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RESEARCH ARTICLE

Tasi Tolu Catchment Area Potential Analysis

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ABSTRACT

Tasi-Tolu lake catchment area a protected area that located in Suco Comoro, Post Administrative Dom Aleixo, Municipality of Dili, that area has been defined according to the Decree Law number 5/2016 National System for Protected Area. Protected area as an area that normally protected by the government under supervisim ministry of Agriculture and Fishery, Within that area already exist a lot of potency in regard with birds' species, flora (Mangrove) Rhiphora SP, Eucalyptus alba, including another resourcers that hadn't been identified. The main objectives for this research is to identifying the condition of species, vegetation as well as birds species that are existing in the Tasi-Tolu lake catchment. The methodology that applied for this research is observation and interviews. The result from the data analysis for vegetation that are based on relative density parameter (Parameter Density Relative), Relative frequency and relative dominant, for tree measurement category (20x20m), pole measurement category (10x10m) and seedling measurement category (5x5m). From the observation result within six (6) demplot shows that species flora total 167 trees that categories for the wood consist of 3 species with total of 35 trees. With the INP value 163% category for stake species 5 with the total flora 84, INP 207.7%, Seedling category species 9 with the total flora 48, Idec's value point (INP) 149%, Birds species analyzing result that exist in tasi tolu catchment area, during the birds observation in the site researcher has been identified 10 species. Base on the result of the research shows that vegetation analization and birds that exist within that area their condition are really bad due to threats and issues of socio-economic. Base on the data SWOT analyze approach shows that; Weakness 40%, threats 33%, strong 13% and opportunities 13%. It means that, the percentage of weakness and threats are more than strong and opportunities. Form the result of SWOT analization shows that the vegetation and the birds within the Tasi-Tolu catchment area in the threats condition and badly.

INTRODUCTION

Timor-Leste exists the types of natural resources such as: Land oil, Gas, Marmer, stone, sandal wood, Coffee, and wild fish are national sustainability economic reservoir resources, but in the Tasi Tolu, there are unique and attractive natural resources such as flora and fauna, but all components are also needed to preserve and preserve the existing potential in the Tasi Tolu Water Base.

According to the Biodiversity Decree Law, Timor-Leste possesses rich biodiversity, with numerous ecosystems and endemic species that hold global significance and are recognized within 'biodiversity hotspots.' However, this biodiversity is considered to be under significant pressure due to excessive exploitation and unsustainable use of biological resources, degradation, fragmentation, and loss of habitats caused by deforestation, land conversion, unsustainable agricultural practices, river exploitation, pollution, invasion by non-native species, and climate change. All of these factors contribute to the loss of biodiversity.

Maintaining Timor-Leste's biodiversity is crucial for certain priority sectors, including agriculture and tourism. Conservation of biodiversity and the sustainable use of biological resources will ensure the preservation of the natural environment, particularly the services provided by ecosystems, such as supplying water and preventing soil erosion. These efforts will continue to provide a fundamental basis for agriculture)">subsistence and food security in Timor-Leste, while also promoting health, well-being, and cultural heritage for its people. For these reasons, the preservation of biodiversity and the sustainable use of biological resources are considered important priorities for the government in addressing biodiversity loss and ensuring sustainable resource utilization.

Hydrographic Based on In the area there are potential such as wild birds species, Rhizphora Spp parap tree, Eucalyptus alba tree, including other resources that do not have detailed information about the resources in the area that have the value of the economy, in these resources we need research to conduct a database survey on the existence of flora and fauna that exists in the area of the Water Base Protection of the Tasi-Tolu Sea to ensure sustainability in the future.

Some of the hydrographic bases in the Tasi-Tolu Sea have other potentials: tourism sites if they are to be developed and promoted, the city's beautiful park or garden because it has a beautiful pass and attracts national and international tourists to visit. Because of the beauty of the Tasi-Tolu, on the mountains, in the mountains, in the lathes and many interesting places, the interesting places in the Tasi-Tolu are: The image of São John Paul II, Uma adat is a potential tourism object for the capital of Timor-Leste.

