

Strategy for Countermeasures for Destructive Fishing in Makassar City Waters

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ABSTRACT

Destructive fishing is fishing activity using materials, tools or methods of fishing that can damage fish resources and the environment. This study aims to determine the strategies for coping with destructive fishing in Makassar City waters. This type of research is using a qualitative descriptive approach and a quantitative approach. A qualitative approach was carried out to determine the strengths, weaknesses, opportunities and challenges of the Makassar City Fisheries Service. Data collection techniques were carried out through observation, interviews, questionnaires, and documentation. The results of the study show that there are five powers that are owned by the territorial waters of Makassar City in preventing destructive fishing, namely the laws and regulations that are standard, have supervisors who go directly to the community to carry out socialization, supported by adequate infrastructure, take a persuasive approach to former perpetrators not to carry out destructive fishing, provide infrastructure and facilities for environmentally friendly fishing. This research can be used in making decisions regarding destructive fishing in Makassar city waters, because previous research only focused on damage to natural resources.

Keywords: Destructive fishing, environment, fish.

INTRODUCTION

The rise of Illegal Unreported and Unregulated Fishing (IUU-Fishing) activities that occur in Indonesian seas is increasingly worrying, based on data released by the Ministry of Maritime Affairs and Fisheries of the Republic of Indonesia, state losses due to illegal fishing reach 300 trillion rupiahs per year, that is, taking into account the loss rate of up to 25% of the total fishery potential of Indonesia. This loss has an impact on the state and threatens the sustainability of marine and fishery resources (Jaelani & Basuki, 2014). Irresponsible fishing activities are not only limited to illegal fishing activities, but also destructive fishing activities. This activity can also cause huge losses, especially to the sustainability of existing aquatic ecosystems. For this reason, the Ministry of Maritime Affairs and Fisheries, through the Directorate General of Marine and Fishery Resources Supervision, is making continuous efforts to protect the sea from the threat of destructive fishing.

Destructive fishing activities carried out by unscrupulous members of the public generally use explosives (fish bombs), and the use of toxic materials to catch fish. The use of these materials causes damage to coral reefs and the surrounding ecosystem, and causes the death of various types and sizes that exist in these waters. At least, the results of research by the World Bank in 1996 showed that the use of bombs weighing 250 grams would cause the area of coral reefs destroyed to reach 5.30 m². (Kepmen of marine and fisheries Number: 114/kepmen-kp/sj/2019), 2019).

Based on Law Number 45 of 2009 above Amendment to Law Number 31 of 2004 concerning Fisheries Article 8 paragraph 1 reads: "Everyone is prohibited from catching fish and/or cultivating fish using chemicals, biological materials, explosives, tools and/or methods, and/or buildings that can harm and/or endanger the preservation of natural resources. fish and/or their environment in the Indonesian Fish Cultivation Territory".

Makassar City consists of eleven islands that have good marine resources. However, until now there are still fishermen who catch fish by destructive fishing. Based on the

Destructive Fishing Profile in the Spermonde Archipelago, the islands that practice destructive fishing in the city of Makassar are Kodingareng Island, Barrang Caddi and Barrang Lompo. One of the causes of damage to marine ecosystems is fishing by destructive fishing or fishing by destroying the environment/not environmentally friendly. Even though Destructive Fishing has been prevented for a long time, the reality is that until now the practice of Destructive Fishing is still happening and this can be categorized as an extraordinary incident because of its very bad impact on all marine ecosystems and humans/actors of destructive fishing. Fishing activities in a destructive way or known as destructive fishing is one of the main threats to the management of Indonesia's fisheries potential apart from illegal fishing.

Destructive fishing causes extensive damage to coral reefs. Damaged coral reefs cause fish to lose their habitat and create difficulties for fishermen to catch fish. On the other hand, it takes a very long time to restore damaged coral reefs. This condition becomes a continuous series of misery for fishermen and the wider community. The perpetrators of destructive fishing aim to gain large profits instantly, but this action actually results in a scarcity of fish which ultimately harms the perpetrators themselves.

Factors causing destructive practices include overlapping management authority between the Ministry of Maritime Affairs and Fisheries, Regional Governments, the Police which can lead to conflicts in management authority, both oversight and enforcement. Apart from that, conflicts between fishermen, both fishermen who practice destructive practices and fishermen who are not/non-destructive actors, as well as local fishermen and migrant fishermen, can result in seizures of fishing grounds.

