

**BUTTERFLIES OF GIBBON WILD LIFE SANCTUARY, ASSAM:
A PRELIMINARY SURVEY**

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ABSTRACT

The present paper deals with 37 species of butterflies belonging to 21 genera were recorded in the Gibbon Wild Life Sanctuary, Assam. Of the ten families of butterflies known to occur in India seven families viz., Danaidae, Nymphalidae, Papilionidae, Satyridae, Lycaenidae, Pieridae, and Amathasiidae were recorded. Families Nymphalidae and Papilionidae had the largest number of species (11 each) while Satyridae, Lycaenidae, and Amathasiidae were represented by only one species each.. None of the species found in the study area are known to be threatened under any category of IUCN, 2003.

Key words: Gibbon Wild Life Sanctuary, butterflies, Biodiversity and survey.

Introduction

Gibbon Wild Life Sanctuary is located in Jorhat district of Assam between 26° 40' - 26° 45' North latitude and 94°20' -94°25' East longitude covers an area of 19.49 square kms of tropical semi evergreen forest on the flat plains of Brahmaputra River. The altitudinal range is between 100-120 M above sea level. Average temperature ranges from 27.9°C to 18.95°C and average humidity ranges between 64.5% and 94.5 %. Annual rainfall of the study site is 249cm. The Sanctuary is rich in floral composition and includes trees like *Dipterocarpus retusus*, *Terminalia myriocarpa*, *Michelia champaca*, *Canarium resiniferum*, *Castanopsis* sp and the area has diverse life forms and includes one of the most famous the only Indian ape, Hoolock Gibbon (*Hylobates* (Bunopithecus)

hoolock. The Gibbon Wild Life Sanctuary in Northeastern region of India has not been subjected to serious scientific studies and the status of available scientific information is meager. Since there is lack of information on insect fauna also, a study was initiated on inventorying the butterfly diversity of the Sanctuary.

Materials and Methods

Surveys were conducted during August 2003 and January 2004 to explore the butterfly fauna of the Gibbon Sanctuary. These two periods were selected considering the fact that August is a wet month while January is a dry month as far as rainfall is concerned. These two periods also correspond to high and low temperature regimes respectively. Sweep nets were used for collecting specimens (Gadagar, 1990). The butterflies were observed between 0700 hrs to 1300 hrs. Collected specimens were narcotized with menthol (Naphthalene) crystals and brought into the laboratory, air-dried for identification. All the specimens were examined carefully and identified specimens were labeled and preserved in insect boxes. A cotton wad immersed in preservative (Phenol, Naphthalene, and Para dichlorobenzene in equal ratio) was kept in the corner of the box to restrict ant and fungal attack. The specimens collected were identified using various publications of Talbot (1939, 1947) Wynter-Blyth (1957), and Gay *et al.*, (1992). All the scientific names follow Varshney (1979, 1985, 1990).

Results and discussion

During the course of the study, 37 species of butterflies belonging to 21 genera were recorded. Of the ten families of butterflies known to occur in India (Wynter-Blyth,

1957), seven families viz., Danaidae, Nymphalidae, Papilionidae, Satyridae, Lycaenidae, Pieridae, and Amathasiidae were recorded in the Sanctuary. Families Nymphalidae and Papilionidae had the largest number of species (11 each) (**Table 1**) while Satyridae, Lycaenidae, and Amathasiidae were represented by only one species each (**Table 2**).

