Species Composition of Some Butterflies From Parapat Village, Amarapura Township

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Abstract

A total of 15 species and 12 genera under three families were recorded during the study period between December 2014 and February 2015 at three study sites of Parapat Village in Amarapura Township. Butterflies species of three families Papilionidae, Pieridae and Nymphalidae have been recorded. Among these, the highest number of species and individual occurred in Nymphalidae and lowest number of species in Papilionidae. In all three study sites, that the number and individual occurrence of Site C was higher than the other sites has been recorded during study period. In this study, among the recorded species *Danaus chrysippus chrysippus* and *Junonia lemonias lemonias* were highest in number and the lowest number was recorded from *Junonia almana almana* at three study sites.

Key words: Composition, butterflies, Parapat Village, Amarapura Township

Introduction

Butterflies are members of the group of insects called Lepidoptera, which is Greek word meaning scaly wings. In the Lepidoptera the adult form is characterized by having two pairs of wings with scales on them. The scales are attached to the wing, but may be easily rubbed off when the butterflies are handled, leaving a clear membrane which looks like a thin sheet of transparent plastic with veins running through it. These scales are responsible for the color of the wings (Schreiner and Nafus, 1997).

The body and antennae of the butterflies are different from those of moths and skippers including in Lepidoptera. The butterflies usually have slender bodies and the antennae are threadlike structures on their heads having a pronounced club shaped on the ends. Another difference is, that the moths fly at dusk or night, while butterflies and skippers are usually day flyers although a few species fly at dawn or dusk (Schreiner and Nafus, 1997).

Butterflies are found throughout the world and in all types of environments hot and cold, dry and moist at sea level and mountains. Abundance of butterfly species in a place indicates healthy environment. Butterflies, like plants and other animals need sun to keep their bodies warm in order to fly and visit one flowering plant after another to gather their food source. Climatic conditions that affects the activities of the butterfly species. Butterflies are associated with warm, sunny days when they fly purposefully, visiting flowers pursuing mates and sparing with in truder (Willians, 2009).

Corbet and Pendlebury, (1992) in the world, these are approximately 170,000 known species of Lepidoptera about one tenth of these are butterflies and the rest are moths. Myanmar butterflies were studied by Bingham (1905, 1907), Talbot (1939) recorded 1014 species of Myanmar butterflies in this Fauna of British India Including

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Ceylon and Burma and Kinyon (2004) described over, 1,400 species exist in Myanmar.

Butterfly and plant coexist in Myanmar (Kinyon, 2004). Benefiting plants in the process of pollination and on the other hand, the plant serves as food or host plant for the larva to undergo the life cycle for butterfly. The abundance of butterfly species in an environment indicates the rich flora in this area (Gooden, 1975).

Although quite a number of researches on butterflies had been done intensively. However, there are still some areas, which have not been surveyed yet. Therefore, the present study has undertaken with the following objectives. To record and identify the butterflies species, to investigate species occurrence and composition of some butterflies species from three study sites at Amarapura Township.

Materials and Methods

Study area

The specimens were collected from three study sites : Rose plantation (Site A), Bean Plantation (site B) and Corn Plantation (Site C) at Parapat Village in Amarapura Township. This study site is located between 21°53' 12.74" N and 96°01' 53.32" E (Fig 1).

Study period

The study period extends from December 2014 to February 2015.

Collection of Specimens

The collection was made during the day between 8:00 am and 16:00 pm. All specimens were randomly captured by using butterfly net in the selected study site.

Spreading of Specimens

Before identification of the butterfly specimens the rigid specimens in the envelope were first relaxed in the relaxing box. They were kept for 24 to 48 hours depending upon the size of the specimens. When the specimens got properly softened they were first pinned through the middle of mesothorax and transferred into the grooved of a setting board. Then the wings were spread out with the aid of a setting needle and secured with paper strips. All specimens were placed in the collecting box scented with creosote. Then the measurements of fore wings and hind wings were taken by using a ruler.

Data Analyzing of Specimens

The data were calculated using the following formula (Thrusfield,1995).

Total average percentage of Lepidoptera was calculated by dividing the total number of each study site of specimens by the total number of all study sites of specimens into 100.

The occurrence rate was calculated by the total number of specific species by the total number of all examined Lepidoptera species in 100.

The composition data were analyzed by Bisht, 2004.

Identification of the Specimens

Identification of the recorded species, based on the natural colour and markings of the specimens were followed after Bingham (1905-1907), Talbot (1939) and Pinratana (1977-1988).