The practice of destructive fishing is common in waters that have coral reefs and tropical countries with a high number of people with economic pressures that trigger despair among fishermen (Saragih & Trencher, 2020). The poverty factor in coastal areas has a significant contribution to the widespread practice of destructive fishing. This is what makes Destructive Fishing activities still popular. So a strategy is needed to reduce the practice of destructive fishing in Indonesia.

METHODS

This study uses a qualitative descriptive approach and a quantitative approach. A qualitative approach was carried out to determine the strengths, weaknesses, opportunities and challenges of the Makassar City Fisheries Service. A quantitative approach is used to analyze SWOT factors in determining strategies in the territorial waters of Makassar City. Data collection techniques in this study were carried out by means of observation, interviews and documentation studies of respondents or key informants (Key Informants) (Sugiyono, 2019). To obtain the necessary data in research. overt and covert observation techniques. The observation technique used is overt and covert observation which is intended to observe: patterns of destructive fishing raw material trade in the territorial waters of Makassar City; level of effectiveness in handling destructive fishing in Makassar City. Interviews in this study were conducted with the Central Government (Satker for Oversight of Maritime Resources Ministry of Maritime Affairs and Fisheries of the Republic of Indonesia) Provincial Government (Branch of the Mamminasata Maritime Service), City Government (Fisheries and Agriculture Office), community shops, fishermen. As for the Key Person (key respondent) who really

understands/experts about Destructive Fishing. in this study researchers used documentation techniques with the intention of enriching, developing and adding information to strengthen the data processed and used as research results, and others. Data analysis was carried out using SWOT-AHP. The first step is to determine the SWOT factor in handling destructive fishing. Followed by the AHP matrix. Then determine alternative strategies, and the final step is to reduce internal and external values.

RESULTS AND DISCUSSION

SWOT + AHP (AWOT) Analysis of Destructive Fishing in Makassar City Waters

The government of South Sulawesi in carrying out prevention of destructive fishing has done several things in preventing destructive fishing of coastal communities and islands. This activity is through education, outreach and campaigns against fish bombs and anesthetics directly to fishing communities in coastal and island areas as well as making films related to preventing the use of hazardous materials (bombs and anesthetics) in fishing activities. In fact, these activities have received awards from the Ministry of Maritime Affairs and Fisheries in 2023 (Prasetya, 2023). Makassar City Government should feel this as an opportunity to take precautions in Makassar City waters. This is because the main tasks and functions of the sea area in the Makassar area are carried out by the South Sulawesi provincial government, which in this case is carried out by the Maminasatta CDK. Even though the activities carried out by the government, in this case the marine and fisheries service for the province of South Sulawesi, have been quite good, they still need help and support from government partners related to destructive fishing supervision, and of course support from fishing communities is highly expected. So that later it is hoped that the territorial waters of Makassar City will truly become an area with zero destructive fishing activity.

Efforts to preserve the environment have also been carried out both by the government, academics and by NGO organizations related to marine preservation. Several examples of ecosystem rehabilitation activities in Makassar City waters have been carried out on Badi Island (Williams et al., 2019), sinking of fish apartments on Barrang Cadi and Kodingareng Islands (South Sulawesi Province, 2022), and coral transplantation on Barrang Lompo Island (Fathuddin et al., 2022). These efforts need to be multiplied and encouraged and their sustainability needs to be maintained so that later they are able to restore the condition of the ecosystem in Makassar waters, although of course the recovery takes quite a long time.

Based on the IFAS and EFAS matrices, the formulation of strategy options for the development of purse seine fisheries was formed. The formulation of this strategy option is formed by a combination of strengths and opportunities (SO), strengths and threats (ST), weaknesses and opportunities (WO), and weaknesses and threats (WT). Next, a SWOT interaction map is prepared as can be seen in Figure 1. This matrix describes the alternative/option strategy concepts that can be implemented, namely SO strategy, WO strategy, ST strategy and WT strategy. Based on this matrix, priority concepts for preventing destructive fishing in City waters can be arranged Makassar. The priority concept used is determined by the score of each strategy in the matrix which has been processed using the AHP method so that strategic priorities are obtained which can be seen in figure 1.

