

Seasonal Abundance of Some Butterfly Species in Hinthada University Campus

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Abstract

Monthly and seasonal abundance of butterfly species were studied from Hinthada University Campus of Hinthada township, Ayeyawady Region. Study period lasted from June 2021 to May 2022. A total of 17 butterfly species belonging to 15 genera of three families were recorded. The butterfly species were caught throughout the year round in the study period. Total catch number of butterfly species were 1668 individuals. In this number, *Eurema hecabe* was the most abundant and *Cethosia cyane* was the least. The total catch number of butterfly was highest in September, lowest in April and not recorded in some months. Rainy season (June-September) was the most abundant (714 individuals), and followed by cool season (October-January) (634 individuals) and hot season (February-May) (320 individuals) were least abundant.

Keywords: catch number, seasonal abundance.

Introduction

Lepidoptera is an order of insects that includes butterflies and moths. There are about 250,000 species of the Lepidoptera. In other words, Lepidoptera is one of the most widespread and widely recognizable insect orders in the world (Paddy Pacey, 2023). Butterflies are found all over the world such as deserts, forests, seashores, high mountains, tropics and snowy places (Corbet and Pendlebury, 1992). Talbot (1939) was able to record 1,014 species of Myanmar butterflies.

Most species of butterflies are active flying around flowering around flowering plants as soon as the sun warms up the environments. They usually rest among shady plants during the hotter part of the day (Talbot, 1939). Most of the butterflies are fascinating because of the attractive colour and movement. Pollination is one of the important beneficial functions of butterfly species especially to the horticulture. Since all stages of butterflies serve as food for insectivorous predators and the adults for pollination, the butterfly species were listed to a priority for conservation (Kunte, 2000).

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, Climate conditions affects the activities of the butterfly species (Willians, 2009).

Butterflies are associated with warm, sunny days when they purposefully, visiting

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flowers pursuing mates and sparring with in trader (Willians, 2009). The present research was conducted to study the seasonal abundance of the butterfly species within Hinthada University Campus. The objectives of this study were

- to identify the butterfly species
- to compare the seasonal abundance of butterfly species

Materials and Methods

Study area

The present study was carried out in Hinthada University Campus, Hinthada Township. It is located at North Latitude $17^{\circ}38'30''$ and East Longitude $95^{\circ}26'10''$ (Fig.1).

Study period

Study period lasted from June 2021 to May 2022.

Specimens collection

The specimens were collected by using insect net from study sites during daytime because butterflies are diurnal. The specimen collection was carried out monthly in the study site. The collected specimens were taken photographs with Vivo phone kept in the plastic containers for identification (Plate 1).

Identification and classification

The specimens were identified according to Borror and Delong (1957), Talbot (1939), Corbet and Pentlebury (1992), Kunte (2000) and Kinyon (2004).

Data analysis

Monthly changes and seasonal abundance of the population of each species were calculated and compared. The seasons were designated as rainy season (June-September), cool season (October-January) and hot season (February-May).



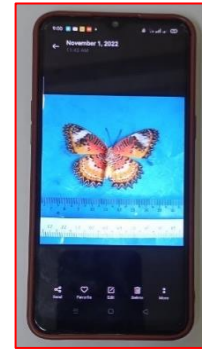
Figure 1. Location Map of the study area (Base map - Setellite Image)



A. Insect net



B. Plastic containers



C. Vivo V 21

Plate1. Materials utilized in the study

Results

A total of 17 butterfly species belonging to 15 genera of three families were recorded from the Hinthada University Campus of Hinthada Township. The recorded butterfly species were *Cethosia cyane*, *Danaus chrysippus*, *Danaus genutia*, *Elymnias hypermnestra*, *Junonia almana*, *Junonia atlites*, *Neptis hylas*, *Tirumala hamata*, *Ypthima huebneri*, *Graphium doson*, *Aphrissa statira*, *Appias libythea*, *Catopsilia pomona*, *Eurema hecabe*, *Hebomoia glaucippe*, *Ixias pyrene* and *Leptosia nina* (Plate 2).

