

Structure And Vegetation Of Soil Plants In Cobantalun River Flow Area (Das)

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Abstract:

Coban Talun is one of the natural attractions of the waterfall. Accessibility is quite easy and close to the city center. Indonesia's nature consists of various lands and waters that make up the archipelago's ecosystem, which stretches from Sabang to Merauke. These ecosystems have a distinctive ecology such as forest ecosystems. Indonesia's geographical location is at 60LU-110LS and 950-1400BT. As well as between the two continents of Asia and Australia resulted in the existence of forest vegetation zones and different forest types. Based on the results of the analysis of vegetation cover plants in the Coban Talun watershed, 19 species of understorey were found, on the transect on the left of the river there were 8 types of understorey, while on the right of the river there were 11 types of understorey, based on vegetation analysis on the transect. 1 the highest value was owned by *Eupatorium riparium* (INP 41.18) because in transect 1 the plant was found in every plot from plot 1 to plot 5, while in transect 2 the most abundant plant was *Paspalum sp* (INP 36.36) with the number of 4 species contained in plot 1, plot 2, plot 4 and plot 5

The presence of understorey in the forest can function as a barrier to rainwater and surface runoff thereby minimizing the risk of erosion. Based on the results of vegetation analysis of ground cover plants in the Coban Talun watershed (DAS) the diversity index of understorey species on transect 1 was dominated by *Eupatorium riparium* plants (INP 41.18) while in transect 2 was dominated by *paspalum sp* plants with (INP 36, 36) and the understorey community has a fairly high level of vegetation diversity.

Key Word: Structure, vegetation, river flow area

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I. Introduction

Coban Talun is one of the natural attractions of the waterfall. Accessibility is quite easy and close to the city center. In 1990, the location of the Coban Talun waterfall was popular among residents of Batu and Malang. The place is used as a campground area for student activities or an organization. One of the problems that arise is the flash flood natural disaster caused by the transfer of forest functions around the Brantas watershed area, so that the sensitivity of the soil in the Brantas watershed is easily eroded. Land use in the upstream area was initially dominated by forest then many are converted to other activities. This happens due to human intervention on land in order to meet the needs of life, both material needs and spiritual needs (Arsyad, 2006).

One of the important components that determine the quality of the watershed area is the diversity of vegetation, which has an important role as a component of buffering erosion and preventing drought (Thurow, 1991). The condition of vegetation around the watershed determines the quality of the watershed as a whole (Maridi et al., 2015).

Ground cover plant communities have a very important role in maintaining and protecting forest sustainability. Undergrowth in a forest can function both ecologically and economically. Ecologically, understorey plants function to protect the soil from raindrops, reduce the velocity of ground water, as a habitat for various types of animals and increase the nitrogen content of the soil (Burianek et al. 2013).

II. Material And Methods

This research was conducted in the Coban Talun watershed, Batu City, East Java. The research was carried out in April 2021.

The equipment used in this research are: Roll meter for measuring plots, meter for measuring plant height, camera for documentation in the field, Talysheet for recording and classifying observed data, each observation

process and data obtained in the field, and stationery for record all data in the field. The object observed was the vegetation structure of ground cover plants in the watershed (DAS) in Coban Talun

This research uses survey method and direct observation in the field. The data collected includes primary data and secondary data. Primary data was obtained by making direct observations in the field, to determine the vegetation structure of ground cover plants by making 2 transects on the left and right of the river, the length of the left transect was 50 meters and the length of the right transect was 50 meters, each transect has 5 plots with size 2 x 2 meters. The primary data collected is plant species in the watershed in Coban Talun.

The data obtained during the study were analyzed quantitatively by calculating the index of species diversity, and the structure of vegetation in an ecosystem. In conducting a vegetation analysis, the variables observed were: Important Value Index is an index of importance that describes the importance of the role of a vegetation type in its ecosystem. Important Value Index (INP) in understorey = FR+KR (Lahusen, et al., 2014; Ismaini, et al., 2015; Bachtiar and Ura, 2016).

III. Result

Types of Ground Cover Plants Found in the Coban Talun River Basin

Based on the results of observations of understorey plants in the Coban Talun watershed as many as 16 species of understorey with quite a lot of numbers. *Eupatorium riparium*, *Paspilum sp*, *Isaimun sp*, *Behlia sp*, *Cyperus monosepala*, *Portulaca sp*, *Philodendron sp*, *Oksunopus compressus*. *Athirum esculetum*, *Portulaca sp*, *Alternathera sessilia*, *Oplusminus sp*, *Paspilum sp*, *Polygonum sp*, *Sinedrella mensicana*, *Ultricase sp*, *Phiolaca deoca*, *Drymaria cordata*, *Eupatorium riparium*

Types of Plant Vegetation

Vegetation analysis is a way to study the type composition and structure of vegetation. To find out the description of the composition of the understorey species that became the object of research, calculations were carried out using the formula or equation according to Soerianegara (1998) as follows: density (K), relative density (KR), frequency (F), relative frequency (FR). important value (INP)

The Importance Value Index (INP) is an Index of Importance that describes the importance of the role of a type of vegetation in its ecosystem. If the INP of a species has a high value, then that species greatly affects stability.