The hydrographic basis of the Tasi-Tolu. It has a very important value, but until it is adapted the community continues to build a close house on the side of the Based on community problems to damage the area with a great potential for the country, it is necessary to preserve the positive impacts on the environment in the zone, both economically beneficial and culturally, to preserve the existing originality of the lake.

According to Adishakti (2007) that: The use of time to preserve nature resources in protected areas to continue to benefit the environment and the social economy of the community, in According to Gifford Pinchot (1865-1946), U.S. forest experts also stated that natural resources as a comoditi and quality exist in the nature of wood, water, wild fish and beautiful passage. According to Isard (1972 times Soerianegara.

Hydrographic Base

The definition of hydrographics is that; an area divided by topography / mountains, through the mountains the water and the rain flow together from the river of the. According to Budhiyono daun Murdhiyono.

Lake

According to Effendi (2003), a lake is defined as a body of water with salt content concentrated in a specific area that is wide in scope, due to contributions from rivers or underground water sources. Additionally, the scholar Kinne (1964) explains that a lake is a

wide area of water surrounded by flat land and has no direct connection to the sea, except when influenced by rivers. A lake can change when natural phenomena occur, contributing to its development through rainfall, underground water, and rivers.

Volcanic Lake

A volcanic lake is one that occurs or forms naturally, often referred to as a caldera. It is characterized by its wide distance and is located in an area filled with stagnant water. An example is Tasi-Tolu Lake, which is also classified as a naturally formed lake, fitting the definition mentioned above.

Birds of Timor

The book describes important areas for birds in timor-leste → Timor-Leste">Timor-Leste. Lagoa Tasi-Tolu is highlighted as a highly significant area for native birds, including migratory birds, due to its status as a protected area. Lagoa Tasi-Tolu also serves as a vital location for migratory birds to forage for food and rest before continuing their journey to other regions, such as Australia. Their migration to important areas in timor-leste → Timor-Leste">Timor-Leste, particularly Lagoa Tasi-Tolu, occurs annually between September and January. During these months, snow in other regions almost entirely covers their natural habitats, making migration to timor-leste → Timor-Leste">Timor-Leste essential for these birds.

According to data from IBA (2006), the Tasi Tolu Lagoon Hydrographic Basin is described as follows: a permanent saltwater lagoon with significant potential, including mangroves (Ai-Parapa), mudflats (Ai Bubur), and various bird species.

The Tasi Tolu Lagoon Hydrographic Basin holds important value from social, cultural, and historical perspectives. Tasi Tolu is also a site of great historical significance for the nation of Timor-Leste: During the Indonesian invasion, Tasi Tolu became the location where Pope John Paul II conducted a Mass during his visit to Timor-Leste on October 12, 1989. Later, this site gained recognition as a historic landmark for the nation of Timor-Leste.

In the independence era, Tasi Tolu became a key site for hosting national historic ceremonies. On May 20, 2002, Tasi Tolu served as the venue for the restoration of independence of the Democratic Republic of Timor-Leste for the first time.

A protected area is a designated space that contains natural resources, such as flora and fauna, which hold significant economic value. These resources require proper management and utilization to ensure their potential for sustainability in the future. Lagoa Tasi-Tolu is an example of a protected area that is under territorial control or oversight by a sovereign entity.

In the past, many regions bordered by natural features like rivers, mountains, or oceans, were subject to physical conditions that shaped their ecosystems. Protected areas need special attention to conserve the environment effectively, enabling future benefits while maintaining the existence of natural components in the ecosystem. This conservation ensures a sustainable environment for generations to come.

According to Decree-Law No. 5/2016 on the National Protected Areas System, a protected area is defined as a geographic space that is clearly designated, recognized, dedicated, and managed through legal means or other effective measures to achieve long-term conservation. This includes the association of ecosystem services and cultural values. Lagoa Tasi-Tolu, as a protected area, typically falls under the protection of relevant institutions responsible for its preservation.

