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Bangsring Fisherman: Cultural Dialectic Between Destruction And Preserve Marine Ecosystems

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Abstract
Bangsring fishermen are traditional fishermen who have been catching ornamental fish since 1960 in the waters of the Bali Strait. Since the 1970s, Bangsring fishermen have used fish bombs and potassium to catch ornamental fish. Such activities have been going on for a long time, polluting the marine ecosystem. Coral reef habitats are damaged. The ornamental fish population has decreased drastically, making it difficult for fishermen to obtain their catch. The income level of fishermen has decreased significantly and the economic burden on households has increased. The economic pressure that befalls fishing communities is a challenge and has encouraged the establishment of the KNIH-SB organization which has a marine resource ecosystem conservation agenda. At first, this idea was opposed by the majority of fishermen who were used to catching ornamental fish with potash. This resistance was answered with a series of activities to make fishermen aware of the important value of conservation for fishermen's lives. The real result of these activities is the gradual restoration of marine ecosystems. The success of conservation has inspired and motivated fishing communities who were against conservation activities to become supporters of conservation. This conservation movement is a cultural movement because it succeeded in changing the mindset of fishermen from destroyers to preservers of the Bangsring marine ecosystem. Restoring marine ecosystems has an impact on increasing ornamental fish populations, thereby contributing to meeting the subsistence needs of fishing communities.
Keywords: *Bangsring fishermen, ornamental fish, potassium, marine ecosystem, conservation*

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I. Introduction

Background of the Problem

The East Coast of Banyuwangi Regency is a water area rich in coral reefs, making it a good habitat for the development of ornamental fish communities. Most of the ornamental fish fishermen are residents who live in Bangsring Village and Bengkak Village, Wongsorejo District, Banyuwangi Regency. Apart from ornamental fish, fishermen also catch other types of food fish as a by-product, namely demersal fish that live in coral reef habitats. The fishing area for ornamental fish fishermen in Bangsring Waters is part of the Bali Strait Waters.

As an area that has the potential for a fairly wide distribution of coral reefs and is in good condition, the waters of the Bali Strait have the potential for rich ornamental fish resources. This potential encourages the growth of ornamental fish fishing activities. Coral reefs that are still in good condition are an ideal habitat for the growth of ornamental fish. Bangsring and Bengkak villages on the East Coast of Banyuwangi Regency are two fishing villages that produce quite productive ornamental fish. The exploitation of ornamental fish has been carried out by the Bangsring fishing community since 1960.

However, in subsequent developments, ornamental fish fishing patterns that occurred in Bangsring Village experienced changes, namely from traditional fishing to destructive fishing patterns. Traditional ornamental fish fishing patterns are carried out using simple technology in limited *fishing grounds.* The productivity of catches using traditional technology is quite low, which has an impact on fishermen's income levels. However, the use of this traditional technology does not cause massive damage to the marine ecosystem in Bangsring Waters.

Changes in the use of ornamental fish-catching technology in Bangsring occurred due to the impact of the introduction of fisheries modernization policies carried out by the government in the early 1970s. The implementation of fisheries modernization is national in nature. Fisheries modernization policy is based on improving the quality of the use of fishing technology and economic rationality to increase the productivity of

catches. Fisheries modernization is expected to improve the welfare of fishermen so that fishing villages become the basis for new regional economic growth.

The era of fisheries modernization has provided ample space for fishermen to access and utilize fishing technology to increase catch productivity (Kusnadi, 2013:323). At first Bangsring fishermen only caught ornamental fish on the coast, then they started operating jukung to facilitate fishing activities on a wide scale. In the next development, they motorized their jukung (boat) so that the sea reach was even further. Along with the expansion of the ornamental fish market and consumer demand continuing to increase, the availability of ornamental fish stocks that are ready to be marketed is urgently needed. Therefore, increasing ornamental fish production must be carried out by fishermen. The fishing method that supports increased production is potassium cyanide. The costs required are quite cheap.

Fishermen also catch ornamental fish using fish bombs to get more catches. Ornamental fish live in underwater coral reefs. Catching them is also not easy, so using potassium is a cheap shortcut to getting ornamental fish catches. This fishing activity which damaged the marine ecosystem continued for the next two decades. At the end of the 1980s and into the 1990s, the Bangsring fishing community began to feel the consequences of damage to the marine ecosystem and difficulties in obtaining ornamental fish catches. At that time the level of damage to coral reefs in Bangsring Waters reached 82.50 % (Kusuma, Satria, and Manzilati, 1917:2). The further impact of the potential scarcity of ornamental fish is a decrease in income levels and an increase in the daily living burden of fishermen's households.

