

**DIVERSITY OF BUTTERFLY *Lepidoptera* IN THE CAMPUS AREA OF PATTIMURA  
UNIVERSITY AMBON MALUKU**

**Deli Wakano<sup>1\*</sup>, Debby Dijola Moniharapon<sup>1</sup>**

<sup>1</sup>Department of Biology, Universitas Pattimura. Jl. Ir. M. Putuhena, Ambon 97233, Indonesia

\*Corresponding Author: delly\_wakano@yahoo.co.id

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**ABSTRACT**

Butterflies are insects that belong to the order Lepidoptera, meaning insects whose body surface is almost entirely covered by sheets of scales that give the style and color of butterfly wings. Butterflies are generally active during the day. The purpose of this study was to determine the diversity of butterfly species that exist in the Pattimura University campus area, Ambon. This research was conducted in February 2018. This research was conducted at 4 stations with 2 count points for each station. The results of research in the Pattimura University campus area at each station found 20 species from 4 major families of butterflies with 322 individual butterflies in all stations. The diversity index for all stations is 2.54 and belongs to the category of moderate species diversity.

**Keywords:** *diversity, area, butterflies.*

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**INTRODUCTION**

Indonesia is a country that has a very large diversity of plant and animal species, one of which is the butterfly. Butterflies are one of the insects belonging to the order Lepidoptera which, almost the entire body surface is covered by sheets of scales that give patterns and colors. In addition, butterflies are also the most widely known and frequently encountered insect species because of their beautiful and varied shapes and colors, and are generally active during the day (Peggie, 2014). Butterflies are part of biological wealth that needs to be preserved, butterflies have important values for humans and the environment, including: ecological, economic, aesthetic, educational, endemic, conservation and cultural values. Ecologically, butterflies also play an important role in maintaining the balance of the ecosystem and enriching biodiversity in nature. Because butterflies play a very important role as pollinators in the process of pollinating flowers, thus helping the natural propagation of plants in an ecosystem (Kunte, 2006). The role of the butterfly itself in the ecosystem is no less important as an indicator of environmental change. Improper environmental management can cause a decrease or loss of a species and diversity of fauna species in a habitat (Davies, 2008).

The diversity of butterfly species in one place is different from another place, because the presence of butterflies in a habitat is closely related to existing environmental factors. Differences in geological and ecological factors are very influential in the existence of butterflies (Amir, 2000). The Pattimura University

campus, which is in the Poka-Rumah area of three Ambon Bay Districts, is a good habitat for this type of butterfly. This is supported by the existence of ecosystems where butterflies live, such as: urban forests, ponds and open land. Ecosystems with various types of plants that can be food plants for butterfly larvae. Faculty gardens or other offices are planted with various types of nectar-producing flowering plants as a source of food for adult butterflies, the various open areas without shade are also grown wildly by larval feed plants and nectar plants. So that these conditions provide a suitable habitat for butterfly life. However, the existence of butterflies in the Pattimura University Campus area is still a lot that has not been noticed. Based on this background, research on the diversity of Lepidoptera Butterflies in the Pattimura University Campus area, Ambon needs to be carried out.

**METHOD**

The type used in the implementation of this research is a quantitative descriptive type with the aim of knowing the types of butterflies found on the Pattimura University campus, Ambon. The method used in this study is the point count or IPA (Index Ponctuallede Abondance) (Facrul. 2012). Research activities were carried out in February 2018 which took place in the Pattimura University Campus area, Ambon. This research was conducted at 4 stations. Butterflies were taken at 4 stations, then identification of the butterflies was carried out in the Ecology laboratory, Faculty of Mathematics and Natural Sciences, Pattimura University

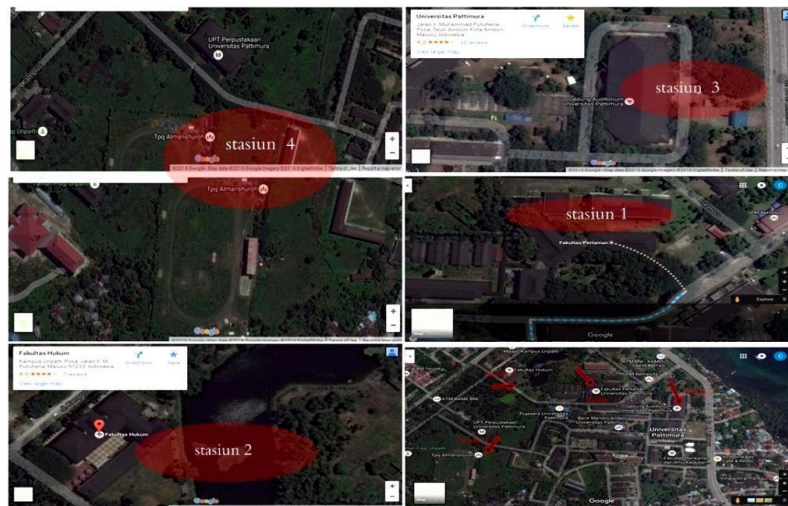


Figure 1. Map of Research Locations in the Pattimura Poka University Campus Area, Ambon City.

