

Occurrence and Species Composition of Butterflies From Pa-daung Village, Shwebo Township, Sagaing Region

Tin Tin Nyunt¹, Khin Mya Mya², Thant Zin³

Abstract

The present study was conducted in Pa-daung Village, Shwebo Township, during the study period from June, 2017 to May, 2018. A total of 47 species and 1709 individuals of butterflies belonging to 35 genera and five families were recorded. Among five families recorded, Nymphalidae was predominant with 19 species (40.43%), followed by Pieridae with 11 species (23.40%), Hesperidae with seven species (14.89%), Lycaenidae with six species (12.77%) and Papilionidae with four species (8.51%). During the study period, the peak number of species and individuals was observed in October and the lowest was recorded in December and May. The present study indicated that the study area provides life supporting necessities such as host and nectar plants, ambient climatic conditions, and suitable habitat for the development and growth of butterflies.

Keywords: Butterfly, number of occurrence

Introduction

Insects are amongst the most fabulous creations of nature. Of the approximately 1.5 million known species of animals, plants and microbes on earth, over 800,000 are insects (Kunte, 2000).

Butterflies together with moths belong to the insect order, Lepidoptera. This is very large group of tremendous diversity and completely worldwide in distribution but more abundant in warmer countries (Abang, 2006).

Among insects, butterflies are an ideal subject for ecological studies of landscapes (Thomas and Malorie, 1985), and their value as indicators of biotope quality is being increasingly recognized because of their sensitivity to minor changes in micro-habitat, in particular, light levels (Kremen, 1992).

Butterflies show migratory behavior, which is strictly seasonal, and because some are confined to specific habitats, they reveal the enriched biodiversity of that region. Therefore, butterflies become ideal candidates for biodiversity studies (Pullin *et al.*, 1995).

Pa-daung Village is situated near the south-east of Shwebo. Various flowering plants, plantations, grassy lands, paddy fields and cultivated fields are present throughout the study area. Although, few studies have been conducted on butterfly fauna from Shwebo Township, little is known about the butterflies of other parts of Shwebo environs. Therefore, the present study has been undertaken to record and identify the butterfly species and to examine the occurrence and species composition in the study area.

Materials and Method

Study area

Pa-daung Village is situated at the south-east of Shwebo. It is located at Latitudes 22°30'23.03"N and Longitude 95°43'35.89"E and the elevation above sea level is 91 m. (Fig. 1).

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Fig. 1 A map of study area (Source: Google earth)

Study period

The study was conducted from June, 2017 to May, 2018.

Collection of the specimens

Butterfly censuses were conducted using the line transect methods (Pollard, 1977). Two transect lines each approximately 300 m in length were allocated in the study site. All butterflies within a 5 m to the left, right and in front of the observer were recorded and identified. If it is not easy to identify, an insect net was used to capture the butterflies for identification. Butterfly observation and collection was made twice per month, and conducted once in the morning from 9:00 am to 12:00 noon and once afternoon from 2:00 pm to 5:00 pm per day.

Identification of the specimens

Identification of the butterflies was made according to Bingham (1905-1907), Talbot (1939), Pinratana (1977-1983). Classification was followed after Corbet and Pendlebury (1992).

Data analysis

The recorded were analyzed for species composition during the following equation

$$\text{Species composition} = \frac{\text{No. of particular species}}{\text{Total number of species}} \times 100$$

Results

Occurrence and composition of butterfly species

A total of 47 species of butterflies belonging to 35 genera, five families were observed during the study period from June, 2017 to May, 2018 (Table 1).

During the study period, the totals number of 1709 individuals was observed and recorded. The most common species was that of *Appias libythea* with the highest number of 144 individuals, followed by *Ixias pyrene* with 116 individuals, whereas the lowest was that of *Pelopidas agna* and *P. conjuncta* with only two individuals. According to the data recorded, the highest number of 41 species amounting to 189 individuals was recorded in October. The lowest number of 22 species with 123 individuals was observed in December and 27 species with 114 individuals in May (Table 1).