To overcome this problem, the fishing community formed a social organization, the Samudra Bakti Ornamental Fish Fishermen's Group (KNIH-SB) Bangsring. This organization offers conservation ideas to restore the condition of marine resources and help fishermen overcome their economic difficulties. Initially, this idea was opposed by most fishermen because it would make it difficult for them to catch ornamental fish with potash. However, in the end, all the activities carried out by KNIH-SB have shown real results that are useful for restoring marine ecosystems and helping to fulfill the economic needs of fishermen's households. Based on these real results, the Bangsring fishing community fully supports marine resource conservation activities. The process of changing the thinking orientation of Bangsring fishermen from destroyers to conservationists of marine ecosystems is the topic of this article.

Research question

Based on the description above, the research questions that will be answered in this article are as follows.

1. How can the Bangsring ornamental fish fishing community utilize fisheries modernization to support fishing activities?
2. What are the consequences of fisheries modernization on the condition of the marine ecosystem in Bangsring Waters?
3. How does the cultural dialectic process emerge which contributes to the growth of environmental awareness in the Bangsring fishing community?

Theoretical Framework

Since the early 1970s, the Indonesian government has used modernization theory as the basis for national development. This theory assumes that underdevelopment that occurs in developing countries is an internal problem in these countries (Md Shatil, 2023; Inglehart, & Baker, 2000). The solution offered is to increase productivity, and the quality of human resources through investment in education, work ethic, savings and investment, political participation, and strengthening legal awareness (Budiman, 1995: 16-36).

Modernization theory is used in fisheries development through fishing modernization *policies*. Fisheries modernization is characterized by boat mechanization, increased fishing vessel capacity, and the use of modern nets (Butcher, 2004; cf. Jiang, Wang, & Pei, 2022; Cooke, Docker, Mandrak, Young, Heath, Jeffries, & Muir, 2022). This policy has increased fishing productivity, fishermen's income, and welfare. The modernization of capture fisheries has received a positive response from capable fishermen. For fishermen who are less well-off, they continue to operate traditional fishing facilities.

After a decade of fisheries modernization, the government banned the use of trawl fishing gear. This is done to reduce social conflicts between fishermen in various regions. Differences in access to fisheries modernization are a source of social conflict. Fisheries modernization has increased fishing competition between modern fishermen and traditional fishermen, social inequality and fishermen poverty, overfishing conditions, scarcity of fishery resources, and damage to marine ecosystems (Rice, 1991; Kurien, 1992; Semedi, 2003). The challenges of fishermen in overcoming the negative impacts and threats of climate change are increasingly burdening fishermen's socio-economic conditions (Dutton, 2005).

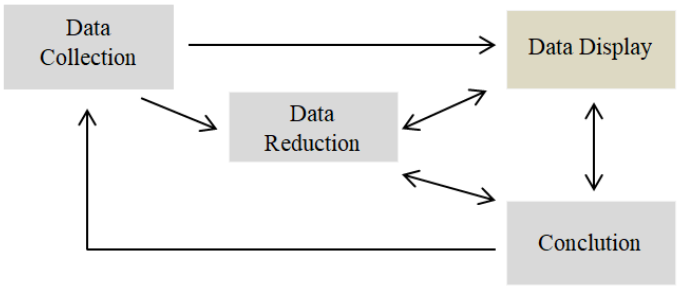
Various efforts have been made by the government and fishing communities to overcome the negative impacts of fisheries modernization. Activities to restore and preserve marine ecosystems continue to be carried

out in various regions. The aim is that the potential of existing fishery resources can be managed sustainably. In this way, efforts to improve fishermen's welfare can be achieved well.

II. Research Methodology

This qualitative research was carried out by exploring the data in depth and interpreting it based on the perspective of the people studied (Afrizal, 2015). The stages of research activities carried out are: (1) field data collection, (2) data reduction, (3) data presentation; and (4) concluding (Miles and Hubermann, 2009). The data collected is in the form of primary data and secondary data obtained from government agencies. Primary data was obtained through in-depth interviews with informants and conducting involved observations in the field.

