

Fishing Technology in the Coastal Community of Kampung Mandar, Banyuwangi: A socio-economic studies

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Abstract

Fishing gear is essential for fishing activities, and as a maritime nation, Indonesia boasts a rich diversity of marine resources. Many Indonesians rely on fishing for their livelihood. This study was conducted in Kampung Mandar, Banyuwangi Regency, and examines four key areas: the condition of the fishing community, the technology used by Mandar fishermen, fishing areas, and profit-sharing among fishermen. The research employed various methods, including literature review, interviews, and observation. The findings reveal significant differences in fishing gear among Kampung Mandar fishermen, with specific gear and areas designated for different types of fish. The majority of the Mandar fishing community consists of service fishermen, many of whom now use diesel engines for their boats. Variations in fishing gear, such as boat type, fishing lines, and the use of lights, highlight different fishing practices. The cooperative established by KUB Pondok Layar aims to mitigate issues that negatively impact fishermen. During the east season (June-October), many Mandar fishermen seek employment in urban areas, returning to the village for the west monsoon fishing season (November-May).

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Introduction

Indonesia is a maritime country with 70% of its territory being sea and 30% land. Its oceans cover 5.8 million km², including 2.8 million km² of archipelagic waters, 0.3 million km² of territorial waters, and 2.7 million km² of Exclusive Economic Zone (EEZ) waters. The community can utilize the diverse fish and marine biota in Indonesian waters. Fishermen, who live along the coast, rely on these marine resources for their livelihood (Rifaldi 2019, 11). Fishermen catch fish and other marine biota to buy and sell. Given Indonesia's extensive coastline, it is easy to find fishing communities, such as those on the east coast of Java, including the Banyuwangi fishing communities (Azis 2021, 3).

Banyuwangi Regency, located on Java's east coast, spans 5,782.50 km² with a coastline of 291.5 km². This region includes several fishing villages, one of which is Kampung Mandar. Kampung Mandar was established by people from the Mandar community of the Sendana and Banggae kingdoms in Majene Regency, West Sulawesi, who migrated to Banyuwangi. This community is diverse, consisting of ethnic groups like Mandar, Bugis, Osing, and Madurese. Kampung Mandar is one of the oldest villages in Banyuwangi, maintaining a close relationship with Sulawesi due to historical ties. The residents are descendants of Datuk Kapitan Galak, which has created a cultural bond with similarities in belief systems, language, customs, religion, and arts (Najamudin 2019, 116).

Fishing is a primary livelihood in Kampung Mandar. Fishing gear is crucial for the traditional fishermen to meet their daily needs (Faazan 2020, 2). According to Mantjoro (1996) traditional

fishermen acknowledge traditional small-scale fisheries by allowing them to fish in coastal waters without needing formal permission from local fisheries authorities. Essentially, the government unofficially acknowledges traditional communal property rights to this natural resource. This approach indirectly supports the ongoing practice of traditional commons management of marine fisheries (Mantjoro 1996). The Mandar community predominantly uses traditional fishing gear, which is more environmentally friendly. However, some fishermen have started using modern equipment to increase their catch. Mandar fishing boats now often use diesel fuel for propulsion. There are three categories of fishermen in Kampung Mandar, differentiated by their fishing equipment.

Alfatah Yusron Azis's research highlights the development of fishing gear technology in Muncar Port, but this study focuses on the fishing equipment technology used by Mandar fishermen in Kampung Mandar, Banyuwangi (Azis 2021, 3). The research aims to explore the categories that describe the characteristics of Kampung Mandar fishermen, systems for stabilizing fish, specific fishing grounds, methods of fishing, and the profit-sharing system among fishermen. The results will provide insights into the fishing technology used by Mandar fishermen in Banyuwangi Regency.

Fishing gear is crucial for the fishermen to meet their daily needs, including their impacts their livelihood. There are three categories of fishermen in Kampung Mandar, differentiated by their fishing equipment; (1) Service fishermen have lights and generators but only basic fishing gear. They are the most common type in Kampung Mandar. In the text, they are described as having lamps and *sethet*, indicating they use additional lighting equipment to attract fish; (2) Net fishermen possess lights, generators, and large nets. This setup allows them to catch fish in larger quantities. The use of nets and lighting equipment enables them to fish more efficiently compared to the service fishermen; (3) Angler or fishing rod fishermen who do not use lights or generators when fishing. They use simple fishing gear such as fishing rods. This study aims to explore the categories that describe the characteristics of Kampung Mandar fishermen, systems for stabilizing fish, specific fishing grounds, methods of fishing, and the profit-sharing system among fishermen.