Table 1
List of butterflies of Gibbon Wild Life Sanctuary

Common name	Scientific name	Family	Status	% frequency
The Common Tiger	<i>Danais plexippus</i> (Linnaeus)	Danaidae	VC	5.58
The Plain Tiger	<i>Danais chrysippus</i> (Linnaeus)	Danaidae	VC	5.82
The Glassy Tiger	<i>Danais aglea</i> (Cramer)	Danaidae	FC	1.43
The Common Indian Crow	<i>Euploea core</i> (Cramer)	Danaidae	VC	4.28
The Striped Blue Crow	<i>Euploea mulciber</i> (Cramer)	Danaidae	C	2.02
The Magpie Crow	<i>Euploea diocletiana</i> (Fabricius)	Danaidae	C	2.93
The Blue Tiger	<i>Danais limniace leopardus</i> (Butler)	Danaidae	VC	4.51
The Common Jay	<i>Graphium doson</i> (C&R Felder)	Papilionidae	C	3.44
The Yellow Helen	<i>Papilio chaon</i> Westwood	Papilionidae	NR	0.83
The Great Mormon	<i>Papilio memnon</i> (Linnaeus)	Papilionidae	NR	0.95
The Tailed Jay	<i>Graphium agamemnon</i> (Linnaeus)	Papilionidae	C	3.44
The Fivebar Swordtail	<i>Pathysa antiphates</i> (Cramer)	Papilionidae	C	3.33
The Great Windmill	<i>Tros dasarada</i> (Moore)	Papilionidae	NR	1.54
The Lime Butterfly	<i>Papilio demoleus</i> Linnaeus	Papilionidae	VC	5.58
The Spangle	<i>Papilio protenor</i> Cramer ^H	Papilionidae	NR	1.31
The Paris Peacock	<i>Papilio paris</i> Linnaeus	Papilionidae	NR	1.78
The Spotted Jay	<i>Graphium arycles</i> (Cramer)	Papilionidae	R	0.36
The Common Mime	<i>Chilasa clytia</i> (Linnaeus)	Papilionidae	NR	0.83
The Three-spot Grass Yellow	<i>Eurema blanda</i> (Boisduval)	Pieridae	C	2.49
The Common Grass Yellow	<i>Eurema hecabe</i> (Linnaeus)	Pieridae	VC	4.63
The Red-Based Jezebel	<i>Delias aglaia</i> (Linnaeus)	Pieridae	NR	0.59
The Common Emigrant	<i>Catopsilia crocale</i> (Cramer)	Pieridae	VC	4.16
The Lemon Emigrant	<i>Catopsilia pomona</i> Fabricius	Pieridae	VC	4.63
The Common Evening Brown	<i>Melanitis ledismena</i> Cramer	Satyridae	VC	5.11
The Staff Sergeant	<i>Pantoporia selenophora</i> (Kollar)	Nymphalidae	GS	0.59
The Backvein Sergeant	<i>Pantoporia ranga</i> (Moore)	Nymphalidae	R	0.24
The Grey Pansy	<i>Precis atlites</i> Linnaeus	Nymphalidae	C	2.97
The Large Yeoman	<i>Cirrhora aoris</i> Doubleday	Nymphalidae	C	3.21
The Tawny Rajah	<i>Charaxes polyxena hierax</i> (Cramer)	Nymphalidae	NR	0.83
The Black Rajah	<i>Charaxes fabius</i> (Fabricius)	Nymphalidae	NC	1.31
The Chocolate Pansy	<i>Precis iphita siccata</i> Stick	Nymphalidae	C	3.68
The Great Eggfly	<i>Hypolimnas bolina</i> (Linnaeus)	Nymphalidae	C	3.09
The Angled Castor	<i>Ergolis ariadne</i> (Johanssen)	Nymphalidae	C	3.44
The Pale Hockeystick Sailer	<i>Neptis manasa</i> Moore	Nymphalidae	VR	0.12
The Knight	<i>Lebedea martha</i> (Fabricius)	Nymphalidae	NR	0.48
The Pea Blue	<i>Lampides boeticus</i> (Linnaeus) ^{IWPA}	Lycaenidae	VC	4.99
The Common Duffer	<i>Discophora tullia</i> (Cramer)	Amathasiidae	C	3.68

VC - Very Common, FC - Fairly Common, C - Common, NR – Not Rare, R – Rare, VR – Very Rare, GS – Generally Scarce, NC – Not common (source: Wynter-Blyth, 1957),.

^H – Distribution restricted only to the Himalays, Hills of North-east India,

IWPA – Indian Wild Life (Protection) Act, 1972.

Table 2
Relative abundance of butterfly families in Gibbon Sanctuary

Families	No. of species	Relative abundance (%)	Relative density (%)
Danaidae	7	18.92	26.4
Papilionidae	11	29.73	23.4
Peridae	5	13.51	16.5
Nymphalidae	11	29.73	19.9
Satyridae	1	2.7	5.1
Lycaenidae	1	2.7	4.9
Amathasiidae	1	2.7	3.7

Relationship between the families was studied by cluster analysis using the software Statistica for Windows version 4.5F based on the number of species and abundance in each family. Satyridae, Lycaenidae, and Amathasiidae form a single group and fall within 1.6 Euclidean distances. Whereas Nymphalidae and Papilionidae form an another group of 2 Euclidean distances. Danaidae and Pieridae fall under 2.8 Euclidean distances and join with neighbouring group consists of Nymphalidae and Papilionidae. All the families fall under 8 Euclidean distances (**Fig 1 & Table 3**). Of the 37 species, one was found to have distribution restricted only to the Himalayas, hills of North-East India (marked in appendix against the scientific name as superscript ^H). Only one species belonging to Lycaenidae has been listed in schedules (part II) of the Indian Wild Life (Protection) Act, 1972 (marked in appendix against scientific names as IWPA). None of the species found in the study area are known to be threatened under any category of IUCN, 2003.

Fig.1

Dendrogram showing the relationship between families of butterfly with respect to species richness and relative density in Gibbon Sanctuary