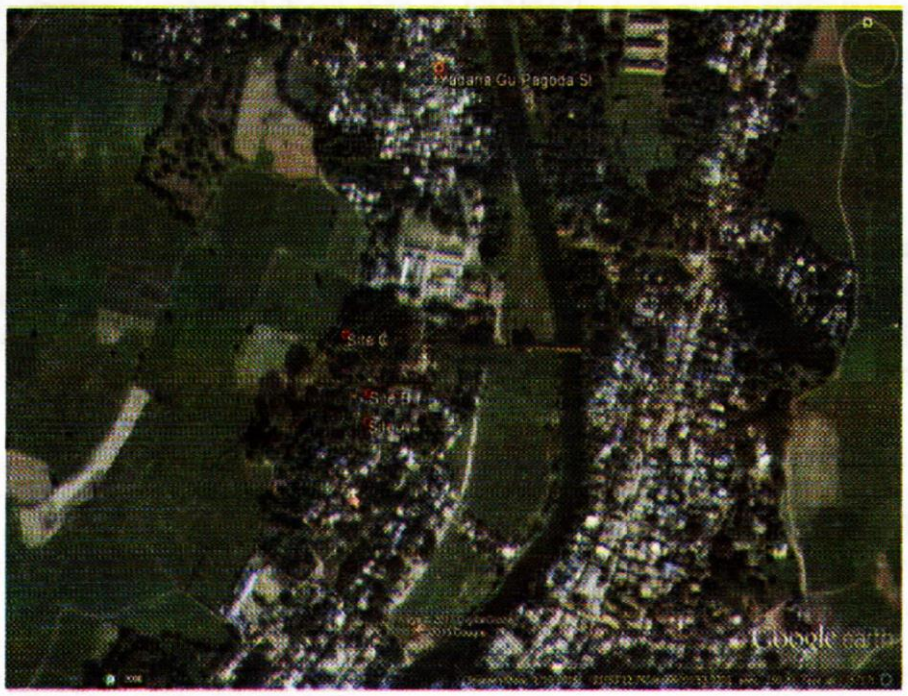

Figure 1 Map of Parapat Village in Amarapura Township (Source from Google Earth)

Results

The study period of present work lasted 3 months. A total of 15 butterfly species into 12 genera and three families were recorded and identified.

Species Occurrence and Composition of Recorded Butterfly Species from Parapat Village in Amarapura Township

Butterflies collected at Parapat Village in Amarapura Township between December 2014 and February 2015, were recorded under three families; Papilionidae, Pieridae and Nymphalidae. A total of 15 species including 14 subspecies under 12 genera were collected during the study period.

Three species of Papilionidae : *Pachliopta aristolochiae goniopeltis, Papilio demoleus malayanus* and *Papilio polytes romulus.* Four species of Pieridae: *Appias libythea alferna, Ixias pyrene verna, Pareronia valeria lutescens* and *Eurema hecabe contubernalis.* Eight species of Nymphalidae: *Danaus chrysippus chrysippus, Danaus genutia genutia, Tirumala limniace limniace, Acraea violae, Ariadne ariadne pallidior, Junonia almana almana, Junonia lemonias lemonias* and *Hypolimnas bolina bolina.*

A total number of individuals from three study sites amounted to 132. Composition of butterfly species at Parapat Village in Amarapura Township where Rose Plantation, Site (A), Papilionidae n = 10 (43.48%) where as Pieridae n = 10 (33.33%) and Nymphalidae n = 20 (25.32%) were found. Bean Plantation, Site (B) Papilionidae n = 7 (30.43 %), Pieridae n = 9 (30.00%) and Nymphalidae n = 24 (30.38%) were found while Corn Plantation, Site (C), Papilionidae n = 6 (26.89 %), Pieridae n = 11 (36.67%) and Nymphalidae n = 35 (44.30%) were recorded during the study period (Table 1).

Under three study areas n = 40 (30.30%) from Rose Plantation, Site (A), n = 40 (30.30%) from Bean Plantation, Site (B) and n = 52 (39.39%) from Corn Plantation Site (C) were observed in this study, (Table 1).