Method

This research was conducted using literature study, interviews and observation methods. An interview is a conversation between an interviewer and a source with the specific aim of obtaining information (Abubakar 2021, 67). Researchers conducted interviews with several sources to understand the topic under study comprehensively. The first resource person was Mr Moh. Salim, a service fisherman. The second resource person was Mr. Slamet Hariyono, a service fisherman. The third resource person is Mr Farid Akbar and his friends; they work in a group headed by Mr Farid in Payang Kayu as net fishermen.

Observation is an activity accompanied by recording facts (Abubakar 2021, 90). Researchers use participant observation, where they are directly involved in field observation activities. Through participant observation in Kampung Mandar, researchers could obtain data about fishing technology in Kampung Mandar, Banyuwangi District, Banyuwangi Regency. Its method can also reveal various types of ships in Kampung Mandar. A literature study complements this research. Researchers collect various sources of information related to the research topic, including articles in journals, books and relevant previous research. Literature studies help researchers analyze and interpret data obtained from observations and interviews and strengthen the validity of research data.

Fishermen Cooperative in Kampung Mandar

According to KEP.14/MEN/2012, a Joint Business Group is an unincorporated business entity in the form of a group established by fishermen based on an agreement/deliberation with the specific aim of increasing the income of fishermen who are members of the group. One is KUB Pondok Layan, located in Kampung Mandar, Banyuwangi District, Banyuwangi Regency. The Fisheries Department

recommends establishing cooperatives for each Joint Business Group (KUB) to have 25 members, but in practice, KUB always has excess members. KUB Pondok Layar aims to avoid the presence of *belantik* which affects the price of fish sold by fishermen. Pondok Layar KUB was founded on April 11 2015 with 40 members and has obtained legal status from the regional government. Through KUB Pondok Layar, local fishermen have received assistance in the form of fishing equipment. KUB aims to be an informative learning forum between fishermen and the authorities.

KUB Pondok Layar first established a cooperative in 2022. When the cooperative was first established, the community had an unfavourable view because they worried they would have more power. The cooperative aims to minimize the role of brokers in the fish trade, which is called *belantik*. Based on the KBBI, *belantik* can be understood as an intermediary in buying and selling. The presence of *belantik* affects the selling price of fishermen's fish. The high selling price of fish is also determined by the order in which fishermen arrive. The sooner the fishermen arrive, the higher the selling price and vice versa. For example, fishermen who arrive early can sell their fish for Rp. 20,000 per kilo, while fishermen who come in the afternoon have their selling price reduced to Rp. 4,000 per kilo, even Rp. 5,000 per tub (± 20 kg). Therefore, the presence of *belantik* is considered very detrimental to fishermen.

The KUB Pondok Layar Cooperative serves as a platform for enhancing business activities. It is a people's economic movement based on the principle of kinship, aimed at promoting a decent life for all its members. This cooperative received government assistance in the form of several boats and machines (Sumadi 2022). The KUB Pondok Layar Cooperative has requested storage assistances from the Fisheries Office, with the condition that the cooperative must be operational for approximately two years. The assistance helps fishermen to keep fish fresh. It has the capacity to hold up to 100 tons of fish, allowing them to sell the fish the next day in fresh condition or during periods of scarcity at a higher price.

The socio-economic conditions of Mandar fishermen in Banyuwangi depend on their income from fishing. Mandar fishermen are classified as middle to upper class if they control capital and own fishing equipment. They can be categorized into three types: service fishermen, net fishermen, and anglers. Service fishermen have lights and generators but only basic fishing gear. Net fishermen have lights, generators, and large nets. Anglers, on the other hand, use only simple fishing gear. In Kampung Mandar, service fishermen, who have lamps, are the most common. Angler fishermen are the least common among the three types.

The classification of fishermen in Kampung Mandar reveals various socio-economic levels. The government is working to improve the welfare of these fishermen through the Fisheries Office, which provides recommendations to the Mandar fishermen in Banyuwangi. According to the Fisheries Office, fishermen must belong to a group. The Governor's Regulation states that one fishing group should have 25 members, but in reality, many groups have more members than allowed. The chairperson and administrators of these fishing groups submit requests to the Fisheries Office to reduce fuel prices, while the fishermen members simply accept these fuel recommendations.

To qualify for government assistance, the Fisheries Office requires fishermen to report their fish catch data. However, not all fishermen promptly report their catches, which can delay their receipt of fuel support from the Fisheries Office. Although many Mandar fishermen hope for government support, this need does not align with the economic activity in Kampung Mandar. The village has a significant money circulation, reaching approximately one billion per year (Slamet, interview by author, May 6, 2023).