METHODOLOGY

This research, aimed at collecting data, will be conducted in Dili Municipality, Dom Alexo Administrative Post, Comoro Village, Aldeia 12 de Outubru, over the span of one month, starting from July 2023.

Materials and Equipment

The materials to be used in the field include a map time)">for GIS analysis to identify the existing trees within the referenced area. These will be used to determine the total number of trees in the area and to record tree-related data.

The equipment to be used time)">for conducting the research in the field includes the following: GPS (Global Positioning System), measuring tape, calculator, raffia string, camera, pen, notebook, tally sheets, all of which will facilitate the activities during the field research.

Descriptive research is a method of investigation that seeks to explain the research object according to the objective of systematically describing facts and the characteristics related to the object under proper investigation. The types of descriptive research include the following: Descriptive Research through Observation: Sometimes data collection does not obtain adequate data. Descriptive Research Requires Clear Identification of Problems: It is necessary to identify and clarify the problems within the researcher's area in order to collect the required data.

Sampling Technique

The research will select representative samples from the total population within the community of the 12th of October sub-village, consisting of a total of 642 households. From this total, the researchers have chosen a sample of 32 households to serve as the basis for this study. The formula used to determine the sample size is: (Taro Yamane Formula or Slovin Riduwan (2010)).

$$\frac{N}{N \cdot d^2 + 1}$$

$$\frac{642}{642 \times (0{,}17)^2 + 1} \quad \frac{642}{642 \times 0.0289 + 1} \quad \frac{642}{18.5538 + 1} = 19.5538 \quad \frac{642}{19.5538} = 32$$

Notes
N: Total number of houses/stems in Aldeia 12 de Outubru = 642
d^2: Respondent scale = 17%
1: Constant value
N: Count the sample.

SWOT analysis serves as a process for identifying factors that can help determine the correct formula and implement effective organizational strategies. This analysis is based on observations and interviews conducted on the ground, aiming to logically analyze aspects linked to strengths, weaknesses, opportunities, and threats. According to the expert Freddy Rangkuti (2009:18), the process evaluates the organization's capacity in these areas to guide decision-making and strategy formulation.

Data Analysis Techniques

The data analysis technique described here employs data-tippy-content="From glossary: kualitativu → adj. qualitative">qualitative descriptive analysis, which accumulates data through words rather than numbers. Its data-tippy-content="From glossary: objetivu → n. purpose">purpose is to design an understanding of situations or incidents in the field (data-tippy-content="From glossary: investigasaun → n. investigation">investigation results) in a data-tippy-content="From glossary: sistematiku → n. systematic">systematic manner, categorized and utilizing data-tippy-content="From glossary: lingua → n. language">language that is easy to comprehend or interpret.

RESULT AND DISCUSSION

General Conditions of the Research Location

The protected area of the Tasi-Tolu hydrological basin is located in Suco Comoro, Administrative Post of Dom Aleixo, Municipality of Dili, Timor-Leste, in western Dili, approximately 8 km from central Dili. The total area of the Tasi-Tolu hydrological basin protected area covers 1,088 hectares. The name "Lagoa Tasi-Tolu" is derived from the three interconnected lagoons.

Research Area Limitations

The protected area of the Tasi-Tolu hydrological basin belongs to Aldeia 12 de Outubru, Suco Comoro. It is bordered on the eastern side by Suco Bairo-Pite, on the western side by Suco Tibar in the Bazartete Administrative Post, on the southern side by Suco Fatisi, and on the northern side by the sea.

Description of Vegetation Observation Results

The results of vegetation observations in the protected area of the Tasi-Tolu hydrological basin are based on activities observing vegetation conditions in the hydrological basin of Lagoa Tasi-Tolu, Suco Comoro. The observations were divided into six demonstration plots (demplots) identified as target areas for researchers to assess vegetation conditions during the study. The method used involved measurements in the demonstration plots, which were categorized into three classifications: A, B, and C.

Category:

A has a measurement of 20 x 20m for observing vegetation conditions classified under the category *Tree*.

