

Need To Conservation of Mangrove Ecosystem In Kotania Bay, District Of West Seram, Mollucas: An Approach The Local Wisdom And Behavior

Research Article

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Abstract

The goal of this paper are to conserve the mangrove ecosystems within local wisdom and behavior approach. The sample selection is done with purposive sampling method. This method was used the consideration to determine the level of people's behavior in conserving mangrove areas. Data Analysis of the indigenous communities were analyzed by descriptive qualitative, while the behavior using analysis of the proportion of the population. The presentation of the society who behave to support the conservation of mangrove ecosystemss is about sixty (60)%.

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Introduction

The coastal ecosystems is a region that has a good strategic sense in economic, social, culture and ecology. This ecosystems has a high biodiversity that needs to be preserved. The coastal ecosystems is indicated to have economic value because it has a very useful resource for coastal communities [3].

Mangrove is one of the coastal resources of economic value for the people who reside in this ecosystems. Indonesia has about 3.2 million hectares of mangrove or nearly 21% of mangroves in the world with the number of species found about 75 species, but the recent data has indicated that a total ecosystems of mangrove in Indonesia within the last twenty years has reduced for the ecosystems of 1.1 hectares or about 75% due to some conversions [7, 13].

Mangrove ecosystems has an important role for the coastal environment, both in terms of physical, ecology, and socio-economic

[2, 13, 21]. Mangrove ecosystems have been widely used and converted to a variety of human needs and development needs. This region has suffered a lot damages caused by high levels of exploitation, lack of coordination, and synchronization of the programs across sectors, weak in law enforcement, and the behavior of the indigenous people against the mangrove ecosystems.

Vulnerability of the existence of the mangrove ecosystems and community activities, the role of the community in preserving and even developing into mangrove ecosystems enabling the environment marine natural resource availability have become very important [1]. The existence of the mangrove ecosystems including the ethnic diversity that creates each coastal ecosystems has a varied customs in utilization [4]. The utilization of the mangrove communities must also be accompanied by the behavior of an effort to ensure the continuity in a sustainable manner.

Kotania Bay is one of the bays located in the territorial waters of West Seram regency, with an ecosystems of 470 999 km² and the water depth of 0-200 m. The Bay is a permanent closed water ecosystems and has coastal and marine resources such as mangroves, sea grass beds and coral reefs. The marine and coastal the regions are also used for the activities of fisheries, aquaculture, tourism and ecotourism [15]. This bay has the width of 1048.79 ha of the mangrove ecosystems with a total economic value of the direct use at Rp. 359.444.908.- per year, and the use of indirect value is Rp. 90,262,166.67. per year and the value of options based on the biodiversity value is Rp. 83,134,356., Per year [10].

However, this mangrove ecosystems has been damaged due to the use of the coastal communities around the Kotania bay, in addition is due to the lack of public knowledge about the benefits of the mangroves and the level of community participation is very low in the conservation of the mangrove ecosystems.

The coastal communities in the Kotania bay must be involved in the conservation of the mangrove ecosystems so that the people

will take a responsibility for maintaining and preserving the mangrove ecosystems to ensure that the role and the benefits of the mangrove ecosystems remain stable. The local wisdom and the behavior of the communities will greatly support the preservation of the mangrove ecosystems in order to highlight the conservation of the coastal environment, sustainable fishing activities, protection of the coastal ecosystems, marine tourism, economic and social needs of the community.

The local wisdom can be understood as the local ideas that are thoughtful, full of wisdom, good value, which is embedded and followed by members of the community. Rules/tradition in Maluku known as SASI. SASI is used in the conservation of community-based resource for both land and sea and is commonly found in Central and Southeast Maluku Islands. In general SASI is customary law provisions on the restriction of entering, taking or doing something in a certain ecosystems and within a specific time period. Sasi is made in a mutually agreed rules and must be implemented by the communities where SASI was imposed. Sasi is usually carried out in a rural / village. This tradition is supported by a local institution and apparatus, and there are sanctions to be imposed if breaking the provisions or the rules that have been set before [8, 11].

The purpose of this study was to identify the values of the local wisdom and the behavior of people in the conservation of the mangrove ecosystems in order to stay awake and sustainable.

The benefits of this research is that the bay coastal communities of Kotania understand about the role and the function of the mangrove ecosystems and participate in the conservation of the mangrove ecosystems.

Materials and Methods

This study aimed to all members of the population to take up most of the population then the results are generalizable to the population [18]. This research design seeks to reveal the relationship between local knowledge and behavior with preserving the mangrove ecosystem.

