# Local Perspectives on the Fishing and Conservation of *Puntioplites bulu* (Tabingalan Fish) in Kotopanjang Hydroelectric Reservoir

*Muhammad* Fauzi[1]*, *Andri* Hendrizal[1], *Bintal* Amin[2], and *Budijono*[1]
[1]Aquatic Resources Management Department, Faculty of Fisheries and Marine Science, Universitas Riau
[2]Marine Science Department, Faculty of Fisheries and Marine Science, Universitas Riau

**Abstract.** This study explores the local perspectives on fishing practices and conservation efforts related to *Puntioplites bulu*, locally known as "Tabingalan Fish" in the Kotopanjang Hydroelectric Reservoir. This species faces growing threats from overfishing and habitat degradation due to the reservoir's fluctuating water levels and human activities. Using a mixed-methods approach, this research integrates surveys and semi-structured interviews with local fishermen to assess their practices, knowledge, and attitudes towards the conservation of the Tabingalan fish. The findings indicate that while the local population heavily depends on this species for their livelihoods, there is a significant gap in awareness regarding sustainable fishing practices and the importance of conservation. Traditional knowledge remains a cornerstone in the community's fishing practices, but it often conflicts with modern conservation strategies. The study emphasizes the need for integrating local knowledge with scientific conservation efforts to enhance the effectiveness of existing programs. Challenges identified include limited access to conservation resources and the necessity for more comprehensive community engagement and educational initiatives. This research provides valuable insights for policymakers and conservationists aiming to develop more effective, community-based conservation strategies that can ensure the sustainability of Tabingalan fish while supporting local livelihoods. The study advocates for a collaborative and culturally sensitive approach to natural resource management, promoting a synergy between local communities and conservation authorities.

## 1 Introduction

*Puntioplites bulu* (Tabingalan fish) is one of the species of freshwater fish that has an important role both in terms of ecology and economy in the Kotopanjang Hydropower Reservoir area, Riau, Indonesia. This species is known as one of the local fish that

* Corresponding author: m.fauzi@lecturer.unri.ac.id

dominate the waters of the reservoir, making it a key component in the aquatic ecosystem and a resource that is very important for local communities [1].

Ecologically, *P. bulu* play a vital role in maintaining the balance of the aquatic ecosystem of the Kotopanjang Hydropower Reservoir. As a fairly abundant species in these waters, this fish serves as an integral part of the food chain, both as predators and as prey for other fish species as well as for larger predators such as waterfowl and mammals. The fish contribute to the dynamics of other fish populations by participating in the ecosystem's energy cycle, processing available organic matter and maintaining the sustainability of reservoir water productivity [2].

The existence of Puntioplites also provides an indication of the health of the Kotopanjang Hydropower Reservoir ecosystem. Stable or increasing populations can indicate good water quality as well as favorable environmental conditions for the life of various other fish species. Conversely, this decline in fish populations can be a sign of adverse environmental changes, such as water pollution, changes in land use around reservoirs, or other disturbances that affect aquatic habitats [3].

From an economic perspective, tabingalan,fish has significant value for the local community living around the Kotopanjang Hydropower Reservoir [1]. This fish is one of the most sought-after species by local fishermen, both for household consumption and for sale in the local market. In this regard, *P. bulu*serve as an important food source and are part of the daily diet of many families in the region.

The capture and trade of fur Puntioplites is also an important source of income for local communities, especially for those who depend on fishing as their main livelihood. These fishing activities support the local economy by providing jobs, both directly and indirectly, for example through the fish processing, distribution, and sales industries. In a broader context, the sustainability of Tabingalan fish populations is essential to maintain the stability of local fisheries-dependent economies.

A deep understanding of local perspectives on fishing practices and conservation efforts is essential in the sustainable management of fishery resources, especially in communities that depend on fisheries as their primary source of livelihoods. Local perspectives encompass knowledge, beliefs, values, and practices that have developed from generation to generation within a given community and are often based on the close relationship between humans and their natural environment. In the context of the Kotopanjang Hydropower Reservoir, the local perspective on the fish reflects how the local community views, manages, and conserves their fishery resources.