Systematic position of the recorded butterfly species

Sr. No	Phylum	Class	Order	Family	Genus	Species
1	Arthropoda	Insecta	Lepidoptera	Nymphalidae	<i>Cethosia</i>	<i>C.cyane</i> (Drury, 1773)
2					<i>Danaus</i>	<i>D.chrysippus</i> (Linnaeus, 1758)
3						<i>D.genutia</i> (Cramer, 1779)
4					<i>Elymnias</i>	<i>E.hypermnestra</i> (Linnaeus, 1763)
5					<i>Junonia</i>	<i>J.almana</i> (Linnaeus, 1758)
6						<i>J.atlites</i> (Linnaeus, 1763)
7					<i>Neptis</i>	<i>N.hylas</i> (Linnaeus, 1758)
8					<i>Tirumala</i>	<i>T.hamata</i> (Macleay, 1826)
9					<i>Ypthima</i>	<i>Y.huebneri</i> Kirby, 1871
10				Papilionidae	<i>Graphium</i>	<i>G.doson</i> C.&R.Felder, 1864
11				Pieridae	<i>Aphrissa</i>	<i>A.statira</i> Cramer, 1777
12					<i>Appias</i>	<i>A.libythea</i> Fabricius, 1775
13					<i>Catopsilia</i>	<i>C.pomona</i> (Fabricius, 1775)
14					<i>Eurema</i>	<i>E.hecabe</i> (Linnaeus, 1758)
15					<i>Hebomoia</i>	<i>H.glaucippe</i> (Linnaeus, 1758)
16					<i>Ixias</i>	<i>I.pyrene</i> Linnaeus, 1764
17					<i>Leptosia</i>	<i>L.nina</i> (Fabricius, 1793)
Total				3	15	17

Monthly abundance of butterfly species in catch number of Hinthada University Campu

A total catch number (1668 individuals) of 17 butterfly species were recorded from the Hinthada University Campus throughout the study period. The recorded catch number of *Eurema hecabe* (222 individuals) was the most abundant and followed by *Leptosia nina* (219 individuals), *Catopsilia pomona* (142 individuals), *Junonia atlites* (122 individuals), *Aphrissa statira* (120 individuals), *Danaus chrysippus* (117 individuals) and *Ixias pyrene* (110 individuals), *Ypthima huebneri* (98 individuals), *Danaus genutia* (92 individuals), *Neptis hylas* (84 individuals), *Elymnias hypermnestra* (83 individuals), *Junonia almana* (72 individuals), *Hebomoia glaucippe* (69 individuals), *Appias libythea* (63 individuals), *Graphium doson* (31

individuals), *Tirumala hamata* (13 individuals), while the least abundant was *Cethosia cyane* (11 individuals).

In the total recorded catch number of butterflies, *Danaus chrysippus*, *Danaus genutia*, *Elymnias hypermnestra*, *Junonia atlites*, *Aphrissa statira*, *Catopsilia pomona*, *Eurema hecabe*, *Ixias pyrene* and *Leptosia nina* were found throughout the year. *Junonia almana*, *Neptis hylas*, *Tirumala hamata*, *Ypthima huebneri*, *Graphium doson*, *Appias libythea* and *Hebomoia glaucippe* were not recorded in April and *Cethosia cyane* was not found in March (Table 1 and Figure 2).

Table 1. Monthly recorded catch number of butterfly species in Hinthada University Campus