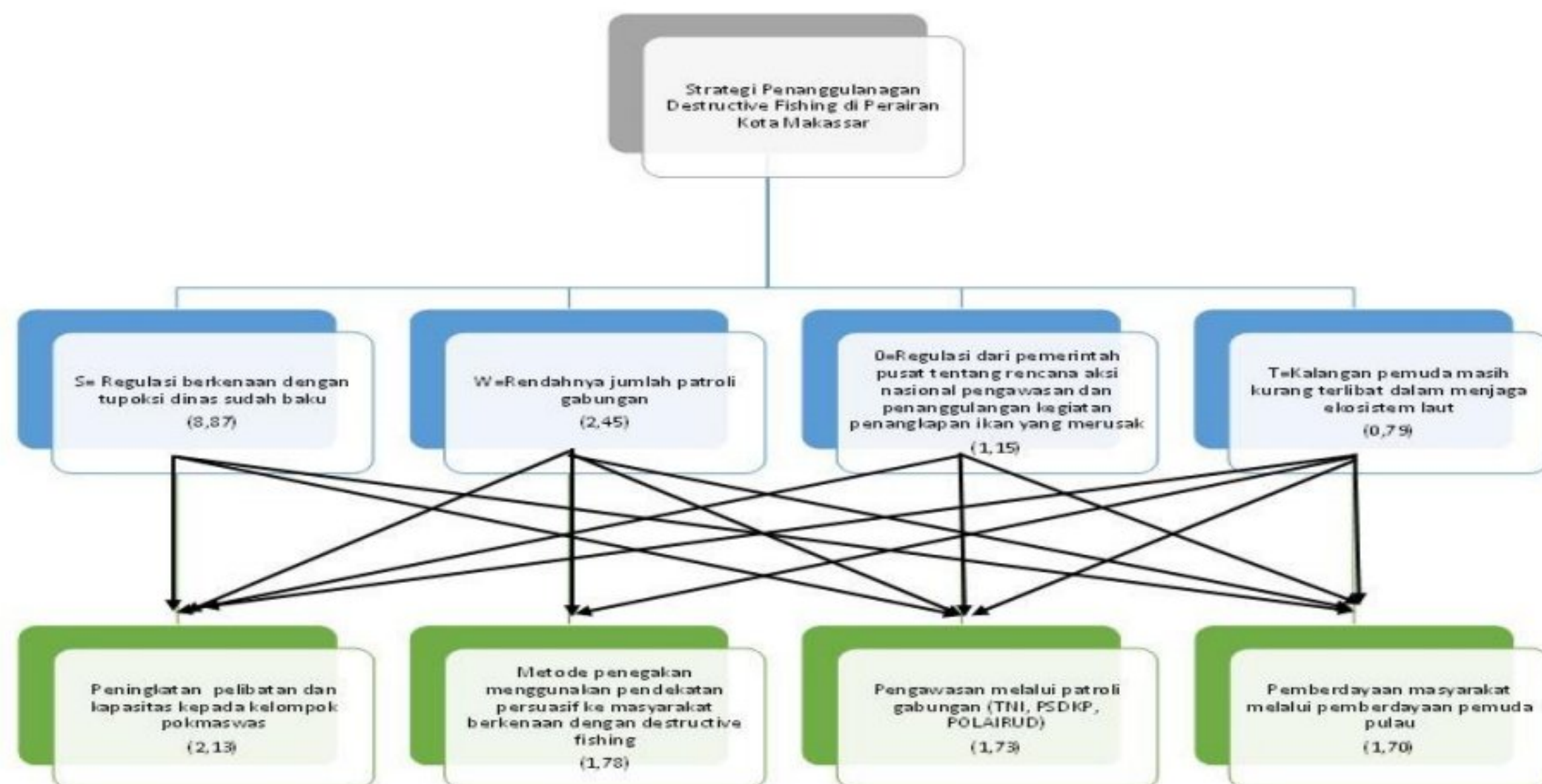


Figure 1. Strategies for Handling Destructive Fishing in Makassar City Waters.

Discussion

Increased Involvement and apacity of Fisheries Supervisory Community Group (2.18)

Involving the community in monitoring the prevention of destructive fishing is one of the methods used by the government to help monitor the oceans. Communities, in this case fishermen, are the largest marine stakeholders who act as users. Of course, it would be very effective if the community supervised each other's places where they made a living. The amount of support from the community regarding the prevention of destructive fishing means that the existence and formation of supervisors can also be easily accepted by the island community. Including the formation of supervisors who come from the community and have been legalized by the government.