Data analysis activities are carried out simultaneously with data collection. The data analysis series begins with data reduction, data modeling (*data display*), and concluding (*verification*). Each component is in an interactive position, as in the schematic below.



Data reduction is a researcher's activity in terms of selecting and selecting data that is relevant to the research topic, simplifying complex data, making abstractions, refining data, and organizing data towards research focus based on field data obtained by researchers. The data model (*data display*) is the second step after data reduction. The data model is the presentation of data in the form of narrative text descriptions and the creation of data matrices/schemes/charts/graphs compiled from selected data. Conclusions were drawn by the researcher to understand the meaning of the totality of the data interpretively.

III. Results And Discussion

Fisheries Modernization

Modernization theories as a basis for development in developing countries, especially in Indonesia, began to be applied in the early 1970s. Modernization theory underlies development policies in various sectors, such as politics, economics, agriculture, maritime affairs, and education. The main tools to accelerate the application of modernization theory are technology, science, capital (investment), and markets. The strategic goals achieved by the application of modernization theory are changes in socio-cultural behavior to a more modern one, increasing productivity, and achieving high economic growth. Achieving these strategic goals will have an impact on increasing welfare and equitable development because the results achieved will trickle down. *effect*) enjoyed by the general public (Abraham, 1991:1-30; Abdoellah and Mulyanto, 2019:1-47).

Maritime development, especially in fishing activities, is one of the sectors targeted by development policy. The policy is the modernization of fisheries (*blue revolution*) while modernization in the agricultural sector is called the green revolution (*green revolution*). Realization of fisheries modernization in the form of boat motorization and fishing gear modernization. To support business capital needs to support the success of fisheries modernization goals, the government established fishery cooperatives in fishing villages with production potential. The government's fishing equipment assistance program (boats, machines, and nets) is also provided to fishermen. Access to fishermen's business capital to cooperatives is opened, as is access to modern fishing equipment and increasingly wider markets.

Fisheries modernization interventions in fishing villages have displaced traditional fishing technology. The operation of motorized boats and the use of modern nets have helped increase productivity. However, not all strata of fishermen can follow the technological offers in fisheries modernization. Due to intensive and accelerated fishing activities, the depletion of fisheries resources is increasingly massive (Kusnadi, 2013:319-339). Before the modernization of fisheries, traditional fishermen simply went to sea in coastal waters, their catch was quite large, more than enough to cover one day's living needs.

After the implementation of fisheries modernization, fishermen who still operate traditional fishing gear have to compete fiercely with modern fishermen. As a result, there is socio-economic polarization in fishing communities and potential fisheries resources are increasingly scarce. Among fishing communities that catch pelagic fish or reef fish, the introduction of fishing practices that damage the environment is carried out

when fisheries resources are scarce so that they can still get the results they catch. Secretly from the monitoring of other fishermen and the authorities, they have continued to operate from the early 1990s until now. Things like this are a common phenomenon in various regions without strict legal action (Kusnadi, 2006:65-90; 2016:40-44).

The case of catching ornamental fish with potassium among Bangsring fishermen occurred earlier in the 1970s. For a long period of around three and a half decades until the second half of the 2000s when the conservation movement began to be mobilized, Bangsring fishermen had polluted the marine ecosystem and damaged coral reef habitat in Bangsring's underwater waters by using massive amounts of potassium. Of course, the level of environmental damage is very extensive and serious. Therefore, it is natural that the ornamental fish population has decreased drastically and become scarce, catches are not easy to obtain, and the fishing radius is increasingly moving away from Bangsring sea waters so that the cost of going to sea becomes more expensive. Finally, the level of fishermen's income is increasingly uncertain and small, amounting to around IDR 40,000-50,000 per fishing trip and that is not necessarily earned every day, so the economic burden on fishermen's households is increasingly heavy.

The damage to the marine ecosystem has had serious consequences for the survival of fishermen because they have had to bear the burden of hardship and economic pressure on their households for quite a long time. Even though fish are difficult to obtain and the marine ecosystem is being damaged, fishermen still use potassium in fishing activities. This shows that the capacity of fishermen to manage the potential of local ornamental fish is not accompanied by an adequate conception of knowledge about how these resources can be exploited sustainably to provide stability in life for fishermen. This aspect of knowledge is important because it is a fundamental element that supports fishing practices carried out by fishermen. In the cognitive map of the Bangsring fishing community, elements of conservation knowledge are not visible. This knowledge can put a brake on fishing practices that damage the environment.