Field work for this study was conducted in the Seram Barat Regency between January and April, 2013. The population in this study are all coastal communities in the Kotania bay conducting activities around mangrove areas. The sample selection is done with purposive sampling method. This method was used the consideration to determine the level of people's behavior in conserving mangrove areas. The sampling technique was performed in non-random (nonprobability sampling), the sampling is not random [22]. Sampling based on; samples are heads of families resident in the five hamlets in the Kotania bay residing in coastal areas or in the surrounding mangrove areas (Table 1).

Techniques of data collection begins with field observations covering the entire observation of mangrove ecosystem and coastal

Tabel 1. The proportion of samples.

No.	Type Activity	Number of samples (persons)
1	Fishing	25
2	Catching crabs	25
3	Decision-shells	23
4	The collection of firewood	25
5	Catching shrimp	2
6	Taking mangrove leaves for fodder	25
7	Construction of houses, bridges and other equipment	25
	Total	150

communities that utilize the coastal region as a livelihood. This technique was used in order to see the general condition of the mangrove areas along the coastal communities. Data collected consist of primary data and secondary data. Primary data was collected through field observations and interviews using a structured questionnaire. While secondary data obtained from the literature and related agencies with the study.

Data Analysis of the indigenous communities were analyzed by descriptive qualitative, while the behavior of people towards preserving the mangrove area in the Kotania bay using analysis of the proportion of the population with equation [19]:

$$Z = \frac{(x/n - \pi_0)}{\sqrt{\pi_0(1 - \pi_0)/n}}$$

by: x / n = proportion of the sample, n = number of samples, x = number of samples that have behavioral support to preserve mangrove areas.

π_0 = An unknown price (60% or 0.60) with the consideration that

the majority of people in the four hamlets in the Kotania bay have behavioral support to preserve mangrove areas.

Results and Discussion

Description Location Research

The Kotania bay region is geographically located in the District of West Seram, District of West Seram, Maluku. The ecosystems is bordered by District Taniwel the north, the Seram Sea in the south, District Kairatu West to the East, and West by District Huamual and based on geomorphology it is an archipelago (District Planning Board Pembangunan SBB, 2008).

The people who live in the coastal ecosystems of Kotania bay are mostly migrant communities from Buton, Southeast Sulawesi. They have settled for about sixty (60) years there. Their cultural traditions are being maintained and some people still follow the traditions of their culture of origin, but partly also to follow the cultural traditions of the Moluccas. In general the people have

double professions for living as well as fishermen and farmers. Both of these jobs are carried out together with the seasons that take place in the Moluccas.

Local Wisdom Society

The identification of the indigenous people in the Kotania bay is more focused on the problems in the conservation of the mangrove ecosystems. Preservation of the mangrove ecosystems have local moral values that are important to the coastal communities in the district of West Seram and specifically in the Kotania bay.

The community at Kotania bay have already implemented some ideas and the values of local wisdom when they perform their activities in the utilization of the mangrove ecosystems. They have already heard the ideas of the local wisdom values by generations to generations from their parents but the idea / notion has not been made in writing to be adhered together. The existence of the local knowledge in the community is the result of a process of adaptation to generation in a very long period of time to an environment that is usually inhabited or environments where frequent interaction therein [4].

The local values that developed in the coastal communities Kotania bay have also been done for generations. They do not take snakes, soa-soa, birds or flowers that are available in the ecosystems of the mangrove ecosystems. Their fishing tools used are also still very simple by using woven bamboo. Catching fish, shrimp, and scallops are also using environmentally friendly fishing tools, but there are some people who still use bombs and or poisons to catch fish illegally. The local wisdom in utilizing of the coastal resources must be maintained and they must pay attention to the environment and to be supported by the local government [5, 9].

They hold a ceremony to their ancestors and also to the seas individually with the aim of gaining a better catch of the fish or at the time of the harvesting seasons. Honoring to the seas will enhance and ensure the harmonious relationship between the people and the surrounding nature [17]. They have also been keeping the mangrove ecosystems by not throwing dirt or garbage around the mangrove ecosystems, but there are some people who still litter or throw garbage in the mangrove ecosystems and this will be disturbing the mangrove growth and its condition in the surrounding ecosystems. Each community has a unique local knowledge in preserving the environment, so that they can survive in living life as well [14].

Sasi as the traditional indigenous tradition in the conservation of natural resources in Maluku has not been implemented by the public and the Rural /village government in the Kotania bay based on the Maluku Provincial Laws No. 14 of 2005. The local community and the local government wanted to implement or enactment of sasi on the mangrove ecosystems. Sasi is deemed to have enormous benefits in addition to the preservation of the mangrove ecosystems, besides sasi has an important role in the effort to preserve and maintain the quality of these resources [8]. Sasi on the conservation of the mangrove ecosystems should be implemented through an agreement with the community and should be passed through a structural mechanism of the local custom [12].

