



Considerations of Local Wisdom from Sabu Raijua Regency (Indonesia) for Coral Reef Conservation for Responsible Management Measures

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Abstract

Coral reefs have economic benefits economic, ecological, and socio-cultural benefits, providing vital climate change mitigation and adaptation ecosystem services that require conservation efforts but are increasingly under threat. The strategy for managing coral reef ecosystems, among others, is prepared by taking into account the sustainability of the ecosystem and considering the wise values of the local community. using secondary data the study aims to identify and explain local wisdom in maintaining the conservation of coral reef ecosystems and sustainable coastal planning whose results can help local governments, and communities in the development of coral reef tourism as well as helping to provide a frame of reference for policymakers to consider in coral reef conservation in Sabu Raijua district, part of the Savu Sea Marine National Park area Local Wisdom in maintaining the conservation of coral reef ecosystems includes Ruju Peluru, Kati Dana, Kowa Hole, Panadahi. Local Wisdom Kowa Hole and Panadahi are in active status. Revitalization efforts are necessary to revive local content based on culture and policies that involve the community in a participatory manner so that the implementation process for coral reef ecosystem preservation can grow and develop again in the pattern of community life, especially in the Savu Sea Marine National Park area

Keywords: Local Wisdom; Sabu Raijua; Conservation; Coral Reefs

Introduction

Coral reefs are one of the typical ecosystems in coastal waters in the tropics. Corals are small individuals called polyps. Coral reefs are structures on the seabed in the form of calcium carbonate deposits which are produced mainly by coral animals. Coral reefs are structures on the seabed in the form of calcium carbonate deposits in the sea which are produced mainly by coral animals. Corals are invertebrate

animals that belong to the *Phylum Coelenterata* (hollow animals) or Cnidaria. One individual coral or called a coral polyp varies in size from very small 1 mm to very large, which is more than 50 [1].

The benefits of coral reef ecosystems consist of economic, ecological, and socio-cultural benefits. Coral reefs have functions that support human life and livelihoods so they are economically important [1]. Humans use coral reefs as a

source of protein, fishing grounds, building materials, tourist attractions, souvenirs, and medicines. Coral reefs provide a source of food and livelihood for coastal communities. Coral reefs have an important value as a source of food, a habitat for various marine biota that has high economic value, a provider of natural services in marine tourism activities, a place of refuge for other marine animals from predators, as a place to find food and breed for fish, reef fish and as a barrier for coastal areas from the brunt of the waves [2].

Coral reefs are one of the ecosystems that play an important role in coastal areas. Coral reefs are also a collection of coral communities (animals), which live at the bottom of the waters, in the form of limestone (CaCO_3), and have a strong enough ability to withstand the force of sea waves. Coral reefs have been identified as having high conservation value like rainforests because of their biological diversity, aesthetic appeal, and function as a reservoir of genetic diversity. Ecosystem diversity is an important indicator of the sustainability of a region. Regions that have more diversity have resilience in their role of protecting coastal areas. The existence of protected species in an area is one of the urgent in managing conservation areas so that their existence can be maintained and protected from extinction [1]. The existence of coral reefs is known to have various economic, ecological and socio-cultural benefits for humans so that their existence needs to be maintained by carrying out conservation and raising awareness for all humans to maintain the existence of these coral reefs [3].

Coral reefs are vulnerable to changes that occur both internally and externally. Along with the rapid economic growth, the pressure on Indonesia's coastal and marine areas is increasing, including in the utilization of coral reef ecosystems, causing some of them to be in a threatened condition. Activities that are destructive to coral reefs cause the rate of damage to coral reefs to accelerate in South Pacific countries, they are generally threatened by negative pressures, overfishing, coastal development, sedimentation, and pollution from agriculture and logging, tourism, climate change, and ocean acidification [1]. Damage to coral reef ecosystems is caused by several factors, both natural factors and due to human activities. Damage and degradation of coral reef ecosystems due to human activities (anthropogenic) are very large [4]. The damage is due to the extraction of biological resources that are not environmentally friendly [5,6]. Anthropogenic and Natural pressures which then affect the condition of coral reefs. Changes in the coral reef ecosystem will have an impact on the availability of fish resources. Damage to coral reefs due to inappropriate fishing activities can reduce the number of existing fish resources [1]. Fishing activities carried out by fishermen using explosive devices also contribute to damage to coral reefs [7], this is

the reason for the importance of coral reef conservation.