What has developed and persisted for quite a long time is the hunting mentality as an innate characteristic of the fishing community and has become the driving spirit of the practice of ornamental fish fishing. Anthropocentrically, the hunting mentality has an important function in increasing the position of fishermen as "conquerors of the sea" along with the potential resources they possess. The availability of fishing equipment brought about by the modernization of fisheries has contributed to increasing enthusiasm for hunting and supporting the accelerated process of damage to marine ecosystems. The modernization of fisheries has turned out to be a fertile habitat for increasing the hunting mentality among the Bangsring fishing community (Kusnadi, 2021:97-114). The increase in mentality is not accompanied by growing awareness of environmental conservation.

Destructive Fishing

Fishing activities that damage marine ecosystems can be carried out by bombing, spraying/dissolving potassium cyanide under the sea and other chemicals, using very small nets, and operating underwater nets pulled by boats, such as mini *trawl fishing gear.* The use of such fishing gear can have serious consequences for marine pollution and damage to fish habitat, thus endangering the survival of all types of marine biota. These consequences have a big impact on human interests, for example in meeting the need for animal protein from sea fish which helps the body's health.

Fishing activities that damage the environment in Bangsring waters are carried out by bombing and potash. Bombing activities are carried out to catch pelagic fish, while potassium is used to catch ornamental fish. This method of fishing is a shortcut to getting a large number of catches in a short time. Using traditional ornamental fish fishing equipment requires a long time and a fair level of difficulty to obtain a catch. Ornamental fish grow and live in coral reef habitats so the use of potassium makes catching them easier.

The use of potassium to catch ornamental fish in Bangsring was carried out in line with the modernization of fisheries around 1972. Such fishing activities have marked a new pattern of post-traditional ornamental fish fishing in Bangsring. Because this fishing method is believed to be more effective in obtaining catches, over time its use continues to spread among fishermen on the Wongsorejo Coast, not just in Bangsring. Potassium is used every day and pollution under the Bangsring Sea continues. Apart from that, the expanse of coral reefs has been damaged and destroyed over a long period.

Undersea pollution and damage to coral reefs that have lasted for almost three decades have driven ornamental fish away from the Bangsring waters. These conditions have created a potential shortage of ornamental fish, thus affecting fishermen's income levels. The economic vulnerability has plagued his household. The economic difficulties that hit fishermen's households are a common situation that occurs in Bangsring. This is a reflection that the Bangsring fishing community has a high economic dependence on the fishing sector so any obstacles faced in obtaining catches will have a direct impact on the economic capacity of their households.

The increasingly difficult life situation of fishermen began to be felt when they entered the 1990s, namely two decades of damage to the Bangsring marine ecosystem. They have to go to sea in an increasingly distant radius from Bangsring Waters to the waters of Tabuhan Island or Menjangan Island, West Bali National Park. The operational costs, energy, and time that fishermen have to spend are increasing. The amount of income cannot be ascertained or cannot be determined. The activity of going to sea is like gambling with a high level of speculation. This means that the opportunity to obtain a catch is very limited while the potential loss from going to sea is quite large. In comparison, the operational costs incurred and the amount of fishing income obtained by fishermen are very unequal.

In a situation of damaged marine ecosystems, fishing activities result in more losses than economic benefits. Even if fishermen continue to carry out fishing activities, this is solely because of the speculative way of thinking that has become institutionalized within fishermen and the absence of other better options than fishing activities. If one go to sea and if luck is good, fishermen earn an income in the range of IDR 40,000 – IDR 100,000. However, in general, the value of the income earned is around IDR 40,000-IDR 50,000. This income figure is of course not sufficient to meet the basic daily needs of ornamental fish fishing households.

Nevertheless, with all the resources they have, fishermen still try hard to continue to look for other work opportunities so that they can still obtain sustainable income, both within the scope of fishing *and* non-fishing *as* part of their activities. adaptation strategies for survival. This strategy is realized by fishermen in the form of *andon* or fishing migration out of Bangsring (*boro kerjo*) to other areas, such as Puger and East Nusa Tenggara. Fishermen continue to catch ornamental fish because they have sufficient knowledge and capital that can be utilized.

