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The Evaluation of the Success of the Growth of Vegetation in Conservation Efforts at the Area Tanjung Bastian Kabupaten Timor Tengah Utara

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ABSTRAK
Pengelolaan terhadap sumberdaya alam menjadi point penting terutama dalam menjaga manfaat, kesinambungan dan berkelanjutan sumber alam. Potensi sumberdaya alam yang tersedia dengan pengelolaan yang baik dapat memberikan manfaat bagi kehidupan manusia. Potensi sumberdaya alam dapat menjadi daya tarik masyarakat dan dapat dijadikan sebagai tempat wisata. Kawasan Tanjung Bastian merupakan salah satu kawasan wisata yang berada di Kab. TTU. yang identik dengan pantai serta juga arena pacuan kuda dan pemandangan alam. Dalam pengelolaannya upaya mempertahankan kondisi ekologi di wisata Tanjung Bastian seperti kegiatan penanaman vegetasi diareal kawasan wisata sebagai upaya konservasi lahan sebagai regerasi vegetasi. Kelangsungan hidup vegetasi dapat tumbuh pada kondisi pertumbuhan yang stabil dan mampu bersaing dengan kondisi fisik lingkungan dan iklim yang ekstrim. Tujuan dari penelitian ini untuk mengetahui tingkat keberhasilan vegetasi dan faktor-faktor penyebab kerusakan pertumbuhan vegetasi. Berdasarkan hasil observasi tanaman yang berhasil hidup sebanyak 53 tanaman yang terdiri dari 6 spesies, dengan jumlah yang hidup terbanyak terdapat pada spesies Delonix regia sebanyak 15 tanaman, dan spesies yang paling sedikit ialah spesies Senna siamea dengan jumlah 3 tanaman. Klasifikasi kriteria penilaian keberhasilan vegetasi bahwa tingkat keberhasilan vetegasi di kawasan tanjung bastian termasuk dalam kategori agak rusak dengan nilai 57,3%.

***Kata kunci*:** Wisata alam, Tanjung Bastian, Pengelolaan Berkelanjutan.

ABSTRACT
Resources management nature becoming point to important especially in maintaining benefits, continuity and sustainable natural source.Natural resource potential available with proper management would be of avail for human life. Natural resource potential can be attraction the community and can be used as tourist destinations. The area of tanjung bastian is one of the area who was in District North Central Timor are identical to the beach and also the racetrack and natural scenery. In its management efforts to maintain ecological conditions in Tanjung Bastian tourism such as planting tourism areas as an effort to conserve land as vegetation regeneration. The survival of vegetation can grow in stable growth conditions and be able to compete with extreme environmental and climatic conditions. The purpose of this study was to determine the success rate of vegetation and the factors causing damage to vegetation growth. Based on the results of observation plants who succeeded life 53 a plant consisting of 6 species with the numbers of life most there are to a species Delonix regia as many as 15 plants and the least species is Senna siamea with 3 plants. The classification of the assessment criteria vegetation that the level of success of success in the vetegasi tanjung bastian included in a category in quite poor repair the % 57,3.

***Keywords*:** The Tourism, Tanjung Bastian, Sustainable Management

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1. Introduction

Indonesia as one of the rich diversities of natural resources. Management of natural resources is an important point, especially in maintaining benefits, sustainability and can be sustainable. Potential natural resources available with proper management can be beneficial for for human the community in his life. Natural resource potential can be the attractiveness of the community and can be used as tourist destinations.

In the development of tourism activities, nature to tourism have been proven it can encourage economic growth in the community, employment opportunities, the odds of trying to. Increased social life, culture, and the environmental conservation is quite support the development of the tour. Tourist development with integrating environmental factor is very important especially in the sustainability of tourism development.

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Sustainability environment in tourism management conservation area or beyond natural area Important in tourism to the development and tourism activity to implement positive and cares for the environment to reach the sustainability of development and be a guarantee for public welfare the present and future generations. Hadi (2005) mentioned that the principle in achieving sustainable development must be fulfilled like; Meeting the needs of people; of integrity ecology and social justice.

