

Local Wisdom *Mane'e* and Its Impact on Fish Resources and Environment in Nanusa Islands, North Sulawesi, Indonesia

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Abstract *Mane'e* is one of the local wisdoms in coral reef fisheries management that is still being conducted in Nanusa Islands, North Sulawesi, Indonesia. *Mane'e* means a statement of agreement of local community to perform an activity together and rituals to prepare fishing equipment and carry out fishing operations together on the basis of cooperation, solidarity and unity. But *mane'e* itself is actually a serial end of a customary law process called *Eha*, which means as a warning not to do or a ban for all public to take natural resources during certain time. Fishing gear is very traditional, made of forest rope (creeping plant), then joined in a row to around 3-4 km long and wrapped with young coconut leaves. The gear is set circle to a reef flat as location of *mane'e* in the morning at high tides. Both ends of the rope are pulled toward the coast so the fish could be trapped in the middle of the lagoon at the lowest tide. *Mane'e* ceremony is conducted at nine sites and each has its own name. *Rannesite* on Intata Island has been established by the regency government as a tourism icon *mane'e* festival and open to the public. *Mane'e* through *Eha* system' actually has a positive impact on compliance with local communities. But the intervention of outsiders has give negative impact in the form of changes in beliefs and social structure, fishery resources damage and the environment deteriorations.

Keywords *Mane'e*, *Eha*, Nanusa Islands, Local wisdom, Coral fisheries management

1. Introduction

Coral reefs and their associated marine life constitute one of the great natural treasures of Indonesia, both their quality and quantity, covering approximately 50,000 square kilometers of corals, the second largest of the world coralreefs after the Australian Great Barrier Reef, but its biodiversity is the richest in the world [1, 2]. Indonesia is also located at the center of the world's coral reef diversity [3-5]. This wealth in biodiversity emphasizes Indonesian's importance in global efforts to conserve marine resources and preserve biodiversities [6].

Coral reefs play an important role to the human life, such as source of food, medicines and raw materials for industry, tourism beaches, education and research. They are also a potential source of foreign exchange from divers and other marine tourists. In addition, they provide a natural barrier against wave erosion, spawning ground, nursery ground and feeding ground for various commercial coral fish species [7].

Unfortunately, the development activities in the coastal

areas in recent years have given various significantly negative impacts on the quality of coral reef resources in Indonesia. Many studies reported that the quality of coral reefs in Indonesia is declining rapidly [4, 2], and only 29 percents of Indonesian coral reefs are in good to excellent conditions [8, 9, 4, 10, 2]. One of the primary extractive activities on reefs is fishing.

Many efforts have been done to secure the coral reef ecosystem of Indonesia, such as the establishment of conservation and rehabilitation regulations and its implementation programs, but those efforts have not worked well in the field and have faced a variety of problems.

The implementation of management instruments in many places of the world are not effective, law seems to be violated, and impact assessment procedures are rarely followed, conflict interests become worse and worse and traditional rights are swept away [11]. Therefore, the environmental deterioration has extended in many places.

Community-based programs are important to consider as an alternative to combat cyanide and blast fishing, besides law enforcement and surveillance [12], or looking at the integrated efforts that involve all societies, such as using indigenous knowledge to improve coastal fisheries management. *Mane'e* is one of the indigenous coral reef fisheries management strategies that are still practiced in Nanusa Islands, North Sulawesi, Indonesia [13]. The study

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was aimed to make description of *Mane'e* system and evaluate its impact on fish resources and environment. This information could be used as an alternative for the establishment of responsible fisheries or coral reef biodiversity conservation.

2. Method

The research was conducted in Kakorot an Island and Nanusa Islands, in May 2013 during *Mane'e* ceremony. Primary data were collected through direct observations, interviews with traditional leaders, religious leaders, educators and village leaders. Other data were obtained through a video recording of *Mane'e* ceremony implementation.

3. Results and Discussion

Geography

Nanusa Islands, also called *Porodisa* (means paradise), are Volcano Islands located in the residential areas of Talaud Islands, North Sulawesi. Geographically, these islands consist of four very small inhabited islands, i.e. Miangas Island. (northern outer part), Marampit Island, Karatung Island and Kakorotan Island, where the *Mane'e* has been practiced. Whereas the uninhabited islands, Garat Island

(local law protected island (*Kalpataru*-environment price recognition), Mangupung Island, Intata Island and Malo Island are plantation islands of local community. Kakorotan Island and Intata Island had been one island in the past, but swept away by big tsunami disaster in 1914. All these islands politically have very strategic position since they are outer boundaries to the neighborhood country, philippine (Fig. 1).