The population in this study was the entire butterfly community in the Pattimura University campus area, Ambon. Samples in this study, the types of butterflies caught in nets, according to the locations that were sampled were: the area around the Pattimura University Auditorium, the stadium area around the Pattimura University central library, the lake area around the Faculty of Law, and the area of the Faculty of Agriculture.

**Materials**

Stationery, Canon cameras, sweep nets, medium boxes/jars, lups, pins, rulers, tape measure, scissors, butterfly identification books in the form of journals (Divisi, 2012). Butterfly, camphor, papilot paper/envelope, Styrofoam 50 x 30cm, 70% alcohol, Aquades.

**Procedures**

Preliminary studies were carried out to learn how to identify, find out the types of butterflies found in the Pattimura University campus area, Ambon, determine the type of habitat and sampling locations. Based on the results of the initial study, the types of butterfly habitats on the Pattimura University campus, Ambon, can be divided into four, namely the Faculty of Agriculture area, the Law Faculty Lake area, the Pela Gandong City Forest around the Auditorium, the Field Land Area (Sports Stadium) Around the Library Pattimura University Center. The research location is determined on the type of habitat that exists.

**Butterfly Sampling**

Sampling was carried out in the morning, from 09:00-10:00, 10:00-11:00 and 11:00-12:00. Data collection is carried out only when the conditions are suitable for butterfly activity, that is, when the air is warm and

sunny. Data collection cannot be done when it rains. The research was conducted at 2 count points for each station. Butterfly data collection was carried out by means of a free collection of each individual encountered and recorded on a field research sheet. Butterflies are caught using insect nets (sweep nets) for identification (Gullan, 2005). Put it in a medium box/jar that has been given 70% alcohol and distilled water. The process of drying the butterflies begins with preparing tools, 2 cm thick styrofoam and 1 cm of papiloat paper as well as pins. Put the butterfly onto the papillot paper or put it in the insect envelope. Pierce 1/3 of the body with a pin into the Styrofoam.

**Identification**

The samples obtained were identified at the Faculty of Mathematics and Ecology Laboratory Natural Sciences, Pattimura University, Ambon and identify it by using a guidebook in the form of Journal of the Division of Entomology Himbio UNPAD Jatnagor, 2013.

**Data analysis**

The data obtained were then analyzed using the ShanonWiener diversity formula (Magurran, 1988):

$$H' = - \sum P_i \ln P_i \quad P_i = \frac{n_i}{N}$$

Information :

$n_i$  = the number of individuals of each type of butterfly

$N$  = the total number of all types of butterflies

$H'$  = Shanon-Winner diversity index

$P_i$  = abundance index

The criteria for butterfly species diversity index values based on Shannon Wiener are as follows (Pelu, 1991):

1-1.5 = Low species diversity 1.6-3 = Moderate species diversity  $H' > 3$  = Very high species diversit

**DISCUSSION RESULT**

The results of the study obtained the following table 1. Types of Butterflies (Lepidoptera) found in the University Pattimura area.