Tanjung Bastian is one of tourism area located in north central Timor district. A Tourism tanjung bastian identical to the beach and also a racetrack. Not only is on the coastline but also features in this area had the potential for that serve as the object of a horse race, the tatters, pool and supporting facilities other thus bastian always tanjung area becomes attractive to tourists.

Soemarwoto (2001) the ability of travelers in areas receive influence by the purpose of tourists and Is expected to environmental factors that will improve the quality of the ecosystem and can avoid possibility of damage So that the development of tourism be continue to grow. Therefore, in the development of its tourism Tanjung Bastian sustainable, required business continiu in the management of tourism area tanjung bastian, whether it is about the potential of owned, facilities supporting infrakstructur tourism area and in terms of meeting the needs of people.

In the development of the Tanjung Bastian tourist area, efforts to maintain ecological conditions are very important. Activities in maintaining the environmental conditions of the Tanjung Bastian tourist area, such as planting vegetation in the tourist area. These activities are done for the purpose to land conservation as regerasi vegetation, and to make replace the role of vegetation that has died from a with age as maintain the availability of water as a source of water for their tourists.

To ensure survival in stable vegetation growing condition thus being able to compete the extreme physical environmental and climate, need to evaluate the extent to which the level of success of tree growth and factors influence it. Evaluation is the process of determining the value for a certain thing or object to determine certain goals. To see the development of the growth of vegetation at the area tanjung bastian need conducted surveillance as an act to evaluate the success of the vegetation growth aimed at the sustainability of the tourism potential tanjung bastian. The evaluation comes to the post rehabilitation vegetation on land in Tanjung Bastian tourism who planted December 2020. The purpose of this study was to determine the success rate of vegetation and the factors causing damage to vegetation growth

2. Method

This research activity carried out at the area Tanjung Bastian District North Central Timor. This research activity carried out for observation and measurement of the plant towards the whole plant reforestation contained in the tourist zone Tanjung Bastian. Covering the growth of plants, percent growing plants, and health plant. The criteria for the growth of plants which includes diameter and tall plants and analyzed a sort of descriptive set, to percent growing plants, the quantity of a crop and health analyzed in skoring plant using formulas the percentage growing plants.

Plant growth criteria which include plant diameter and height and analyzed descriptively, for percent plant growth, number of plants and plant health were analyzed by scoring using the formula for plant growth percentage. The criteria for the classification vegetation; plants grown as Table 1.

Analysis of plant vegetation is done by looking for Density, Frequency, Dominance, Important Value Index, and Diversity Index. This vegetation analysis was carried out at the tree level using the transect method with a plot size of 10x10 m as Figure 1.

$$Percentage\ of\ success = \frac{\sum number\ of\ living\ plants}{\sum number\ of\ plants\ planted}\ x\ 100\%$$

Table 1. Classification of vegetation success assessment criteria

Classification	Value (%)
Heavily damaged	0-25
Broken	26-50
Slightly damaged	50-75
Undamaged	76-100

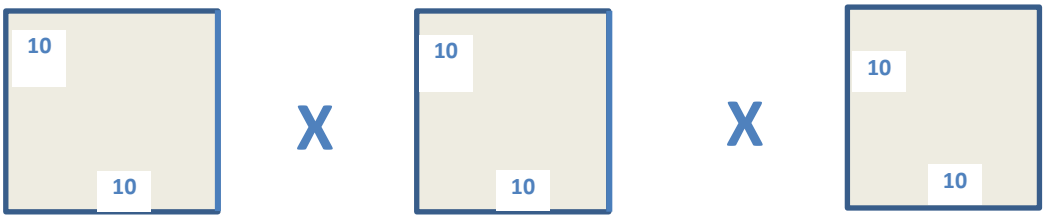

Figure 1. Research Sampling Model

Classification of vegetation analysis formula.

$$K = \frac{\text{Number of a Species}}{\text{Area of Sample Plot}}$$

$$KR = \frac{\text{Density of a Spesies Total}}{\text{Total density off all spesies}} \times 100\%$$

$$F = \frac{\text{Number of sampel plots occupied by Sp}}{\text{The number of sample plots}}$$

$$FR = \frac{\text{Frequency of a Species}}{\text{Total Frequency of all species}} \times 100\%$$

$$D = \frac{\text{Dominancy of a Species}}{\text{Total areal of sample plot}}$$

$$DR = \frac{\text{Dominancy of a Species}}{\text{Total areal of all species}} \times 100\%$$

3. Result and Discussion

Research was conducted in Tanjung Bastian tourism located in village Humusu C, Subdistrict North Insana. Tanjung Bastian tourist location is about ± 67 KM from the center of Kefamenanu City the capital of Timor Tengah Utara.