To control each activity so that the economic and ecological aspects continue to run in balance, sustainable management is needed to maintain coastal sustainability, the existence of local wisdom which is always a limiting factor for activities that are harmful and endanger biophysical conditions. Coral reef resources must be maintained and preserved so that they can still be utilized in the future [1]. Sustainability of coral reef management is very necessary because it relates to human survival [8]. Coral reefs in the Sawu Sea Marine National Park are one of the water conservation areas known to have abundant marine biodiversity, including various types of cetaceans (whales, dolphins, etc.) and Sirenians (Dugong) (COREMAP-CTI) located in the Nusa Tenggara Province. Timur is found scattered in the waters of coastal villages where its distribution is concentrated mainly in Rote Ndao Regency and Sabu Raijua Regency [9].

The Savu Sea waters area holds many benevolent relics which, if functioned, have the potential to protect environmental conservation efforts, especially marine conservation. There is no less than 20 local wisdom that grows and develops in coastal village communities in the Sawu Sea Marine National Park. One of them is the Hohorok culture which spreads to several coastal villages in Rote Ndao, Dawwu, and Pudhi Dahi Regencies in Sabu Raijua District, Mehing Parotu in Sumba, Banu in South Central Timor District and Nempung Cama and Nareng in Manggarai and West Manggarai Regencies. The Sawu Sea Waters Area has many no-take areas which are regulated through various customary regulations and the customary instruments contained therein. This no-take area also has a variety of rituals that are performed every season before going down to the sea [10]. The purpose of the study is to explain local wisdom in protecting coral reef conservation ecosystems and sustainable coastal planning in Sabu Raijua Regency, East Nusa Tenggara Province, Indonesia. The results are expected to be used to assist local governments and communities in the development and conservation of coral reefs and to help provide a frame of reference for policymakers to consider in coral reef conservation.

Methods

The approach method used is normative, descriptive-analytic research specifications. The data used is based on secondary data including data and information about local wisdom, laws and regulations related to this research such as; Law No. 52 of 2008 concerning the Establishment of Sabu Raijua Regency in East Nusa Tenggara Province, Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia No. 6/ Kepmen -KP/2014, and

development plans, as well as literature studies on coral reef conservation, sustainable coastal areas, legal materials, and other supporting data, as well as analysis using qualitative methods.

Results and Discussion

Coral Reef Conservation and Sustainable Coastal Management Based on Local Wisdom

Good management thinks that future generations can also enjoy the resources that currently exist. Management of coral reefs must preserve, protect, develop, improve, and improve the condition or quality of coral reefs for the benefit of all levels of society and think about future generations. Management according to considerations to maintain the relationship between exploitation and environmental preservation [11].

The strategy for managing coral reef ecosystems includes community-based management to support increased knowledge of the importance of preserving and managing coral reef ecosystems [12]. Encourage awareness, participation, and cooperation/partnership from the community, in planning and implementing coral reef management [11]. Actions taken in order to encourage coral reef conservation include maximizing the participation of coastal communities and related stakeholders to jointly conserve coral reefs [13]. One of them is by providing understanding to coastal communities, who are mostly fishermen, to use fishing gear that is environmentally friendly, and not to use fishing gear that damages coral reef ecosystems [14]. In addition, the government as a legislator can also provide incentive funds to village administrations in coastal areas through managing village funds to create a coral reef conservation program, the purpose of which is the preservation of coral reef ecosystems [15]. Comprehensive management of coral reef ecosystems needs to be developed, namely, management that is prepared by taking into account the balance and harmony between the needs of regional economic development and local communities, ecosystem sustainability, and consideration of local community wisdom values (Coral Reef Rehabilitation and Management Program). The wisdom of the local community as a way of life and knowledge as well as various life strategies in the form of activities carried out by local people in responding to various problems in meeting their needs. often also conceptualized as local policies "local wisdom" or local knowledge "local knowledge" or local intelligence "local genius" [10]. In everyday language, this is often referred to as local wisdom or knowledge [9].

The waters of the Sawu Sea store several local pearls of wisdom that are used for the utilization of natural resources

[9]. Sawu Sea is an area that has the potential for coral reefs with very high diversity. The Sawu Marine National Park, which is part of the Lesser Sunda Eco-region, has recorded a total of 532 species of coral there are 11 endemic and sub-endemic species, and is home to around 350 species of reef fish. Coral reefs in the Sawu Marine National Park are found scattered in coastal waters in all districts that are included in the Sawu Marine National Park area with a total area of 63,339.32 ha [2].

