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VEGETATION POTENTIAL ANALYSIS IN LAKE MOOAT TOURIST AREA, NORTH SULAWESI

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Abstract:
This study aimed to assess the potential vegetation of trees in the Lake Mooat tourist area and identify the dominant tree species in this attraction. The research employed a descriptive quantitative approach and was conducted in October-November 2018. The study area featured a plateau topography at an approximate elevation of 1,090 meters above sea level, as indicated in the Lake Mooat Potential Study Report 2013. The survey method was used, and plots were established with dimensions of 20 meters by 20 meters. Data collected included tree density, relative density, frequency, relative frequency, dominance, and the Important Value Index (INP). The findings revealed the presence of 242 individual trees and identified 15 tree species. Among these species, Mahogany had the highest Important Value Index, reaching 156.29%, indicating its ecological significance in the area. Mahogany also emerged as the most dominant tree species at the Lake Mooat tourist attraction, with a dominance value of 55.51%. In conclusion, the study highlighted the rich diversity of tree vegetation in the Lake Mooat tourist area, with Mahogany as the most significant and dominant species. On the other hand, the tree species with the lowest Important Value Index was Trembesi (Albizia saman), registering a value of 1.563%. These findings contribute to understanding the ecological composition and potential conservation efforts for the vegetation in this region.

Keywords: Vegetation Potential, Tourist Attraction, Continuity.

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INTRODUCTION

Vegetation analysis is a way to determine how widely various species are distributed in an area through direct observation. It is done by making plots and observing the morphology and identification of existing vegetation. The presence of vegetation in an area will positively impact the balance of the ecosystem on a broader scale. Vegetation in ecology is the term for the entire community of plants. Vegetation is a part of life continuously composed of plants occupying an ecosystem. Different types of forests, gardens, grasslands and tundra are examples of vegetation (Rohman & Wayan, 2001).

In general, the role of vegetation in an ecosystem is related to regulating the balance of carbon dioxide and oxygen in the air, improving the physical, chemical and biological properties of soil, regulating groundwater systems and others. Although, in general, the presence of vegetation in an area has a positive impact, the effect varies depending on the structure and composition of the vegetation that grows in that area. The structure and composition of vegetation in an area are influenced by other ecosystem components that interact with each other so that vegetation that grows naturally in the area is a reflection of the results of the interaction of various

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environmental factors and can experience drastic changes due to anthropogenic influences (Setiadi, 1984).

Forest damage impacts ecological functions, such as the root system of forest trees will be disrupted, and forest floor cover plants cannot increase soil stability, so they cannot reduce the speed of water flow which causes erosion and flooding. In addition, forest damage reduces plant carbon absorption and storage, affecting plant biological activity and biodiversity (Suripin 2001 in Utami 2007). An ecosystem is an ecological system formed by the mutual relationship between living things and the environment, which influence each other. Plant community or vegetation is one of the essential components of the ecosystem. Critical components in an ecosystem are biotic components (living things) and abiotic components (non-living things).

The presence of vegetation in an area will positively impact the ecosystem balance on a broader scale. However, the effect varies depending on the structure and composition of the vegetation that grows in each area. Biotic components include animals, plants and microbes, while abiotic components include water, air, soil and energy. The area where researchers conducted the research is the area of the Mooat Lake tourist attraction. The Mooat Lake tourist attraction is located in Mooat Village, Mooat District, East Bolaang Mongondow Regency, with an area of 2.2 Ha, according to Measurement Letter Number: 4928/1983. (Source: East Bolaang Monondow Tourism and Culture Office).

The Mooat Lake tourist attraction is one of the tourist objects managed by the Regional Government of East Bolaang Mongondow Regency through the East Bolaang Mongondow Tourism and Culture Office with the potential for diversity of vegetation types in the area, so there is a need for practical protection efforts by observing the potential for vegetation. Furthermore, identify the types of tree-level vegetation that predominate in the Lake Moat tourist attraction area (Riyadh et al., 2022).

