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Fauna Exploration and Inventory in the Mount Kelua Fkip Campus Area, Mulawarman University

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Abstract

Diversity is one of the important factors in determining the state and quality of an environment. The objectives of this research are as follows: Knowing the diversity of fauna species found in Mulawarman University, Knowing the fauna habitats in Mulawarman University and analyzing the benefits of the diversity of fauna found in the Mulawarman University environment. The research was carried out in April - June 2021, in the FKIP Campus area of Mulawarman University, Kec. North Samarinda, Samarinda City. The method used in self-observation is the method of observation and documentation with data analysis techniques in the form of descriptions. From this observation itself, data obtained in the form of family classification with a total of 13 types of families where in aquatic there are 2 families, in mammals there is 1 family and in insects there are 10 families. From the data obtained during the observation, it is known that the fauna contained in Mulawarman University itself is 17 species. This shows that the diversity of species at Mulawarman University is still little or less diverse.

Keywords: *Inventory, Diversity, Fauna*

1 Introduction

Mulawarman University is one of the universities in Indonesia. Mulawarman University is located in the province of East Kalimantan, precisely in the heart of the city as well as the area which is the capital of East Kalimantan Province, namely the city of Samarinda. Mulawarman University as the largest university in East Kalimantan is the most natural to have a large campus area. Of the four campuses owned by Mulawarman University, the main campus is located in Gunung Kelua with an area of about 70 hectares containing many rectorate buildings, libraries and campus buildings from 13 existing architectures. And one of

these 13 architectures is the Faculty of Teacher Training and Education, which is the main location of our observations.

The biodiversity of Indonesia's flora and fauna invites attention and admiration for various parties in Indonesia and throughout the world. BAPPENAS (2003) recorded no less than 515 species of mammals (the world's largest), 1531 species of birds (fourth most), 270 species of amphibians (fifth most), 600 species of reptiles (third most), 1600 species of butterflies (most) and 20,000 species of flowering plants (seventh most) inhabit the land and water habitats of this vast Indonesian archipelago. According to Law No. 5/1990, it is stated that fauna/animals are all types of animal natural resources that live on land, and/or in the air, and/or in the air, while wild fauna are all animals that live on land, and/or in the air. , and or in the air that still has the characteristics of a liar, both free living and being cared for by humans. The law states the safety and security of the diversity of flora and fauna that are rare and have certain characteristics or are found in nature reserves, both on land and in waters (sea). (Mellawati, 2010: 67-68).

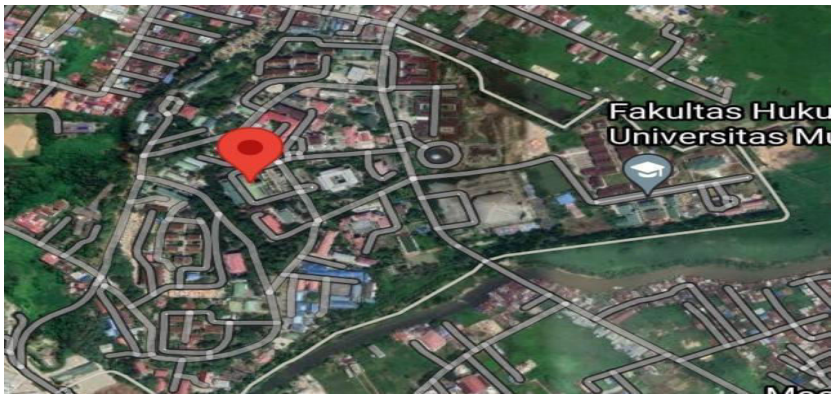
Under normal conditions, this campus will deal directly with students passing by on campus, so that it will have the potential to disrupt the fauna habitat on campus. So, there are concerns about the loss of these fauna due to too often interacting with humans. We can see this in the extinction of the dodo bird due to interacting with sailors from Europe whom he had never met. (Rijsdijk, 2016: 4). So the need for data collection or fauna inventory to find information on fauna around the campus, to minimize the loss of several fauna species which is added because in the last 10 years there has been no fauna inventory in the FKIP campus area. So, our team of observers are interested in conducting observations with the title "Fauna Exploration and Inventory in the Mulawarman University FKIP Campus Area".