The waters of the Sawu Sea hold many legacies of local policies which, if functioned, have the potential to support environmental conservation efforts, especially for marine conservation. Marine conservation aims to protect endangered species from the threat of extinction due to human actions that do not protect these species, marine conservation is carried out with policy instruments and contains elements of regulation so that it has coercive power for every community [16]. The potential for local wisdom in the community is one of the factors for the development of the Sawu Marine National Park, namely community socio-economic empowerment [9,10].

Local Wisdom in Sabu Raijua Regency, Province in Maintaining the Conservation of Coral Reef Ecosystems

The habitat of the deep waters of the Sawu Marine National Park consists of deep sea sills, straits, oceanic islands, and satellite islands. Deep sea thresholds are underwater bunds that can limit the flow of deep water between two ocean depths. While the strait is a narrow canal that connects two larger water masses. This area is important as a migration route for cetaceans and other large marine fauna. Oceanic islands are isolated islands surrounded by deep sea. In the area of the Sawu Marine National Park, this includes oceanic islands, namely Dana Island in Sabu Raijua Regency [9].

Regency based on Law Number 52 of 2008, one of the Regencies in East Nusa Tenggara Province, Indonesia, the capital of this Regency is located in Seba. (Profile of the National Marine Protected Area of the Savu Marine National Park) The people on this island themselves call their island Rai Hawu which means Land of Hawu and the Savu people themselves call themselves Do Hawu. The official name used by the local government is Sabu. The people of Sabu explained that the name of the island came from the name Hawu Ga, the name of one of their ancestors who was thought to have first visited the island [10]. Sabu Raijua Regency is an area that adheres to its traditional traditions; this district has a lot of local wisdom among others

Kowa Hole

The Savunese people have a Hole ritual (a life activity based on a specific schedule such as summoning sap, summoning rain, rejecting supernatural powers, or the whole ceremony from planting, and harvesting to offering the harvest), which is the culmination of most of the rituals in the Sabu people's culture. Hole describes cognitive culture or cultural orientation which is a way of life that shapes individual attitudes as well as social and cultural attitudes. Hole is also used as a basis for symbolic communication through the expression of poetry as well as through artifact symbols in their cultural context. The hole in the internal context describes the individual's cognitive culture that guides how individuals organize social life [10].

In the external context, Hole is a socio-cultural aspect that the Sabu people create in interpersonal relationships with other people so that the cognitive map of the Sabu people lives the hole as an expression of gratitude for the prosperity of humans, animals, and plants as a whole for giving them life. This ceremony is still maintained, especially those carried out by the people in Sabu Liae District which aim to summon sap, and rain, and ward off supernatural powers. From the activities of planting, and harvesting, to offering the harvest for both land and sea products, this ritual must be carried out once every year in April.

The process of collecting coral to be used for whiting is a unique thing for the people of Sabu. This coral collection may only be done once a year by using a Kowa (boat). This ritual is an activity in the form of releasing a kowa (boat) to Rutay the ruler of the sea containing crops. This is done as an effort to request to avoid the bad things that can arise due to a lack of gratitude and the hope that the ruler of the sea will accept the offering and bestow the seafood for the residents who have made the offering [10].

Something is interesting in this ritual, namely the boat planks used will return to the shore and be used again in releasing boats in the coming year. In this procession, before the boat is released to the beach, poems are recited that tell praises to Rutay, and after the releasing ceremony is complete, the participants must immediately go home and are forbidden to look back.

Prohibition of using tuba roots

In Limaggu Village there are customary rules that do not allow the use of tuba roots (Dawwu) in every fishing process and still in this village, there is also a sacred area or sacred area that cannot be entered carelessly which can be used as a source of fish (Menangalea).

Panadahi

Raijua Island has a local wisdom called Panadahi, which

is a Meting concept that is another form of maintaining the sustainability of marine resources. Meting is an activity of fishing on the beach during low tide/meting conditions which has been going on for generations in almost all areas of NTT Province, but there is something unique about Raijua, to keep the catch sustainable, the people here carry out the land clearing process for meeting.

A piece of land in the waters area will be used for two years and then for the next two years the area will be closed and the people there based on an agreement made together and approved by the customary leader are prohibited from carrying out the fishing process there. The process of opening and closing the area is based on the observations of the traditional elders after carrying out a series of traditional ceremonial rituals and only the traditional elders have the right to determine when the panadahi process begins [10].