Based on the description of the existing background, researchers are interested in conducting research with the title "Vegetation Potential Analysis In Lake Mooat Tourist Area, North Sulawesi"with the hope that this research can provide an understanding and educational information for both researchers, the public, tourism managers and especially the district government. East Mongondow Bolaang. From the results of this study, it is hoped that it will provide input in formulating an appropriate action for managing the Mooat Lake tourist attraction. In this case, the concept and government policy as well.

METHOD

This research will be carried out at the Lake Moaat Tourism Object. Mooat Village, Moaat District, East Bolaang Mongondow Regency, North Sulawesi. It is starting from September 2018 to November 2018. Materials and Research Tools are; a camera, GPS, meter tape, roll meter, camping gear, stationery, moaat village profile, plastic strap, and logistics. The population in this study consists of trees with a diameter of 20 cm and above, situated at the observation site within the Lake Mooat Tourism Object, Mooat Village, Mooat District, covering an area of 2.2 hectares. The method used in this research is 100% census in all areas. In order to facilitate the observation process, the research site will be organized by creating a 20-meter-wide path that aligns with the shape and boundaries of the tourist site. Along this designated path, observation plots will be set up at consistent intervals, each measuring 20 meters by 20 meters.

The collected data consists of primary and secondary data. The primary data includes the condition of the vegetation, including the composition of constituent species and the structure of the vegetation in the observation area. Conversely, the secondary data were obtained from the Tourism and Culture Office of East Bolaang Mongondow Regency, the Regional Development

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Planning Agency (BAPPEDA) of East Bolaang Mongondow Regency, and the Mooat Village Government. In this study, several variables are observed, including the type and number of trees and the diameter of a tree with a diameter of 20 cm and above.

RESULT AND DISCUSSION

Results of Analysis of Tree Vegetation Potential at Lake Mooat Tourism Object. The following results are from analyzing tree-level vegetation potential at the Mooat Lake tourist attraction.

Table 1 . Tree-level vegetation analysis

No	Species Name		K	KR (%)	F	FR (%)	D	Dr (%)	INP
	Local	Scientific							
1.	Pine	*Pine pinasters*	50	0.76	0.05	2,5	15,7	2.86	6,12
2.	Mahogany	*Swietenia macrophylla*	3,875	59,38	0.82	41,4	304.05	55,51	156,29
3.	Coconut	*Cocos nucifera*	50	0.76	0.02	0.01	0.051	0.0931	1.8631
4.	Avocado	*Persea Americana*	100	1.53	0.10	5.05	7.9175	1.44	8.02
5.	Mango	*Manggifera indica*	100	1.53	0.10	5.05	7.9175	1.44	8.02
6.	Bintangur	*Calophyllum*	900	13.79	0.41	20,7	104,735	19,12	53,61
7.	Trambesi	*Albizia saman*	25	0.38	0.02	1.01	0.95	0.173	1,563
8.	Later	*Nyatoh sp.*	575	8,81	0.20	1.01	74,777	13.65	23,47
9.	Ecolyptus	*Eucalyptus melliodora*	50	0.76	0.05	2,5	5,865	1,070	4,33
10.	Jackfruit	*Artocarpu heterophyllus*	600	8,81	0.05	2,5	4.54	0.812	12,122
11.	Tagalolo	*Septic ficus*	25	0.38	0.02	1.01	1.43	0.261	1,651
12.	Angsana	*Pterocarpus indicus*	50	0.76	0.05	2.0	3.4425	0.628	3,388
13.	Teak	*Tectona grandis*	50	0.76	0.02	1.01	2.4875	0.519	2,289
14.	Ketapang	*Terminalia catappa*	50	0.76	0.02	1.01	11.235	2,051	3,821
15.	Fir	*Casuarina junghuhniana*	50	0.76	0.05	2,5	10.1775	1,858	5,118
	Amount		**2,679**	**99.3**	**1.98**	**89,26**	**555,2755**	**101.4851**	**291.6751**

Source: Primary Data 2018

Based on Table 1, the study identified 15 types of tree-level vegetation in the Mooat Lake tourist attraction. These include pine trees (pinus pinaster), mahogany trees (Swietenia macrophylla), nantu trees (nyatoh sp), coconut trees (cocos nucifera), avocado trees (persea americana), mango tree (mangifera indica), trambesi tree (albizia saman), bintangur (calophyllum sp), awar-awar tree (tagalolo) (ficus septic), jackfruit tree (artocarpus heterophyllus), eucalyptus tree (eucalyptus melliodora), sangsana tree (pterocarpus indicus), ketapang trees (terminalia catappa), cypress trees (casuarina junghuhniana), and teak trees (tectona grandis).