B has a measurement of 10 x 10m for observing vegetation conditions classified under the category *Stake*.

C has a measurement of 5 x 5m for observing vegetation conditions classified under the category *Shrubs*.

To analyze the vegetation, it will be classified based on the measurement sizes, using

three parameters to determine the vegetation conditions, which are:

- Relative Density
- Relative Frequency
- Relative Dominance

Table 1.These parameters will be used to obtain the INP (Importance Value Index).

No	Observation Àrea	Latitude	Longitude
1	BH Lagoa Tasi-Tolu, Comoro	8°33'37.07"S	125°29'56.77"E
2	BH Lagoa Tasi-Tolu Comoro	8°34'2.13"S	125°30'10.32"E
3	BH Lagoa Tasi-Tolu, Comoro	8°34'11.16"S	125°30'43.17"E
4	BH Lagoa Tasi-Tolu, Comoro	8°34'46.07"S	125°30'51.40"E
5	BH Lagoa Tasi-Tolu, Comoro	8°34'41.51"S	125°31'11.29"E
6	BH Lagoa Tasi-Tolu, Comoro	8°34'0.32"S	125°31'16.28"E

Categories:

Category A involves a plot measuring 20 x 20 meters for observing vegetation conditions classified under the "Tree" category. Category B involves a plot measuring 10 x 10 meters for observing vegetation conditions classified under the "Stake" category. Category C involves a plot measuring 5 x 5 meters for observing vegetation conditions classified under the "Shrub" category. To analyze the vegetation, classification will be based on plot measurements using three parameters to determine vegetation conditions, namely: Relative Density, Relative Frequency, and Relative Dominance. These observations are based on primary data collected in 2017.

The table describes specific observation points within the research area, which consists of six demonstration plots established within the hydrographic basin area of Tasi-Tolu Lagoon, covering a total area of 1,088 hectares. Observations of vegetation conditions were conducted according to the six demplots established within the protected hydrographic basin area of Tasi-Tolu Lagoon. These observations were carried out based on the measurements of six demplots, with vegetation conditions determined and the INP (Importance Value Index) calculated.

Description of Vegetation Species Analysis

Table 2: Total Species in Plot 6 with Density and Relative Density.

Naran Especies	**Total Espesies**			**Density**			**Relative Density**		
	Plant	Estake	Mueda s	plant	Estake	Mueda s	plant	Estake	Mueda s
Eucalyptus	23	41	11	0.12	0.2	0.06	0.7	0.5	0.2
Pterocarpus	7	4	2	0.04	0.0	0.01	0.2	0.0	0.0;
Leucaena		35	3		0.2	0.02		0.4	0.1
Sesbania		3			0.0			0.0	
Santalum			8			0.04			0.2
Scheleisera	5		3	0.03		0.02	0.1		0.1

Syzyiphus			5			0.03			0.1
Chimama		1	5		0.0	0.03		0.0	0.1
Mangrove			7			0.04			0.1
Aegle			4			0.02			0.1
Total	**35**	**84**	**48**	**0.40**	**0.42**	**0.2**	**1.00**	**1.00**	**1.00**

Based on Table 2 above, it is shown that the density and relative density of plant species within the hydrographic basin of Lagoa Tasi-Tolu are as follows. The total number of plant species categorized as trees is 35, with a combined density of 0.40%, including a relative density of 100%. Additionally, there are 84 species categorized as stakes, with a density of 0.42% and a relative density of 100%. Furthermore, there are 48 plant species categorized as shrubs, with a density of 0.2% and also a relative density of 100%, all derived from Plot 6.

The results indicate that the plant species with the highest density are Syzygium sp., with a total density of 0.12%/ha and a relative density of 0.7%. This includes the species Pterocarpus indicus, which has a combined total density of 0.04%/ha and a relative density of 0.2%, classified under the tree category.