This government and community partnership is developed in the management of environmental security and order on all islands within the waters of Makassar City. This partnership is based on social norms and/or local agreements while still observing applicable national legal regulations and upholding the principles of human rights and responsible individual freedom in the life of a democratic society.

The application of supervision for the prevention of destructive fishing by involving the community as the front guard is expected to be able to suppress, reduce and even eliminate the desire of the island community to catch using destructive methods, both bombs and anesthetics. With the involvement of the community, there is no need to create new security concepts or systems anymore, but rather prioritize the development of existing systems that are adapted to

the latest conditions in the implementation of modern security and supervision functions by synergizing the community with the government.

In order for the supervisory performance to run well, the Makassar City government always coordinates with the Supervisory community group (Community Monitoring Group) located on the islands around Makassar City waters. This is done because it is well realized that a very basic weakness in preventing destructive fishing is that the vast area of water that must be monitored is not proportional to the fleet and the number of supervisors working to oversee the waters. The number of ships and people related to supervision is disproportionate. Therefore, the government carried out an initiation by involving the community as supervisors and it was legalized through Supervisory community group (Community Monitoring Group) activities.

The explanation regarding the duties of the Supervisory community group is described in As for the tasks of the Supervisory community group listed in (Regulation of the Director General of PSDKP No. 5 of 2021 concerning the Development of Supervisory community group in the Maritime and Fisheries Sector, 2021) that Supervisory community group has the duty to inform fisheries supervisors/law enforcement officers of alleged violations in the field of fisheries, can arrest perpetrators of violations in the marine and fisheries sector for further submission to fisheries supervisors/law enforcement, monitor activities in the management of marine and fisheries resources in their territory and can be involved in operations supervision of Fishery Marine Resources. With this task, there are several things that need to be remembered and become a concern for Supervisory community group members in carrying out supervisory activities, namely, Supervisory community group is prohibited from judging perpetrators of violations, acting as law enforcement officers, carrying out surveillance operations independently, applying rules that have no legal basis,

All supervisory elements are also supported by better facilities and infrastructure because they have been facilitated by the government. This is evidenced by the facilities provided by the agency in the form of surveillance ship assistance. This concept is also in accordance with the concept of sea power, namely the power of the state at sea which involves not only law enforcement agencies and marine resources but also involves everything in the sea including the community (Nasution et al., 2018).

The Enforcement Method Uses a Persuasive Approach to the Community With Regard To Destructive Fishing (1.78)

The demand for fish by the community either to fulfill food needs or demand for fish in a live state may also be a trigger for destructive fishing still occurring. In the interviews conducted with fishermen, some said that if the demand for live fish is large enough, fishermen may be tempted to return to destructive fishing, especially fishing lures. Although the demand for live fish is indeed one of the factors that drives destructive fishing practices, there are still many other factors that influence it. One of the other main factors is the lack of supervision and law enforcement against destructive fishing practices by the authorities. Therefore, efforts to reduce destructive fishing practices in Makassar must involve various parties, including the government, community, and fishery business actors. Some of the efforts that can be made include increasing supervision and law enforcement. If translated, the economic factor is the most important thing in preventing destructive fishing. This economic factor is also the main

driver, usually fishermen who have received legal sanctions in the form of prison or fishermen who no longer want to carry out destructive fishing to return to these activities (Jumrana, 2021; Kusdiantoro et al., 2019; Nababan et al., 2007; Zaelany, 2019). Various reasons can be used as justification for carrying out destructive fishing activities again. Starting from meeting basic needs, children's school fees, debt bondage for previous fishing activity capital, there is more demand for live fish, increasing demand for consumption fish, and other reasons that can be a trigger factor for fishermen to return to destructive fishing activities. The thing that can become a generator is that fish resulting from destructive fishing activities, be it bombs or anesthetics, can actually be sold in the market. This certainly can be a trigger that encourages fishermen to return to destructive fishing activities.

Fish is the cheapest and most affordable source of protein for Indonesian people and has a high amino acid content (Anwar et al., 2019). No wonder the potential for increased demand for fish is also very large. In addition, the food business with processed fish, both on a local and export scale, has also increased the demand for fish meat. This can also be a trigger for fishermen to seek large profits with small capital. From the statistical data of the KKP, it can be seen that the number of fish consumption in South Sulawesi continues to increase. With the increasing number of fish consumption, the greater the possibility of fishermen to carry out destructive fishing activities, especially bombs and anesthetics. This is what researchers want to anticipate by using a persuasive approach to fishermen, be it ordinary fishermen, active destructive fishing actors, fishermen who have undergone legal proceedings or new generation fishermen.