Mane'e has been performed in all islands but the society structure and belief has changed with time, so that only local community in Kakorotan Island has still strictly held their customary law system. Other important terrestrial natural resources beside local plantations are climber crabs (*Birgus latro*) and moleo birds (*Macrocephalon sp.*).

Local Wisdom

Mane'e is one of indigenous fisheries management which has been conducted from generation to generation by the local people since 16th century in Nanusa Islands of North Sulawesi. *Mane'e* means a statement of agreement of local community to do activities together, rituals to prepare fishing equipment and carry out the fishing operations together, or fish harvest ceremony together. *Mane'e* could also be interpreted as an activity to implement fishing operations on the basis of cooperation, solidarity and unity. *Mane'e* itself is actually a series end of a customary law process called *Eha'* which means a warning not to do or a ban on all people to take natural resources during certain time (closing harvest season or periodic closures).

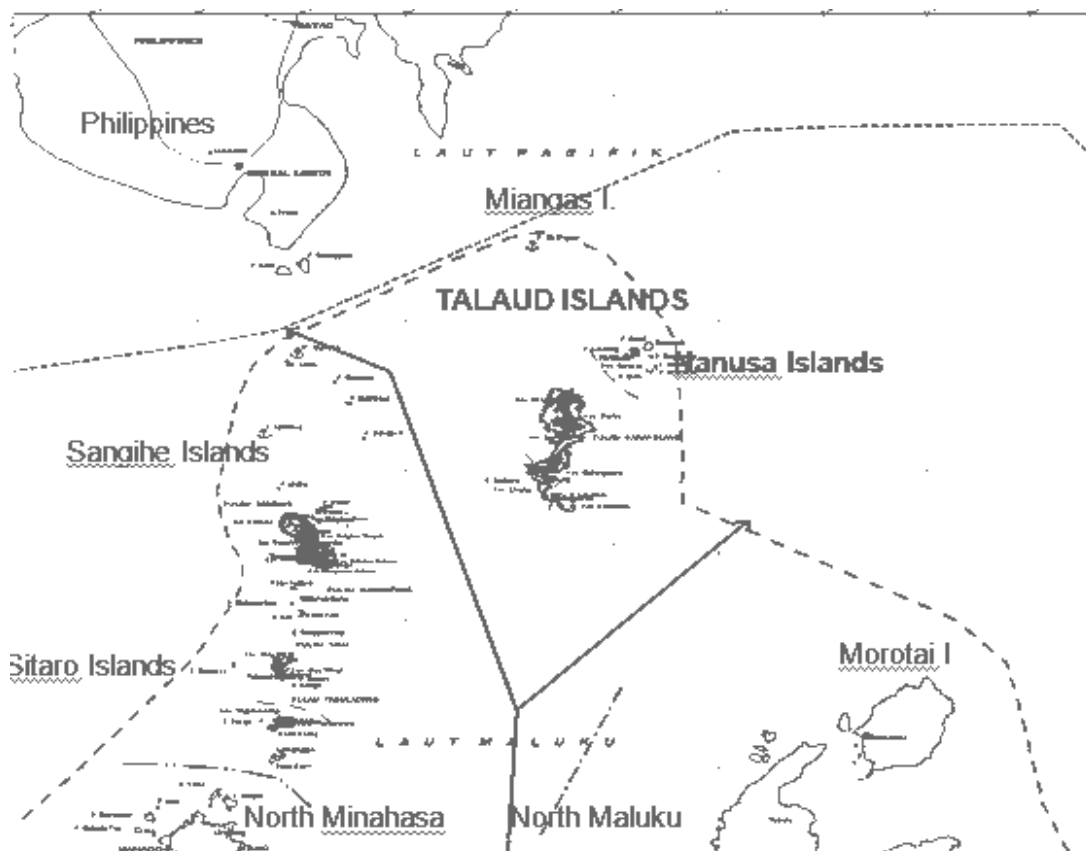


Figure 1. Geographic position of Indonesia outer islands in North Sulawesi Province