Table 1 Percentage of recorded families from three study sites at Parapat Village in Amarapura Township

No.	Family	Site (A) Rose Plantation	Site (B) Bean Plantation	Site (C) Corn Plantation	Total occurrence percentage
1.	Papilionidae	43.48 %	30.43 %	26.89 %	17.42 %
2.	Pieridae	33.33 %	30.00 %	36.67 %	22.73 %
3.	Nymphalidae	25.32 %	30.38 %	44.30 %	59. 85%
Total Percentage from the sites		30.30 %	30.30 %	39.39 %	

Table 2 Monthly occurrence and abundance of butterfly species from Parapat Village in Amarapura Township during December 2014 to February 2015

No	Scientific Name	Total number of individual												Species Total	Relative abundance	Average relative abundance
		Rose Plantation Site (A)				Bean Plantation Site (B)				Corn Plantation Site (C)						
		Dec	Jan	Feb	Total	Dec	Jan	Feb	Total	Dec	Jan	Feb	Total			
1	*Pachliopta aristolochiae goniopeltis*	2	0	0	2	1	0	1	2	0	0	0	0	4	0.0303	C
2	*Papilio demoleus malayanus*	2	2	1	5	3	0	0	3	1	0	1	2	10	0.0758	VC
3	*Papilio polytes romulus*	1	1	1	3	0	1	1	2	4	0	0	4	9	0.0682	VC
4	*Appias libythea alferna*	2	0	1	3	1	0	0	1	0	0	0	0	4	0.0303	C
5	*Ixias pyrene verna*	0	0	1	1	0	0	1	1	1	1	0	2	4	0.0303	C
6	*Pareronia valeria lutescens*	2	3	0	5	2	2	1	5	0	0	0	0	10	0.0758	VC
7	*Eurema hecabe contubernalis*	0	0	1	1	1	0	1	2	6	1	2	9	12	0.0909	VC
8	*Danaus chrysippus chrysippus*	0	1	3	4	0	2	2	4	2	3	3	8	16	0.1212	VC
9	*Danaus genutia genutia*	2	2	1	5	1	1	2	4	3	2	1	6	15	0.1136	VC
10	*Tirumala limniace limniace*	1	1	1	3	3	2	0	5	1	0	0	1	9	0.0682	VC
11	*Acraea violae*	0	0	0	0	0	1	1	2	0	1	1	2	4	0.0303	C
12	*Ariadne ariadne pallidior*	0	0	0	0	2	0	0	2	4	3	2	9	11	0.0833	VC
13	*Junonia almana almana*	0	0	0	0	0	0	0	0	1	0	0	1	1	0.0076	UC
14	*Junonia lemonias lemonias*	0	2	1	3	4	0	1	5	5	1	2	8	16	0.1212	VC
15	*Hypolimnas bolina bolina*	2	1	2	5	0	1	1	2	0	0	0	0	7	0.0530	VC
Total of species		14	13	13	40	18	10	12	40	28	12	12	52	132		

C = Common, UC = Uncommon , VC = Very common

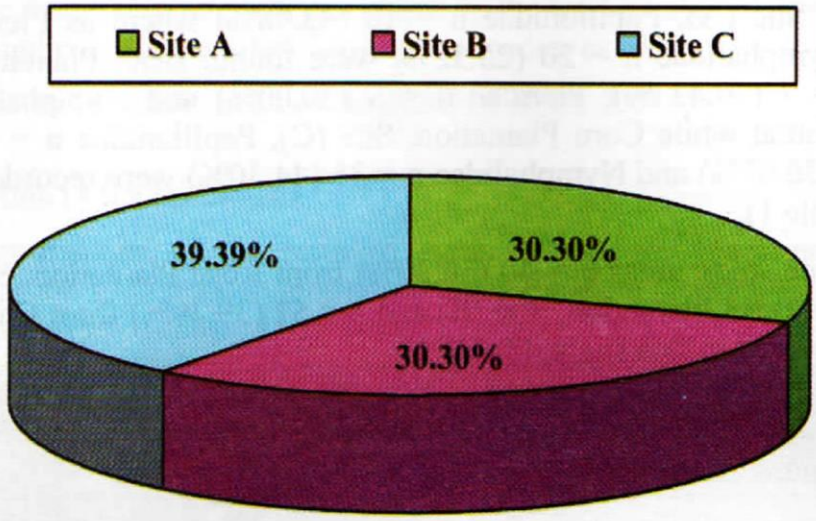

Figure 2 Occurrence percentage of butterfly species at three study sites (A, B, C)