Among the families recorded, the highest species composition was recorded from Nymphalidae with the highest number of 19 species (40.43%), followed by Pieridae (23.40%) with 11 species, Hesperidae (14.89%) with seven species, Lycaenidae (12.77%) with six species and Papilionidae (8.51%) with four species (Fig 2).

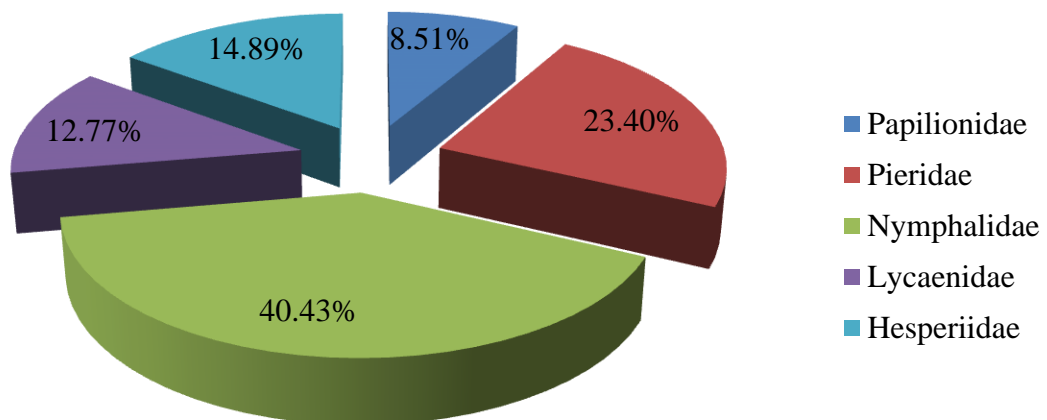


Fig. 2 Relative percentage of butterfly species in different families recorded during the study period (June 2017-May 2018)



