



Butterfly Insectarium from Three Different Ecosystems of Gunung Palung National Park as Biology Learning Resource

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Received: November 20, 2022

Revised: January 18, 2023

Accepted: January 29, 2023

Published: January 31, 2023

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DOI: [10.29303/jppipa.v9i1.2508](https://doi.org/10.29303/jppipa.v9i1.2508)

Abstract: Gunung Palung National Park (GPNP) has butterfly diversity. However, there is a lack of information about butterflies in Gunung Palung National Park as a learning resource. This article reports on the species of butterflies in three different ecosystems from GPNP and the potential of insectariums as a source of learning biology. There are two stages of research, first to examine the species of butterflies from GPNP in the Freshwater Swamp Forest, Alluvial Forest, and Lowland Granite Forest ecosystems. Second, to examine the potential of butterfly insectariums as a learning resource. The location of the research was determined by purposive sampling. Butterflies are caught by sweeping technique. Collecting data on potential learning resources using observation, documentation, and questionnaires. The results found 119 individuals from 39 butterfly species. Based on the aspects of access, safety, time, cost, clarity of potential, suitability of learning objectives, clarity of material objectives, and clarity of information, it shows that the potential of the butterfly insectarium is worthy of being used as a learning resource, especially in biology subjects, namely Biodiversity, Classification of Living Things, Animalia, and Ecology.

Keywords: Butterflies; Gunung Palung; Insectarium; Learning Resources; National Park

Introduction

Gunung Palung National Park (GPNP) is a conservation area in North Kayong Regency and Ketapang Regency, West Kalimantan. Butterflies belong to the order Lepidoptera. Butterflies have an important role in the ecosystem, especially as pollinators. In the food chain, butterflies act as prey for other animals and maintain the balance of the ecosystem (Toledo and Mohagan, 2011; Perveen and Haroon, 2015; Ghazanfar et al, 2016).

Butterflies can be found in almost any type of habitat. We can find butterflies in hills, trails, forests, lush trees, natural flower gardens, waterfalls, and watersheds (Tabadepu et al, 2008). Butterfly diversity in one place is relatively different from other places. The presence of butterflies in a habitat is influenced by many factors. The biotic factor such as forage plants, host plants, predators, parasites, and parasitoids. The abiotic factor such as altitude, temperature, humidity, light intensity and weather (Lamatoa et al. 2013; Lodh and Agarwala 2016).

The ecosystem in GPNP has characteristics suitable for butterfly habits. However, until now there is a lack of information about butterfly species in GPNP. The previous research on butterfly diversity was found in Tanjung Puting National Park (TPNP) which is 33 species of butterflies were found in lowland forests and 13 species were found in peat swamp forests (Santosa et al, 2008). In addition, in Belitang Dua Village, Kec. Belitang Regency. Sekadau found 24 species of butterflies in lowland forest and freshwater swamp forest ecosystems (Saputra et al, 2013). The ecosystem in GPNP has almost the same characteristics as the ecosystem in Tanjung Puting National Park, so it is expected that many butterflies will be found in this ecosystem. One of the reasons for conducting research on these butterflies is that butterflies can be preserved.

Insect preservation aims to make it easier to understand the morphology, anatomy, and systematics of insects by making their own educational media that are as interesting as possible, one of which is an insectarium. A Butterfly insectarium is a place where butterfly specimens are stored in a dry place. Insectarium are manufactured using 70% alcohol as

How to Cite:

Nurliza, N., Setiadi, A.E., & Rahayu, H.M. (2023). Butterfly Insectarium from Three Different Ecosystems of Gunung Palung National Park as Biology Learning Resource. *Jurnal Penelitian Pendidikan IPA*, 9(1), 478-487. <https://doi.org/10.29303/jppipa.v9i1.2508>

preservatives. The sample was injected with 70% alcohol in the thorax and after death was put in a paper envelope and then labeled (Wardhani and Kerlin, 2019). Insectarium is very necessary in the process of learning biology. Sulistyarsi (2010) stated that in his research studying insect material using insectarium media would be more interesting than just studying what was in books. Insectarium can serve to clarify the object because it is an original specimen so that students can learn more meaningfully. Insectarium also has the advantages of presenting concrete and avoiding verbalism, can show objects clearly, and can be brought directly to class (Susilo, 2014).