3.1. The Tourism Potential Tanjung Bastian

Tanjung Bastian Tourism has a beach, and a stretch of white sand with a length of more than 100 meters and near the sand of the seashore, there are already gazebo structured properly, a thousand stairs with a and shelfie spot with a natural beach background. The condition of the sea water is still clean, there are even many points where the eye can see the situation of beauty under the sea water. Near Tanjung Bastian beach there is a horse racing arena, and usually every July a horse racing event is often held. It is been a tourist unique because Tanjung Bastian having a racetrack that chime with the beach natural beauty.

In accordance with the climate classification by Schmidt and Ferguson, TTU Regency belongs to a type D climate area (semi-arid climate) with a coefficient of 2 of 71.43% or a tropical climate with two seasons, namely dry and rainy seasons. The average rainfall for 5 years (2010-2015) is 1,581.47 mm/year with the number of rainy days is 94.84 days/year. The air temperature ranges from 22º-34ºC, humidity 69–87% and the intensity of sunlight 50–98%. Rainfall and air temperature as climate elements are environmental factors that determine agricultural planning, especially their influence on plant growth and productivity. In June–September the wind flows from Australia and does not contain much moisture, resulting in a dry season. On the other hand, in December–March, the wind currents contain a lot of water vapor from Asia and the Pacific Ocean, resulting in the rainy season. This makes TTU including the Tanjung Bastian area a relatively dry area where only 4 (four) months, namely January, February, March and December are relatively wet and the remaining 8 (eight) months are relatively dry (Pemda Kab. TTU, 2016)

Vegetation have a very important climate in an area. Maridi et al., (2014) added that diversity vegetation good tree and plant a floor covering *(lower crop communit)* can be used as one of indicators in determining the quality of cliff around the watershed so as to be used an alternative to prevent erosion due to blocking vegetation exert influence over the capacity land In holding water (Wang et al., 2013). In the management of water vegetation have an important role and the potential in support of water and soil conservation can be done by applying the vegetative as a watershed conservation the riverbank as a strategy (Maridi, 2012).

3.2. Components Authors Vegetation In Tourism Area Tanjung Bastian

The components that make up the vegetation planted as vegetation regeneration in the Tanjung Bastian tourist area are as follows:

1. *Handroanthus chrysotrichus*

   Handroanthus chrysotrichus is a categorized as a large tree because of high could reach more than 4 meters. *Handroanthus chrysotrichus* also could grow well in tropical area and sub-tropic. Habitats *Handroanthus chrysotrichus* in brazil was in the area to climate dry so that these plants having a resistance lives high in dry weather. It is very appropriate because the program generally face a lack of watering when dry season. Three benefits trees *Handroanthus chrysotrichus*: as tree to treat diseases, as material for the manufacture of fertilizers and as material for furniture.

2. *Samanea saman*

   Samanea saman is the type of tree widely distributed in tropics and sub-tropic. *Samanea saman* capable of adapting and growing well in other areas. Thrives in an area that has 3000 average rainfall to 600 mm per year with a height 0-300 meters below sea level. In addition, *Samanea saman* also was able to growing in land flooded in a short time. The benefit of the Co^2 *Samanea saman* capable of absorbing optimally, and can reduce the pollution, as building material and having benefit to treat various diseases.

3. *Syzygium myrtifolium*

   (Syzygium myrtifolium is a dpecies derived of the genus *Syzygium* with the ability absorb Carbon-dioksida (CO2) Is greater than the other kind of growth. *Syzygium myrtifolium t*o prevent landslide and storing a reserve water for Syzygium myrtifolium having the structure taproot firm. Higher than stems *Syzygium myrtifolium* it can reach a height of 5 meters if grows in the place of fertile and there are nutrients high. Haryati (2015) mentions that there are secondary metabolites in some parts of the red shoots. This plant has benefits as an antioxidant, natural dye, anti-tumor, antiangiodensis and cytotoxic.

