

**INVENTORY OF BRYOPHYTA DIVERSITY ON THE MADAPANGGA RIVER
BIMA WEST NUSA TENGGARA INDONESIA**

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ABSTRACT

The diversity of mosses in the Madapangga river can be analyzed to find out their morphology and is rarely followed up by scientists as a small part of the flora that has not been explored much, and is also one of the supporting parts of flora diversity Ecologically, mosses play an important role in ecosystem function. Thus, the author aims to describe the moss in the madapangga river. Transect method and make a plot with a plot size of 10 x 10 m, starting from the south to ± 50 m towards the north with a rarity of 10 plots each and identification in the health department laboratory room, to calculate the diversity index of mosses (Bryophyta) using the formula Shannon-Wiener. The results of data analysis using the Shannon-Wiener formula while the overall value of the diversity index is $H' = 0.636514$ because the value is less than $H' < 1$ then the species diversity is said to be very low. The species diversity is said to be very low if $1 < H' < 3$ then the species diversity is said to be moderate if $H' > 3$ then the diversity is very high.

Keywords: inventory, diversity, bryophyta

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INTRODUCTION

Indonesia is one of the countries in the world that has geographically abundant biodiversity (Shahabuddin). Biodiversity is a determinant of the life of certain organisms. Biodiversity includes various types of living creatures from the microorganism to macroorganism level, both on land, sea and other places. (Qori a`yunan, 2017). Biological diversity cannot be separated from the relationships that exist. Between living creatures in their environment, because the distribution of each living creature is influenced by environmental factors. The diversity and abundance of moss varies depending on environmental conditions, including altitude which provides variations in microclimate, especially air humidity and wind direction at the bottom of the mountain. Moss is a small part of the flora that has not been widely explored, it is also one of the parts that supports flora diversity. Ecologically, mosses play an important role in ecosystem function. Like peatlands, it really depends on the layer or moss cover. So the presence of moss as a ground cover also influences productivity, decomposition and community growth in the forest (Mundir, 2013). Moss is a group of micro (small) plants that grow attached to substrates such as trees. Decayed wood, litter, soil and rocks. This group of plants is one of the supports for floral diversity that has not been studied much because at first glance it seems to attract people's attention (Fioretina, 2013). The distribution of mosses is very dependent

on environmental conditions. These environmental factors include temperature, humidity, light intensity and altitude. (Nuroh, 2014).

Based on the results of observations and direct observations carried out every weekend, it is clear that many moss plants in the Madapangga River area, Ndano Village, Bima Regency are not fully known or known by the names of the species and their morphological characteristics to the local community. Based on the description above and the background above, the problems studied are: What types of moss are found in the Madapangga River Area? What is the index of moss species diversity in the Madapangga River Area? And the aim of this research is to find out the types of moss found in the Madapangga area and to find out the species diversity index in the Madapangga River area.

METHOD

This research was conducted from August to September 2021 in the Madapangga River area, Bima Regency, using quantitative descriptive, that is this type of research is used to describe or explain events or occurrences that are currently occurring in the form of numbers. This research was carried out from the river bank from north to south. And the method used in this research was the transect method and making plots with a plot size of 10 x 10 m, starting from the south to ± 50 m towards the north with a spacing of each plot 10 and carry out identification in the health department laboratory room, to calculate the moss (Bryophyta) diversity index using the Shannon-Wiener formula (Odum, 1993).

$$H' = -\sum P_i \ln(P_i) \text{ where } P_i = (N_i/N)$$

Description:

H' = Shannon-Wiener diversity index

n_i = number of individuals of type i

N = total number of all types

The criteria for the Shannon-Wiener diversity index value are as follows

If H' < 1 then diversity is low. If 1 < H' < 3 then diversity is medium

If H' > 3 then diversity is high.

RESULTS AND DISCUSSION

Based on the results of observations of the diversity bryophyta on the coast of the Madapangga River, Bima Regency, after observations were made, the types of moss were obtained which consisted of 2 classes, namely the Bryopsida class with the number of species being 1 and the largest number of individuals in each observation transect, Transect 1 was on the west coast of the Madapangga River, Bima Regency and transect 2 is located on the west coast of the Madapangga River, Bima Regency. And on transect 2 there is 1 Marchantiopsid class. The types of moss found at the research location are presented in table 1.

Table 1. Types of moss found on observation transects based on habitat.