Learning resources are an important element in supporting the learning process. The data obtained from GPNP can be used as a learning resource. The butterflies obtained will be used as an insectarium and used as a medium for learning resources on the concept of biodiversity, especially on biodiversity at the gene, species, and ecosystem levels. This is expected to make it easier for students to understand the concept of biodiversity. This study aims to identify species as butterflies, make insectariums, analyze the characteristics of butterfly habitats, and analyze the butterfly insectarium in Gunung Palung National Park as a source of learning biology.

Method

Research design

There are two stages of the research, the first is the observation of the butterfly species and ecosystems in GPNP, second is to find out the potential of insectarium as a source of learning biology. Research in Gunung Palung National Park was conducted using quantitative descriptive methods. The research was carried out by exploring the ecosystem path in Gunung Palung National Park following a transect line that was applied randomly along 500 m/5 points of each habitat with a width of 20 M to the right and 20 M to the left. One transect was made for each type of habitat. The placement of transects in each habitat was carried out by purposive random sampling. Sampling was carried out using insect nets and repeated 3 times in each habitat. The time of exploration was carried out according to the activity of the butterfly in the morning (08.00-11.00 WIB) and afternoon (13.00-16.00 WIB). For vegetation, the analysis used the quadratic method (Quadrat Sampling Technique) which was carried out randomly. In addition to the observation method, this study also uses direct observation and documentation methods that are used to complete the primary data.

The second, qualitative research conducted in schools was carried out to produce descriptive data in the form of narrative writings about the diversity of butterflies in 3 different types of ecosystems in the

Gunung Palung National Park area which are associated with biological learning resources.

Population and Samples

The population of butterflies that will be taken in the field is all butterflies in GPNP. The samples were selected by purposive sampling taken from freshwater swamp ecosystems, alluvial forest ecosystems and lowland granite forest ecosystems. Data collection for the potential of the butterfly insectarium as a source of learning was taken from all high school and junior high school teachers in North Kayong. The sample was selected from 10 biology teachers in high school and junior high schools in Kayong Utara. The sample aims to find information about the utilization of butterfly search results as a learning resource used in the learning process.

Instrument

The instruments used in this study were the verification sheet for the identification of butterflies in Gunung Palung National Park and the habitat characteristics sheet. Verification sheet of the butterfly as a learning resource, questionnaire validation sheet, and questionnaire sheet. The questionnaire used is an open questionnaire. Questionnaires will be given to high school biology teachers in North Kayong.

Procedure

The stages of observing butterflies and ecosystems: recycling sampling points, making transects, and measuring glass chemistry parameters on site, Sampling is done in 2 ways, photographed from a distance or captured using insect nets. If during sampling you find individual butterflies of the same species, it is enough to count the number and record the characteristics and the butterflies will be released again. Observations were made on a sunny day at 08.00-11.00 AM and 13.00-16.00 PM WIB. The small butterfly samples were killed by pressing the thorax and the medium-large butterflies were anesthetized with chloroform. Then, the butterfly was put into the papilot envelope with both wings spread out so as not to be damaged.

Stages of preparation and identification: The butterfly samples obtained were pinned by inserting a needle in the chest and spreading the butterfly wings on styrofoam. Butterfly wings are covered with papilot paper and sprayed with 70% alcohol to prevent damage to the wings. The butterfly sample was then oven-dried until it was dry according to the size of the butterfly's body. The dried butterflies were then made into an insectarium and labeled with the scientific name and time of capture. Lastly, butterfly identification. The identification process is carried out at the species level.

