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Short communication: The Implementation of Local Wisdom Intervention by Bajo People In Eco-Friendly Artisanal Fishery In Torosiaje Gorontalo, Indonesia

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ABSTRACT

BACKGROUND: The activity of aquaculture can cause an organic and pesticide material stockpiling that adversely affects the biodiversity of coastal waters. Similarly, dangerous and toxic material utilisation in fishing has damaged the coastal ecosystem. The government and community have applied for a coastal rehabilitation program, yet it is unsustainable because it has not been synergic with fishery development that raises the economy of the coastal community. **OBJECTIVE:** Reviewing the implementation of local wisdom intervention by Bajo people in the eco-friendly artisanal fishery. **RESULTS:** There is a local wisdom in fishery activity by Bajo group reflected by their hierarchy division in fishing or called as *Mamia Kadiolo*. Those groups are *Palilibu*, *Bapongka*, and *Sasakai*; *Palilibu* is they who are fishing only one to two days and using *Soppel/Leppa* as their traditional boat with paddle, *Bapongka*, in contrast, are coming back to their village one to two weeks after fishing, and *Sasakai* is they who are fishing for months. It is found an eco-friendly traditional fishing gear used by Bajo people that it is well-operated and selective fishing. The gear is known as *Yaiyai Daya* including trawl, fishing rod, nets, arrows, *sero*, *rumpon*, *bagang*, *bubu*, *seko*, *bina*, *ngelora*, *poncong*, and *doa*. **CONCLUSION:** The implementation of local wisdom intervention by Bajo community in fishery activities provides positive effect towards coastal and sea area in Torosiaje such as *Mamia Kadiolo* that bans a littering that can damage marine ecosystem, and also *Yaiyai Pangala Daya* as their eco-friendly traditional fishing gear.

INTRODUCTION

Indonesia is geographically having rich renewable and non-renewable coastal natural resources and environmental services. Indonesia surrounded by Hindia Ocean, the South China Sea and the Pacific Ocean is very strategic in world political and economic parties. Coastal area consists of three vital ecosystems; mangroves, seagrass beds and coral reefs in which they can create biologically, physically, and chemically functional system (Dahuri, 2003).

Alongside being energy and nutrient resources, mangroves, seagrass and coral reefs ecosystem also become the habitat for various marine biota for feeding, enlargement, shelter, and for rare and endangered fishes Kusmana (1995), Utina (2012). Almost 75 percent of commercial fishes in the tropical area are experiencing their life cycle in mangrove ecosystem (Duke *et al.*, 2007). The dynamics of fishery resources is inseparable from the complexity

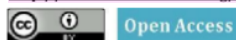
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of tropical ecosystem; therefore, fishery management that can give social and economic benefit for people has something to do with the dynamic of the ecosystem as the living medium for fish stocks themselves. This past half century, the area of mangrove forest in Indonesia decreased by 50 percent due to pond expansion and illegal logging Duke *et al.* (2007), Giri *et al.* (2001) The activity of aquaculture can cause an organic and pesticide material stockpiling that adversely affects the biodiversity of coastal waters. Similarly, dangerous and toxic material utilisation in fishing has damaged the coastal ecosystem.

The government and community have applied for a coastal rehabilitation program, yet it is unsustainable because it has not been synergistic with fishery development that raises the economy of the coastal community. Nevertheless, there is a local wisdom in coastal community's life including local knowledge or ecological order-based natural resources utilisation (Kusmana, 1995). In Bajo coastal community, for example, the fishes in mangrove forest area in high tide are localised to make it easy to catch, and also the use of fishing gear (bubu) in coral reefs or mangrove forest. For that reason, it is significant to conduct a study on the implementation of Bajo local wisdom intervention in the eco-friendly artisanal fishery, so that it positively affects the environmental preservation in Torosiaje coastal area. The result of this study can also be a reference to generally implement it in every coastal zone that has local wisdom in its artisanal fishery.

Methodology:

This study used an explorative survey method to obtain the data about facts and phenomena and to search for factual information at the location of this study (Mardijono, 2008). The data were collected from direct interviews with Bajo people in Torosiaje, Gorontalo, and then analysed by using qualitative descriptive analysis.

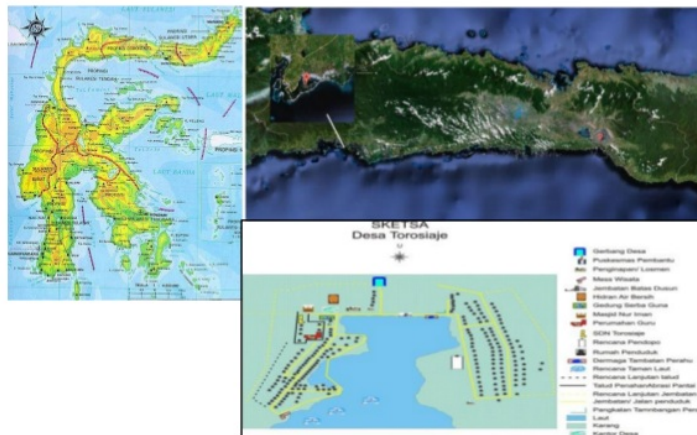


Fig. 1: Study Location

RESULTS AND DISCUSSION

Bajo community in Torosiaje Village has much potential local wisdom embraced as a value system and institutions related to artisanal fishery activities that can make them happily live with their environment. For Bajo community, the coastal area is their life resources reflected by their hierarchy division in fishing or called as *Mamia Kadiolo*. Those groups are *Palilibu*, *Bapongka*, and *Sasakai*. *Pallibu* is they who are fishing only one to two days and using *Soppe/Leppa* as their traditional boat with a paddle. They will return to their hometown to sell their product or simply enjoy it with family. *Bapongka*, on the other hand, is coming back to their village one to two weeks after fishing and still using *Soppe/Leppa* boat. *Sasakai* is they who are fishing in the farther area for months, and they tend to sail on the island after island, even province after province. However, they use the bigger boat with thrusters.