According to the Law of the Republic of Indonesia No. 1 In 2014, the local wisdom must be maintained in the conservation of the coastal ecosystems. Article 21 clearly states that the use of the space and the coastal resources should consider the national interests and the local communities customary law. Sasi in the conservation of the mangrove ecosystems in the Kotania bay needs to be made in accordance with the wish of the people and to maintain the sustainability of the mangrove ecosystems. As for some agreements in implementing of the sasi to the mangrove ecosystems in the Kotania bay are as follows: not allowed to cut/take young mangrove trees for any purpose (firewood, building construction and residential ecosystems), prohibited to garbage in the mangrove ecosystems; prohibited from using bombs/poison of fish in mangrove ecosystems; prohibited from making mangrove ecosystems as a livestock raising for it may damage the mangrove; prohibited from taking, catching, shooting, killing various types of animals and plants associated with mangrove ecosystems such as birds, soa-soa, snakes, orchids, and so forth in the mangrove ecosystems; prohibited from taking mangrove saplings to be cultivated or planted without permission from *Kenang*

Sasi in the conservation of the mangrove ecosystems should be applied to the sanctions which are binding. The values that developed in the coastal communities Kotania bay have also been done for generations. They do not take snakes, soa-soa, birds or flowers that are available in the ecosystems of mangrove ecosystems. Fishing tools used are also still very simple by using woven bamboo. Catching fish, shrimp, and scallops are also using environmentally friendly fishing tools, but there are some people who still use bombs/poison to catch fish illegally. The local wisdom in the use of coastal resources must be maintained and they have to pay attention to the environment and to be supported by the local government [5, 9].

Community Behavior

The Analysis to the behavior of the people in the Kotania bay, the conservation of the mangrove ecosystem using ten criterias. The ten criterias are then to be scored according to the community assessment to identify the position of the community behavioral assessment decision. The results of the t-test scoring then to be performed in SPSS with multiple linear regression analysis approach, and continued with the analysis of the proportion of the population to determine people's behavior towards the mangrove ecosystem conservation, as detailed below (Table 3).

The results of the analysis using the t-test in each vilalage in the Kotania bay in Table above shows that the use of standard scores the maximum number of the answers (50) is 30 (the test value), ie 60% of 50 or $0.6 \times 50 = 30$. With the significant level of each is 0,000 or less than alpha (α) = 0.025 [16]. Thus more than 60% of the five villages in the Kotania bay have behavior to support the conservation of the mangrove ecosystems.

The behavior in supporting the conservation of the mangrove ecosystems should be maintained and developed so that the sustainability of the preservation of the mangrove ecosystems can be well protected. The development of people's behavior can be done with love movement to mangrove and imposing the rules and sanctions in the utilization of the mangrove ecosystems. The mangrove love movement can be done by the local government in collaboration with the local institutions concerned. The local

Table 2. Local Wisdom Society in the Kotania bay.

Culture Product	Type Local Wisdom
The idea/notion	1. Society were not justified to cut mangrove tree saplings.
	2. Not justified use poison or bombs around mangrove areas.
	3. Values not take the snake, soa-sao, birds and flowers in mangrove areas.
	4. Make traps to catch crabs that do not damage the mangrove area.
Values	1. Catch fish, shrimp, and scallops with environmentally friendly fishing gear.
	2. Must not dispose of household waste to the area of mangrove areas.
	3. Memorial to the ancestors sea guard.
	4. Do not throw dirt into the sea.
Norma	No
Written Regulation	No

Table 3. Calculate the t Value of Behavior Society Against Preserving mangrove ecosystem conservation.

Hamlet	Value t count
Kotania	14,153
Wael	11,874
Airpessy	9,761
Taman Jaya	8,962
Pulau Osi	8,997

institutions have a task to develop programs that will promote the environmental sustainability [6, 11].

The conservation of the mangrove ecosystems in need of good cooperation between communities, the local wisdom and the behavior that support the conservation of the programs. The public participation can be developed through the different productive activities which relatively enable to protect the environment and maintain the values of the local wisdom to improve the welfare of the community in a sustainable manner [6].

Conclusion

Based on the results of the research, it can be concluded as follows: The idea / ideas and values of the local wisdom have existed and evolved in the middle of the community at the Kotania bay, but to date the sasi tradition has not been executed in the conservation of the mangrove ecosystems. The presentation of the society who behave to support the conservation of mangrove ecosystems is about sixty (60)%.

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