Table no 1 Table of Importance Values of Lower Plants in the Coban Talun River Basin found on transect 1

No	Nama Spesies	Kerapatan (K)	Frekuensi (F)	Kerapatanrelatif (Kr)	Frekuensi Relatif (Fr)	INP
1	<i>Pspilum sp</i>	0,05	0,2	5,88	5,88	11,76
2	<i>Eupatorium riparium</i>	0,25	1	29,41	29,41	41,18
3	<i>Isaimun sp</i>	0,10	0,4	11,76	11,76	23,53
4	<i>Behlia sp</i>	0,15	0,6	17,65	17,65	35,29
5	<i>Cyperus monosepala</i>	0,10	0,4	11,76	11,76	23,53
6	<i>Portulaca sp</i>	0,05	0,2	5,88	5,88	11,76
7	<i>Phylodendron sp</i>	0,05	0,2	5,88	5,88	11,76
8	<i>Oksunopus kompresus</i>	0,10	0,4	11,76	11,76	23,53
	TOTAL	0,85	3,4	100,00	100,00	182,35

Table no2 Table of Importance Values of Undergrowth in the Coban Talun Watershed on Transect 2

No	Nama Spesies	Kerapatan (K)	Frekuensi (F)	Kerapatan Relatif (Kr)	Frekuensi Relatif (Fr)	INP
1	<i>Athyrum esculetum</i>	0,05	0,2	4,55	4,55	9,09
2	<i>Portulaca sp</i>	0,05	0,2	4,55	4,55	9,09
3	<i>Alternathera sessilia</i>	0,10	0,4	9,09	9,09	18,18
4	<i>Oplusminus sp</i>	0,15	0,6	13,64	13,64	27,27
5	<i>Paspilum sp</i>	0,20	0,8	18,18	18,18	36,36
6	<i>Poligonum Sp</i>	0,05	0,2	4,55	4,55	9,09
7	<i>Sinedrella Mensicana</i>	0,15	0,6	13,64	13,64	27,27
8	<i>Ultricase sp</i>	0,05	0,2	4,55	4,55	9,09

9	<i>Phylaca Deoca</i>	0,05	0,2	4,55	4,55	9,09
10	<i>Drymaria Cordata</i>	0,15	0,6	13,64	13,64	27,27
11	<i>Eupatorium Riparium</i>	0,10	0,4	9,09	9,09	18,18
	TOTAL	1,10	4,4	100,00	100,00	200,00

IV. Discussion

The Ecosystem (Fachrul, 2007). The INP of a species in lower plants is obtained from the sum of the relative density and relative frequency of a species. In transect 2, it can be seen that plot 1 contains many types of plants.

Filter and Hay (1998) in Setyawan (2006) state that one of the environmental conditions that most influence plant growth under stands include sunlight or shade. Undergrowth also has an important role in maintaining the balance of natural ecosystems, understory plants function as soil cover that increases humidity so that the decomposition process can take place more quickly, a rapid decomposition process can provide nutrients for the main plant, fallen leaves as sersa are returned to the tree in the form of nutrients that have been decomposed by bacteria or microbes (Indiyanto 2006). Fachrul (2007) states that the diversity index is a vegetation parameter that is very useful for comparing various plant communities, especially to study the influence of disturbances of environmental or abiotic factors on the community or to determine the state of succession or community stability. Because in a community in general there are various types of plants, the older or more stable the condition of a community, the higher the diversity of plant species.

Competition will increase the fighting power to survive, strong species will win and suppress others, so that the losing species become less adaptive and cause low reproduction rates and low density (Kunarso and Azwar, 2013). Undergrowth is very influential from the lighting of the sun and the type of species that live as a place of shade. Undergrowth has many benefits for the environment, including being able to help keep soil aggregates from being easily separated and eroded by rainwater and runoff (Hilwan et al., 2013).

V. Conclusion

Based on the results of vegetation analysis of ground cover plants in the Coban Talun watershed, there are 19 types of understory plants, namely: *Eupatorium riparium*, *Paspilun sp*, *Portulaca sp*, *Philodendron sp*, *Eupatorium riparium*, *Athyrum esculatum*, *Portulaca sp*, *Ultricase sp*, *Phylaca deoca*, *Eupatorium riparium*, *paspalum sp*

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