The second strategy is to enter other informal economic sectors, which are available in the surrounding environment or which can be accessed outside the village through their social networks. The informal economic sector is plantation workers and workers in the construction sector. In general, fishermen do not have plots of land that can be cultivated when catch shortages occur and do not have other skills outside of fishing. Therefore, for fishermen, becoming a laborer is the most rational choice *because* it does not require the required skills. These two adaptation strategies can at least help ease the burden of life for Bangsring fishermen in overcoming economic difficulties that have lasted for quite a long time.

Cultural Dialectics

The process of changing the culture of Bangsring fishermen towards a collective commitment to the narrative and practice of marine ecosystem conservation, it is determined by the following three things. *First*, the objective condition of society has been experiencing economic difficulties for quite some time and requires great efforts to overcome. *Second* , there are actors (subjects) who can play a role in transforming community hopes into reality with the support of institutions or social organizations at the local level. *Third* , the involvement of supra-village institutions together with Bangsring fishermen carrying out social awareness movements through various communication strategies, outreach and activities that concretely support conservation. *Fourth* , carry out cultural movements in order to strengthen social integration, strengthen empathy for collective struggle, and strengthen togetherness. *Fifth*, there is a situational context that provides space and support for the birth and development of collective movements in the context of marine ecosystem conservation.

Bangsring fishermen face the objective reality that their level of income as ornamental fish fishermen has decreased due to polluted marine ecosystems and damaged coral reefs. In addition, the cost of going to sea increases as fishing areas become more distant. With operational costs increasing, there is also no guarantee that the catch obtained can cover the operational costs incurred by fishermen. In the midst of such economic difficulties, these objective conditions do not automatically encourage the majority of Bangsring fishermen to immediately stop fishing practices that damage the environment. The majority of them still use potassium cyanide to catch ornamental fish. They believe more in cutting devices for catching ornamental fish than in Bangsring's rhetoric about marine conservation, with the slogan “No fishing, no potassium! ”.

Only a small number of Bangsring fishermen wanted from the start to change their way of thinking (*mindset*) so that they could support the collective movement to conserve marine ecosystems. Their movement is an effort to find a solution on how to stop ornamental fish fishing activities from destroying the marine ecosystem. This idea was initiated in 2005 and continued by spreading ideas for conservation of the Bangsring marine ecosystem. As a collective movement, fishing communities need the presence of new social institutions to support the conservation movement at the social base level. For this reason, the KNIH-SB organization was formed in 2008 with 23 members. Organizations and the members who join them constitute the social capital that will become the backbone of the conservation movement. Therefore, the priority activities handled by KNIH-SB are strengthening the organization and outreach to change *mindsets* to support the conservation movement. The birth of KNIH-SB also received support from the Bangsring Village Government with the

issuance of Village Regulation No. 2/429.405.01/2009 concerning Management of the Joint Protection Zone for Marine Resources in Bangsring Village (Kusuma, Satria, and Manzilati, 2017:6-30; Tindi et.al., 2018:165-168).

The establishment of the KNIH-SB organization provides easy access to collect resources, namely by opening up to collaborating with supra-village parties who can help the marine ecosystem conservation movement. Two non-governmental organizations, Pelangi Indonesia Foundation, Jakarta and Pilang Institute, Buleleng, Bali participated in supporting the achievement of KNIH-SB goals. The two institutions will assist KNIH-SB with the social awareness process regarding the importance of marine and coral reef conservation for the survival of fishing communities, rehabilitation of coral reefs, establishment of joint maintenance zones for ornamental fish resources, legal education, and several skills training related to handling ornamental fish.

The next six months after the establishment of the joint protection zone on the Bangsring seabed, rare fish species began to be discovered again. This fact is an initial indication of the restoration of the Bangsring underwater ecosystem. Throughout 2009-2014, efforts to restore the Bangsring marine ecosystem continued, namely by sinking fish *apartments* which were expected to become new fish nests. Apart from that, around 17,333 grouper fish seeds were released in the Bangsring Sea. Public participation in this conservation movement is also facilitated by giving donors the opportunity to finance the construction of demonstration lots. This movement was able to attract the attention of 200 people with a contribution per person of IDR 100,000 (Nursalim, 2017:71-88).

By taking into account the scale and goals that KNIH-SB will achieve, internal strengthening of the organization is a need that must be met by increasing public support and acceptance of village communities towards the marine conservation organizations and movements being developed. The steps taken are by holding organizational meetings on a rotating basis and going there to members' homes, involving collectors and fishermen community leaders in the conservation movement, involving religious figures in conservation outreach through sermons in mosques, and influencing fishermen's wives. to support marine conservation activities as the most interested resource user.