Sr. No.	Species	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Total
1	<i>Cethosia cyane</i>	1	2	1	2	1	1	1	0	0	0	1	1	11
2	<i>Danaus chrysippus</i>	17	13	15	18	14	9	6	7	5	4	3	6	117
3	<i>Danaus genutia</i>	10	6	5	4	5	6	5	13	15	8	10	5	92
4	<i>Elymnias hypermnestra</i>	6	5	6	5	8	7	8	15	10	7	4	2	83
5	<i>Junonia almana</i>	10	12	8	12	8	6	5	1	3	2	0	5	72
6	<i>Junonia atlites</i>	10	8	10	9	8	10	9	15	13	14	7	9	122
7	<i>Neptis hylas</i>	10	7	11	15	9	12	8	5	3	2	0	2	84
8	<i>Tirumala hamata</i>	1	1	1	2	1	3	1	1	1	0	0	1	13
9	<i>Ypthima huebneri</i>	13	10	17	10	12	7	9	8	6	4	0	2	98
10	<i>Graphium doson</i>	3	2	3	5	6	3	3	2	2	0	0	2	31
11	<i>Aphrissa statira</i>	11	9	10	20	12	17	13	10	8	6	2	2	120
12	<i>Appias libythea</i>	5	4	6	7	5	7	6	10	7	3	0	3	63
13	<i>Catopsilia pomona</i>	15	20	15	25	18	15	12	8	5	5	2	2	142
14	<i>Eurema hecabe</i>	21	18	23	25	23	25	23	14	15	17	10	8	222
15	<i>Hebomoia glaucippe</i>	6	5	7	12	8	10	9	6	4	2	0	0	69
16	<i>Ixias pyrene</i>	12	10	15	17	8	10	7	9	9	6	4	3	110
17	<i>Leptosia nina</i>	25	25	20	20	25	23	25	18	14	10	9	5	219
Total number of individuals		176	157	173	208	171	171	150	142	120	90	52	58	1668

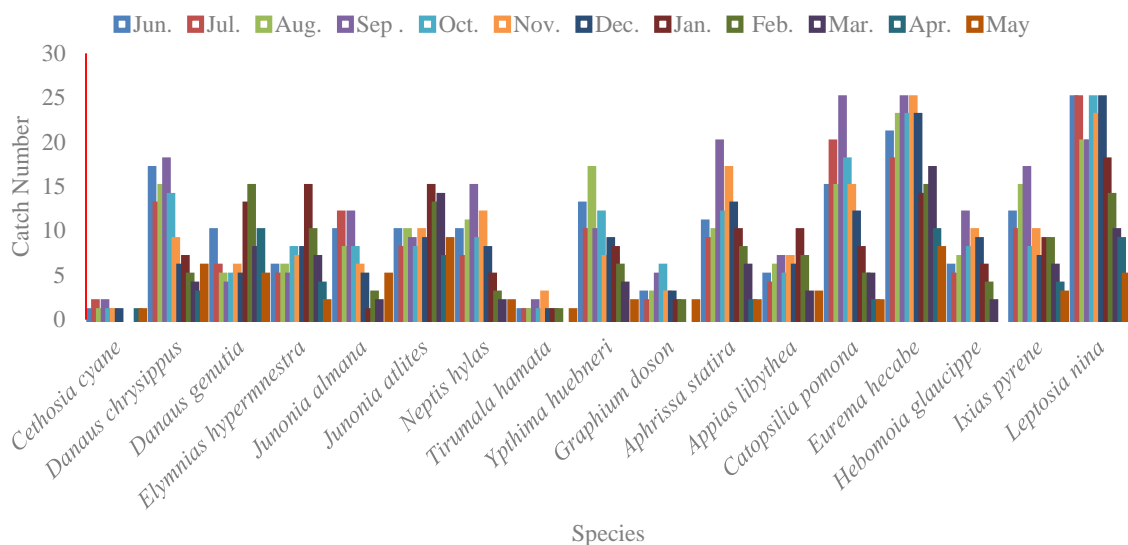


Figure 2. Monthly recorded catch number of butterfly species in Hinthada University Campus

Table 2. Seasonal recorded catch number of butterfly species in Hinthada University Campus

Sr. No.	Species	Rainy Season	Cool Season	Hot Season	Total
1	<i>Cethosia cyane</i>	6	3	2	11
2	<i>Danaus chrysippus</i>	63	36	18	117
3	<i>Danaus genutia</i>	25	29	38	92
4	<i>Elymnias hypermnestra</i>	22	38	23	83
5	<i>Junonia almana</i>	42	20	10	72
6	<i>Junonia atlites</i>	37	42	43	122
7	<i>Neptis hylas</i>	43	34	7	84
8	<i>Tirumala hamata</i>	5	6	2	13
9	<i>Ypthima huebneri</i>	50	36	12	98
10	<i>Graphium doson</i>	13	14	4	31
11	<i>Aphrissa statira</i>	50	52	18	120
12	<i>Appias libythea</i>	22	28	13	63
13	<i>Catopsilia pomona</i>	75	53	14	142
14	<i>Eurema hecabe</i>	87	85	50	222
15	<i>Hebomoia glaucippe</i>	30	33	6	69
16	<i>Ixias pyrene</i>	54	34	22	110
17	<i>Leptosia nina</i>	90	91	38	219
Total number of individuals		714	634	320	1668