Stages to determine the potential of the butterfly insectarium as a learning resource: verification of the

results of identification data, verification of the suitability of the material identified with learning resources, instrument validation, distributing questionnaires in junior and senior high schools in North Kayong, and analyzing the data.

Data Analysis Techniques

The data analysis technique used in this research is quantitative and qualitative. To find out the types of butterflies and their habitat characteristics is to describe the morphology of the butterfly, make a description, calculate the average temperature, humidity, light intensity, wind speed, and altitude. The butterfly identification process is based on morphological characteristics, such as antenna length, head length, chest-length, abdomen length, upper wing length, lower wing length, lower wingspan, upper wingspan, and wing span length. Butterfly identification refers to the book *A Field guide for beginners butterflies of Bonai, Odisha* (Mohapatra et al, 2012), *Jenis-jenis kupu-kupu di desa Bulu Mario Tapanuli Selatan* (Andrianto & Lin Nuriah, 2020), a guide to the butterflies of Sebangau (Harrison et al., 2012), *Kupu-kupu taman wisata alam Suranadi* (Ilhamdi et al, 2018), *Keanekaragaman Kupu-kupu* (Ruslan, 2015), and *Bioekologi kupu-kupu* (Rohman et al., 2019).

The collection of data taken from the GPNP ecosystem is temperature, humidity, light intensity, wind speed, and altitude. Presentation of data in the form of narratives and tables. The data collection of learning resources in schools using a questionnaire is seen from the aspects of potential clarity, access, safety, time efficiency, cost, suitability of learning objectives, clarity of material objectives, and clarity of information compiled. Then, the presentation of the data in descriptive and narrative forms. The tools and materials used include stationery, location maps, identification books, Thermohygro, GPS, insect nets, compass, meter, observation sheet, altimeter, white cloth, papilot paper, syringe, cellphone camera, raffia rope, 70% alcohol, clothes meter, chloroform, cotton, specimen box, styrofoam, camphor, and empty bottles.

Result and Discussion

Description of the Study Site Ecosystem in Gunung Palung Nasional Park

Gunung Palung National Park is a conservation area that has a very high potential for biological resources and has 8 types of ecosystems from the coast to the subalpine forest, making this area a center for the distribution of flora and fauna in West Kalimantan Province. The eight ecosystems are (1) Peat swamp forest (2) Freshwater swamp forest (3) Alluvial soil forest (4) Lowland sandstone forest (5) Lowland granite forest (6) Upland granite forest (7) Mountain Forest and (8)

Kerangas Forest. This research was conducted in 3 ecosystems, namely freshwater swamp forest, alluvial soil forest, and lowland granite forest.

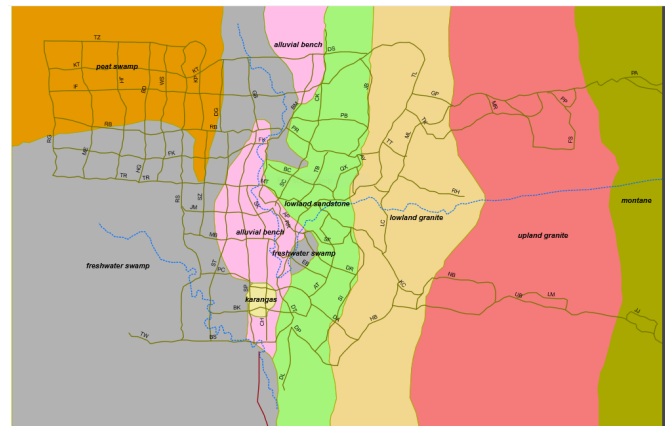


Figure 1. Map of 8 ecosystems in Gunung Palung National Park (Source: Stasiun Riset Cabang Panti)

Freshwater Swamp Ecosystem

Freshwater ecosystems are ecosystems with habitats that are always flooded with mineral-rich fresh water with a PH of around 6. The condition of the water surface is not always constant because it is influenced by ups and downs. Freshwater swamp ecosystems have soil conditions that are muddy and some are rather hard (Riduwan et al, 2019). At the research location, the freshwater swamp ecosystem is located at an altitude of 28 meters above sea level. Has a temperature of 28.4 Celsius with a humidity of 94%. The wind speed of freshwater swamp forests is 0.02 with a light intensity of 1245. The dominant plant in this place is litsea.