Density and Relative Density. The number of individuals of a plant species can be estimated or counted. If the number of plants is expressed as a unit area, that value is called density. This density value can illustrate that types with high-density values have a significant adjustment (Fachrul, 2006, p. 46). Table 1 shows that the highest density and relative density values at Lake Mooat Tourism Object are Mahogany (Swietenia macrophylla) with a value of 3.875 individuals/ha or 59.38% tree level. In comparison, those with the lowest density and relative density values were trambesi (Albizia saman) and tagalolo (Ficus septic), with a value of 25 individuals/ha or 0.38% for the tree phase.

Frequency and Relative Frequency. Frequency is used as a vegetation parameter that can show the distribution or distribution of plant species in an ecosystem or a pattern of plant

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distribution. The values obtained can also describe the certainty of reproduction and adaptability and indicate the number of "sampling units" containing certain plant species. (Fachrul 2006:47). Table 1 shows that the highest frequency and relative frequency value of tree-phase vegetation are Mahogany (wietenia macrophylla), with a value of 0.82 or 41.4% of tree-phase vegetation. Whereas those with the lowest frequency and relative frequency were coconut (cocos nucifera), trambesi (Albizia saman), nantu (nyatoh sp.), tagalolo (ficus septic), teak (Tectona grandis), ketapang (terminalia catappa), with a value of 0, 02 or 1.01% for the tree phase.

Relative Dominance and Dominance. Dominance states a main plant that influences and exercises control over the community using many species, the size and growth of which is dominant. The value of the dominant vegetation parameter can be known from the value of the area or cover (Fachrul, 2006, p. 46). Table 1 shows that the tree-phase vegetation with the highest dominance and relative dominance values in the Lake Mooat Tourism Object is Mahogany (swietenia macrophylla), with a value of 304.05 individuals/ha or 55.51% of the tree-phase vegetation. At the same time, the lowest dominance and relative dominance values were coconuts (cocos nucifera), with a value of 0.051 individual/ha or 0.0931% for the tree phase.

Important Value Index (INP). The Important Value Index (INP) is an index of interest that describes the vital role of a high-value vegetation type that dramatically influences the ecosystem's stability (Fachrul, 2006). Table 1 shows that the tree phase vegetation in the Lake Mooat Tourism Object, which has the highest IVI value, is Mahogany (Swietenia macrophylla), with a value of 156.29% for the tree phase. Meanwhile, the one with the lowest IVI value was trambesi (Albizia saman), with a value of 1.563% for the tree phase.

CONCLUSION

The vegetation was obtained through the track plot method in the Lake Mooat tourist area, covering an area of 2.2 hectares. A total of 55 plots were created with a distance of 20m × 20m, resulting in 39 plots containing tree-level vegetation. The survey identified 239 tree-level vegetation individuals and identified 15 types of tree-level vegetation in the Lake Mooat tourist area. Based on field observations, the most dominant tree-level vegetation in the Lake Mooat tourist area was Mahogany (Swietenia macrophylla), with a dominance value of 55.51 and an Important Value Index (INP) of 156.29. On the other hand, the tree species with the lowest IVI value was Trembesi (Albizia saman), with a value of 1.563% for the tree phase. It is recommended that the Government Department of Tourism and Culture in East Bolaang Mongondow pay attention to the vegetation analysis in the Lake Mooat tourist area, as they are responsible for managing the attraction. Proper attention to the existing vegetation is crucial, as its absence can adversely affect humans and animals. The potential of vegetation in the Lake Mooat tourist area should not be overlooked, as it contributes to the overall environmental quality and can provide a more excellent environment for visitors. Therefore, it is necessary to plan and manage the structure and composition of vegetation in the Lake Mooat tourist area accordingly.

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