Fishing Gear and Fishing Grounds

A fishing ground or fishing area is a body of water where fish populations are found, allowing fishermen to hunt and catch fish (Aufar et al., 2021). Besides fishing gear, the choice of fishing grounds is a crucial factor in determining fishermen's catches. Each area has different types of fish,

but fishermen generally know and understand where to find specific species. Fishermen select fishing areas based on their experience and predictions, making it challenging to guarantee a successful catch. The main areas used by Mandar fishermen to catch fish are Blimbingsari, Singaraja, Pandean, and Denpasar. The target catch areas for Mandar fishermen are as follows: squid from Blimbingsari, kite fish (*merenyeng*) from Singaraja, and codfish from Singaraja and Pandean (Slamet, interview by author, May 6, 2023).

Squid fishing is only conducted in the Blimbingsari area, located in the Bali Strait, at depths of around 20-30 meters. Fishing for flying fish and tuna in the Singaraja area can reach depths of more than 1000 meters. Mandar fishermen focus on catching specific types of fish, such as tuna, flying fish (*merenyeng*), lemuru fish, and squid, because these trips can yield large catches. Mandar fishermen typically go out to fish from 3 pm to 8 am. Their working hours are uncertain, as they depend on wind and weather conditions (Slamet, interview by author, May 6, 2023).

Service Fishermen

There are several types of boats used by the Mandar tribe for travel, trade and fishing. One of the local boats used by the Mandar community is called *sandeq*. These boats are made from certain woods such as *dango*, *palapi*, *ma'dang*, *ti'pulu*, and *kanduruang* (Amrullah 2015, 85). This type of wood is increasingly difficult and rarely found in the forest, causing the price of this wood to increase. Other alternatives such as fiberglass are used as boatbuilding materials. Fiberglass is composed of three materials, namely fiberglass, resin, and catalyst. Fiberglass is in the form of liquid glass which is drawn into thin fiberglass with a diameter of 0.005 mm – 0.01 mm. Fiberglass turns into thread by spinning and cloth by weaving. Threads and fabrics are treated with liquid resin which then produces material that is strong and corrosive resistant. This material is called fiberglass which is then used as material for making boats, roofs, water tanks, etc. (Nugroho 2015, 32).

In boat making, fiberglass material is widely used for small boats. The ingredients are easy to obtain and have an affordable price (Yuwanda, et al., 2013, 120). It is no surprise that many fishermen in Indonesia use fiberglass boat materials. Fishermen in Kampung Mandar also use boats made from fiberglass. They call boats made from fiberglass with fiber canoes. The advantages of fiber canoes are that they are cheap, more durable, and light. The disadvantage of fiber canoes is that they do not float when submerged in the sea (Slamet, interview by author, May 6, 2023).

Mandar fishermen use fiberglass boats measuring 1 GT with a length of 9.50 m; a width of 1.20 m; and a height of 0.08. Each ship has a name and certain characteristics to distinguish other ships. Fiberglass canoes move with the help of motor engines with a power of 6.5-10.5 PK, often in one boat there are one or two propulsion engines. Fishermen often receive boat support from the Ministry of Maritime Affairs and Fisheries, but much of the assistance in the form of boats is not used. The support that fishermen in Kampung Mandar hope for is generators and motorbike engines which are more practically useful for fishermen (Slamet, interview by author, May 6, 2023).

Maintenance of fiberglass canoes is carried out once a month. The Kampung Mandar Fisherman Group does this in open sea waters. This is due to the dirty condition of the river. Boat maintenance is carried out to prevent the ship from becoming overgrown with coral reefs. The power and speed of the ship affect the catch. Thus, the presence of coral reefs in the ship's hull can hinder the speed of the ship when going to sea. Fishermen also paint and caulk boats (Slamet, interview by author, May 6, 2023).

One of example in KUB Pondok Layar fishermen are dominated by service fishermen (Moh Salim, interview by author, May 5, 2023). Service fishermen have generators to power the lights on fiberglass boats. The lights function to attract fish to gather around the ship. According to researchers' observations, each ship has at least 10 lights. The generator used has a power of 2300-7000 watt. The lights make it easier for fishermen to catch fish using makeshift fishing gear, which is not too big or sophisticated.

Kampung Mandar fishermen tend to use simple fishing gear. Fishing gear includes nets and fishing rods. The net used is a *sethet* net. *Sethet* is included in the Gill Net Group in the classification

of fishing gear. *Sethet* net are used to catch groups of fish whose habitat is on the surface of waters (pelagic fish). The shape of *sethet* is not too long, 15 meters long with a depth of 15 meters. Mandar fishermen have at least one to three *sethet*. The advantage of having more than one *sethet* is that they can catch them in a row. A *sethet* can only be used once to catch fish, once the fish is caught it will be difficult to collect the fish around the canoe a second time. There is an *ancitan* fishing gear in the form of a reel of fishing line that has around 25-100 hooks. *Ancitan* fishing rods are used to catch kitefish, mackerel, cork, and tuna.