Table: 3 Total Species in 6 Demonstration Plots with Frequency and Relative Frequency

Naran Espesies	**Total Espescies**			**Frequency**			**Relative Frequency**		
	Plant	Estake	Mueda s	plant	Estake	Mueda s	Plant	Estake	Mueda s
Eucalyptus	23	41	11	0.11	0.08	0.04	65.1	50.8	11.6
Pterocarpus	7	4	2	0.03	0.01	0.01	19.61	5	2.1
Leucaena		35	3		0.07	0.01		35.5	3.16
Sesbania		3			0.01			7.25	
Santalum			8			0.03			8.42
Scheleisera	5		3	0.02		0.01	14.06		3.16
Syzyiphus			5			0.01			3.16
Chimama		1	5		0	0.02		2.55	5.26
Mangrove			7			0.02			7.37
Aegle			4			0.01			4.21
Total	**35**	**84**	**48**	**0.17**	**0.16**	**0.33**	**100**	**100**	**100**

Based on Table 3 above, it is shown that the most frequent vegetation species is Leucaena glauca, with a total combined frequency of 0.11%/ha and a relative combined frequency of 65.1%. This includes the vegetation species Pterocarpus indicus, which has a total combined species frequency of 0.03%/ha and a total relative frequency of 19.61%/ha. Observing the vegetation conditions in the research area, the species' structure is not very dense due to damage caused by the community's daily activities in the referenced area, which has led to a reduction in the frequency of vegetation species.

Table: 4 Total Species in 6 Demonstration Plots with Dominance and Relative Dominance

Naran Espesies	Total Especies			Dominant			Relative Dominancy		
	Plant	Estake	Muedas	plant	Estake	Muedas	Plant	Estake	Muedas
Eucalyptus	23	41	11	0.12	0.21	0.06	66	42	23
Pterocarpus	7	4	2	0.04	0.02	0.01	20	5	5
Leucaena		35	3		0.18	0.02		37	6
Sesbania		3			0.02			4	
Santalum			8			0.04			17
Scheleisera	5		3	0.03		0.02	7		6
Syzyiphus			5			0.03			10
Chimama		1	5		0.01	0.03		1	10
Mangrove			7			0.04			15
Eucalyptus			4			0.02			8
Total	**35**	**84**	**48**	**0.18**	**0.42**	**0.24**	**100**	**100**	**100**

Based on Table 4 above, it demonstrates the dominance and relative dominance of vegetation species composed from plot 6, along with the species composition of vegetation in the tree category comprising 23 species with a dominance of 0.12%, a relative dominance of 66%. Additionally, the stake category includes 41 species with a dominance of 0.12%, as well as shrubs with 11 species having a dominance of 0.06% and a relative dominance of 23%. These results indicate that the most dominant vegetation species are of the eucalyptus type, consisting of a total of 10 types of vegetation species combined in the hydrographical area of Tasi-Tolu.

Table:5 Total Species in 6 Demonstration Plots with their Index of Importance Percentage (INP%) Value

Nara Species	Total Species			Density relative			Frequency Relative			Dominant relative			INP		
	A	E	M	A	E	M	A	E	M	A	E	M	A	E	M
Eucalyptus	23	41	1	0.7	0.5	0.2	65.1	50.8	11.6	66	42	23	131.8	93.3	34.8
Pterocarpus	7	4	2	0.2	0	0	19.61	5	2.1	20	5	5	17.8	20.5	7.1
Leucaena		35	3		0.4	0.1		35.5	3.16		37	6		72.9	9.3
Sesbania		3			0			7.25			4			15.4	
Santalum			8			0.2			8.42			17			25.6
Scheleisera	5		3	0.1		0.1	14.06		3.16	7		6	13.3		9.3
Syzyiphus			5			0.1			3.16			10			13.3
Chimama		1	5		0	0.1		2.55	5.26		1	10		5.6	15.4

Mangrove			7			0.1			7.37			15			22.5
Aegle			4			0.1			4.21			8			12.3
Total	**35**	**84**	**48**	**1**	**1**	**1**	**100**	**100**	**100**	**100**	**100**	**100**	**16**	**20**	**14**
													2.9	**7.7**	**9.6**

Significance:
A = Trees
E = Stakes
M = Measurements

The important index value resulting from three relevant parameters—namely Relative Density, Relative Frequency, and Relative Dominance—is as follows:

Based on the table above, the species categories of trees found within the six demonstration plots during ground observation are as follows:

Eucalyptus alba INP 131.8
Pterocarpus indicus INP 17.8
Schleichera oleosa INP 13.3

Among the species mentioned above, the vegetation with the highest INP value is Eucalyptus alba, located in the demonstration plot measuring 20 x 20 meters.

