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IDENTIFICATION OF CATCH SPECIES BY KMN. SILIWANGI USING PURSE SEINE FISHING GEAR AT MAYANGAN COASTAL FISHING PORT

Identifikasi Jenis Tangkapan Kmn. Siliwangi Menggunakan Alat Tangkap Purse Seine di Pelabuhan Perikanan Pantai Mayangan

Wanri Sitanggang[1*], Rifaldo Belmo Da Costa[1], Herning Pramudya[1], Daniel Candido Da Costa Soares[2], Maria Dyah Ayu Pitaloka[3]

[1]Capture Fisheries Study Program, Pertahanan University, [2]Aquaculture Study Program, Pertahanan University, [3]Plantation Crop Cultivation Study Program, Pertahanan University

Jl. Trans Timor, Fatuketi, Kec. Kakuluk Mesak, Kab. Belu

[*]Coresponding author: sitanggangwanri@gmail.com

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ABSTRACT

The Fisheries Potential in Indonesia is vast and spread across the entire waters of Indonesia, which are divided into 11 Fisheries Management Areas (FMA). This regional division aids in fishing activities, resource protection, and fisheries innovation for sustainable utilization. The Mayangan Coastal Fishing Port (CFP) in Probolinggo serves as a facilitator and provider of capture fisheries services, utilizing purse seine fishing gear. This study aims to identify the species and morphology of fish caught by purse seine at the Mayangan CFP. Based on observations and interviews, five dominant fish species were found: Indian mackerel 22% (338,8 kg), Short-bodied mackerel 12% (184,8 kg), Yellowstripe scad 18% (277,2 kg), Round scad 24% (369,6 kg), and Anchovy 24% (369,6 kg). Morphological identification showed variations in size and body shape, influenced by genetic and environmental factors. These results provide important information for effective and sustainable fisheries resource protection and management policies.

Keywords: fish species, fish morphology, fisheries potential

ABSTRAK

Potensi perikanan di Indonesia sangat besar dan tersebar di seluruh wilayah perairan Indonesia, yang dibagi menjadi 11 Wilayah Pengelolaan Perikanan Indonesia (WPPI). Pembagian wilayah ini membantu dalam kegiatan perikanan, perlindungan sumber daya, serta inovasi perikanan untuk pemanfaatan yang berkelanjutan. Pelabuhan Perikanan Pantai (PPP) Mayangan di Probolinggo berperan sebagai fasilitator dan penyedia layanan perikanan tangkap, menggunakan alat tangkap purse seine. Penelitian ini bertujuan untuk mengetahui jenis dan morfologi ikan hasil tangkapan purse seine di PPP Mayangan. Berdasarkan hasil pengamatan dan wawancara, ditemukan lima jenis ikan dominan: Kembung Perempuan 22% (338,8 kg), Kembung Lelaki 12% (184,8 kg), Selar 18% (277,2 kg), Layang 24% (369,6 kg), dan Tembang 24% (369,6 kg). Identifikasi morfologi menunjukkan variasi ukuran dan bentuk tubuh ikan yang dipengaruhi oleh faktor genetika dan lingkungan. Hasil ini memberikan informasi penting

untuk kebijakan perlindungan dan pengelolaan sumber daya perikanan yang efektif dan berkelanjutan.

Kata kunci: jenis ikan, morfologi ikan, potensi perikanan

INTRODUCTION

Indonesia's fisheries potential is exceptionally high, with resources spread across nearly all Indonesian waters. These waters are divided into 11 major areas known as Indonesia's Fisheries Management Areas (FMA). According to Wirjawan & Solihin, (2015), this regional division serves as a method for conducting fishing activities, protecting resources, and carrying out innovative studies in the field of fisheries. The sustainable utilization of fisheries resources is essential. These fish resources are also expected to serve as a source of improved quality of life for local communities, particularly in terms of income generation and job opportunities. To optimally harness these fisheries resources, adequate facilities are required to support these activities, such as fisheries port infrastructure.