		I	II	III	IV					I	II	III	IV						
1	<i>Pieridae</i>	<i>Catopsilia Pomona jantan</i>	22	6	3	5	3	17	0	0	0	0	0	0	1	2	0	2	5
		<i>Eurema hecabe</i>	38	3	3	2	2	10	7	5	3	4	19	4	2	0	3	9	
		<i>Apias oliferna</i>	7	0	0	0	0	0	0	0	0	0	0	2	3	2	0	7	
		<i>Eurema alitha</i>	11	0	0	0	0	0	2	5	2	2	11	0	0	0	0	0	
		<i>Zizina otis</i>	5	0	0	0	0	0	0	0	0	0	0	1	2	2	0	5	
2	<i>Lycaenidae</i>	<i>Chilades sp</i>	17	0	0	0	0	0	4	3	3	7	17	0	0	0	0	0	
		<i>Zizula hylax</i>	23	2	0	6	2	10	2	1	0	1	4	4	3	1	1	9	
		<i>Jamides celeno</i>	46	19	9	5	13	46	0	0	0	0	0	0	0	0	0	0	
		<i>Jamides pura</i>	60	6	2	2	2	12	17	11	7	13	48	0	0	0	0	0	
		<i>Papilio memnon</i>	12	1	2	0	0	3	0	0	0	0	0	3	3	1	2	9	
3	<i>Papilionid</i>	<i>Papilio demolion</i>	7	0	0	0	0	0	1	0	0	0	1	1	3	1	1	6	
		<i>Papilio polytes</i>	3	0	0	0	0	0	0	0	0	0	0	1	0	1	1	3	
		<i>Graphium doson</i>	8	1	0	1	0	2	0	0	0	0	0	3	0	0	3	6	
		<i>Euploea caramal zeman butler</i>	5	0	0	0	0	0	0	0	0	0	0	2	2	0	1	5	
		<i>Junonia hedonia</i>	10	0	0	0	0	0	0	0	0	0	0	5	3	0	2	10	
4	<i>Nymphalidae</i>	<i>Junonia atlites</i>	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	
		<i>Mychalesis janardana</i>	10	0	0	0	0	0	3	2	1	3	9	0	0	1	0	1	
		<i>Ariadne Ariadne</i>	16	0	0	0	0	0	1	0	1	0	2	6	4	2	2	14	
		<i>Hypolimnias bolina</i>	18	8	4	1	5	18	0	0	0	0	0	0	0	0	0	0	
		<i>Junonia orithya moore</i>	2	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	
		$\Sigma$ Individu	322					118					113					91	

The types of butterflies found in the Pattimura University campus area can be seen in Figure 2.



Figure 2. Types of butterflies found in the Pattimura University campus area.

**Information:**

(A) *Catopsilia pomona jantan*, (B) *Eurema hecabe*, (C) *Apias oliferna*, (D) *Eurema alitha*, (E) *Zizina otis*, (F) *Chilades sp.*, (G) *Zizula hylax*, (H) *Jamides celeno*, (I) *Jamides pura*, (J) *Papilio Memnon*, (K) *Papilio demolion*, (L) *Papilio polytes*, (M) *Graphium doson*, (N) *Euploea caramal zeman butler*, (O) *Junonia hedonia*, (P) *Junonia atlites*, (Q) *Mycalesis janardana*, (R) *Ariadne Ariadne*, (S) *Hypolimnas bolina* dan (T) *Junonia orithya moore*.

Butterflies found based on research time at 09.00-10.00 found 8 species with 118 individual butterflies. At 10.00-11.00 9 species were found with 113 individual butterflies and at 11.00-12.00 14 species were found with 91 individual butterflies, the highest abundance of individuals was found at 09.00-10.00. These results are presumably because at that time flowering plants produce the largest volume of nectar with a sugar concentration that meets the needs of butterflies. Nectar production can vary in amount and concentration, depending on the weather and time of day. According to (Davies & Butler, 2008), this time range is thought

to be the peak time for butterfly activity during the study. Furthermore, the results of calculating the diversity of butterfly species are presented in table 2 below.

Table 2. Value of butterfly diversity in the Pattimura University

Index	Stasiun				mean	category
	I	II	III	IV		
Diversity ( $H'$ )	2.590	2.600	2.537	2.456	<b>2.54</b>	Moderate level of diversity

The level of species diversity is determined by the number of species and the total number of individuals. The diversity value will be high if the number of individuals per species is evenly distributed. In other words, all species found in a community have almost the same number of individuals (Brower et al, 19889). Based on the data obtained, the highest level of diversity of butterfly species was at station II, namely 2.6 as well as the value of diversity of butterfly vegetation 2.7193. Followed by other stations such as Station 2 with a butterfly species diversity value of 2.6001 and a butterfly vegetation value of 2.3667, station 3 with a butterfly species diversity value of 2.5371 and 2.3439 for the vegetation, station 4 with a butterfly species diversity value 2.4568 . and 2.3391 is the value of the diversity of vegetation. Vegetation affects species diversity. The more diversity of plant species, the greater the diversity of animals, in this case Lepidoptera.

## CONCLUSION

Research on butterfly diversity at the University of Pattimura Ambon yielded as many as 20 species from 4 major families, namely Papilionidae (4 species), Pieridae (4 species), Lycaenidae (5 species), and Nymphalidae (7 species). The diversity of butterfly species at the 4 stations varies, with an average value of 2.54 which is included in the category of medium diversity level.

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