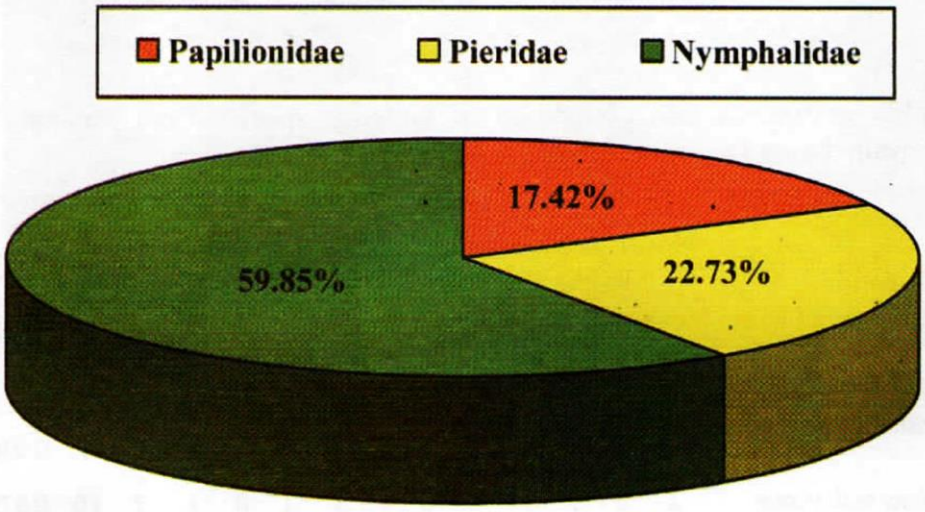

Figure 3 Occurrence percentage of butterfly family at three study sites

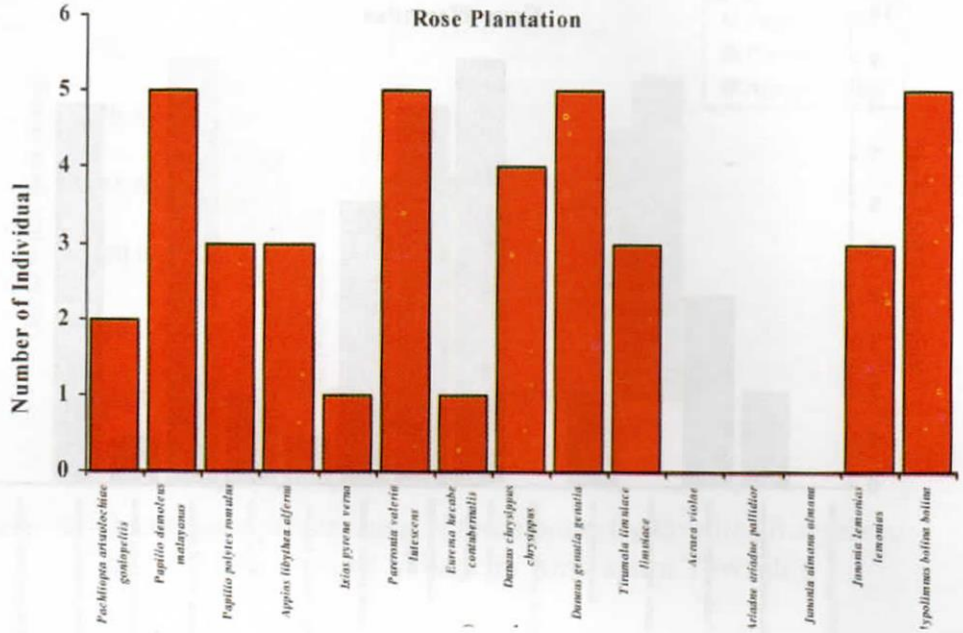

Figure 4 Total number of butterfly species from Rose Plantation Site (A)