The Mayangan Coastal Fishing Port (CFP), located in the city of Probolinggo, functions as a facilitator and service provider, specifically in the capture fisheries sector. The fish resources in Probolinggo are abundant, with significant economic value. Fishermen catch various fish species, which are then sold at the Fish Auction Market (FAM) in the Mayangan CFP. Purse seine fishing gear is often successful in catching a variety of fish species, such as Round Scad (*Decapterus russelli*), Fringescale Sardinella (Sardinella fimbriata), Short-bodied Mackerel (*Rastrelliger brachysoma*), and Indian Mackerel (*Rastrelliger kanagurta*) (Zakaria *et al.,* 2016).

The purse seine fishing gear is a device consisting primarily of a net, used for catching both large and small pelagic fish. Its function is to quickly encircle a school of fish and then pull the drawstring to form a bag-like enclosure, as explained by Sudirman & Mallawa, (2004).

According to Radarwati, (2010), improper use of fishing gear can also lead to the depletion of fish resources. The identification of purse seine catches is crucial in providing foundational information for designing effective fisheries resource protection and management policies. A thorough understanding of the characteristics of fish caught by purse seine vessels can also generate accurate data regarding catch results, fishing areas, and the species or taxonomy of the target fish.

Most of the fish found at the Mayangan Port have body shapes resembling torpedoes, flattened, or irregular forms (Siagian, 2009). Fish variations depend on various factors, including age and sex (Khayra *et al.,* 2016).

The identification of fish species caught by purse seine is also important to ensure compliance with fishing regulations set by the government or regulatory bodies. This includes ensuring that minimum size requirements and catch quotas are adhered to, as well as preventing the capture of prohibited species (Ajin, 2020). The identified catch data can be used by the government, scientists, and environmental organizations to develop more effective policies and sustainable fisheries management strategies. This includes determining appropriate catch quotas, designating permitted fishing areas, and developing strategies to protect critical habitats (Prajaputra *et al*., 2023).

This research was conducted at the Mayangan Coastal Fishing Port (CFP). The objectives of this study are to identify the fish species caught by purse seine fishermen at the Mayangan CFP and to examine the morphology of the fish caught by purse seine fishermen at the Mayangan CFP.

METHODS

Place and Time

This research was conducted from May to July 2024 at the Mayangan Fishing Port, located in the city of Probolinggo.