1 cm

Pachliopta aristolochiae

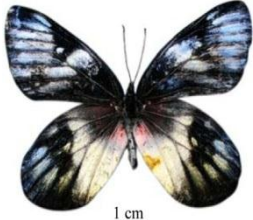
1 cm

Papilio demoleus

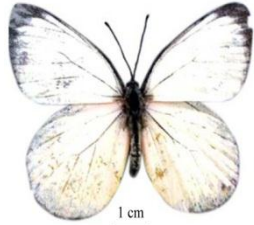
1 cm

Papilio polytes

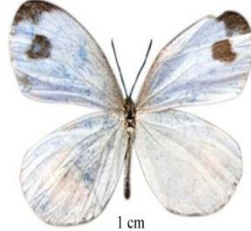
1 cm

Graphium agamemnon

1 cm

Delias pasithoe

1 cm

Delias descombesi

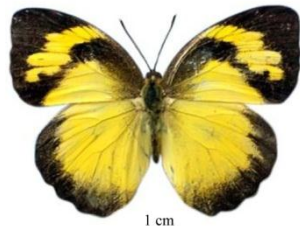
1 cm

Leptosia nina

1 cm

Cepora nerissa

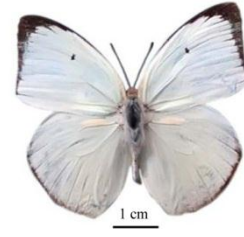
1 cm

Appias libythea

1 cm

Ixias pyrene

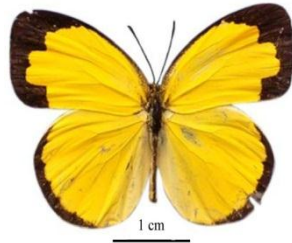
1 cm

Pareronia anais

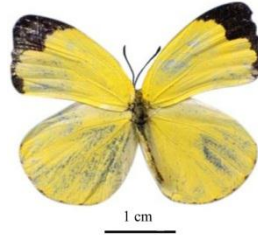
1 cm

Catopsilia pyranthe

1 cm

Catopsilia pomona

1 cm

Eurema hecabe

1 cm

Eurema blanda

1 cm

Danaus chrysippus

1 cm

Danaus genutia

1 cm

Tirumala limniace

1 cm

Euploea core

1 cm

Melanitis leda

1 cm

Elymnias hypermnestra

1 cm

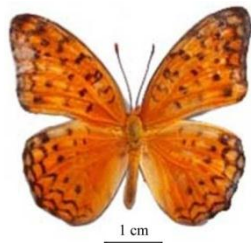
Mycalesis mineus

1 cm

Mycalesis perseus

1 cm

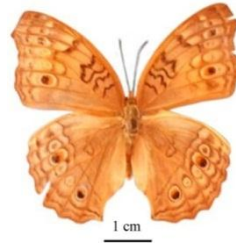
Acraea terpsicore



Phalanta phalantha



Cethosia cyane



Junonia atlites



Junonia almana



Junonia lemonias



Junonia orithya



Hypolimnna bolina



Hypolimnna misippus



Neptis hylas



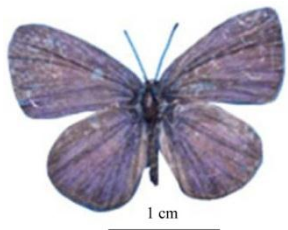
Pantoporia sandaka



Castalius rosimon



Tarucus callinara



Leptotes plinius



Chilades pandava



Euchrysops cnejus



Jamides bochus



Tagiades japetus



Ampittia dioscorides



Telicota colon



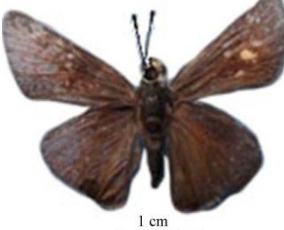
Parnara ganga



Pelopidas mathias



Pelopidas agna



Pelopidas conjuncta

Plate Butterfly species recorded from Pa-daung Village

Table 1 Monthly occurrence and composition percentage of butterfly species collected from Pa-daung Village (June, 2017- May, 2018)

Sr. No.	Family	Scientific name	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total no. of individuals	Total no. of individuals (%)
1	Papilionidae	<i>Pachliopta aristolochiae</i>	1	1	2	3	3	2	0	0	0	1	0	1	14	0.82
2		<i>Papilio demoleus</i>	6	7	10	8	5	7	10	9	4	7	5	5	83	4.86
3		<i>Papilio polytes</i>	1	2	3	3	5	3	5	2	3	5	1	2	35	2.05
4		<i>Graphium agamemnon</i>	0	0	0	1	2	1	0	1	3	1	0	0	9	0.53
5	Pieridae	<i>Delias pasithoe</i>	0	0	0	0	0	0	0	1	2	1	0	0	4	0.23
6		<i>Delias descombesi</i>	0	0	0	0	2	2	0	2	3	2	0	0	11	0.64
7		<i>Leptosia nina</i>	9	7	9	5	9	10	13	10	8	10	9	5	75	6.09
8		<i>Cepora nerissa</i>	11	6	7	12	5	3	1	0	2	3	8	5	63	3.69
9		<i>Appias libythea</i>	6	15	12	13	17	10	9	10	13	13	15	11	144	8.43
10		<i>Ixias pyrene</i>	7	12	9	10	11	7	9	9	5	9	15	13	116	6.79
11		<i>Pareronia anais</i>	0	0	0	2	5	3	6	4	12	7	3	1	43	2.52
12		<i>Catopsilia pyranthe</i>	6	7	9	12	5	2	0	2	1	3	2	3	52	3.04
13		<i>Catopsilia pomona</i>	9	12	11	15	7	7	5	0	2	6	12	10	96	5.62
14		<i>Eurema hecabe</i>	17	9	7	10	5	3	5	10	5	3	9	9	92	5.38
15		<i>Eurema blanda</i>	0	0	0	2	2	3	3	5	8	7	2	1	33	1.93
16	Nymphalidae	<i>Danaus chrysippus</i>	7	7	6	3	5	9	13	10	5	10	5	7	87	5.09
17		<i>Danaus genutia</i>	2	3	5	3	6	7	10	10	5	4	2	5	62	3.63
18		<i>Tirumala limniace</i>	5	7	6	9	5	12	9	2	3	3	1	3	65	3.80
19		<i>Euploea core</i>	0	2	3	3	5	2	0	1	0	0	0	0	16	0.94
20		<i>Melanitis leda</i>	13	5	3	2	7	3	4	0	0	2	1	2	42	2.46
21		<i>Elymnias hypermnestra</i>	0	0	0	0	2	1	0	0	3	2	2	0	10	0.58