Alluvial Forest Ecosystem

Alluvial soil type is soil originating from young alluvial or colluvial deposits with weak to non-existent soil profile development. Soil properties vary depending on the parent material deposited and its distribution is not affected by altitude or climate. Habitat characteristics are based on the results of an alluvial forest research area at an altitude of 34 meters above sea level, a light intensity of 1520, and a wind speed of 0.05. Alluvial soil forest has a temperature of 23.7 C with a humidity of 93%. The dominant plant in alluvial soil forest is *Syzygium*.

Lowland Granite Forest

Lowland Granite Forest is a form of forest located after the coastal forest. As the name implies, this forest thrives in lowland areas that have an altitude between 5 to 1,000 meters above sea level. In general, the structure of forests in low-lying areas is very diverse or complex and is also called rainforest. At the research location, the lowland granite forest has the characteristics of an air temperature of 25.6 degrees Celsius with a humidity of

92%, a light intensity of 452 LUX, and a wind speed of 0.8. The vegetation that dominates this forest is Dipterocarpus. The selection of these 3 ecosystems is because these places are easily accessible and many types of butterflies are found.

Diversity of Butterflies in Gunung Palung National Park

The results showed that 119 individuals from 39 species and 5 families were found in three ecosystems of the Stasiun Panti Research Station, TNGP. There are Papilionidae with 10 species, Pieridae with 3 species, Nymphalidae with 18 species, Lycaenidae with 5 species, and Rionidae with 2 species. (Table 1).

The results of this study indicate that the highest number of individual butterflies is found in an alluvial forest, which is as many as 105 individuals, this is because this station has relatively diverse forage and host vegetation, and environmental conditions are relatively quite supportive for butterflies to forage, play and lay eggs. The dominant area of this station is an open area, and at this station, there is also a river which is a source of minerals for the survival of butterflies. In general, environmental factors that have a major influence on butterfly life include temperature, sunlight, rainfall, availability of water sources, and feed vegetation.

In a freshwater swamp forest, 11 individuals of butterflies were found and it became the second-highest ecosystem after the alluvial forest. This ecosystem is rich

in soil mineral content and has the characteristics of being constantly inundated with water throughout the year so that the surrounding environment always gets a supply of water during the dry season, dominated by trees or shrubs with special adaptations for living in wetlands, providing many important ecosystem benefits for society and the environment surrounding areas (Burton and Tiner, 2009; Bannister et al, 2017).

The ecosystem where the butterflies were least found was the lowland granite forest. At this station, only 3 individuals were found. A lowland granite forest is an area dominated by plants in the form of tall trees, so it is rare to find food plants and butterfly hosts under tree stands. This is in line with the statement of Peggie and Moh. Amir (2006), that there is a very close relationship between butterflies and plants for food for caterpillars known as host plants. Lowland granite forest has an altitude of 200-400 m above sea level. This is what causes the existence of butterflies in this place to be difficult to find. The opinion (Rizal, 2007) is that the diversity of butterflies is also influenced by altitude, temperature, humidity, light intensity, weather, season, and volume of plant nectar. It was found that differences in the types of butterflies in each of these ecosystems were caused by differences in the vegetation of plants in each of these ecosystems. (Sutra et al, 2012) stated that differences in plant vegetation in an area greatly determine the diversity of butterfly species found in that area.

