BUSH COMMUNITY STRUCTURE IN THE FOREST AREA OF LAMPAGEU UJONG PANCU VILLAGE GREAT ACEH DISTRICT

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ABSTRACT

Shrubs are the lowest type of plant compared to trees and shrubs. Shrubs are woody plants that measure more than one meter in height but are lower than shrubs. The method used in this research is the quadratic method and then sampling is carried out using proportional sampling using the transect line technique. Data collection was carried out using a rectangular example. The results obtained show that the shrubs in the Lampaggeu Ujong Pancu Village area, Aceh Besar Regency consist of 8 species from 8 families.

Keywords : Community structure, Bush, Lampageu Ujong Pancu

INTRODUCTION

Aceh Besar Regency is one of the districts in Aceh, located on the line 50 3'00"- 5 0 36'00" North Latitude and 940 59'24"- 950 55'48" East Longitude. Geographically, the location of Aceh Besar Regency is that the North side borders the Malacca Strait and Banda Aceh City, the South side borders Aceh Jaya Regency, the East side borders Pidie Regency, and the West side borders the Indonesian Ocean. The area of Aceh Besar Regency is 2,903.50 km2, (M. Ikbal, 2019). Lampageu Ujong Pancu is a village located in Peukan Bada sub-district, Aceh Besar Regency, Aceh Province.

Natural ecosystems consist of 2 main components, namely biotic components and abiotic components. Vegetation or plant community is a biotic component that occupies certain habitats such as forests, grasslands, shrubs, etc. The structure and composition of vegetation in an area is influenced by other ecosystem components that interact with each other, so that vegetation that grows naturally in an area is actually a reflection of the results of the interaction of various environmental factors and can experience drastic changes due to arthropogenic influences, (S.M. Sundarapandian, 2002) .

Community structure is one of the studies studied in Synecology which includes diversity, uniformity, dominance and abundance. Community structure is important to study, namely to understand the distribution, arrangement and composition of a community.

Communities consist of organisms that interact with each other in a certain environment (Yusra 2017). Plant community analysis is a method that studies the arrangement or composition of vegetation types and structures. In forest ecology, the vegetation unit studied is a plant community which is a concrete association of all plant species that occupy a habitat. According to Indriyanto (2006), the goal to be achieved in community analysis is to determine the species composition and structure of plant communities in an area being studied. Community composition and structure describe the level of abundance of a species in a community, the distribution of individuals between species, and the influence of species on system balance and community stability (Soegianto 1994).

Shrubs are the lowest type of plant compared to trees and shrubs. Shrubs are woody plants that measure more than one meter in height but are lower than shrubs (Nanny Kusminingrum, 2007). Shrubs are vegetation that has branches and is generally less than 8 meters high. Shrubs are vegetation that is not very large, have woody stems, branches near the ground surface, and generally have taproots. Shrubs are layers that grow in clumps with short stems under 1.5 meters high. Shrubs are also woody plants that are more than one meter high, but lower than shrubs and only the main branches are woody. Shrubs have important ecological functions in forest ecosystems, including as a habitat for birds, insects, wildlife and other animals. Apart from that, the bush is also useful as a hedge plant and can also be used in traditional medicines (Trikinasih, 2018). This research is useful for providing information and knowledge about the structure of bush plant communities in the forest area of Lampageu Ujong Pancu village, Aceh Besar Regency.

Based on the description above, the aim of this practicum is to understand the basic principles of plant community structure and be able to understand and implement scientific methods to obtain quantitative information on the structure of bush plant communities in Lampaggeu Ujong Pancu Village, Aceh Besar Regency.

RESEARCH METHODS

This research was conducted in the village of Lampageu Ujong Pancu, Aceh Besar Regency. This research was carried out on June 17 2023.

Research Tools and Materials

Tabel 1. Research Tools

No	Tool	Function
1	String of raffia	To determine the plot area
2	Stake	For example dividing marks
3	Stationery	To record research results
4	Plywood	For making herbarium
5	Camera	To take a picture of each sample
6	Meter cloth	To measure plant height
7	Scissors	To cut parts of plants as samples
8	Identification book	For reference material for growing identification

Tabel 2.Material

	Material	Function
1	Alcohol 70%	For making herbarium
2	Plastic bags	To collect sampling results
3	Whiteboard marker	To mark the name on the plastic bag on the plant

Determination of Station Points and Plot Centers and Sampling

The method used in this research is the quadratic method, sampling was carried out by purposive sampling with a transect technique. There are 4 stations, each station has one transect line consisting of 4 plots, so that the total plots from the 4 stations are 16 plots. From each plot the transect line is 2m x 2m. Then bush samples were taken by plucking the part of the stem containing the leaves of each species found in each plot.

Data collection technique

This research was carried out using the quadratic method using rectangular sample plots. The sample plot size used is 2 x 2 m2. The number of sample plots used was 5 plots. The initial determination of where to place the sample plots was carried out randomly. In each sample plot, every individual plant found is recorded, the number of species is counted, photographed and samples are taken for making a herbarium.