Table 1 Continued

Sr. No.	Family	Scientific name	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total no. of individuals	Total no. of individuals (%)
22		<i>Mycalesis mineus</i>	5	1	1	2	2	0	0	0	0	1	0	2	14	0.82
23		<i>Mycalesis perseus</i>	2	0	1	1	2	0	2	1	0	1	0	0	10	0.58
24		<i>Acraea terpsicore</i>	1	2	3	1	2	0	0	0	0	0	3	3	15	0.88
25		<i>Phalanta phalantha</i>	7	12	2	0	0	0	0	0	0	0	0	0	21	1.23
26		<i>Cethosia cyane</i>	1	3	2	3	2	1	3	8	7	7	4	2	43	2.52
27		<i>Junonia atlites</i>	1	3	0	0	3	0	0	2	2	4	3	1	19	1.11
28		<i>Junonia almana</i>	4	7	5	5	3	3	1	0	3	6	4	5	46	2.69
29		<i>Junonia lemonias</i>	3	5	7	9	13	7	5	10	11	10	7	7	94	5.50
30		<i>Junonia orithya</i>	1	1	2	0	0	0	0	0	2	4	0	0	10	0.58
31		<i>Hypolimnna bolina</i>	2	5	3	3	5	0	0	0	1	2	0	0	21	1.23
32		<i>Hypolimnna misippus</i>	1	2	2	3	2	0	0	0	2	2	0	0	14	0.82
33		<i>Neptis hylas</i>	0	1	2	0	0	0	0	1	2	3	0	0	9	0.53
34		<i>Pantoporia sandaka</i>	0	0	0	0	0	0	0	0	2	2	0	0	4	0.23
35	Lycaenidae	<i>Castalius rosimon</i>	2	4	2	3	3	7	5	9	5	7	2	2	51	2.98
36		<i>Tarucus callinara</i>	0	0	0	0	2	1	1	0	0	0	0	0	4	0.23
37		<i>Leptotes plinius</i>	0	0	0	0	2	0	3	5	8	9	7	3	37	2.17
38		<i>Chilades pandava</i>	0	0	0	1	3	1	0	0	0	0	0	0	5	0.29
39		<i>Euchrysops cnejus</i>	7	5	2	3	7	1	0	10	7	5	3	2	52	3.04
40		<i>Jamides bochus</i>	0	0	0	0	0	1	0	2	1	0	0	0	4	0.23
41	Hesperiidae	<i>Tagiades japedus</i>	0	0	0	1	2	0	0	0	0	0	0	0	3	0.18
42		<i>Ampittia dioscorides</i>	0	1	3	3	6	2	0	0	0	1	0	0	16	0.94

Table 1 Continued

Sr. No.	Family	Scientific name	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total no. of individuals	Total no. of individuals (%)
43		<i>Telicota colon</i>	0	2	0	0	2	1	1	0	0	0	0	2	8	0.47
44		<i>Parnara ganga</i>	0	0	1	2	8	1	0	0	0	0	0	2	14	0.82
45		<i>Pelopidas mathias</i>	0	1	1	2	5	1	0	0	0	0	0	0	10	0.58
46		<i>Pelopidas agna</i>	0	0	0	0	1	1	0	0	0	0	0	0	2	0.12
47		<i>Pelopidas conjuncta</i>	0	0	1	0	1	0	0	0	0	0	0	0	2	0.12
		Total no. of individual	137	157	142	158	189	125	123	139	139	163	123	114	1709	100
		Total no. of species	27	31	32	33	41	33	22	26	31	35	23	27	47	