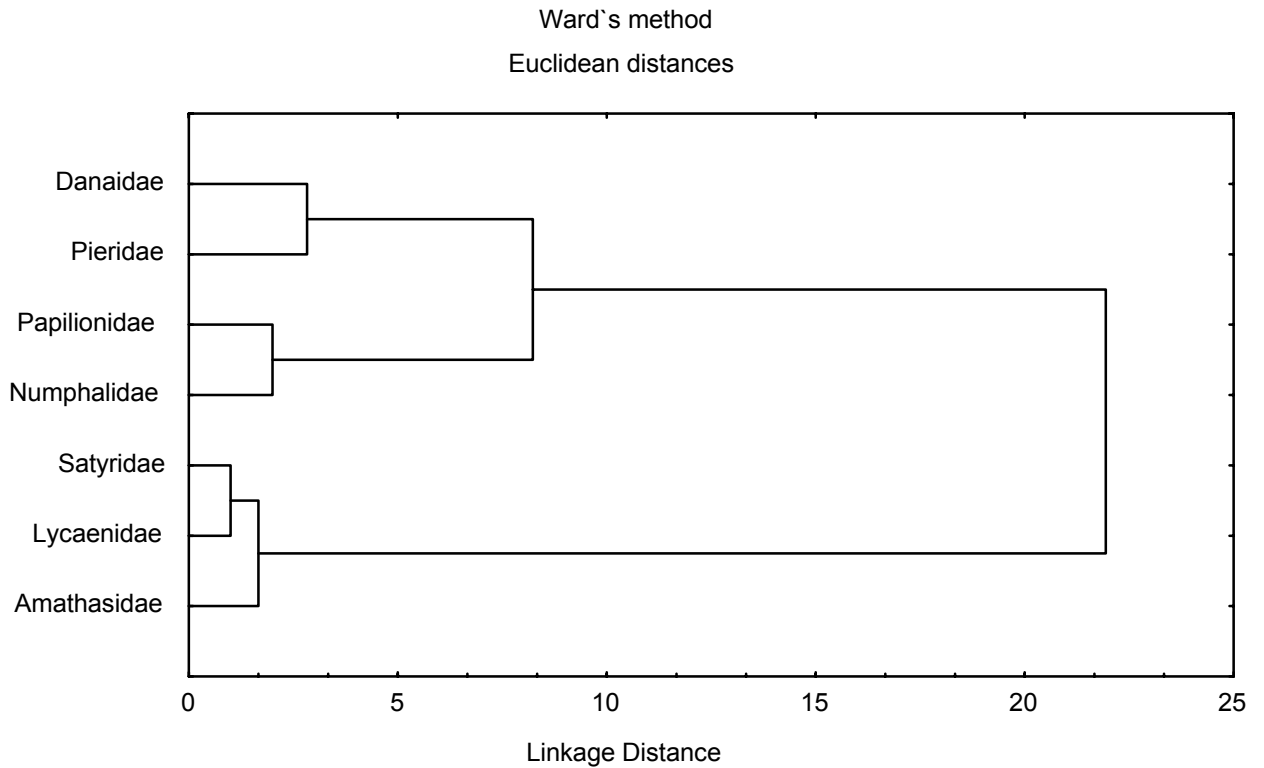


Table 3

Amalgamation Schedule for clustering of families in Gibbon Sanctuary

Amalgamation Schedule (cluster analysis)							
Ward's method							
Euclidean distances	1	2	3	4	5	6	7
1.000000	Satyridae	Lycaenidae					
1.666667	Satyridae	Lycaenidae	Amathasiidae				
2.000000	Papilionidae	Nymphalidae					
2.828427	Danaidae	Pieridae					
8.230103	Danaidae	Pieridae	Papilionidae	Nymphalidae			
21.94106	Danaidae	Pieridae	Papilionidae	Nymphalidae	Satyridae	Lycaenidae	Amathasiidae

Conclusion

Since there is lack of information on insect fauna of Gibbon Wild Life Sanctuary, a preliminary survey has been made on inventorying the butterfly diversity of the Sanctuary. A total of 37 species of butterflies belonging to 21 genera were recorded in the Gibbon Wild Life Sanctuary. It is common belief that natural ecosystems are characterized by a great diversity of plant and animal species (Van Embden and Dabrowski, 1994). Our studies on butterflies have again supported the fact that a heterogeneous habitat like Gibbon Wild Life sanctuary harboured greater number of butterfly species. Of the ten families of butterflies known to occur in India seven families viz., Danaidae, Nymphalidae, Papilionidae, Satyridae, Lycaenidae, Pieridae, and Amathasiidae were recorded in the preliminary survey, which indicating greater chances of encountering more species with further increase in effort (further surveys). Relationship between the families was also studied by cluster analysis based on species richness and abundance. Satyridae, Lycaenidae, and Amathasiidae form a single group, indicating these families are related with one another in relation to the number of species and their relative abundance. Nymphalidae, Papilionidae, Danaidae and Pieridae form another large group. The availability of host plant in the habitat is vital role for insect colonization. Habitat heterogeneity influences not only species presence, but also relative abundance (Kemp *et al.*, 1990). Our present analysis gives higher value of relative abundance indicating butterflies to be more diverse in Hollongapar reserve forests (Gibbon wild life sanctuary). Of the 37 species, The Spangle, *Papilio protenor* Cramer was found to have distribution restricted only to the Himalayas, hills of North-East India. The Pea Blue, *Lampides boeticus* (Linnaeus) belonging to Lycaenidae has

been listed in schedules (Part –II) of the Indian Wild Life (Protection) Act, 1972, indicating the lower eastern Himalayas especially Assam part needs for conservation in order to hold the unique, native butterfly species .

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