Vegetation species in the category of stakes (Estaka) identified within six plots during ground observations, along with their Importance Value Index (INP), are as follows:

Eucalyptus alba : INP 93.3
Pterocarpus indicus : INP 20.5
Leucaena leucocephala : INP 72.9
Sesbania Sp: INP 15.4
Chimama cinom INP 5.6

Among these species, the dominant vegetation in the demarcated plots with measurements of 10 x 10 meters is **Ai Bubur** (*Eucalyptus alba*), which has the highest INP value of 93.3%.

For the category of shrubs (Medas) identified within six plots during observations on the ground, their Importance Value Index (INP) is as follows:

Eucalyptus alba : INP 34.8
Pterocarpus indicus : INP 7.1
Leucaena leucocephala : INP 9.3
Kisar tree: INP 25.6
Scheleisera : INP 9.3
Syzyphus mauritiana : INP 13.3
Chimama cinom : INP 15.4
Rhizophora spp. : INP 22.5
Aegle marmelos : INP 12.3

From the species listed in Table 8 above, the dominant vegetation in the demarcated plots of category Medas with measurements of 5 x 5 meters is **Ai Bubur** (*Eucalyptus alba*), which has the highest INP value of 34.8%.

Table: 6. Species Categories of Trees with their Diameter

No	Species	Total Species	Plant Diameter (cm)	Diameter Ø
1	(*Eucalyptus alba*)	23	130	41.40
2	(*Pterocarpus Indicos)*	7	100	31.85
4	(*Schleichera Oleosa)*	5	120	38.22
	Total	**35**		

Based on the table above, the category of tree species found within the six demonstration plots during observations conducted on the ground and their respective diameters are as follows:

(Eucalyptus alba), with a diameter of 41.40 cm.

(Pterocarpus indicus), with an average diameter of 31.85 cm.

(Schleichera oleosa), with a diameter of 38.22 cm

Among the species listed above, the vegetation with the largest diameter within the 20 x 20 m demonstration plot is (Eucalyptus alba), with an average diameter of 41.40 cm.

Table: 7 Types of Vegetation Categories Stake Average Diameter

No	Species	Total Species	Plant Diameter (cm)	Diametru Ø
1	(*Eucalyptus alba*)	41	65	20.70
2	(*Pterocarpus Indicos)*	4	50	15.92
3	*(Leucaena Leucocephala*)	35	48	15.29
4	Sesbania sp	3	45	14.33
5	(*Chimama cinom*)	1	40	12.74
Total		84		

Based on the table, 7 at the top, the category of stakes found within demonstration plot 6 during observations in the field are as follows: Eucalyptus alba, with an average diameter of 20.70; Pterocarpus indicus, average diameter 15.92; Leucaena leucocephala, average diameter 15.29; Sesbania sp, average diameter 14.33. Among the species shown in the table above, the vegetation with the largest diameter in the 10x10m demonstration plot is Eucalyptus alba, with an average diameter of 20.70.

Table: 8 Types of vegetables with the category Muedas with its diameter.