Discussion

In the present study, a total of 47 butterfly species belonging to 35 genera under five families were identified and recorded from Pa-daung Village during the study period from June, 2017 to May, 2018. The total number of butterflies recorded was 1709 individuals. In terms of species among the five families, the highest number of 19 species was recorded in family Nymphalidae, followed by 11 species of Pieridae, seven species of Hesperidae, six species of Lycaenidae and the lowest in Papilionidae with four species.

In family Papilionidae, *Papilio demoleus* represented as the most abundant species throughout the study period. This finding may be due to the host plant of *Citrus* plant species which were grown abundantly in the vicinity of the study area. Talbot (1939) mentioned that *P. demoleus* is commoner in the plains and in wooded country and hill, may be seen on the wing throughout the year.

According to Su Su Tun (2010), Thida Tun (2014), Naw Me Me Tun (2015), Ei Ei Ko (2015), Thida Win (2015), Hnin Hnin Wai (2015), Pa Pa Phy (2016), *P. demoleus* was recorded as the most abundant species in their study sites. *Graphium agamemnon* represented the least abundant species and this species had never been recorded by previous researchers of Shwebo environs (Htay Htay Soe, 2006; Pa Pa Phy, 2016).

In family Pieridae, *Appias libythea* was encountered as the most common species in the study area where various capers (Capparaceae) were abundantly grown throughout the year. Kunte (2000) stated *A. libythea* is a common species that is abundant and often dominant in terms of its population size at the right place and in the right seasons. Therefore the abundance of the butterfly species may be assumed that the study area is suitable habitat due to the abundance of their host plants. Hnin Hnin Wai (2015) and Khin Myat Kyu (2016) reported *A. libythea* as the predominant species in Magway environs and Minsu environs. Thus, these findings agreed with the result of the present study.

In the family Nymphalidae, the most dominant species was *Junonia lemonias* and occurred throughout the study period. Some of the herbs and shrubs of the study area serves as larval host plants and nectar plants for this species. Lu Awn (2013) recorded *J. lemonias* as the most dominant species in Myitkyina environs. Therefore, the result of present study agreed with Lu Awn (2013).

Among the species of Lycaenidae, the highest number of individuals was *Euchrysops cnejus* in the present study. According to Wynter-Blyth (1957), the blues are found in every sort of country. In the temperate and cold regions of the hills the majority is found in open meadow and grassland, but in the tropic and warmer parts of the country very many of them frequent trees and bushes. The larvae feed on leguminous plants more than any other order. This seems to be due to the abundance of bushes, shrubs and various leguminous plant species in this study area. Family Hesperidae, *Ampittia dioscorides* were recorded as the most dominant species during the study period. According to Kunte (2000), skippers inhabit woody areas, mostly deciduous and evergreen forests. Some are from open, grassy habitats. It may be due to the study area being enriched with grass species including paddy fields and shrubby vegetation at open areas.

When the monthly occurrence of butterflies was considered, the peak number of butterfly species was observed in the month of October and the lowest number of species was collected in December. During and after the rainy season, weather condition was not dry and hot, and a number of flora, including various kinds of flowering plants and vegetation were abundantly grown. It is assumed that the abundance of population was due to the favourable weather and the present of rich vegetation. Thus, Pa-daung Village with suitable habitat type for a large number of butterflies to thrive, need to be preserved for the sustainability of the butterfly species that enjoy the eco-friendly nature of the environment of Pa-daung Village.

Acknowledgements

We would like to express my profound indebtedness to Dr Thein Win, Director General, Department of Higher Education and Dr Kay Thi Tin, Dr Myin Zu Minn, Dr Mi Mi Gyi, Pr-Rectors, University of Mandalay for their encouragements to present their paper.

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