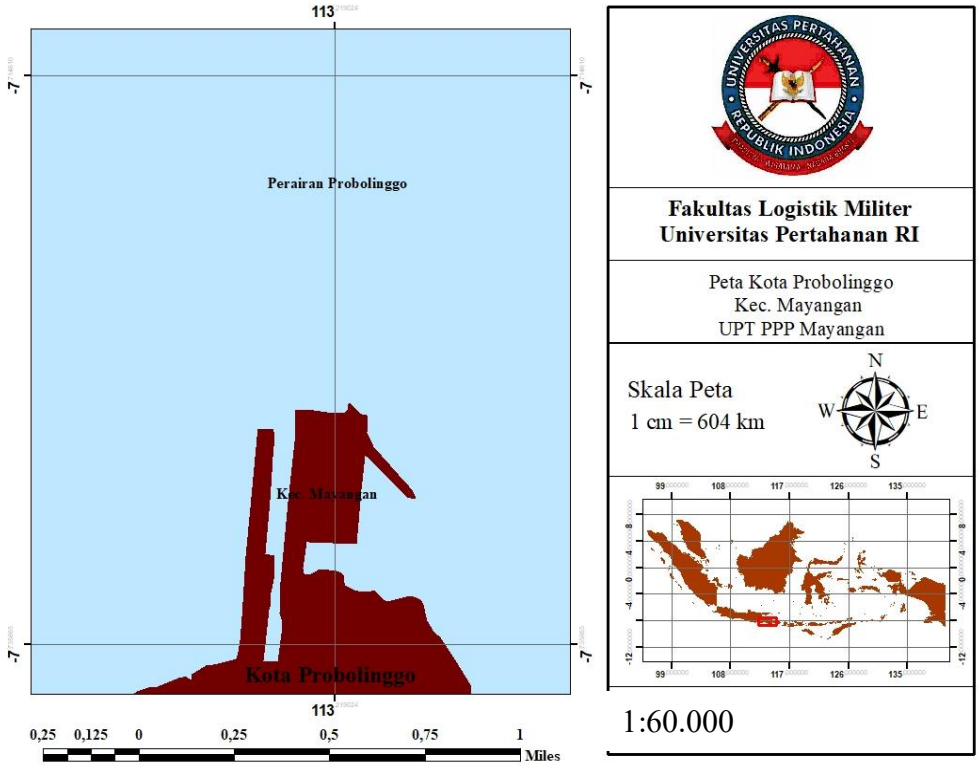

Figure 1. Research Location

Collecting Data Methods

This study employed a quantitative method, where data collection was carried out through surveys and direct field observations during the loading and unloading operations of fishermen at the Mayangan Coastal Fishing Port. The sample is taken three times, with one sample taken each month, in the hope of observing variations in the catch results. The collected data included the catch for each species and the size of fish captured by the fishermen. Direct observation and measurement of the catch from the purse seine fishing gear were conducted. Measurements taken included total length (TL), half-length (HL), tail length (TL), eye height (EH), body width (BW), fin height (FH), fin width (FW), head width (HW), and eye width (EW). After completing the required measurements, the fish were then separated by sex (male or female) to determine the distribution patterns of the catch (Widiyanto, 2018). Additionally, interviews with the fishermen were conducted to identify the species caught and the duration of the fishing operations.

Data Analysis Methods

After all the data was collected, it was processed and analyzed to determine the distribution of the catch based on the fishing area and the sex of the fish. After obtaining the total length (TL), half-length (HL), tail length (TL), eye height (EH), body width (BW), fin height (FH), fin width (FW), head width (HW), and eye width (EW) of the fish, this data was used to determine the morphology of the fish.

RESULTS

Types of Fish Caught by Purse Seine Fishing Gear

Table 1. Types of Fish Caught by Purse Seine from May to July 2024

No	Nama Lokal	Latin	Family	The total catch
1	Tembang	*Sardinella fimbriata*	*Clupeidae*	*369,6 kg*
2	Kembung Lelaki	*Rastrelliger kanagurta*	*Scombridae*	*184,8 kg*
3	Kembung Perempuan	*Rastrelliger brachysoma*	*Scombridae*	*338,8 kg*
4	Layang Benggol	*Decapterus russelli*	*Carangidae*	*369,6 kg*
5	Selar Bentong	*Crumenophthalmus*	*Carangidae*	*277,2 kg*
				1.540 kg

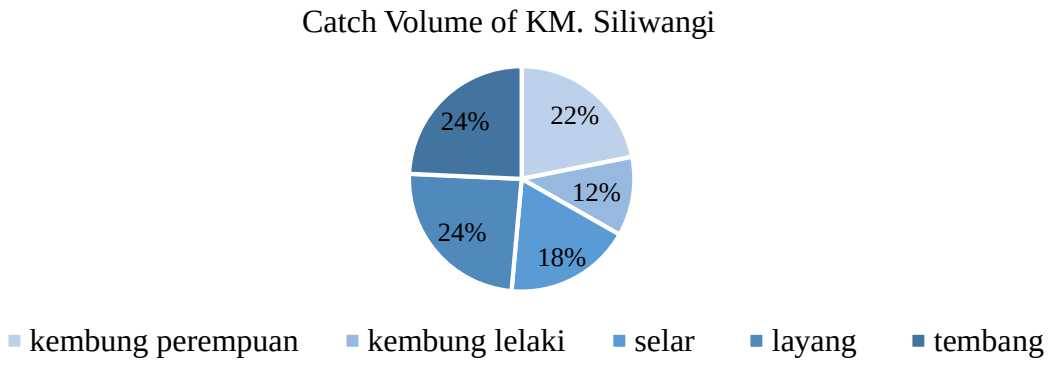

Figure 2. Percentage of Catch from May to July 2024

Observations from KMN. Siliwangi indicate that the catches of fishermen at the Mayangan Coastal Fishing Port consist of various fish species. Identification results revealed five fish species captured by the fishermen. The fishermen employed purse seine fishing gear to catch the fish. This purse seine gear is capable of capturing both small and large pelagic fish, with a mesh size of 2.5 inches. According to Genisa, (2005), purse seine is a selective fishing gear, where the mesh size can be adjusted to match the size of the target fish. The fishing process is conducted over 3 to 4 days in the Java Sea, approximately 20 to 60 miles from the port area.