Bulu-bulu fishing gear is a squid fishing gear that contains 10 cm long feathers on every one meter of fishing line. *Bulu-bulu* do not have hooks. The way to use the feathers is to move them slowly up and down, and if they stop, the target will move away. The target is squid. Once it is felt that many squid have been collected, they are removed using a scoop. *Serokan* is about 1-1.5 m long. All the fishing gear used is made by the fishermen of Kampung Mandar themselves.

Net Fishermen

Net fishermen have larger nets compared to service fishermen. They provide fishing services in large quantities to service fishermen. Net fishermen have larger nets, so they must use boats that are more durable and stronger. Net fishermen use wooden canoes or *payang kayu* or *seleret* boats. The advantage of wooden ships is that if the ship sinks it can still float or the remains of the wood can still float.

As wooden ship bodies tend to be larger, the power required to move the ship must also be large. *Payang kayu* at least has a driving engine with a power of more than 20 PK. Often using car engine power, such as the Yanmar 21 and Temes. The *payang kayu* has a size of 3 GT with a length of 10.50 m; width 3.00 m; and 0.7 m high. Wooden boat maintenance is almost the same as fiberglass boat maintenance. When fishing for *payang kayu* there are at least 12-15 or more people, depending on the season.

Fishing tools are used by net fishermen in the form of nets and lights. The nets used are large, with a large estimate of 80 m to more. This fishing tool uses a different light from the light in the fiberglass canoe. *Pelak* is a term for the union of lights and generators from net fishing vessels. This lamp then replaces the service fisherman's lights when the netter fisherman will net the fish. Someone will dive while bringing the plate to the center. Then the fishing nets will be spread around the area around *pelak*. The generator as power for the lamp has a power of 1000-3500 watt.

Fishing Rod Fishermen

In addition, traditional fishers are not use lights when fishing. Their numbers are smaller compared to service fishermen and net fishermen. They use fiberglass boats with a slimmer shape, which allows for more agile movement when casting their lines. These slender boats are often referred to as hunting boats. To find fish, they follow clues from seagulls. Their fishing gear includes sandpaper fishing rods, and they typically catch tuna, mackerel, and *tawes*.

Profit Sharing System among Fishermen

Profit sharing in the fisheries business is an agreement in the fund processing system that applies between the ship or boat owner (*juragan*) and fishermen (Widihastuti and Rosyidah 2018). The profit-sharing system applied by Mandar Fishermen is usually 3:1 or at best 2:1 depending on the provisions and agreements between the boss and the fishermen. One calculation is as follows, the fisherman gets 1 quintal (100 kg) of fish, and then both parties divide it into 50 kg each. The distribution results are sold to collectors and small traders for around 2-3 tubs (per tub ± 20 kg). Mandar fishermen's income during the fishing season can reach IDR 500,000 per night, even one KUB member once earned up to IDR 60,000,000 per night.

The majority of Mandar fishermen do not approve of cooperation between fishermen in the form of notification of fishing areas, because it is considered unprofitable. This is caused by differences in the selling price of fish in the market. The time the fishermen arrive also affects the selling price of

the fish. Fishermen who have caught the fish must return to land as soon as possible to sell the fish at a high price. The longer it takes for fishermen to arrive on land, the price of fish can plummet on the market, even dropping to IDR 5,000 per tub. The establishment of the cooperative was carried out so that the price of fish was not manipulated by *belantik* (buyers of fish at low prices). The fish caught by fishermen is weighed in front of the cooperative and stored in the cooperative's castorite (fish storage) so that fish prices can be more stable. The price of fish will increase from normal prices if it is sold outside the season. It is hoped that the existence of cooperatives can reduce the role of shopping malls in gaming fish prices.

In Kampung Mandar, the fishing season (fish harvest) often referred to as the west season generally occurs in November-May. Meanwhile, the east season (famine) occurs for five months, namely June-October. The profit sharing system has a big impact on the fishermen's economy to meet the financial needs of their families during the lean season. Some Mandar fishermen work odd jobs such as working as coolies, looking for shellfish, and even migrating to Jakarta or Surabaya to work (Slamet, interview by author, May 6, 2023).