NO	Class	Family	Species	T		Total	Subtract
				1	2		
1.	<i>Bryopsida</i>	<i>Pottiaceae</i>	<i>Barbula Indica</i>	3	1	4	Stone
2.	<i>Marchantiales</i>	<i>Cyatodiceae</i>	<i>Cyatodium cavernum</i>	2	2	2	Stone
Total						6	

Table 2. Shanon Wiener Calculation

No	Class	Family	Species	T1	T2	Total	Pi	LN _{Pi}	PiLN _{Pi}	H'
1	<i>Bryopsida</i>	<i>Pottiaceae</i>	<i>Barbula Indica</i>	3	1	4	0,66667	-0,40547	-0,27031	0,27031
2	<i>Marchantiales</i>	<i>Cyatodiceae</i>	<i>Cyatodium cavernum</i>		2	2	0,33333	1,09861	-0,3662	0,366204
Totoal						6				0,636514

Information:

T : Transect

Pi : Index of each species (ni/N)

H': Diversity index Shannon-Wiener

Based on the calculation data in table 4.2 above, it can be seen that the moss plant diversity index in all observation transects is said to be very low, $H'=0.636514$ because if the value is less than $H'<1$, the species diversity is said to be very low in this category. Based on the criteria stated in assign it to Shannon-Wiener if $H'<1$ then the species diversity is said to be very low if $1<H'<3$ then the species diversity is said to be medium if $H'>3$ then the diversity is very high.

CONCLUSION

Research on Bryophyta plants around the Madapangga River, Bima Regency, resulted in 2 species from two different classes, the most commonly found being 1 species from the Bryopsida class and the Marchantiopsid class. A total of 1 species and the results of data analysis using the Shannon-Wiener formula, the overall value of the diversity index is $H'= 0.636514$ because if the value is less than $H' < 1$, the species diversity is said to be very low in this category. Based on the criteria set in Shannon-Wiener if $H'<1$ then the species diversity is said to be very low if $1<H'<3$ then the species diversity is said to be medium if $H'>3$ then the diversity is very high.

REFERENCES

- Bawaihatty, N., Istomo, and I. Hilwan. 2014. Diversity and Ecological Role of Bryophytes in the Sesaot Forest of Lombok, West Nusa Tenggara. *Journal of Tropical Silviculture*. Vol. 05(1):13-17.
- Dirga Shabri Pradana, 2013, Epiphytic Moss Community of Coffee Plantations in Tanjung Russia, Lampung, Thesis Department of Biology, Faculty of Mathematics and Natural Sciences, Bogor Agricultural Institute, Bogor
- Djoko S., 2007, Animal and Plant Science and Technology Encyclopedia, Jakarta: GanecaExact Publisher.
- Fiorentina.I.M, Susan Dewi. 2013. Diversity of Moss Types in the Raja Ampat Islands, West Papua. Jakarta Bogor: Botanical Gardens Bulletin Vol.16 No.2.
- Fiorentina.I.M, Susan Dewi. 2013. Diversity of Moss Types in the Raja Ampat Islands, West Papua. Jakarta Bogor: Botanical Gardens Bulletin Vol.16 No.2.
- Glime, J. M. 2017. Anthocerotophyta. Chapt. 2-8. In: Glime, J. M. Bryophyte Ecology. Volume 1. Physiological Ecology. Ebook sponsored by Michigan Technological University and the International Association of Bryologists.
- Glime,j(2017) Bryophyte Ecology Volume 1physiological Ecology Chapter 2.Ebook Sponsored By Michigan Technological University And The International Association Of Bryologists
- Indah, W, F. 2009. "Diversity of the Moss genus Pandanus in the National Park, Ujung Kulon, Banten", *Indonesian Natur Journal*, Vol.11 No.2 (April 2009), p. 89-93.
- Ipaulle, A. A., Suryadarma, and Djukri. 2017. The influence of moss (Bryophyta) as a composition of the media for sprouting and growth of Binahong plants (*Anrederacordifolia*). *Biology Study Program Journal*. Vol 6 (3): 154-164.
- Indriani, L., R. P. Poppy, and Sulistiono. 2013. Inventory of Terrestrial Moss in Roro Kuning Nganjuk. *Journal of Biology*. Vol 7 (1): 340-343.
- Indah, N, 2009. "Taxonomy of Lower Plants, Schyzophyta, Thallophyta, Bryophyta, Pterydophyta", (Department of Biology, Faculty of Mathematics and Natural Sciences, PGRI Jember Teacher Training Institute, 2009), p. 49.
- Jumianti, 2020. Invertarization of Lumut Types (Bryophyta).
- Kharis Triyono, 2013. Biodiversity in Supporting Food Security. *Journal of Agricultural Innovation*, Vol.11 No.1.