Table 1 illustrates the catch of the KMN. Siliwangi at the Mayangan Coastal Fishing Port using purse seine gear, which includes the following fish species: Fringescale Sardinella (*Sardinella fimbriata*), Indian Mackerel (male) (*Rastrelliger kanagurta*), Short-bodied Mackerel (female) (*Rastrelliger brachysoma*), Round Scad (*Decapterus russelli*), and Bentong Scad (*Crumenophthalmus*). Among the five species caught by KMN. Siliwangi at the Mayangan Coastal Fishing Port using purse seine gear, the most abundant catches were Round Scad and Fringescale Sardinella, accounting for 24% (369,6 kg) of the total catch, followed by

Short-bodied Mackerel 22% (338,8 kg), Yellowstripe Scad 18%(277,2 kg), and the least caught species being Bentong Scad at 12% (184,8 kg).

DISCUSSION

Based on the morphological observations of the fish species caught by KMN. Siliwangi at the Mayangan Coastal Fishing Port (CFP), five species of fish were identified, each exhibiting distinct body shapes. The following presents the results of the morphological identification of fish on KMN. Siliwangi.

Morphology of Male Indian Mackerel

The Male Indian Mackerel (*Rastrelliger kanagurta*) is commonly known as a small pelagic fish that is frequently found in shallow waters of tropical and subtropical regions. This species has an elongated and slightly flattened body, typically measuring between 18 to 22 cm in length. It possesses a terminal mouth and large, round eyes. The fish has five fins: the dorsal fin (back fin), pectoral fin located on the sides of the body, pelvic fin situated beneath the body, anal fin also located at the bottom of the body, and the caudal fin (tail fin), which is forked.

The coloration of this fish ranges from bluish-green on the back to silvery-white on the belly. Additionally, it features a lateral line that detects vibrations and movements in the water. According to Kurniawan, (2022), the male Indian Mackerel has a slender and elongated body covered with smooth scales, and it has a socket behind the pectoral fin along with a fatty membrane around its eyelids. The upper part of the fish is bluish-green, while the underside is yellowish-white. There are two black stripes on the back, one black stripe near the pectoral fin, and a dark-colored band extending above the lateral line. Its dorsal fin is grayish-yellow.

The distribution of this fish is nearly ubiquitous across Indonesian marine waters. Male Indian Mackerel is typically found in shallow coastal waters and often inhabits the neritic zone, which is the shallow marine area close to the land. This species is also known to be migratory, often moving in large schools in search of food (Kurniawan, 2019).

Figure 3. morphology of male indian mackerel

Morphology of Female Indian Mackerel

The Female Indian Mackerel (*Rastrelliger brachysoma*) is commonly recognized as a small pelagic fish often found in shallow waters. This species has an elongated and somewhat flattened body, typically measuring between 15 to 20 cm in length. It possesses a terminal mouth and large, round eyes. The fish has five fins: the dorsal fin, pectoral fin, pelvic fin, anal fin, and caudal fin.

The coloration of this fish ranges from bluish-green on the back to silver on the belly, and it features a lateral line that functions to detect movements and vibrations in the water. According to Aprilia *et al.,* (2021), the female Indian Mackerel has a very deep body, with the eye height being equal to the body height, and well-developed eyelids. The gill rakers are very long and easily visible when the mouth is opened, exhibiting a dark bluish-green coloration.

The lateral side of the body is silvery, and it has a yellowish, hard-spined dorsal fin with a blackish edge, as well as pectoral and pelvic fins. Other fins are also yellowish.

The distribution and habitat of the female Indian Mackerel are similar to those of the male Indian Mackerel.

Figure 4. morphology of female indian mackerel

Morphology of Round Scad

The Round Scad (*Decapterus russelli*) is one of the small pelagic fish species that are commonly targeted by fishermen at Mayangan Coastal Fishing Port (CFP). This fish has a long and slender torpedo-shaped body, typically measuring between 20 to 22 cm in length. It features a terminal mouth that can open widely, with large, round eyes. There are five fins on this fish: the dorsal fin, pectoral fin, pelvic fin, anal fin, and caudal fin.