No	**Species**	**Total Species**	**Plant Diameter (cm)**	**Diameter Ø**

1	(*Eucalyptus alba*)	11	25	7.96
2	(*Pterocarpus Indicos)*	2	28	8.92
3	*(Leucaena Leucocephala*)	3	25	7.96
4	Kisar tree	8	21	6.69
5	(*Scheleisera oleosa)*	3	25	7.96
6	(*Syzyiphus Mauritania)*	5	27	8.60
7	(*Chimama cinom*)	5	25	7.96
8	(*Rhizphora Spp.)*	7	30	9.55
9	*(Aegle Marmelos)*	4	30	9.55
Total		**48**		

Based on the table above, the categories of Muedas found within 6 demplots during the field observation with the same diameter are; Eucalyptus alba, diameter 7.96, Pterocarpus Indiços, diameter 8.92, Leucaena Leukocephala, diameter 7.96, Santalun tree, diameter 6.69, Syzyiphus Mauritania, diameter 7.96, Syzyipus Mautritânia, diameter 8.60, Leucaena Leucocephala, diameter 7.96, Rhizphora Spp., diameter 9.55, Aegle Marmelós, diameter 9.55, of the species shown in the table, the most dominant plantation in 6 demplots, the Dila Fatuk (Aegle Marmelós), diameter 9.55, of the species shown in the table, the most dominant plantation in the demplot 6 category of Muedas Aegle Marmelós, Aegl Marmelos with a value of 9.55 diameter.

Conditions of Vegetation in the Protection Area of the Tasi Tolu

Based on the analysis of the data shown in the 6 demplot, a total of 35 vegetative vegetative vegetatives with a percentage of 2.1%. through the results of the analysis which shows that the vegetative area of the Tasi-Tolu.

Description of the Research Results of wild bird Observation.

Table: 9 The wild birds species exist in the Tasi-Tolu

No	Local Name	Indonesia name	Latin Language	No photo	Clasification
1	Manu Rade	Undan Kacamata	*Pelecanus conspicollatus*	5898	Migrasaun
2		Kuntul Besar	*Egretta alba*	6023	Migrasaun
3		Kuntul Kecil	*Egretta garzzetta*	6025	Migrasaun
4		Pecuk-padi Hitam	*Phalacrocorax sulcirostris*	5912	Migrasaun
5		Pecuk-padi Belang	*Phalacrocorax melanoleucos*	5918	Migrasaun
6		Gagang-bayam belang	*Himantopus himantopus*	6003	Migrasaun
7		Cerek tilil	*Charadrius alexandrines*	599	Migrasaun

8		Kuntul perak	*Egretta intermedia*	6589	Migrasaun
9		Trinil Rawa	*Tringa stagnnatilis*	6004	Migrasaun
10	Makikit	Elang Bondol	*Haliastur Indus*	6508	Nativu
Total Species					

The table shows species of wild birds that exist in the center of the Tasi-Tolu lake. During observations and identification, 10 individual species were found to exist in the Tasi-Tolu lake, which is indicated in the table above. The data also shows that the Tasi-Tolu lake has significant potential, but during the exploratory research observations, it was noted that conditions for wild birds are not good because of the lush vegetation around the mangrove area that surrounds the lake and the community that extracts resources for various activities such as fishing, and because the vegetation in the area around mangrove is almost totally cleared, it is very difficult for birds to move in and out and find food due to their habitat being continuously damaged by the community.

CONCLUSION

Based on the analysis of vegetation from parameters (Species density, relative density, frequency, relative frequency) to obtain important index values, the species category of Trees with its INP is mostly (Eucalyptus alba) INP 131.8%, category of Shrubs mostly has (Eucalyptus alba) INP 93.3%, and category of Herbs mostly has (Eucalyptus alba) INP 34.8%.

Based on the results of observations and interviews, it shows that the vegetation and fauna in the protected area of the hydrological basin of Lagoa Tasi-Tolu are not in good condition, leading to a decrease in species of vegetation found in places referred to in the disturbances from communities such as Eucalyptus alba, Leucaena Leucocephala , Mangrove, and others where communities explore for various resources.

Based of observations and interviews from the community indicates that the community in the area refers that there is very little knowledge about the Lagoa Tasi-Tolu area as a protected area that normally receives protection from relevant institutions according to Decree Law No. 5/2016 regarding the National System of Protected Areas.

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