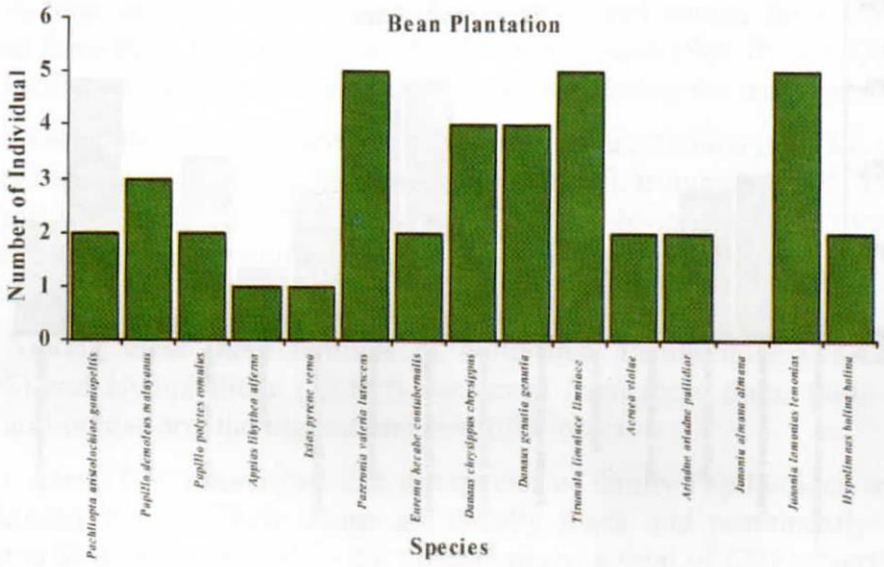

Figure 5 Total number of butterfly species from Bean Plantation Site (B)

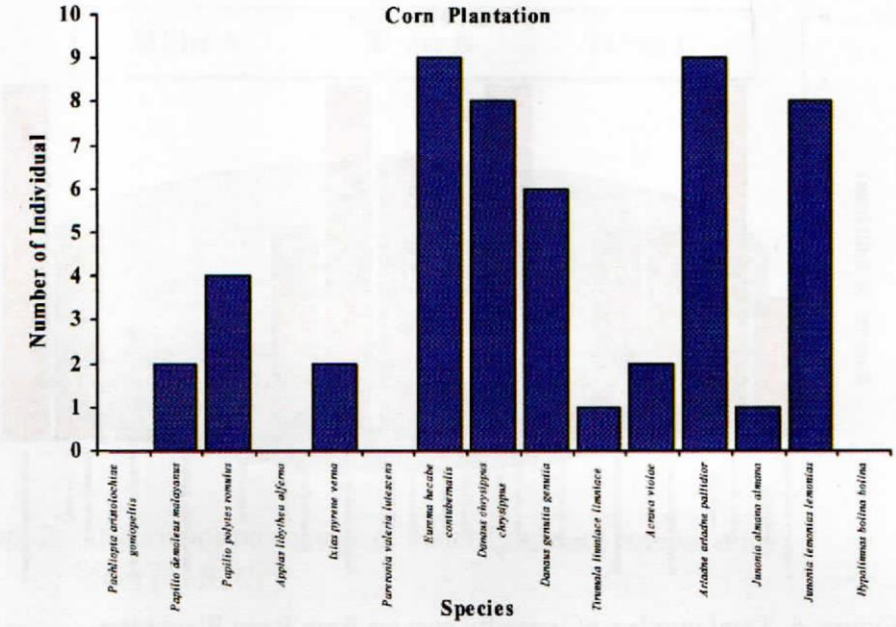

Figure 6 Total number of butterfly species from Corn Plantation Site (C)

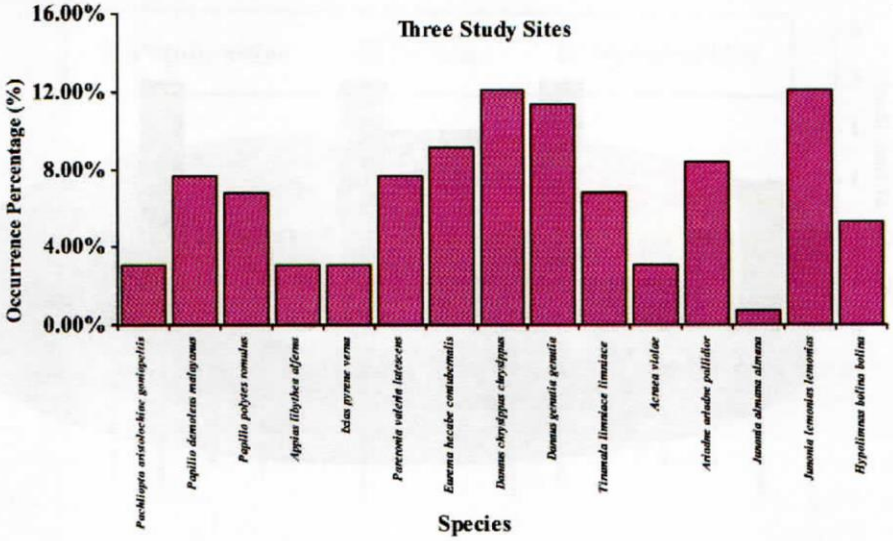

Figure 7 Individual occurrence percentage of butterfly species from three study sites