Another thing that should also be a concern is the need for assistance to former destructive fishing actors who have served legal sentences or fishermen who no longer want to do destructive fishing but are lured to do it again. This assistance is expected so that former perpetrators do not return to destructive fishing activities. Of course, as long as the perpetrator is out of jail, he will experience many things that will allow a change in the mindset of the fisherman or even influence him to return to destructive fishing activities. Including the influence of the surrounding environment first.

Supervision Through Joint Patrols (TNI AL, PSDKP and Polairud) (1.70)

This understanding regarding losses due to destructive fishing may arise from the government's incessant efforts to socialize government regulations that are binding on the community and have legal force if violated, especially Law Number 45 of 2010 concerning internal force. The rules included in this law also serve as guidelines for government stakeholders related to the supervision of fishing activities, including the legal risks that arise (Tombokan et al., 2021). Apart from that, there are a lot of talking boards being put up on the islands regarding the legal risks that will occur if it remains in 2009 regarding changes to Law number 31 of 2004 concerning Fisheries. Because these rules are binding and become the legal basis for fishing activities in Indonesia.

Currently the stake holders of water surveillance (TNI AL, Polairud and PSDKP) in Indonesia mostly carry out their own surveillance. It is still very rare for the stake holders of water supervision to carry out joint patrols, especially in Makassar waters. In several other water areas such joint operations or patrols have already been carried out. Some areas that have

already done this are Maluku (Terasmaluku.com, 2023), Bali (Polresjembrana.com, 2022), Ketapang (PuspenTNI, 2018) and several other cities.

The main objective of holding joint patrols is to anticipate criminal acts at sea. One of them is preventing the destructive practice of fishing, be it fish bombs or anaesthesia. At present surveillance at sea has been assisted by a community watchdog group (Supervisory community group) to monitor fishing activities in the waters of Makassar City.

The monitoring system model with the community must be further improved, especially because a lot of environmental restoration has been carried out by both the government and the private sector, for example planting coral in several locations in Makassar City waters and installing fish apartments and several fishing aids that are environmentally friendly. changing the marine environment of Makassar City as long as it receives intensive and continuous attention and supervision from the surrounding community and the government so that the activity can have a significant impact on the environment even though it takes quite a long time.

Joint patrols need to be carried out so that the stake holders related to supervision are able to work together, especially in protecting the Makassar City waters from destructive fishing activities. The ultimate goal is to provide a deterrent effect on fishermen who are still carrying out destructive fishing activities, be it bombs or anaesthesia.

Currently, surveillance technology has developed using satellites or unmanned aircraft. In the future, it is hoped that maritime surveillance can also apply this advanced technology so that it can be more effective and efficient. Another technology that can be used is the Vessel Monitoring System which is installed on every large fishing boat. This technology is useful for obtaining real-time location of vessels and enabling authorities to track the movement of vessels operating in restricted zones or no-fishing areas.

Community Empowerment Through Island Youth Empowerment

Empowering youth is one of the important efforts to stop the practice of destructive fishing. Youth are expected to be able to become agents of change in preventing destructive fishing, especially in their respective island locations. To improve the ability of youth, they also need to be equipped with knowledge related to destructive fishing. Some things that can be done to empower youth: 1). Education and Training: Provide education and training regarding the importance of marine conservation and the impacts of destructive fishing. Youth can also be given training on alternative environmentally friendly techniques in fishing such as using selective nets, 2). Social Campaign: Youth can form social campaigns to increase public awareness of the importance of marine conservation and environmental damage caused by destructive fishing practices, 3). Collaboration with Other Communities: Youth can work together with fishing communities, NGOs and environmental organizations to enhance marine conservation efforts and stop destructive fishing practices, 4). Use of Technology: Youth can use technology to monitor and report destructive fishing activities in their area. Technologies such as cell phone applications and environmental sensors can assist in collecting data and information related to destructive fishing practices, 5). Increasing Economic Welfare: Improving the economic welfare of youth can help reduce economic pressures that can lead to destructive fishing practices. Youth can be provided with training and assistance to start eco-friendly business ventures such as fish farming. Another activity that can be profitable is making ecotourism on islands around the waters of Makassar City. Of course this must be

discussed in a more in-depth way so that the island community also feels the benefits. There needs to be a policy for each stakeholder as a whole which is more prioritized for the development of marine tourism as well as technical, tactical and practical policies in order to realize proper and safe marine tourism in the waters of Makassar City (Basiru et al., 2019). By empowering youth, it is expected to increase public awareness of the importance of marine conservation and stop destructive fishing practices. This can help maintain the sustainability of marine ecosystems and the welfare of fishermen.