Data analysis technique

After the data is collected, proceed with analyzing the data by looking for: absolute density (Km), absolute frequency and specifically for trees, absolute dominance analysis is carried out. To obtain values for the structure and community of shrub plants, use the following formulas:

Absolute Density (Km)

Absolute density or species density is the number of stands of type I in one unit area (Eggy, 2016). To determine the density of bush plant species in Lampageu Village.

$$\text{KM} = \frac{Jumlah\ suatu\ spesies}{Luas\ petak\ conto}$$

Relative Density (KR)

Relative density is the ratio between the number of stands of type I and the total stands of all types

$$\text{KR} = \frac{Kerapatan\ mutlak\ suatu\ spesies}{Jumla\quad kerapatan\ suatu\ spesies} \times 100\%$$

Absolute Frequency (FM)

Absolute frequency is the probability of finding a type I in all sample plots created.

$$\text{FM} = \frac{\sum Peta\ con\quad yang\ diduduki\ spesies}{\sum Banyak\ peta\ conto}$$

Relative Frequency

Relative frequency is the comparison between the absolute frequency and the sum of the absolute frequencies of all species.

$$\text{FR} = \frac{Frekuensi\ Mutlak\ spesies\ 1}{Jumlah\ frekuensi\ mutlak\ seluruh\ spesies}$$

Results and Discussion

The results of research carried out in the forest area of Lampageu Village, Aceh Besar, found 8 species of shrubs from 8 families, namely, Fabaceae, Acantheceae, Asteraceae, Oxaladaceae, Passifloraceae, Piperaceae, and Sapindaeceae. The list of types of bush plants in the forest area of Lampageu Village, Peukan Bada District, Aceh Besar can be seen in table 1 below:

Tabel 1. List of Shrub Plant Types in the Lampageu Village Forest Area Peukan Bada District, Aceh Besar

No	Regional Name	Scientific Name	Nama Famili	Picture
1	Lamtoro	*Leucaena leucocephala*	Fabaceae	
2	Kecana Ungu	*Ruellia angustifolia*	Acanthaceae	
3	Balakacida	*Chromolaena odorata*	Asteraceae	

4	Calincing	*Oxalis corniculata* L.	Oxaladaceae	
5	Ermot/Rambusa	*Passiflora foetida*	Passifloraceae	
6	Cabe Jawa	*Piper retrofractum*	Piperaceae	
7	Paria Gunung	*Cardiosperma hallicacabum*	Sapindaceae	
8	Patha	*Cissampelos pareira* L.	Menispermaceae	

Absolute Density and Relative Density Values

The absolute density and relative density values in the forest area of Lampageu Village, Peukan Bada District, Aceh Besar can be seen in table 2 below:

Tabel 2. Values of Absolute Density and Relative Density of Shrub Plants in the Area Lampageu Village Forest, Peukan Bada District, Aceh Besar

No	Regional Name	Scientific Name	Total	Absolute Density	Relative Density
1	Lamtoro	*Leucaena leucocephala*	4	1	7,843
2	Kecana Ungu	*Ruellia angustifolia*	7	1,75	13,735
3	Balakacida	*Chromolaena odorata*	7	1,75	13,725
4	Calincing	*Oxalis corniculata* L.	1	0,25	1,960
5	Ermot/Rambusa	*Passiflora foetida*	20	5	39,215
6	Cabe Jawa	*Piper retrofractum*	6	1,5	11,764
7	Paria Gunung	*Cardiosperma hallicacabum*	2	0,5	3,921
8	Partha	*Cissampelos pareira* L.	4	1	7,843
	Amount		51	12,75	100

Based on table 2, it shows that the bush plant density value as seen from the highest absolute density is *Passiflora foetida*, namely 5 and the lowest density is *Oxalis corniculata* L. Likewise, the highest relative density value is *Passiflora foetida*, namely 39.215 and the lowest relative density value is *Oxalis corniculata* L., namely 1.960.

The highest relative density is in *Passiflora foetida* because there are 20 individuals in the research location so that the level of environmental adaptation has the ability to maintain the sustainability of the species. Meanwhile, the kraptn value is relatively low in *Oxalis corniculata* L because the number of individuals is 1 at the research site so there is very little adaptation in this environment.

Absolute Frequency and Relative Frequency Values

The relative frequency values in the forest area of Lampageu Village, Peukan Bada District, Aceh Besar can be seen in table 3 below:

Tabel 3. Absolute value frequency and relative frequency of shrubs in forest areas Lampageu Village, Peukan Bada District, Aceh Besar

No	Regional Name	Scientific Name	Total	Absolute Frequency	Frequency Relatively
1	Lamtoro	*Leucaena leucocephala*	4	0,8	7,843

2	Kecana Ungu	*Ruellia angustifolia*	7	1,4	13,735
3	Balakacida	*Chromolaena odorata*	7	1,4	13,725
4	Calincing	*Oxalis corniculata* L.	1	0,2	1,960
5	Ermot/Rambusa	*Passiflora foetida*	20	4	39,215
6	Cabe Jawa	*Piper retrofractum*	6	1,2	11,764
7	Paria Gunung	*Cardiosperma hallicacabum*	2	0,4	3,921
8	Partha	*Cissampelos pareira* L.	4	0,8	7,843
	Amount		51	10,2	100

Based on table 3, it shows the absolute frequency value of shrub plants as seen from the highest absolute frequency is Passiflora foetida, namely 4 and the lowest absolute frequency is Oxalis corniculata L. Likewise, the highest relative frequency value is Passiflora foetida, namely 39.215 and the lowest relative frequency value is Oxalis corniculata L. namely 1,960.

The highest absolute frequency is Passiflora foetida because there are 20 individuals in the research location so that the level of environmental adaptation has the ability to maintain the sustainability of the species. Meanwhile, the frequency is relatively low in Oxalis corniculata L because the number of individuals is 1 at the research site so that adaptation in this environment is very small.

CONCLUSION

The results of research conducted in the forest area of Lampageu Village, Peukan Bada District, Aceh Besar, found 8 species from 8 families. The bush plant density value seen from the highest absolute density and highest frequency is *Passiflora foetida*, namely 39.215, while the lowest density value and lowest frequency is *Oxalis corniculata* L., namely 1.960.

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