This study aims to identify and understand local perspectives on the fishing practices of Tabingalan fish in the Kotopanjang Hydropower Reservoir, as well as to evaluate the conservation efforts made by the local community in preserving this species.

## 2 Method

This research was conducted at the Kotopanjang Hydropower Reservoir, which is located in Kampar Regency, Riau Province, Indonesia. This reservoir is one of the important reservoirs in the region, both in terms of ecology and socio-economy. Ecologically, the reservoir provides habitat for a variety of fish species, including the tabingalan,fish, which is the main focus of this research. From a socio-economic perspective, the communities

around the reservoir are highly dependent on fishery resources for their livelihoods, with many of them working as traditional fishermen.

The research method used is a qualitative approach with the aim of gaining a deep understanding of local perspectives on fishing practices and conservation efforts of feather Puntioplites. Primary data were collected through in-depth interviews with local fishermen who had first-hand experience in catching , as well as with village chiefs and community leaders around the reservoir. These interviews are designed to explore traditional knowledge, fishing practices, and conservation efforts undertaken by local communities.

A qualitative approach was used in the analysis of the data obtained to explore the main themes that emerged from the interviews, such as fishing techniques, conservation values embraced by the community, and the challenges and opportunities faced in the conservation of fur Puntioplites. This analysis allows researchers to deeply understand how local communities view and manage their fishery resources, as well as how this knowledge can be integrated into sustainable management strategies.

## 3 Result and Discussion

This study reveals in-depth insights into the fishing practices of tabingalan,fish by fishing communities around the Kotopanjang Hydropower Reservoir, as well as the challenges faced in maintaining the preservation of this species. The Kotopanjang hydropower reservoir, which has been an integral part of the life of the local community since its construction, is one of the main fisheries resources for the local population. The tabingalan fish, have become a very important fish species economically and culturally for fishermen in this region.

**Fig.1.** Tabingalan Fish Caught by Fishermen

The fishermen interviewed in the study have on average been involved in the fishing activities of tabingalan,fish for more than a decade, with some of them having up to twenty years of experience. This long experience reflects a high level of skill and knowledge of local ecology as well as effective fishing techniques. Fishermen catch these fish every day, using fishing gear such as nets and fishing rods. The fishing gear used by local fishermen generally has a net size and a fishing rod designed to target adult fish and

avoid catching small fish. This approach not only ensures that only those fish with high economic value are caught, but also helps to maintain the sustainability of the fish populations.

The larger tabingalan,fish, with an average weight of between 1 and 4 kilograms per head, is highly valued in the local market, with selling prices ranging from 40,000 to 50,000 rupiah per kilogram. This fishing activity is usually carried out at certain times, especially when the water conditions are high and low, which is considered the most optimal time to catch this fish. Fishing is carried out both at night and in the morning, depending on the water conditions and the strategies used by the fishermen. The average daily catch of fishermen reaches about 20 kilograms, most of which are sold at local markets to support the family economy, while the rest is consumed by the fishermen's families themselves.

**Table 1.** Summary of Research Results

| Research Aspects | Information |
|---|---|
| **Duration of Fisherman's Experience** | 10 to 20 years (since the construction of the Kotopanjang Hydropower Reservoir) |
| **Frequency of Fishing** | Every day |
| **Fishing Gear Used** | Environmentally friendly size nets and fishing rods (do not target small fish) |
| **Targeted Fish Size** | 1 to 4 kg per head |
| **Best Time of Fishing** | When the tide is high and low; Fishing is carried out at night and in the morning |
| **Average Daily Catch** | 20 kg per fisherman |
| **Selling Price of Fish** | 40,000 to 50,000 rupiah per kilogram |
| **Distribution of Catch** | Some are sold at local markets, some are consumed by fisherman families |
| **Catch Trends** | Declining year on year |
| **Alleged Causes of Fish Population Decline** | Climate change and the use of fishing gear that is not environmentally friendly (targeting small fish) |
| **Rules or Customary Norms of Fishing** | There are no customary rules or norms that regulate fishing practices in the Kotopanjang Hydropower Reservoir area |

However, although fishing for *P. bulu* has become an important part of fishermen's lives, there are significant concerns about the decline in catches from year to year. Fishermen who participated in the study reported that their catches have continued to decline over the past few years. They suspect that climate change, which affects weather patterns and water temperatures, as well as the use of unfriendly fishing gear by other fishermen, are the main factors contributing to the decline in this fish population. The use of non-selective fishing gear, which targets small fish, is thought to damage the structure of fish populations and interfere with the natural reproductive process of the animal, which in turn reduces the number of adult fish available for catch.