Table 1. Number of Butterflies Species in Gunung Palung National Park

Taxa	Number of Individual			Σ Total
	FSF	AF	LGF	
Papilionidae				
<i>Graphium antiphates</i>	0	3	0	3
<i>G. delesserti</i>	0	1	0	1
<i>G. doson</i>	0	4	0	4
<i>G. evemon</i>	0	4	0	4
<i>G. Sarpedon</i>	1	6	0	7
<i>Papilio Helenus</i>	0	2	0	2
<i>P. Memnon</i>	0	1	0	1
<i>P. nephalus</i>	0	1	0	1
<i>P. polytes</i>	0	1	0	1
<i>Trogonoptera brookiana</i>	0	2	0	2
Σ	1	25	0	26
Pieridae				
<i>Appias nero</i>	0	4	0	4
<i>Catopsillia pomana</i>	0	6	0	6
<i>Eurema blanda</i>	0	2	0	2
Σ	0	12	0	12
Nymphalidae				
<i>Athima asura</i>	0	3	0	3
<i>Cupha erymanthis</i>	1	3	1	5
<i>Eulaceura osteria</i>	0	1	0	1
<i>Euploea mulciber</i>	1	7	0	8
<i>E. radamanthus</i>	0	1	0	1
<i>Erites Argentina</i>	1	1	0	2
<i>Faunis cannes</i>	0	1	0	1
<i>F. menado menado</i>	1	3	0	4

Taxa	Number of Individual			Σ Total
	FSF	AF	LGF	
<i>Idea stollii</i>	0	5	0	5
<i>Junonia atlites</i>	0	6	0	6
<i>J. iphita</i>	0	4	0	4
<i>Lexias dirtea (Jantan)</i>	1	1	2	4
<i>L. dirtea (Betina)</i>	0	4	0	4
<i>L. pardalis</i>	0	1	0	1
<i>Mycalesis kina</i>	1	0	0	1
<i>Athima pravaara</i>	0	1	0	1
<i>Ragadia makuta</i>	0	1	0	1
<i>Tanaecia palguna</i>	0	3	0	3
<i>Sp 1</i>	0	1	0	0
Σ	6	47	3	56
Lycaenidae				
<i>Allotinus horsfieldi</i>	0	1	0	1
<i>Athenelicaenina</i>	0	1	0	1
<i>Chilades pandava</i>	0	2	0	2
<i>Dacalana vidura</i>	0	2	0	2
<i>Tajuria mantra</i>	0	1	0	1
Σ	0	7	0	7
Rionidae				
<i>Paralaxita damajanti</i>	2	10	0	12
<i>Paralaxita telesia</i>	2	4	0	6
Σ	4	14	0	18
Total of Individuals	11	105	3	119

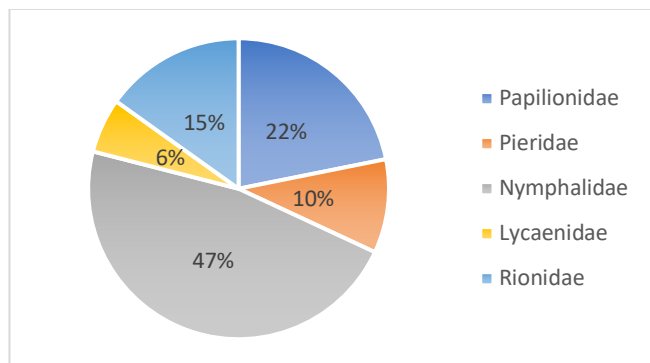


Figure 2. Percentage of butterfly families in three GPNP ecosystems

From the data on the percentage of butterflies in the three ecosystems, it is known that the most common butterflies found in the GPNP are the Nymphalidae and Papilionidae families. Meanwhile, Rionidae, Lycaenidae, and Pieridae each account for less than 22%. The Nymphalidae family is commonly found because it is the largest family in the Lepidoptera Order. The Nymphalidae family generally has a wide distribution, likes bright places, garden areas, forests, and also likes rotten fruit (Dendang, 2009). The large number of Nymphalidae families found in GPNP is because there are several plants that are suitable for supporting the life of the Nymphalidae family butterflies, both as a source of food and as a place to shelter. Tabadepu (2008) states that Nymphalidae is a butterfly family that is cosmopolitan, this family is distributed in many regions of the world and has a high ability to survive in various types of habitats because it is polifag.