The coloration of the upper body is usually bluish-green or blue, while the underside is silvery-white. It possesses a lateral line that extends from behind the operculum to the base of the tail. According to Suwarso & Achmad, (2014), the dorsal part of the Round Scad is bluish-green, while the belly is silvery-white. The fins of this fish are reddish-yellow. The body is elongated and can reach lengths of up to 30 cm, although the average length is around 20-25 cm. The Round Scad has two dorsal fins, two accessory fins located behind the second dorsal fin, and one accessory fin behind the anal fin.

This species is widely distributed throughout Indonesian waters. The Round Scad can be found in coastal waters and the open sea. Like other pelagic fish, the Round Scad migrates in large schools in search of food or spawning grounds. They are often found at the surface of the sea to depths of about 200 meters (Kuswoyo & Rahmat, 2019).

Figure 5. morphology of round scad

Morphology of Sardinella

The Tembang Fish (*Sardinella fimbriata*) is a species of small pelagic fish that is commonly caught by fishermen at Mayangan Coastal Fishing Port (CFP). The general

morphology of the Tembang fish is as follows: it has a fusiform (torpedo-shaped) body that is elongated and slender, measuring between 13 to 18 cm in length. The fish features a terminal mouth and round eyes that are slightly protruding. There are five fins on the Tembang fish: the dorsal fin, pectoral fin, pelvic fin, anal fin, and caudal fin.

The body color of the Tembang fish is generally silver, with a bluish-gray back and a lighter underside (silvery-white). A distinctive horizontal line of silvery coloration runs along the body, which is characteristic of fish from the Clupeidae family. The Tembang fish has a clearly visible lateral line that functions to detect movement and vibrations in the water. According to Peristiwady, (2006) the Tembang fish (*Sardinella fimbriata*) has a terminal mouth, a sagittal body shape, a maximum length of 17 cm, and an average length of 14.3 cm. Its body is white with a golden, light blue, or dark blue back, is scaleless, and has a forked tail.

The Tembang fish is often found in coastal and open sea waters. It frequently migrates in large schools in search of food or spawning grounds.

Figure 6. Morphology of sardinella

Morphology of Selar

The Selar (*Crumenophthalmus*) belongs to the family Carangidae and is popular among anglers. It is also a commonly consumed fish in the PPP Mayangan area. The Selar exhibits an elongated and slender body, typically measuring between 14 to 20 cm in length. The head of the Selar is relatively small compared to its body size, and it has a terminal mouth located at the tip of its head, along with large, round eyes. The Selar possesses five fins: the dorsal fin, pectoral fin, pelvic fin, anal fin, and caudal fin. The coloration of the upper body is predominantly blue-yellow, while the underside is silvery in appearance. A distinctive horizontal stripe, which is yellow or golden, extends from the operculum to the base of the tail.

According to Peristiwady, (2006) the Selar has a streamlined and flattened body, with well-developed adipose tissue around the eyes. It features an inward curve along the edge of the shoulder girdle, with a large papilla located just above it. The dorsal coloration is bronze with a bluish tint, while the ventral side is a silvery white, and the tail fin is characterized by a grayish-black tip.

Selar fish are typically found in shallow coastal waters, reaching depths of up to 100 meters. They tend to swim in large schools, particularly around coral formations and sandy bottoms, which provide ample protection and a rich food supply (Singkam,2020).

Figure 6. Morphology of Selar

CONCLUSION

There are five species of fish captured from the catch of the KMN Siliwangi, namely: Male Mackerel, Female Mackerel, Layang, Tembang, and Selar. Among these five species, they belong to four families, with the family Scombridae being the most dominant. The conclusions drawn reflect the answers to the hypotheses and/or objectives of the research or the scientific findings obtained.

Morphological identification of the five species of fish captured by the KMN Siliwangi reveals that each fish exhibits different body shapes and distinct coloration. The Male Mackerel has an elongated and flattened body, with eyes that are larger than its body size. The Female Mackerel also has an elongated and flattened body but is generally larger than the Male Mackerel. The Layang exhibits a torpedo-shaped body with a lateral line extending from the tip of the head to the base of the tail. The Tembang has a long and flattened body with a silvery coloration. Lastly, the Selar has an elongated and flattened body, characterized by a yellowish color on the upper back and a silvery underside.

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