4. *Syzygium aqueum*

   Syzygium aqueum is a Plants in the *Myrtaceae. Syzygium aqueum* easy planted and in cultivation. The growing from *Syzygium aqueum* is land that is appropriate for cultivation arable and crumbly and At the region can grow good temperate dry by low rainfall ranges 500-3.000mm per year. The ideal that suitable for growth *Syzygium aqueum* ranged 18-280c % with humidity of the air between 50-80. *Syzygium aqueum* planted low to a height 500 meters below sea level (Pujiastuti, 2015).

Table 2. Types of vegetation in Tanjung Bastian Tourism Area

Latin Name	Local name
Samanea saman	Trembesi
Senna siamea	Johar
Delonix regia	Flamboyan
Syzygium aqueum	Jambu air
Handroanthus chrysotrichus	Tabebuya
Syzygium myrtifolium	Pucuk merah

Table 3. Results of identification of plant species and number in Tanjung Bastian area

Latin Name	Plants		Total
	life	deat	
Samanea saman	5	-	
Senna siamea	3	-	
Delonix regia	15	-	
Syzygium aqueum	6	-	
Handroanthus chrysotrichus	7	-	
Syzygium myrtifolium	7	-	
	-	22	
The number of	53	22	75

3.3. The Percentage Growth Vegetation In Tourism Area Tanjung Bastian

The success of life plants and growth vegetation are influenced by various environmental factors that is on which. In a growing factors affecting the growth of plants could include biotic factors and abiotic (Indriyanto, 2008). Biotic factors of living organisms and plant growth as mikro-patogen, parasitic, insects and other large animals, wild plants or weeds. While factors abiotik all components of environmental can affect the lives and growth of plants as the climate condition and soil fertility.

The success of plants and vegetation that planted by the number and variety of plants grown determined based on the type and number of crops that works and crops are dying. Some things that causes the death of a plant that is because there are of a bully, there is another plant in one place plants under large tree is causing a plant does not obtaining a light the sun resulting in plants become dead. Pest or diseases including a factor of damage / death plant that is some plants can it dead predicted the animals that is in the area and the climate causing some types of crops have not adjusted to growing conditions. Brandle et al. (2000) in Takle et al. (2006) that there are several important coastal vegetation characteristics that contribute to the effectiveness of coastal forests as wind dikes. These factors are height density, length, width or thickness, continuity, orientation, and cross-sectional shape.

The number and types of plants that were successfully planted are described in table 3. Based on table, above a successful life 53 some plants are composed of 6 species with the numbers of life most there are to a species *delonix regia* as many as 15 plants, *syzygium myrtifolium* and *Handroanthus chrysotrichus* as many as 7 plant, species Syzygium aqueum to the total number of a plant which is alive as many as 6 plant and species the least is species *Senna siamea* by the number of 3 plants. And or plants dead as many as 22 plants and unknown its kind or anonymous. Based on the percentage success formula plant and the level of success of plants as table on is: 57,3%. Based on classifications the criteria for assessing which the success of vegetation that grown, so can be concluded that the level of success of vegetation in the region tanjung bastian included in a category somewhat ruined. The vegetation which has been available in the tourist area of the cape Bastian such as mangroves and tree functions as a protection and shade for visitors at the area Tanjung Bastian is like; *Tamarindus indica (*Asam jawa), *Lannea coromandelica* (Reo), *Vachellia leucophloea* (Kai besak/ Pilang*), Ziziphus mauritiana (*Pohon Bidaraa), *Eucaliptus sp* (Pohon Putih) and A*lstonia scholaris* (Pule).