Butterfly Species in Gunung Palung National Park

Butterfly species found in three ecosystems in Gunung Palung National Park are presented in Figure 3:

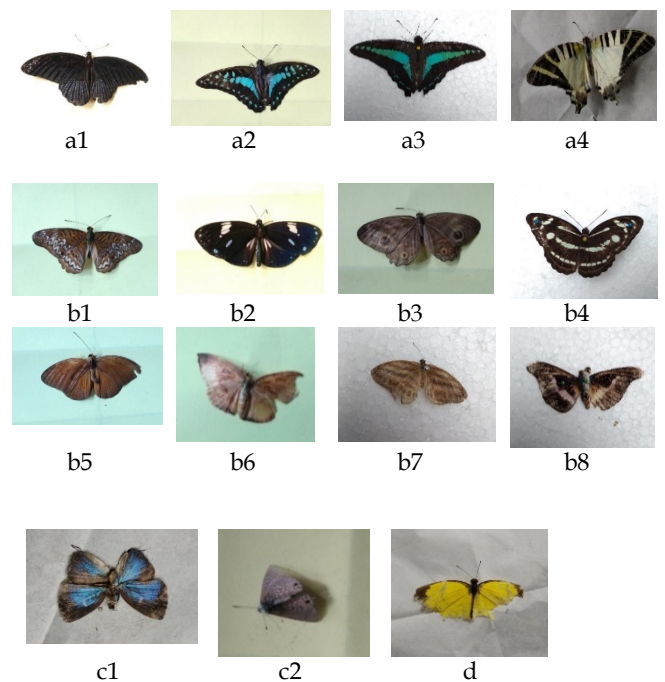




Figure 3. Family Papilionidae: (a1) *P. memnon*, (a2) *G. agamemnon*, (a3) *G. sarpedon* (Jantan), (a4) *G. antiphates*. **Family Nymphalidae:** (b1). *T. munda*, (b2) *E. radamanthus*, (b3) *E. Argentina*, (b4) *A. pravara*, (b5) *F. menado*, (b6) Sp1, (b7) *R. makuta*, (b8) *E. osteria*. **Family Lycaenidae:** (c1) *D. vidura*, (c2) *C. pandava*. **Family Pieridae:** (d) *E. blanda*. **Family Rionidae:** (e1) *P. damajanti*, (e2) *P. telesia*. (f) Insectarium.

The picture above shows the butterflies from three ecosystems in Gunung Palung National Park and used as an insectarium. Based on the results of research in three ecosystems in Gunung Palung National Park, plant species from 22 families with 31 species were found, *Artocarpus Sp.*, *Fagraea*, *Santiria Sp.*, *Canarium*, *Symplocos Sp.*, *Shorea sp*, *Dipterocarpus*, *Popowia apiscarpa*, *Monocarpia marginalis*, *Myristicaa spp.*, *Knema*, *Horsfieldia sp*, *Melanochyla caesia*, *Bouea*, *Syzygium*, *Litsea*, *Nephelium uncinatum*, *Stemonurus secundiflorus*, *Calophyllum*, *Croton sp*, *Antidesma sp*, *Pternandra*, *Irvingia malayana*, *Xanthopylium*, *Findicus*, *Fordiasima*, *Findicus*, and *Gironniera nervosa*. Gunung Palung National Park is a conservation area that has a very high potential for biological resources. Of the three ecosystems, the most common plant species found was *Dipterocarpus*, which consisted of 8 individuals. This is by the inventory data of 4,000 woody tree species with 70 species belonging to the Dipterocarpaceae family (Prasetyo and Jito, 2010).

The potential of the butterfly insectarium as a learning resource

To find out the potential diversity of butterflies as a learning resource, a questionnaire was used which was distributed to biology teachers at Kayong Utara Middle School and High School. Based on the potential results of butterfly insectarium research on the subject matter of Biology, the suitability of the learning resources for class X material was obtained, which consisted of 4 subject matters with 7 sub-materials. This is in line with the opinion (Febrita, 2014) that essentially all environmental potential such as the biodiversity of an ecosystem can be developed as a source of learning. The potential contained there can be used as a source of ideas that can be developed to support the learning process.