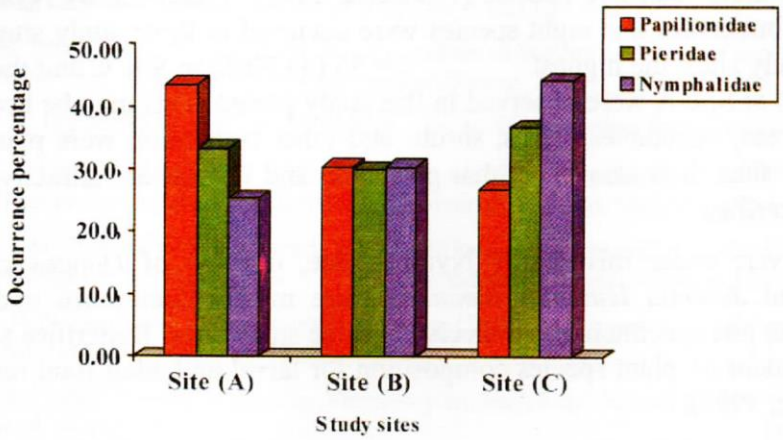

Figure 8 Occurrence percentages of three butterfly families from three study sites at Parapat Village in Amarapura Township

Discussion

A total of (132) butterflies were collected and among these 15 species were identified from Rose plantation (Site A), Bean plantation (Site B) and Corn plantation (Site C) at Parapat Village in Amarapura Township during the study period.

Corbet (1992) mentioned that the butterflies are divided into two superfamilies. Papilionoidea (butterflies) and Herperioidea (skipper). Bingham (1905; 1907) recorded five families such as Papilionidae, Pieridae, Nymphalidae, Lycaenidae and Hesperiidae. In present study, three family Papilionidae, Pieridae and Nymphalidae were recorded.

Among these three families of butterflies, Papilionidae (17.42%), Pieridae (22.73%) and Nymphalidae (59.85%) occurred from these three study sites. In this study Papilionidae are the biggest and beautiful insect.

Corbet (1992) described that the species of family Papilionidae are the biggest and beautiful insects. Their wings are usually black and prominently marked with white or with a bright colour. In the present study, a total of (23) butterflies and three species of family Papilionidae were occurred in three study sites. Among these three sites, the highest n = 10 (43.48%) at Site A and lowest n = 6 (26.89%) in Site C were observed in the study period.

Under the family Papilionidae, *Pachliopta aristolochiae goniopeltis* occurred in Site A and Site B. This species was not occurred in Site C in during the study period. Moreover, the number of butterfly species of family Papilionidae was less than the other families. Because this species are swift and powerful flies so that they may be difficult to be caught.

According to Talbot (1939), total of 1014 species of butterflies, 55 species under family Pieridae were recorded in Myanmar. In the present study, the total of (30) butterflies and four species of family Pieridae were occurred in three study sites. Among these three sites, the highest n = 11 (36.67 %) at Site C and lowest n = 9 (30.00 %) in Site B were observed in the study period. All these pierid butterflies were found in all three sites. These structures seem to suit for migrating habit.

In family Nymphalidae, is medium sized to large butterflies. They are now classified into more than 500 species (Pinratana, 1977). Under family Nymphalidae, the total (79) butterflies and eight species were occurred in three study sites. Among these three study sites, the highest n = 35 (44.30%) in Site C and the lowest n = 20 (25.32%) at Site A were observed in this study period. This may be because Site C has more trees, vegetables, herbs, shrubs and other cultivation were planted more than the other sites. It is also likely that plantation and flowers are attractive to more species of butterflies.

Moreover, under this family Nymphalidae, n = 16 of *Danaus chrysippus chrysippus* and *Junonia lemonias lemonias* were mostly occurrence and *Junonia almana almana* one specimen was collected in three study sites. Butterflies species are directly dependent on plant species composition for larval and adult food resources in an area (Kunte, 1997).

When the study in three study sites, a total number of (132) butterflies were recorded. Among these family Nymphalidae n = 79 (59.85%) were most dominant followed by family Pieridae n = 30 (22.73%) and Papilionidae n = 23 (17.42%) respectively. Butterflies are good biological indicators of habitat quality as well as general environmental health (Larsen, 1988; Kocher and Williams 2000; Sawchike *et. al.*, 2005).

The abundance of butterfly species in an environment indicates the rich flora in this area (Gooden, 1975). So, Parapat Village in Amarapura Township could be considered as environment good health and rich butterfly diversity. Therefore, it was concluded that long term monitoring is needed for more accurate information. Furthermore, additional work on the relationship of butterflies and host plant should also be carried out.

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