1. Traditional Fishing Gear

Based on the findings, Bajo people is always using traditional fishing gears namely *yaiyai panggaladaya*, including: *Ringgi* (trawl), *Missi* (fishing rod), fish arrow, net; *Billa* is a kind of long fish cage, *bubu*; *Seko* is crabbing gear; *Bina* is using thread in fishing; *Ngelora* is *cakalang* and *ekor kucing* fishing gear; *Poncong* is octopus gear; *Doa* is squid gear made of wood with fishhook; spear and *Rompong*

2. The Implementation of Local Wisdom Values by Bajo People in Eco-Friendly Artisanal Fishery

Bajo people's traditional gear or known as *Yaiyai Pangala Daya* is static, easy-operated, and the fish product is more selective and environmentally friendly.

a. Yaiyai Pangala Daya as Eco-Friendly Traditional Fishing Gear

Traditional fishing gear has been using in Torosiaje which is static, easy-operated, and the fish product is more selective and environmentally friendly. There are also some conventional and modern boats (sope/Lepa) used by Bajo people.

Several traditional fishing gears do not damage marine ecosystem, including:

a. Ringgi(Trawl):

It is a rectangular fishing gear, made of nylon and stretched to form such an ensnaring wall. It is also equipped by a buoy on top of the trawl and ballast at the bottom of it. The mesh size is similar to make it have a high fishing selectivity, and then this gear is floated so that it will not reach the coral reef and sea grass. This is an eco-friendly fishing gear based on its operation and selective fishing that can preserve the coastal area.

b. Mis'si(fishing rod):

Fishing rod consists of two main components; nylons and hooks, with or without baits. The number of hooks depends on its kind of rod. Alongside nylons and hooks, the fishing rod can also be equipped with pole, ballast and buoy. Bajo community uses some fishing gears, including *Mis'si Ngelora* as the effective fishing gear for *ekorkuningand cakalang* fishes. *Mis'si Ngelora* is the number of fishing rods (500-1000) operated at once in high seas, or even ocean. *Pancing Hanyut* is the passive fishing gear that it only depends on the baits eaten. Once it is down to the waters and boat machine is turned off, the boat and fishing gear will drift along the waters. After approximately four hours, the hooks will be raised up back to the boat. *Huhate* is a special and active fishing gear for *cakalang* fish and operated all day long when fishes are around the ship. *Huhate* is unique since it is not hooked like the other hooks; rather it is covered by chicken feathers to make it invisible. *Pancing Tonda* is semi-active fishing gear and pulled by a boat to catch the fish. It is operated in sustainable fishery zone. *Bina* is fishing by using thread instead of a hook, and it is only for *Sori* fish. That fish will eat the thread since it has along mouth and too many teeth to make it entangled.

The use of these fishing gears gives a positive impact on the environment since they are very selective; the coral reef ecosystem is still preserved, and it will not endanger the fisherman.

c. Rompong (Fishing Aggregating Device):

Fishing Aggregating Device (FAD) is fishing gear aid tool that uses the net. It is made of long bamboo, and on the floated raft, it is tied by long and vigorous rope and connected with an anchor at the bottom of the sea. There are coconut leaves as the baits put in the rope for about 5m-20m at the bottom of the sea. The fishes are then surrounded by traditional trawl (*Ringgi*) or large purse seine.

Based on environmental preservation aspect, the technique of FAD has an environmental wisdom which is selective fishing in the surface (nets size is adjusted with the kinds of fishes). Therefore, an excessive fishing can be prevented to reach eco-friendly fishing.

d. Bagan:

Bagan consists of principal components including a cottage in a big seine rectangle boat with a small hole (to catch small fishes lived in sea level) and lamp (lantern and electric lamp) as the night light to attract the fishes. This operated in the deep seas so that the location of the coral reef can be protected.

e. Bubu:

Bubu is the static fishing gear like a cage as a trap to make the fishes easily enter it without any difficulties. It is made of rattan, bamboo, net wire and plastic, and operated in the seabed and sea level. It is also a selective fishing gear to catch bigger and eco-friendly fishes.

f. Spear:

It is made of spear hook rod used in sea level fishing. If fishing is done at night, they will use the lantern to catch bigger fish. The fish product from spear is usually cheaper than usual because its body is wounded. However, to maintain the price, Bajo community changes the fishes to salty ones.

g. Net:

The size of net's hook must be considered because sometimes it only catches the untargeted fishes. This is an eco-friendly fishing gear due to its high selectivity and limited operation scale.

Food Agriculture Organization (FAO) provides the Code of Conduct for Responsible Fisheries- CCRF). In CCRF, FAO assigns a set of criteria for eco-friendly fishing technology, including: have high selectivity, do not damage the habitats, fishes and other organisms, do not endanger the fishermen, produce qualified fishes, the product does not harm consumers' health, minimum wasted, give minimum impact on biodiversity, do not fish any protected and endangered fishes, and socially accepted. Regarding these criteria, Bajo traditional fishing gear

(*Yai-yaipangaladaya*) is categorised as eco-friendly gear that fulfils the standard criteria; the tools, operation, not dangerous, and selective fishing.

Conclusion:

The implementation of local wisdom intervention by Bajo community in fishery activities provides positive effect towards coastal and sea area in Torosiaje such as *Mamia Kadialo* that bans a littering that can damage marine ecosystem, and also *Yaiyai Pangala Dayaas* their eco-friendly traditional fishing gear.

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