed vegetation	VC
2.		<i>Danaus genutia</i> Cramer, 1779	Striped Tiger	Flowering bush and vines	VC
3.		<i>Tirumala limniace</i> (Cramer, 1775)	Blue tiger	Grassland with mixed vegetation	UC
4.		<i>Euploea core</i> (Cramer, 1780)	Common Crow	Grassland with mixed vegetation	C
5.	Papilionidae	<i>Papilio demoleus</i> (Linn., 1765)	Lime Butterfly	Grassland with mixed vegetation	C
6.		<i>Papilio polytes</i> Cramer, 1775	Common Mormon	Flower gardens, Flowering plants	VC
7.		<i>Papilio polynestor</i> Cramer, 1775	Blue Mormon	Flower gardens, Flowering bush and vines	VC
8.		<i>Graphium agamemnon</i> (Linné, 1758)	Tailed Jay	Bushes and vines, Grassland	UC
9.		<i>Chilasa clytia clytia</i> (Linné, 1758)	Common Mime	Grassland with mixed vegetation	C
10.		<i>Pachliopta aristolochiae</i> (Fabricius, 1775)	Common Rose	Grassland with mixed flowering vegetation	VC
11.		<i>Papilio sycorax/ Atrophaneura sycorax</i> (Grose-Smith, 1885)	Swallow-tail	Flowering bushes	VC
12.	Pieridae	<i>Leptidea sinapis</i> (Linné, 1758)	Wood white	Grassland, Bushes	UC
13.		<i>Pareronia hippia</i> (Fabricius, 1787)	Common Wanderer	Gardens, Forest edge habitats	UC
14.		<i>Eurema simulatrix</i> Moore, 1886	Changeable grass yellow	Flower gardens, Grassland with	VC

Sl. No.	Family	Scientific name	Common name	Habitat	Status
				mixed vegetation	
15.		<i>Eurema hekabe</i> Linné, 1758	Common Grass Yellow	Flower gardens, Grassland with mixed vegetation	VC
16.		<i>Delias hyparete</i> Doharty, 1886	Painted Jezebel	Flower gardens, Shady Grassland with mixed vegetation	VC
17.		<i>Catopsilia pyranthe</i> (Linné, 1758)	Molted Emigrant	Grassland, Crop land, Bushes and vines	UC
18.		<i>Catopsilia pomona</i> (Fabricius, 1975)	Common Emigrant	Grassland, Crop land, Bushes and vines	UC
19.		<i>Gandaca harina</i> (Horsfield, 1829)	Tree Yellow	Open Woodland	VC
20.	Nymphalidae	<i>Hypolimnas misippus</i> Linné, 1764	Danaid Eggfly	Flower garden, Bushes and vines	UC
21.		<i>Junonia atlites</i> (Linné, 1763)	Grey Pansy	Flower garden, Bushes and vines	VC
22.		<i>Junonia almanac</i> (Linnaeus, 1758)	Peacock Pansy	Flower garden	VC
23.		<i>Junonia lemonias</i> (Linnaeus, 1758)	Lemon Pansy	Grassland with mixed vegetation	VC
24.		<i>Junonia orithya</i> (Linné, 1758)	Blue Pansy	Flower garden, Bushes and vines	R
25.		<i>Acraea violae</i> Fabricius, 1775	Tawny Coster	Grassland, woodland, Flower Garden	VC
26.		<i>Aridne merione</i> (Cramer, 1777)	Common Castor	Bushes and vines	C
27.		<i>Phalanta phalantha</i> (Drury, 1773)	Common Leopard	Grassland with mixed vegetation	VC

Sl. No.	Family	Scientific name	Common name	Habitat	Status
28.		<i>Euthalia aconthea</i> (Cramer, 1777)	Common Baron	Grassland with mixed vegetation	VC
29.	Satyridae	<i>Melanitis leda</i> (Cramer, 1775)	Common Evening Brown	Grassland with mixed vegetation	C
30.		<i>Ypthima hubneri</i> Kirby, 1897	Common Four-ring	Grassland under shrubs	C
31.	Lycaenidae	<i>Rapala manea</i> Hewitson, 1863	Slate Flash	Moist evergreen and deciduous forests	C
32.		<i>Tarcus callinara</i> Butler, 1886	Spotted Pierrot	Grassland, Shrubs, Flower Garden	R
33.		<i>Zizina otis</i> (Fabricius, 1787)	Lesser Grass Blue	Grassland, River banks, Flower Garden	C
34.		<i>Zizula hylax</i> (Fabricius, 1775)	Tiny Grass Blue	Shadowed grassland and garden, Flowering vegetation	VC
35.		<i>Jamides celeno</i> (Cramer, 1775)	Common Cerulean	Forest edge, Mango orchard	UC
36.	Hesperiidae	<i>Parnara guttata mangala</i> ((Moore. 1865)	Straight Swift	Garden, Bushes, Cropland	C
37.		<i>Parnara bada</i> (Moore, 1878)	Grey swift	Moist forest	C
38.		<i>Polytremis eltola</i> (Hewitson, 1869)	Yellow-spot swift	Scrub forest	C
39.		<i>Udaspes folus</i> (Cramer, 1775)	Grass demon	Bushes at edge of forest	UC

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