In addition to providing space for the involvement of the island's youth. Providing education about destructive fishing to school-age children is also very important. To increase their awareness of the importance of marine conservation and the adverse effects of destructive fishing practices, there are several possible ways to provide education about destructive fishing to school-age children, namely: 1). Learning Materials: Learning materials about marine conservation and destructive fishing can be integrated into the school curriculum. This can help students understand the concept of marine conservation and recognize destructive fishing practices, 2). Field Trips: Students can be taken to nearby waters to observe marine life first-hand and provide opportunities to teach marine conservation concepts. during the visit, students can also be taught about environmentally friendly fishing techniques and alternatives to destructive fishing practices, 3). Class Discussion: Teachers can facilitate class discussions about marine conservation and destructive fishing. Students can be asked to share their opinions and ideas on how to stop destructive fishing practices, 4). Competition: Competitions can be held to encourage students to learn and understand the concepts of marine conservation and destructive fishing. The competition may include making posters or short videos about the importance of marine conservation, 5). School Campaign: Students can form a school campaign to raise awareness about destructive fishing and marine conservation. These campaigns can include activities such as creating banners or holding social actions.

By providing education about destructive fishing to school-age children, it is hoped that they will be able to develop awareness and concern for marine conservation. This can help in maintaining the sustainability of marine ecosystems and maintaining the welfare of fishing communities. To improve the ability of island youths, they also need to be equipped with knowledge about fishing, especially regarding environmentally friendly fishing gear. This is so that when they are ready to go to sea they have sufficient knowledge about fishing and understand the use of environmentally friendly fishing gear so that the fish resources at their fishing location remain sustainable and they can also continue to catch fish.

This training activity is to answer the doubts and reluctance of fishermen in Makassar waters who are still reluctant to use environmentally friendly fishing gear as their main fishing gear because they think that using it is not profitable. This training aims to educate fishermen, especially former perpetrators or fishermen who no longer want to do destructive fishing so that they are able to produce fish catches that can be sold, profitable and of course not damaging the environment.

As for persuasive assistance activities and given to former perpetrators so that they do not return to fishing activities that damage the environment. These two things must be done to be able to improve internal weaknesses in fishing communities in the use of environmentally friendly fishing gear and increase fishermen's awareness to preserve the environment with

environmentally friendly fishing. This is also to help overcome internal deficiencies, namely the lack of personnel and a marine surveillance fleet. With awareness to abandon fishing methods that damage the environment, especially bombs and anesthetics, it will certainly reduce the workload of stakeholders related to marine surveillance.

CONCLUSION

The results of the study show that there are 5 strengths possessed by the territorial waters of Makassar City in preventing destructive fishing, namely the laws and regulations are already standardized, have supervisors who go directly to the community to carry out outreach, are supported by adequate infrastructure, take a persuasive approach to former perpetrators not to carry out destructive fishing, provide infrastructure and facilities in environmentally friendly fishing. The weaknesses of the territorial waters of the City of Makassar in preventing destructive fishing are the lack of supervisors in preventing destructive fishing, limited budgets, the low number of joint patrols, not all supervisors are PPNS, the low level of supervision of fisherman catches at fish auctions, and the absence of a monitoring base. Opportunities owned by the territorial waters of Makassar City in preventing destructive fishing are regulations from the central government regarding the national action plan for monitoring and overcoming destructive fishing activities. AL, Polairud, and PSDKP KKP, Supervisory community group capacity building. Meanwhile, the threats posed by the territorial waters of Makassar City include: youth are still not involved in protecting marine ecosystems, destructive fishing activities are already entrenched, the deterrent effect for destructive fishing actors is still low, the safety risk for supervisors is quite low, and many marine ecosystems have been damaged.

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