A marine conservation movement based on optimal involvement of social elements of village communities is the right step because it is in accordance with the current situational context which is the reference for contemporary society, namely the narrative of sustainable community-based development strategies and optimal and sustainable management of natural resources. These narratives are also to answer and anticipate the negative impacts of climate change on marine ecosystems, especially coral reefs which can result in a reduction in ornamental fish populations in Bangsring sea waters.

Both fishing community groups, most of whom still maintain the tradition of catching potash, and the small KNIH-SB group who are trying to offer conservation as a new way of life for the Bangsring fishing community fill the public space of the Bangsring community. Both groups of fishing communities have developed a diametrical conception of thinking in understanding the existence of marine fisheries resources for community survival. Therefore, it is not easy to reconcile and unite thoughts to collectively move together to support the marine conservation narrative. The tug-of-war between the two groups of fishermen is very intense.

As conservation pioneers, KNIH-SB leaders are trying to reach out to fishing community groups by providing free services to arrange fishing permits, boat operational permits, and andon letters to other areas, if fishermen join KNIH-SB. Because the conservation movement was carried out seriously and showed concrete results, eventually widespread support from the village community developed for the activities initiated by KNIH-SB. The investment activities carried out by KNIH-SB have instilled public trust in all fishing communities who then entered into joint agreements and collective support to conserve marine resources in a sustainable manner.

Based on the description above, the five elements that support changes in Bangsring fishing culture interact dialectically, synergistically, and occur reciprocally so that widespread public awareness is built to support a sustainable marine conservation movement. This public awareness emerged because of the values of trust in others and the good intentions of the conservation movement carried out by KNIH-SB. Changing *the mindset* to support conservation is a choice that can be accepted by common sense after going through a process of in-depth reflection and thought dialogue with various parties. This cultural change then becomes the basis for the sustainability and success of conservation activities.

IV. Conclusion

The destruction and pollution of the marine ecosystem in Bangsring Waters occurred because local fishermen used fish bombs and potassium cyanide [*potash*] to catch ornamental fish. The destruction of marine ecosystems has been ongoing since the early 1970s until the Bangsring marine ecosystem conservation movement began in 2008. The use of potash as part of ornamental fish fishing activities was carried out in line with the implementation of fisheries modernization in the 1970s.

The era of fisheries modernization provides fishermen with free access to fishing technology and wider markets. With limited conservation knowledge, these two things have encouraged fishermen to increase the

exploitation of ornamental fish, with the hope of increasing income and welfare. The use of potash is a very effective instrument for increasing catch productivity, so that the needs of the ornamental fish market can be met. Such demands have increased the hunting mentality of fishermen to conquer the sea and the potential of ornamental fish it contains.

On the other hand , the exploitative, massive and extensive use of fish bombs and potash in ornamental fish fishing activities has resulted in pollution of underwater ecosystems and damage to coral reef habitats as places for the growth and development of ornamental fish populations. The increasingly damaged condition of coral reefs has resulted in a shortage of ornamental fish. Ornamental fish stay away from damaged coral reefs. Difficulty in getting catches has a direct impact on reducing fishermen's income. The burden on fishermen's household lives is getting heavier. These life difficulties have encouraged a small number of fishermen who are members of the KNIH-SB organization to raise a new awareness about the important value of conservation to save marine ecosystems.

Even though not all fishermen support the conservation movement, in the end the fishing community realizes their mistake in destroying the marine ecosystem. Various efforts related to conservation objectives are carried out so that the condition of damaged marine ecosystems and coral reefs can be restored. Various efforts have been made to prevent further threats to the survival of fishing communities. Even though the conservation movement has been carried out, not all fishermen support it. Opposition to the conservation movement is also high. Despite this, the KNIH-SB organization continues to struggle to convince the fishing community that the conservation movement that will be carried out will bring good benefits to the lives of the Bangsring fishing community.

In the end, the conservation activities were successful, marked by the gradual recovery of the Bangsring marine ecosystem. Ornamental fish are starting to come back and their population continues to increase. The fishing community began to rediscover the types of ornamental fish that had been lost so that their income level became stable. The change *in mindset* from destroyers to conservationists of marine ecosystems marks a change in the culture of fishing communities in relation to strategies for managing marine resources, namely the potential of ornamental fish, which must be carried out optimally and sustainably.

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