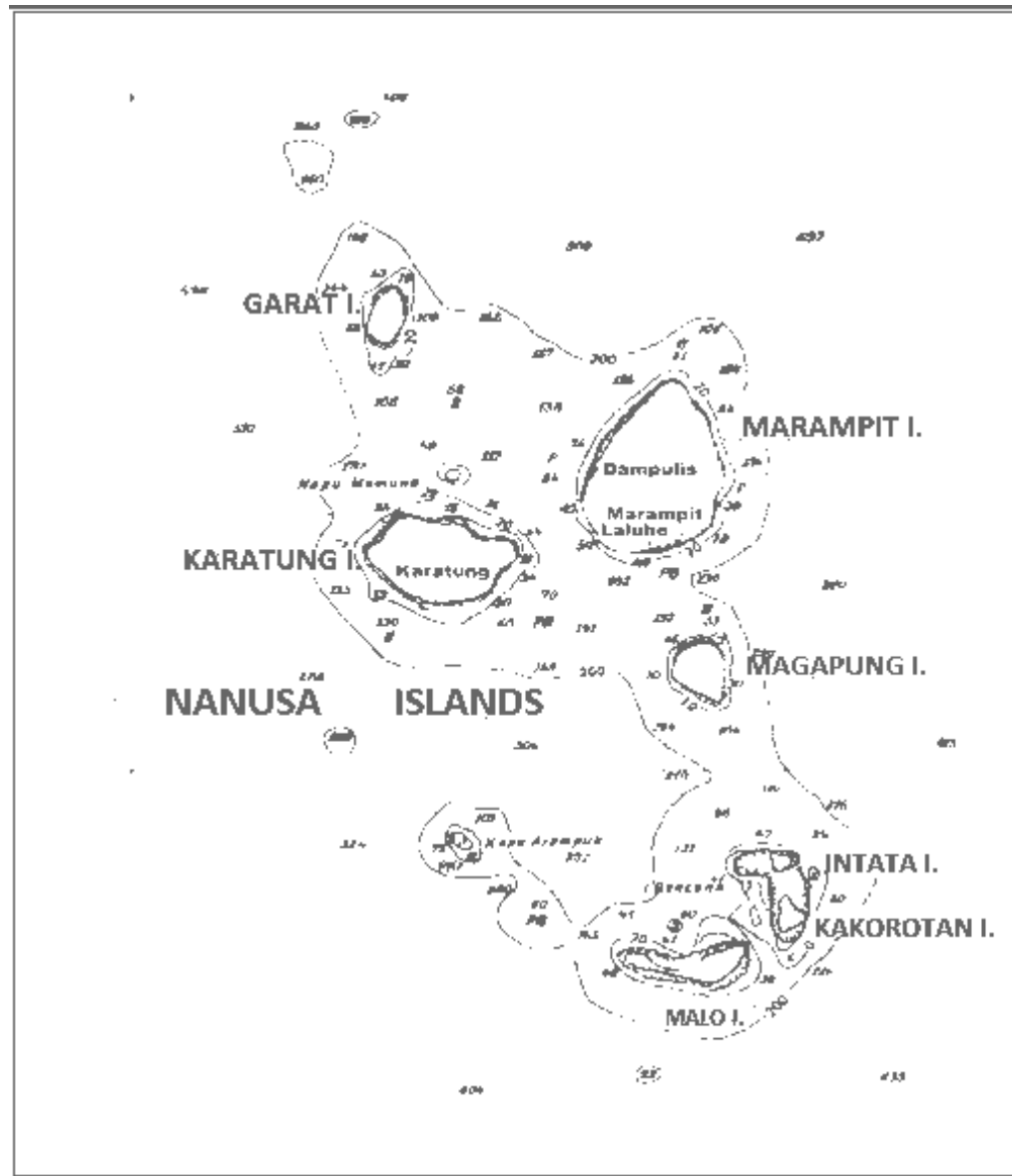


Figure 2. Islands of mane'e practices

There are two kinds of *Eha'*. First, land *Eha'*: closing season for harvesting natural resources on the islands, like coconut, banana, cassava, sweet potatoes and other land natural resources. Second, sea *Eha'*: closing fishing season and fishing ground, which forbid people to enter some beaches and coral reef waters. *Eha'* has been established by local customary institution together with village government and religion institution.

Basic Principle

The traditional knowledge of this *Eha'*, is mainly based on trust and community compliance, not greedily exploiting the limited natural resources on very small islands as Nanusa Islands. *Eha'* guard for law enforcement called *mangangeha* will be chosen a number of men from ten Tribe Heads for one year. Anyone who violates the rule will be punished by moral sanctions or some money decided by customary law institution, because local community believes that any

violation would cause some natural calamity in their villages.

Mane'e Location and implementation time

Mane'e ceremony is conducted at nine sites (Fig. 2), and each has its own name, *Lenggoto*, *Ale'e*, *Apan* and *Dansunan* in Kakorotan Island, *Ranne* (national site), *Abuwu* and *Ondenbui* in Intata Island, and *Malele* and *Sawanin* Malo Island. Implementation of *mane'e* is once a year at each site in May to June. Fishing gear will be deployed at the sea during a high tide (spring tide), usually the day after the new moon or the full moon, and its time is determined through traditional rituals of *Mane'e*.