Kati Dana

Raijua residents believe that the spirits of the ancestors are always guarding and overseeing all forms of activities that they carry out daily. The spirits of these ancestors are believed to reside on Dana Island which is the outermost island in the southern part of Sabu Raijua Regency. As an expression of gratitude and gratitude for protecting them and keeping them away from harm, the people in Sabu Raijua Regency routinely every year between June and July hold a traditional ceremony called the Kati Dana.

The procession begins with the residents directing their boats to Dana Island together with various offerings such as beef, chicken, or anything that can be eaten which is intended as a tribute to the ancestors for their generosity in allowing the products that are in the sea to be utilized. Arriving at Dana Island, the residents of Raijua will pray together and also eat together with the ancestors which are shown by harboring free marine food ingredients.

Peluru Ruju

Is one of the waters that have seagrass beds in good condition, making Raijua Island waters dugong habitats. This is what later inspired the residents who were there to carry out a kind of test of courage and also as a sign of maturity for every male who was there. The Peluru Ruju is one of the dugong hunting rituals which is carried out annually in March-April by the residents there. This activity begins with the erection of a stake around the waters that are expected to be approached by the mammal, and then the men are invited to carry out the spearing process [10].

However, there is still wisdom, that is, hunters are only allowed to spear once, and only dugongs are allowed to spear those who touch their noses to a stake that has been driven, and the dugong must be an adult and male. This shows that

there are virtues that regulate how the customs and survival of these mammals must work in balance [10].

Understanding coral reefs by preserving them use local knowledge obtained from parents and passed down from generation to generation. Collected knowledge is shared and explained by the older community to younger members of the community to form an understanding to preserve coral reefs [17], Status of local wisdom in the Sawu Sea TNP in Sabu Raijua district, Kowa hole, Panadahi, active status [10], Revitalization efforts are necessary, this is important to revive local content based on culture and policies that involve the community in a participatory manner so that the process of implementing environmental preservation can grow and develop again in the pattern of people's lives. By revitalizing local wisdom, the community can participate in supporting efforts to protect coastal and marine resources in coastal villages in the Sawu Sea area [10].

This local policy is important to maintain, establish, and even revitalize so that the community can participate in and support efforts to protect coastal and marine resources in coastal villages in the Sawu Laut TNP area. The use of local wisdom can revive community participation in the process of implementing conservation programs in the Sawu Sea TNP so that environmental preservation develops again in the pattern of people's lives [9].

Local Wisdom Zones are needed to protect areas that have important cultural-traditional values and accommodate the local wisdom of the people that exist and are spread in each area within the Savu Sea Waters National Park area which is unique and supports conservation efforts such as Lilifuk, Nempung Cama, Watuweri, Mehing Parotu, Mini Parotu, Luat, Manita, and other local wisdom [10].

Conclusion

Coral reefs are one of the ecosystems that play an important role in coastal areas. Its benefits include economic, ecological, and socio-cultural benefits, providing vital ecosystem services for climate change mitigation and adaptation, but its condition is threatened which requires conservation efforts. The strategy for managing coral reef ecosystems includes community-based management which is prepared by taking into account the balance and harmony between the needs of regional economic development and the local community, ecosystem sustainability, and consideration of the wisdom values of the local community. Local wisdom in Sabu Raijua district as part of the Sawu Marine National Park area includes Kowa Hole, Panadahi, Kati Dana, Peluru Ruju. Local Wisdom Kowa hole, Panadahi Active status. Revitalization efforts are needed to revive local content based on culture and policies that involve the

community in a participatory manner so that the process of implementing coral reef conservation can grow and develop again in the pattern of people's lives. By revitalizing local wisdom, the community can participate in supporting efforts to protect coastal and marine resources in coastal villages in the Sawu Sea area [18-20].

Local Wisdom Zones are needed to protect areas that have important cultural-traditional values and accommodate the local wisdom of the community that exists and is spread in each area within the Savu Sea Marine National Park area which is unique and supports ecosystem conservation efforts. coral reefs such as Lilifuk, Nempung Cama, Watuweri, Mehing Parotu, Mini Parotu, Luat, Manita, and other local wisdom. Local government, policymakers in coral reef conservation, communities and coral reef tourism managers, and existing local wisdom in Sabu Rajua district are to be considered as a frame of reference in the development of sustainable coral reef tourism areas

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