The purpose of this research itself is as follows.; Knowing the diversity of fauna species found at Mulawarman University, Knowing the fauna habitats in Mulawarman University, AND Analyzing the benefits of the diversity of fauna found in the Mulawarman University environment. Based on the research objectives. So, the benefits of this research are as follows: To find out the diversity of fauna species found at Mulawarman University, To find out the fauna habitats in Mulawarman University, To find out the analysis of the benefits of fauna diversity found in the Mulawarman University environment

2 Methodology

2.1 time and place

The research was carried out in April - June 2021, to coincide in the Mulawarman University area, Kec. North Samarinda, Samarinda City, East Kalimantan. The research location itself is divided into three paths, namely Gazebo, Water Pool and Park. The research was carried out by making direct observations to the location to see the real condition and presence of fauna in the Mulawarman University Area.



Picture 1. Map of Observation Locations on the Mulawarman University FKIP Campus

2.1. Data Collection Technique

The data needed in this study uses several techniques including the following:

2.1.1 Observation

This research itself was carried out in April - June 2021, coinciding in the area of Mulawarman University, Kec. North Samarinda, Samarinda City, East Kalimantan. The research was carried out by making direct observations to the location to see the real condition and presence of fauna in the Mulawarman University Area. Observations are made to see the natural potential that can be used as a habitat for various types of animals

2.1.4 Documentation

In addition to observation, data collection was also taken through other sources such as journals, theses, theses and the internet as well as other materials related to this research. The documentation method itself aims to be evidence that the preparation has carried out research through electronic and print media

2.2 Data Analysis Technique

The data that has been collected is analyzed by formulating words and sentences that have been obtained in the field so that they can answer problems with original evidence based on the research studied. This research is carried out by exploring the data. The data is analyzed with guaranteed references, complete with descriptions containing explanations or depictions and telling the actual state of the object under study, the data is then classified according to the focus of the research that has answered all the questions in the problem formulation, in another sense to solve and answer all the questions in the problem formulation we use a description technique. Primary data were obtained from animal observations, types of animals, and the number of individuals. Secondary data were collected through literature, interviews, and other sources regarding the general condition of the research location, climatic conditions, textbooks, theses and research journals as well as practicum reports.

Species Diversity Index (H')

The index used is the Shannon-Wiener Diversity Index, with the formula :

$$J' = -\Sigma\, i = 0 pi \ln pi$$

$$pi = ni/N$$

Description :

H' = Shannon-Wienner species diversity index

ni = nubers of individuals of the 1st species

N= number of individuals of all species

Criterria for the Shannon-Wiener Diversity Index Value (H')

$H' \leq 1 = low\ diversity$

$1 < H' < 3 = medium\ diversity$

$H' \geq 3 = high\ diversity$

Species Evenness Index (J')

Species evenness index expressed with formula :

$$J' = H'/\ln S$$

Description :

J' = Pielou evenness index

H' = Species diversity index

S = Number of species

Criteria for the Species evenness index (J')

$0 < J \leq 0{,}5 = stressed\ community$

$0{,}5 < J \leq 0{,}75 = labile\ community$

$0{,}75 < J < 1 = stable\ community$

Margalef Species Wealth Value (Richness Index)

The species richness value used is the Margalef species richness index using the following formula :

$$DMg = (S-1)/\ln N$$

Description

DMg = Margalef Species Wealth Value

S = Number of species found

N = Number of all species

The criteria for the Margalef Species Wealth Index value are as follows

$D < 2{,}5 = low\ level\ of\ richness$

$2{,}5 < D < 4 = moderate\ level\ of\ richness$

$D > 4 = high\ level\ of\ richness$

3 Results and Discussion

Habitat Condition

Data collection carried out in the field itself was carried out on 3 types of existing habitats, namely Gazebos, Ponds / Trenches and Parks. From the data obtained, it is known that there are 17 types of fauna from 13 families which can be grouped into 3 orders, namely Aquatic, Mammal and Insect. For the next discussion, we will discuss the order of Aquatic and Insects.