These findings suggest that the high dependence on *P. bulu* as a key economic resource makes this situation even more urgent. The decline in fish populations can have a direct impact on fishermen's livelihoods and the local economy as a whole [4]. However, what is more worrying is the absence of customary rules or norms that regulate fishing practices in the Kotopanjang Hydropower Reservoir area. The absence of these regulations allows for the unlimited exploitation of fishery resources that can accelerate the degradation of fish populations.

In this context, it is important to explore and develop sustainable fisheries management strategies, which involve the active participation of local communities. Stricter regulations on the minimum size of fish that can be caught, the regulation of the fishing season, and the prohibition of the use of destructive fishing gear are important measures to consider [5], [6]. In addition, a community-based approach to fisheries resource management can provide more effective long-term solutions, by utilizing local knowledge that has been passed down from generation to generation.

It is also important to educate fishermen about the negative impacts of unsustainable fishing practices. For example, raising awareness about the importance of protecting small fish and their spawning habitats can help fishermen understand that conservation is not just about preserving nature, but also about maintaining the sustainability of their own livelihoods. The involvement of fishermen in the development and implementation of conservation policies can increase a sense of ownership and responsibility, which can ultimately increase compliance with existing rules [7].

There is an opportunity to integrate conservation aspects into local economic development programs, such as the development of fisheries-based ecotourism. By promoting Puntioplites as an iconic species that has high ecological and cultural value, the Kotopanjang hydropower reservoir can become an attractive ecotourism destination. This will not only provide an additional source of income for the local community, but also encourage the conservation of the wider natural resources [8] [9] [10].

Integrating fisheries-based ecotourism with conservation initiatives can also enhance community awareness and participation in sustainable practices [11]. By involving local residents in tourism activities such as guided fishing tours, traditional fish processing demonstrations, and cultural performances, the community can play an active role in protecting the ecosystem while simultaneously preserving their cultural heritage. These activities offer an educational aspect for tourists, allowing them to learn about the importance of conservation and traditional fishing methods, thereby fostering a deeper connection with the local environment [12].

Moreover, establishing a sustainable ecotourism model centered on fish species and the surrounding ecosystem could attract partnerships and funding from environmental organizations, government agencies, and the private sector [13]. These partnerships can provide technical support, capacity building, and financial resources necessary for developing infrastructure, such as eco-friendly lodging, interpretive trails, and conservation centers. This kind of collaborative approach can further bolster conservation efforts, ensuring the long-term protection of the reservoir's biodiversity while promoting the local economy [14] [15].

The results of this study highlight the urgent need for more structured and sustainable fisheries management in the Kotopanjang Hydropower Reservoir. Combining local knowledge with a scientific approach and effective policy is key to preserving the preservation of *Puntioplites bulu*and ensuring that fishing communities around the reservoir can continue to enjoy the economic benefits of this resource in the future. Without proper intervention, the risk to the sustainability of these fishery resources can increase, which will ultimately harm both the environment and the communities that depend on them.

## 4 Conclusion

This study shows that Tabingalan fish is a very important fishery resource for fishermen in the Kotopanjang Hydropower Reservoir, both economically and socially. Although fishermen use environmentally friendly fishing gear and have many years of experience, catches continue to decline, allegedly due to climate change and the non-selective use of fishing gear by other parties. This decline is exacerbated by the absence of regulations governing fishing practices in the region. Therefore, sustainable fisheries management policies and education to fishermen are needed to preserve feather Puntioplites and ensure the sustainability of their livelihoods.

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