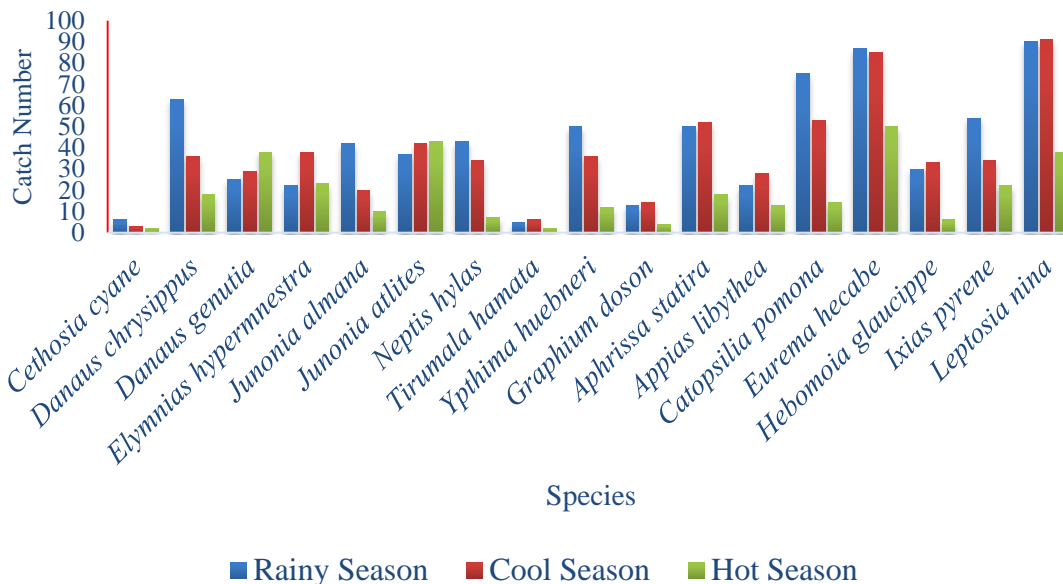


Figure 3. Seasonal recorded catch number of butterfly species in Hinthada University Campus



(Upperside)



(Underside)

A. Cethosia cyane



(Upperside)



(Underside)

B. Danaus chrysippus



(Upperside)



(Underside)

C. Danaus genutia



(Upperside)



(Underside)

D. Elymnias hypermnestra



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E. Junonia almana



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F. Junonia atlites

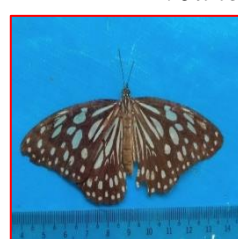


(Upperside)



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G. Neptis hylas



(Upperside)



(Underside)

H. Tirumala hamata



(Upperside)



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I. Ypthima huebneri



(Upperside)



(Underside)

J. Graphium doson



(Upperside)



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K. Aprissa statira



(Upperside)



(Underside)

L. Appias libythea

Plate 2 Continued-



(Upperside)



(Underside)

M. Catopsilia pomona

(Upperside)



(Underside)

N. Eurema hecabe

(Upperside)



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O. Hebomoia glaucippe

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P. Ixias pyrene

(Upperside)



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Q. Leptosia nina

Plate 2. Recorded butterfly from Hinthada University Campus

Seasonal abundance of catch number of butterfly species from Hinthada University Campus

In the total catch number (1668 individuals) of recorded butterfly species, the rainy season (714 individuals) was the most abundant and followed by cool season (634 individuals) and hot season (320 individuals). In rainy season, *Leptosia nina* (90 individuals) was the most abundant in 17 species of butterfly and *Tirumala hamata* (5 individuals) was the least abundant. In cool season, *Leptosia nina* (91 individuals), was the most abundant and *Cethosia cyane* (3 individuals) was the least abundant. In hot season, *Eurema hecabe* (50 individuals) was the most abundant and *Cethosia cyane* and *Tirumala hamata* (2 individuals each) was the least abundant throughout the study period (Table 2 and Fig.3).