No	Ordo	Famili	Jenis	Lokasi			Total	Status
				A	B	C		
1	Aquatik	Aplocheilidae	*Aplocheilus panchax*	1	0	0	1	LC
2		Poeciliidae	*Poecilia reticulata*	2	0	0	2	LC

3	Mamalia	Felidae	*Felis catus*	0	2	0	2	-
4	Insekta	Acrididae	*Valanga sp.*	0	0	1	1	LC
5		Aeshnidae	*Aeshna petalura*	0	0	1	1	LC
6		Apidae	*Xylocopa appendiculata*	0	0	1	1	LC
7		Formicidae	*Oecophylla smaragdina*	0	0	1	1	-
8		Mantidae	*Mantis religiosa*	0	0	1	1	LC
9		Nymphalidae	*Acraea terpsicore*	0	0	1	1	-
10			*Elymnias hypermnestra*	0	0	1	1	-
11			*Melanitis leda*	0	0	1	1	-
12		Papilionidae	*Papilo demoleus*	0	0	1	1	-
13		Pieridae	*Colias croceus*	0	0	1	1	-
14			*Leptosia alcesta*	0	0	1	1	-
15		Pyrgomorphidae	*Atractomorpha crenulate*	0	0	1	1	-
16			*Atractomorpha similis*	0	0	1	1	-
17		Reduviidae	*Zelus luridus*	0	0	1	1	-
		Total Individu		3	2	14	19	
		Total Jenis		2	1	14	17	

Location A : Pond and Trench LC : Least Concern (Low Risk)

Location B : Gazebo

Location C : Park

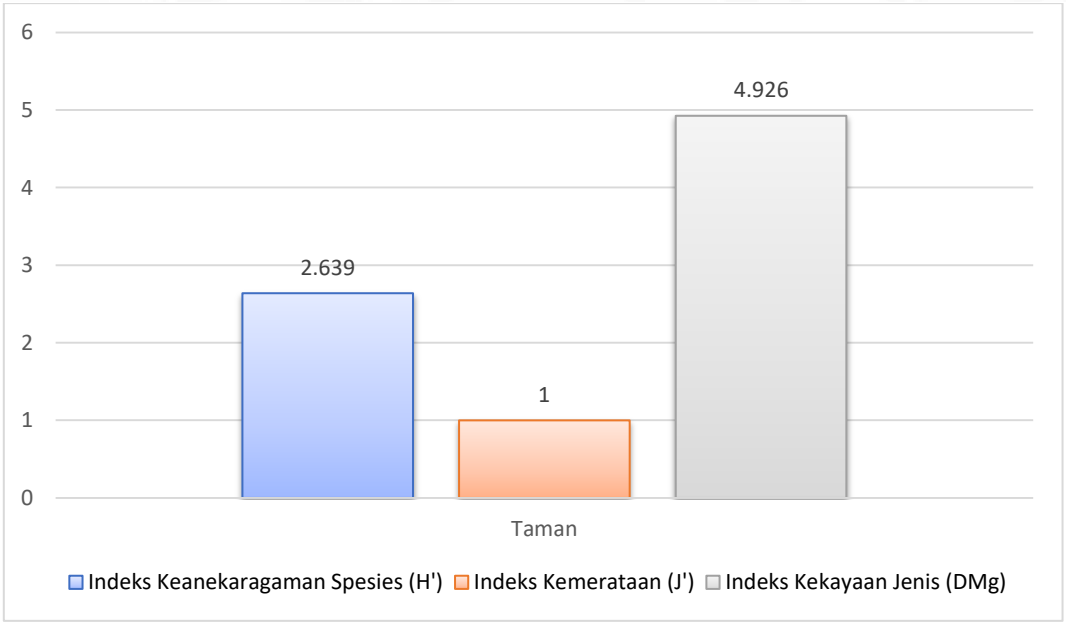
*Conservation status based on IUCN Red List