3.4. Vegetation Analysis

Vegetation analysis was carried out in the Tanjung Bastian tourist area on tree-level vegetation that functions as a protective tree and shade tree for visitors in the Tanjung Bastian tourist are shown in Table 4. Based on the tree-level vegetation analysis table above, the lowest Relative Density (KR) value is found in the vegetation type *Eucaliptus sp, Alstonia scholaris* with a value of 7.40 and the highest value is found in the vegetation type *Tamarindus indica* with a value of 40.74. For the value of Relative Dominance (DR) with the lowest value found in the type of vegetation *Lannea coromandelica* with a value of 15.33 and for the highest value found in the vegetation of *Vachellia leucophloea* with a value of 18.37. For the value of Relative Frequency (DR) with the lowest value found in the vegetation type *Vachellia leucophloea*, *Ziziphus mauritiana*, *Alstonia scholaris* with a value of 10 and for the highest value found in the vegetation of *Tamarindus indica* with a value of 30. On the type of vegetation *Eucaliptus sp* with a value of 32.74 and the highest value is found on the type of vegetation *Tamarindus indica* with a value of 87.81.

3.5. The Causes Of The Failure Of Plants

Environmental factors that can affect the growth of plants in between that is the temperature, moisture, climate, rainfall, and the land. Environmental factors such as the condition of the ground being one of the obstacles in the growth of plants. If growth is compromised then plant the crops will respond by shows physically by showing some of the As the leaves yellowing, a small trunk diameter, the dead branches, and the stagnation of.Based on obersevasi conducted crops are dying because of lack of care like basin water, the existence of a wild plant, around him and the plant located under a shade tree that slow the growth of plants and possibly get on the death of the plant.

The quality of the place to grow a combination of a lot of the environmental factors, for example the type of, the depth of the ground, soil texture characteristic of a soil profile, mineral composition, and the micro climate (Baker et al. 1979 in Lakitan 2007). The bad condition of place grew out of this in undermine by a lack of improvement land and maintenance a plant so this means does not work revegetasi of that location.

The plants in the research areas should be focused on the basis of evaluation revegetasi success has been that the recommendation can as expected. The success of the evaluation results revegetasi to research is found some plants must be considered relation to the growth of plant which remains inadequate and it was still even bad.

The role of vegetation to support conservation water and soil of them for the ability vegetation in holding water, reduce runoff and diminishing the capacity flows water on the surface reduce the erosion, and prevent the sediment.

Table 4. Analysis of tree-level vegetation in the Tanjung Bastian tourist area

No	Nama jenis	KR	DR	FR	INP
1	*Tamarindus indica*	40,741	17,074	30	87,815
2	*Lannea coromandelica*	14,815	15,823	20	50,639
3	*Vachellia leucophloea*	11,111	18,372	10	39,483
4	*Ziziphus mauritiana*	18,519	17,074	10	45,593
5	*Eucaliptus sp*	*7,407*	*15,337*	*10*	*32,744*
6	*Alstonia scholaris*	7,407	16,318	20	43,726
	Jumlah	**100**	**100**	**100**	**300**

Hence to repair the vegetation that has grown necessary for plant replacement cleared the area plant of plant a bully and kept monitoring of all vegetation.

3.6. Tourism Development Strategy Sustainable Tanjung Bastian

Tanjung tourism bastian required in the development and giving integrated management and support community needs / visitors and chooses Tanjung Bastian as a purpose for recreation. Some things that need attention as in terms of aesthetics, economic, social and cultural and ecological tourism Tanjung Bastian. To support Tanjung Bastian tourism sustainable strategy so needed are as follows: An increase in the management of tourist tanjung bastian

- Increase tourist attraction to maximize the potential tourist zone which is.
- An increase in environmental sustainability and avoid damage vegetation that is in tourism area tanjung bastian
- To keep the city clean and environment tourist zone which inflicted by the tourists with providing a place sampat luminance point
- Promote tourism tanjung bastian continuously.

4. Conclusion

Based on the formula for the percentage of plant success and the success rate of plants, the success rate of vegetation in the Tanjung Bastian area is included in the slightly damaged category. In the development of Tanjung Bastian tourism, good management is needed so that its management is integrated in terms of aesthetics, economy, socio-culture and ecology of the Tanjung Bastian tourist with a strategy to apply conservation values in tourist areas is : 1) conduct a conservation program 2) improve the system of management, supervision and maintenance of resources 3) conduct a human resource development program for the local community. 4) Promoting tanjung bastian tourism continuously.

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