Process of Mane'e ceremony

During this event, there is no difference in community status, either religion or life status. Process of *Mane'e* ceremony is conducted through nine stages, including prayers to the Lord that all the work going well and blessed,

as follows: 1) *Maraca Pundagi* (cutting the forest ropes); 2) *Mangolom Para* (requests to God); 3) *Matuda Tampa Pane'ea* (go to the location of the ceremony); 4) *Mamabi U'Sammi* (making fishing gear); 5) *Mamoto U' Sammi* (casting the fishing gear); 6) *Mamole U' Sammi* (pulling the gear shoreward); 7) *Manganu Ina* (take or catch the fish); 8) *Matahia Ina* (dividing the catch); and 9) *Manarimma Alama* (thanksgiving to God).

Fishing Gear and Process

Fishing gear used in *Mane'e* ceremony is very traditional, made of forest rope - a type of creeping plant which is easy to grow in the forest of Nanusa Islands, then joined in a row to form a rope around 3 -4 km in length and wrapped with young coconut leaves. Preparation of *Mane'e* ceremony requires 3- 4 days before the main event. *Ratumbanua* (traditional leader) duty is to ask the Lord to grant the ease and a lot of catches during the *mane'e* event.

The fishing gear is set circle to a reef flat as location of *mane'e* by a small boat using paddles in the morning when the sea being high tides. Free divers with hand-made goggles follow the line in certain distance to guide the fish school from the deep into the center of shallow lagoon while the tide is going out. The divers should identify sharks and guide them out from the circle line, because the people believe that it is a bad sign for local community in future. Both ends of the rope are pulled towards the coast to minimize the circle of rope so that the fish are trapped in the middle of the lagoon at the lowest tide.

When waters is shallow enough, fishing will be firstly initiated by the head of the customary law, and then special guests or government officers, religion leaders and followed by local community and visitors using simple gear or by hand. Catches consist of coral fishes and their associates, such as Serranidae (groupers), Scaridae (parrotfishes), Haemulidae (sweetlips), Acanthuridae (surgeonfishes), Balistidae (triggerfishes), Siganidae (spinefoot), Carangidae (trevallies), Barracudas and some time turtles.

The Impact to Fish Resources and Environment

Mane'e tradition, especially in *Ranne* site of Intata Island was established by the Government of Talaud Islands Regency as a tourism icon (*mane'e* festival) and open to public, while eight other locations were closed to the outsiders. The catch of *mane'e* activity in recent years, however, tended to decline, both number and size reflecting a decline in aquatic environmental quality around the *mane'e* site. Many young fish were also trapped in the lagoon die at the lowest tide. Annual *Mane'e* activities as a tourist attraction are usually attended by thousands of people. In this occasion, when fishing takes place, then the seagrass beds and coral reefs are damaged because of being trampled by visitors.

After the *mane'e* ceremony had completed, then garbages from human activities were spread in Intata Island and its surrounding waters. Anchor of the carrier vessel had also a great contribution to coral damages and water pollution from fuel oil waste or other liquid wastes. Yearly

harvest of creeping plants (forest rope) will affect the coastal ecosystems of Mangupung Island as well. Cutting young coconut leaves may also inhibit the production ability of the coconut itself.

Mane'e activities, as ceremonies customary law, were often intruded by the outsiders. *Mane'e* Ranne, as a national tourist attraction, was usually attended by officials of central government, but the local government who felt concerned to arrange the *mane'e* activities which sometimes broke the rules of local customary law. This situation could weaken the people's traditional belief on the local wisdom, and it could also be the reason why this tradition could be gradually left.

Mane'e effective time was predetermined by the customary law, but the outsiders could impose a delay or accelerate the implementation in association with official visit, so that it could finally forced *mane'e* ceremony to be conducted at the expense of customary law. Many other customary rules were often not followed by the visitors. These conditions eventually led to changes in beliefs and social structure of local communities that violation of customary law could cause a catastrophe in their village later. Therefore, the implementation value of national *mane'e* ceremony in *Ranne* site of Intata Island is not genuine local customs anymore, and the benefit of local wisdom could degrade because of the outsiders' intervention.

4. Conclusions

Mane'e through *Eha* system' actually has a positive impact on compliance with local communities, so that they are not greedy to exploit the limited natural resources in very small islands. Nevertheless, outsider intervention that violate the customary law could result in negative impact on local community's beliefs and social structure, so that fisheries management traditionally well managed will be gradually degraded and could also cause environmental deteriorations. In spite of that, resources management in this area should be more rationally done and environmental friendly. Hence, the development of Intata island tourism should be done with three approaches, prosperity approach (welfare approach), security approach and environmental approach, that the natural resources could be sustainably managed.

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