Conclusion

The fishing community of Kampung Mandar in Banyuwangi is divided into three categories of fishermen. Service fishermen dominate the number of fishermen in Kampung Mandar. The existence of KUB in Kampung Mandar is able to stabilize fish prices. Many service fishermen use fiberglass boats which tend to be cheaper and stronger. The drawback is that if the ship sinks, the remains of the ship will not return to the surface. Meanwhile, net fishermen use wooden boats or what are called *payang kayu* which are considered sturdier and stronger. The shape is larger to be used as a place to store more fish. *Payang kayu* also tend to last a long time, and if the ship sinks the remains of the wood float. For fishing fishermen, the boats used are slim. The slim shape is used for sailing quickly.

The fishing gear technology used has differences. Wood fishermen use fairly simple equipment. The equipment used can be operated by one person. Net fishing equipment has much larger equipment. It takes several people to operate the fishing equipment, around 7–10 crew members. Fishermen tend to use simple equipment, not having generators or lights. The fishing areas by Mandar fishermen are quite varied, for example squid can be found in Blimbingsari, flying fish in Singaraja, and tuna in Singaraja and Pandean. The profit sharing for Mandar fishermen is not known with certainty. The distribution of profits is determined by the number of fish obtained. The distribution ratio on normal days is around 3:1 or at best 2:1 depending on the terms and conditions.

References

- Abubakar, Rifa'i. 2021. *Pengantar Metodologi Penelitian*. Yogyakarta: SUKA-Press UIN Sunan Kalijaga.
- Amrullah, David. 2015. "Representasi Makna Simbolik Dalam Ritual Perahu Tradisional Sandeq Suku Mandar di Sulawesi Barat." Undergraduate Thesis, Universitas Hasanuddin.
- Aufar, Teuku Fauzan Zul, Kunarso Kunarso, Lilik Maslukah, Dwi Haryo Ismunarti, and Anindya Wirasatriya. 2021. "Peramalan Daerah Fishing Ground di Perairan Pulau Weh, Kota Sabang Menggunakan Indikator Suhu Permukaan Laut dan Klorofil-a Serta Hubungannya Dengan Kelimpahan Ikan Tongkol." *Indonesian Journal of Oceanography* 3 (2): 189–196. <https://doi.org/10.14710/ijoce.v3i2.11221>.
- Azis, Alfatah Yusron, and Wisnu. 2021. "Perkembangan Teknologi Alat Tangkap Ikan Nelayan di Desa Kedungrejo Kecamatan Muncar Kabupaten Banyuwangi Tahun 2001-2013." *Avatara* 11 (1): 1-12.
- Faozan, Ahmad. 2020. "Penggunaan Alat Tangkap Setrum Ikan di Sungai Ngrowo, Kecamatan Tulungagung, Kabupaten Tulungagung." Undergraduate Thesis, UIN Syarif Rakhmatullah.

- Mantjoro, Eddy. 1996. "Management of Traditional Common Fishing Grounds: The Experience of The Para Community, Indonesia." *Coastal Management* 24 (3): 229–250. <https://doi:10.1080/08920759609362293>.
- Najamudin, Atho'illah Aly. 2019. "Jejak Orang Mandar Di Kelurahan Kampung Mandar Banyuwangi." Undergraduate Thesis, UIN Sunan Kalijaga.
- Nugroho, Wendy Triadji. 2015. "Pengaruh Model Serat pada Bahan Fiberglass Terhadap Kekuatan, Ketangguhan, dan Kekerasan Material." *Jurnal Ilmiah Inovasi* 15 (1), Januari–April 2015: 27–32.
- Rifaldi, Filza. 2019. "Analisis Faktor-Faktor yang Mempengaruhi Pendapatan Nelayan di Kecamatan Pangandaran Kabupaten Pangandaran." Undergraduate Thesis, Universitas Siliwangi.
- Sumadi. 2023. "Dinas Perikanan Suport Koperasi KUB Pondok Layar dan KUB Pantai Marina." *Faktanews*, January 18, 2023. <https://faktanews.co.id/dinas-perikanan-suport-koperasi-kub-pondok-layar-dan-kub-pantai-marina/>.
- Widihastuti, Retno and Lathifatul Rosyidah. 2018. "Sistem Bagi Hasil Pada Usaha Perikanan Tangkap di Kepulauan Aru." *Jurnal Kebijakan Sosial Ekonomi Kelautan dan Perikanan* 8 (1): 63-75. <https://doi.org/10.15578/jksekp.v8i1.6859>.
- Yuwanda, Dwi Putra., Purwangka, Iskandar, and Budhi Hascaryo. 2013. "Desain dan Konstruksi Perahu Katamaran Fiberglass untuk Wisata Pancing." *Buletin PSP* 21 (1), April 2013: 119–136.