Discussion

The present study was conducted in the Hinthada University Campus of Hinthada Township. A total of 17 species of butterfly belonging to 15 genera under three families were recorded from the Hinthada University Campus. The recorded butterfly species were *Cethosia cyane*, *Danaus chrysippus*, *Danaus genutia*, *Elymnias hypermnestra*, *Junonia almana*, *Junonia atlites*, *Neptis hylas*, *Tirumala hamata*, *Ypthima huebneri*, *Graphium doson*, *Aphrissa statira*, *Appias libythea*, *Catopsilia pomona*, *Eurema hecabe*, *Hebomoia glaucippe*, *Ixias pyrene* and *Leptosia nina*

In the total catch number (1668 individuals) of 17 butterfly species, the recorded catch number of *Eurema hecabe* (222 individuals) was the most abundant and the least abundant was *Cethosia cyane* (11 individuals) within the study period. *Danaus chrysippus*, *Danaus genutia*, *Elymnias hypermnestra*, *Junonia atlites*, *Aphrissa statira*, *Catopsilia pomona*, *Eurema hecabe*, *Ixias pyrene* and *Leptosia nina* were found throughout the year. *Junonia almana*, *Neptis hylas*, *Tirumala hamata*, *Ypthima huebneri*, *Graphium doson*, *Appias libythea* and *Hebomoia glaucippe* were not recorded in April and *Cethosia cyane* was not found in March. This may be the changes of the weather and the environmental conditions.

Kumar *et al.* (2013) recorded 4100 species of butterfly in the oriental region. According to Talbot (1939) 1014 butterfly species were collected and identified in Myanmar. Kinyon (2004) also mentioned that total numbers of butterflies 1,331 species were collected in Myanmar. Nowadays, the most of butterfly species have been still diverse for suitable locations in Myanmar.

Saw Ye' Htun Aung (2011) stated that a total of 15 butterfly species belonging to 11 genera, two tribes, four subfamilies from Zalun environs, Hinthada District. Eight species was the same with the present study.

Than Than Aung (2016) stated that the most abundant months of order Lepidoptera were Jun, July and August. This finding was agreed with the present study.

Wai Wai Lwin (2022) recorded 27 species, 22 genera belonging to five families under the Order Lepidoptera from Ingapu Township, Ayeyawady Region. Therefore, eight species was the same with the present study. *Eurema hecabe* was most abundance species in site II. In the study period, *Eurema hecabe* was most abundant. Therefore, this finding was agreed with the former author.

In the total catch number (1668 individuals) of recorded butterfly species, the rainy season (714 individuals) was the most abundant and followed by cool season (634 individuals) and hot season (320 individuals). In rainy season, *Leptosia nina* (90 individuals) was the most abundant in 17 species of butterfly and *Tirumala hamata* (5 individuals) was the least abundant. In cool season, *Leptosia nina* (91 individuals), was the most abundant and *Cethosia cyane* (3 individuals) was the least abundant. In hot season, *Eurema hecabe* (50 individuals) was the most abundant and *Cethosia cyane* and *Tirumala hamata* (2 individuals each) was the least abundant throughout the study period.

This may be concluded that the seasonal abundance of butterfly species was the most abundance in rainy season, moderate in cool season and the least abundance in hot season because of the localities, weather and environmental conditions.

Conclusion

A total of 17 butterfly species belonging to 15 genera and three families were recorded. In the study period, the total catch number of *Eurema hecabe* (222 individuals) was most abundant and *Cethosia cyane* (11 individuals) was the least abundant among the 17 species of butterfly. In the monthly abundance of catch number, the most abundant months were September, June and August and the least abundance months were April and May. In the seasonal catch number, rainy season is the most abundance season, cool season is moderate and hot season is the least abundance season in the study site.

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