Diversity is one of the important factors in determining the state and quality of an environment. The research location, which is centered at Mulawarman University, is a habitat that does not have many types of mammals, relatively few or less diverse plants, and the absence of natural water sources. This is the main cause of less diversity in the Mulawarman University Area compared to other locations. Based on data obtained from the International Union for Conservation of Nature and Natural Resources (IUCN), it is known that of the 17 species of fauna found at the observation site, it is known that 11 of them are not listed on the IUCN Red List. Meanwhile, 6 other fauna species are listed as Least Concern (LC) or fauna species with low risk. The data obtained is very important as a benchmark in monitoring the diversity of fauna species in Kalimantan, especially in East-North Kalimantan.

INSEKTA

Based on observations made on the Park route, 14 species of insects belonging to 10 families were found. The 10 families found were Acrididae, Aeshnidae, Apidae, Formicidae, Mantidae, Nymphalidae, Papilionidae, Pieridae, Pyrgomorphidae and Reduviidae.

In this observation, the data obtained in the form of data analysis index values are as follows.



Gambar 2. Nilai Indeks Keanekaragaman Spesies, Kemerataan dan Kekayaan Jenis dari Spesies Insekta di Kampus FKIP Universitas Mulawarman

From the data above, it can be seen that the value of the species diversity index for insects is 2,639. Adelina (2016: 53) herself explained that for the Shannon-Wiener diversity index criteria, moderate diversity itself occurs if the value obtained is between 1 and 3 (1 < H' < 3). This shows that the diversity of insect species on the FKIP campus itself is of moderate diversity. The diversity in the data is due to the fact that even though the FKIP campus park is in the middle of the city, the closure of the campus for about a year due to a pandemic has caused the species that live there to be undisturbed from interactions with humans. This can lead to an increase in the number of insect species found in the FKIP Campus Park. The evenness index for insects in the park itself is 1. According to Wahyuningsih (2019: 95), the Species Evenness Index (J) with a value of J = 1 indicates that the level of evenness of species in the environment is quite high or stable. This, according to Insafitri (2010: 57) shows that the species that live in the FKIP campus park have an even number and none of them dominate one another. The Species Richness Index (DMg) according to Santosa (2008: 2) serves to determine the species richness of each species in each community encountered. This shows that the greater the value of the species richness index, the more diverse the species in the environment. From the table above, it can be seen that the value of the species richness index of the insects in the FKIP campus park is 4.926. According to Wahyuningsih (2019:

95), a species richness index with a value of D > 4 indicates a high level of species richness in that location. This shows that the number of species that live in the Mulawarman University FKIP Campus Area is quite large so that it can create an ecosystem that is rich in various species. From the data obtained, it can be seen that of the 14 Insect species in the FKIP Campus, 4 of them are classified as low risk (Least Concern) and are listed in the IUCN (International Union for Conservation of Nature and Natural Resources).

AQUATICS

For Aquatics itself, based on the results of observations that have been made in Trenches and Ponds located on the FKIP Campus, it is known that there are 2 aquatic species originating from 2 families that live in the FKIP Campus Area. Two families were found, namely Aplocheilidae and Poeciliidae.

In this observation, data were obtained which were then converted into data analysis index values as follows:.