Table 2. The Eligibility of Gunung Palung National Park as a Biology Learning Resource

Aspect	Present	Interpretation
Access	56%	Quite decent
Safety	88.90%	Very Feasible
Time	56%	Quite decent
Cost	88.90%	Very Feasible
Potential clarity	100%	Very Feasible
Conformity with Learning Objectives	100%	Very Feasible
Clarity of material objectives	100%	Very Feasible
Clarity of information	100%	Very Feasible
Average	86%	Very Feasible

This study used eight aspects to determine the results of research as a source of learning. Data collection in schools uses questionnaires which are seen from the aspects of clarity of potential, access, security, time, cost, suitability of learning objectives, clarity of material objectives, and information clarity. The results of the teacher's response to the diversity potential of the butterfly insectarium have understood the interpretation of "very feasible" to be used as a biology learning resource. According to Najmulmunir (2010), the criteria for learning resources consist of ease of access, security, time efficiency, cost, and adjustment to the material being taught. To find out the potential of research results as a source of learning biology is carried out through the assessment method according to (Suhardi, 2012) which includes potential availability of objects and issues raised, according to learning objectives, target material and its designation, and information to be disclosed

Access

Ease of access in this study obtained results of 56% with a fairly decent interpretation, this is because the distance between the GPNP and the school is quite far and requires permission to enter the place, so it is difficult for teachers to carry out the learning process directly at GPNP. Learning resources must be easy to find and obtain (Samsinar, 2019). If necessary, you can take advantage of the available surroundings so that students can also easily take advantage of it.

Safety

The safety aspect obtained results of 88.90% with a very feasible interpretation, this is because going to the GPNP will be accompanied by an assistant from the GPNP, the location is close to residential areas, and there are no dangerous locations so it is safe to use as a learning resource. Learning resources used in a learning process should be safe for students, avoid crime, not detrimental, and not dangerous. Learning resources can

also be formulated as anything that can provide convenience to students in obtaining a certain amount of information, knowledge, experience, and skills in the learning process.

Time efficiency

The aspect of time efficiency obtained results of 56% with a fairly decent interpretation, this is because getting to GPNP takes a long time, so a lot of time is wasted traveling to that place. A good learning resource is one that is easy to obtain, both because of the close distance between the learning resource and the user, but also because the number of learning resources available is quite a lot (Supriadi, 2015). The surrounding environment provides a source of information related to knowledge, concepts, laws, and theories, by using nature as a student learning resource, students can explore information and biology learning concepts that can be found directly in the surrounding environment, interaction and students with the environment can be carried out through activities observation, as well as data collection in the field.

Cost

From the cost aspect, the results obtained were 88.90% with a very feasible interpretation, because going to GPNP does not need to pay a lot of money. Learning resources must be practical, easy to carry, simple, do not require special equipment, not expensive, and do not require special skills and the selected learning resources must be cheap and not cheap (Samsinar, 2019).

Clarity of potential

Gunung Palung National Park has clear potential and gets 100% results because 119 individuals of butterfly diversity have been found. The potential diversity of butterflies in Gunung Palung National Park can be used as a learning resource because students can learn directly and can collect data about the diversity of butterfly species by studying the morphology of the butterfly insectarium obtained. This is in line with the opinion of Susilo (2018) that material analysis according to the 2013 Curriculum Core Competency 4 is processing, reasoning, and presenting in the concrete and abstract realms related to the development of what is learned in school independently, and being able to use methods according to scientific and ethical principles. Basic competencies. The information raised in the research results is about the diversity of butterflies, their classification, morphological characteristics as well as their benefits and roles in life.