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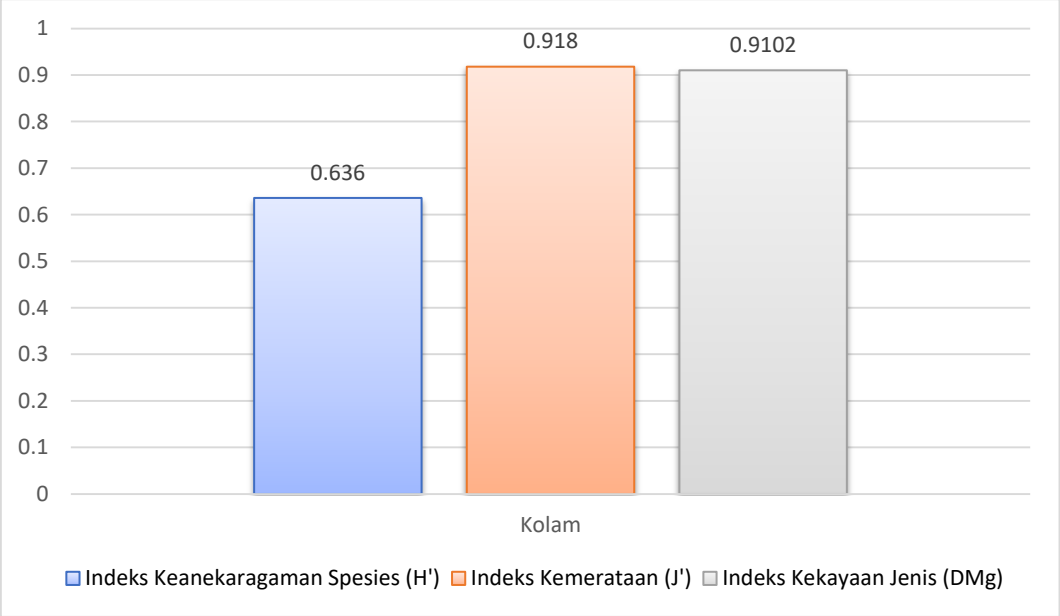

Based on the data above, it is known that the value of the Aquatic Species Diversity Index in the FKIP Campus pond is 0.636. Based on the criteria for the Shannon-Wiener Diversity Index by Adelina (2016: 53), it is known that if the diversity index value of a place is H' 1, it can be concluded that the diversity at that location is low. This can happen because there are only 2 species from 2 families that can be found in the FKIP Campus pond, so it can be concluded that the species diversity in this pathway is quite low. For the evenness index

(J'), it is known that the value of the aquatic evenness index is 0.918. According to Wahyuningsih (2019: 95), the Species Evenness Index (J) with an index value of 0.75 < J 1 indicates that the community in the environment is quite stable. This shows that although the species present are quite low, the number of species that live is quite evenly distributed and none of them dominate each other so as to create a stable environment. For the Margalef Richness Index, it is known that the value of the species richness index in the FKIP Campus Pool is 0.9102. According to Wahyuningsih (2019: 95), the species richness index with a value of D < 2.5 indicates that the level of species richness in the environment is quite low. This can happen because at the time of observation, only 2 aquatic species can be found living in the pond of the FKIP Campus. From the data above, it is also known that two Aquatic species found in the FKIP Campus Pond have a low risk or Least Concern status by IUCN (International Union for Conservation of Nature and Natural Resources). In addition, the Poecilia reticulata species itself has benefits as an ornamental fish, so it has a fairly profitable selling value

4 Conclusions

Geologically, the distribution of fauna in Indonesia is divided into 3 regions, including the Sunda Plain, the Sahul Plain and the Transitional Area (Wallace Region). For this observation itself was carried out at Mulawarman University which is included in the Sunda Plain (Asiatic). From the data obtained during the observation, it is known that the fauna contained in Mulawarman University itself is 17 species. This shows that the diversity of species at Mulawarman University is still little or less diverse. The diversity of fauna species occurs due to several factors, so that a patterned diversity is formed in its distribution, namely the spatial aspect. Factors that affect the distribution of fauna in Indonesia, namely the influence of geological changes, the influence of climate conditions of an area, and the influence of human activities. To prevent the extinction of this fauna, efforts are made, among others by establishing a place of protection for fauna so that their breeding is not disturbed, building several rehabilitation centers and breeding places for certain animals, development with an environmental perspective, stipulating several types of animals that need to be protected. , carry out forest conservation efforts, carry out animal conservation efforts, and carry out efforts to preserve aquatic biota..

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