Conformity with Learning Objectives

The diversity of butterflies found in Gunung Palung National Park can help students identify, classify and analyze butterflies so that 100% (very feasible) results are obtained. Potential butterflies found at the

study site consisted of 5 families Papilionidae, Pieridae, Nymphalidae, Lycaenidae and Rionidae which correspond to the high school Biology syllabus class X Curriculum K13. The number of teaching materials that are in accordance with the potential of butterflies in Gunung Palung National Park can be seen in table 3.

Table 3. High School Biology Teaching Materials That Are Appropriate to the Diversity of Butterflies and Plants in Gunung Palung National Park

Potential Found	Theory	Compatibility of Potential with Material
5 families of the butterfly of the Papilionidae, Pieridae, Nymphalidae, Lycaenidae dan Rionidae	Biodiversity (biodiversity at gene, species, and ecosystem level).	Can provide information about butterfly diversity.
	Classification of Living Things (classification principles and systems of classification of living things: taxon, binomial nomenclature).	Can classify butterflies based on their morphological characteristics.
	Animalia (General characteristics of Animalia, Invertebrates,	Can determine the basis of grouping and grouping butterflies based on similarities and differences in characteristics found.
	The role of invertebrates for life).	Can determine the classification of butterflies (taxon and binomial nomenclature).
	Ecology (Interaction within ecosystems).	Can determine the benefits and roles of butterflies in life.

Based on table 3, it is found that there is a match between the potential for butterfly diversity in Gunung Palung National Park and the biology teaching materials in Class X; material on biodiversity in Indonesia, Classification of living things, invertebrate Animalia, and ecology.

Clarity of material objectives

The results of the butterfly research are by the class X biology material, biodiversity, classification of living things, invertebrate Animalia and ecology. This is by the results of the analysis that has been verified that the butterflies in Gunung Palung National Park are by the

objectives of high school Biology learning materials. By the opinion (Febrita et al., 2014) essentially all environmental potentials such as the biodiversity of an ecosystem can be developed as a learning resource. The potential contained in it can be used as a source of ideas that can be developed to support the learning process. According to (Rachmasari, et al, 2016) Research results used as learning resources must have the right ones for whom and for what learning resources are used. According to Kurniawan (2014), the intended target is the clarity of the target of observation (object) and the target of designation (subject). Clarity of observation targets (objects) namely butterflies and plants found in Gunung Palung National Park. The target designation (subjects) are high school students, especially biology teaching material for class X.

Clarity of information

Research results that are used as learning resources must have clear information/material and then be revealed and conveyed through learning resources (Rachmasari, et al, 2016). The information must be by the KI and KD previously described. The clarity of information that will be conveyed from the results of this study is that there are 119 individuals from 39 species and 5 families of butterflies obtained from Gunung Palung National Park.

Conclusion

The results of the study found 119 individuals and 39 species of butterflies in Gunung Palung National Park that have the potential and meet the criteria to be used as learning resources. The diversity of butterflies is grouped into 5 families consisting of Papilionidae, Pieridae, Nymphalidae, Lycaenidae, and Rionidae. Butterflies' insectarium in Gunung Palung National Park can be related to biology subjects at the X grade high school level, biodiversity, classification of living things, invertebrate Animalia, and ecology. The results of this study can be recommended as teaching materials and supporting Student Performance Sheets (LKPD).

Acknowledgements

The author would like to thank the Gunung Palung National Park Office for collaborating with the Biology Education Study Program. The author also thanks Dr. Kustiati, S.Si., M.Si as validators of Entomologists, Bilyardi Ramdhan, S.Pd., M.Si and Andre Ronaldo as validators of Botanical experts who have provided assessments, suggestions, and input for improving the analyze in this study. Thanks to the teachers of SMP Negeri 4 Seponti, SMP Negeri 1 Simpang Hilir, SMA Negeri 1 Sukadana, SMA Negeri 2 Sukadana, SMA Negeri 1 Seponti, SMA Negeri 2 Simpang Hilir and SMA

Negeri 3 Simpang Hilir who were willing to fill out a questionnaire to complete the data for this research.

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