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QUALITY OF CATCH RESULTS OF SHORTFIN SCAD (*DECAPTERUS MACROSOMA*) ON KMN. BUKIT SAFA

Kualitas Hasil Tangkapan Ikan Layang Deles (*Decapterus macrosoma*) Pada Kmn. Bukit Safa

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ABSTRACT

KMN. Bukit Safa is a fleet that uses pelagic purse seine fishing gear with one ship. One of its main catches is the shortfin scad (*Decapterus macrosoma*). To maintain the quality of the caught fish and prevent damage that could lower its market value, it is important to implement proper handling methods on board the ship. This research was conducted with the aim of describing the physical condition of the fish after being brought on board and determining the freshness quality of the fish after the handling process on the ship. The research was conducted from February 23 to April 5, 2024, on the KMN. Bukit Safa, which is based at the Kendari Oceanic Fishing Port. The data collection method in this study used observation, interviews, and documentation techniques. To assess the freshness of the fish, it refers to the organoleptic evaluation SNI 2729:2021 on fresh fish. The data were analyzed quantitatively with reference to SNI 2346:2015 on sensory testing guidelines for fishery products and then analyzed descriptively. The physical condition of the fish brought onto the ship during the study was intact, lightly damaged, and heavily damaged. Based on the data analysis for the quality assessment results of the flying fish, there were several fish that experienced a decline in quality but were still in a fresh condition. The freshness of the fish is influenced by the quantity of the catch, the handling techniques used on the ship, the amount of ice used during handling, and the duration of the freshness assessment after the fish handling process on the ship.

Key words: Catch Results, Fish Freshness, Fish Physical Condition, Shortfin Scad

ABSTRAK

KMN. Bukit Safa merupakan armada yang menggunakan alat tangkap pukat cincin pelagis dengan satu kapal. Salah satu hasil tangkapan utamannya yakni ikan layang deles (*Decapterus macrosoma*). Agar menjaga kualitas ikan hasil tangkapan dan mencegah kerusakan yang dapat menurunkan nilai jualnya, penting untuk menerapkan cara penanganan yang baik di atas kapal. Penelitian ini bertujuan untuk menggambarkan kondisi fisik ikan setelah naik ke atas kapal dan

mengetahui kualitas kesegaran ikan setelah proses penanganan di atas kapal. Penelitian dilaksanakan pada tanggal 23 Februari sampai dengan 5 April 2024 di KMN. Bukit Safa, yang berpangkalan di Pelabuhan Perikanan Samudera (PPS) Kendari. Dalam penelitian ini, data diperoleh melalui teknik observasi, wawancara dan dokumentasi. Untuk menilai kesegaran ikan mengacu pada penilaian organoleptik SNI 2729:2021 tentang ikan segar. Data tersebut dianalisis secara kuantitatif dengan mengacu pada SNI 2346:2015 tentang pedoman pengujian sensori pada produk perikanan kemudian dianalisis secara deskriptif. Kondisi fisik ikan yang dinaikan ke atas kapal selama penelitian dalam kondisi utuh, rusak ringan dan rusak berat. Berdasarkan analisis data untuk hasil penilaian mutu ikan layang deles, yaitu terdapat beberapa ikan yang mengalami kemunduran mutu namun masih dalam keadaan segar. Kesegaran ikan tersebut dipengaruhi oleh jumlah hasil tangkapan, teknik penanganan hasil tangkapan di atas kapal, banyaknya penggunaan es saat penanganan dan jangka waktu penilaian kesegaran ikan setelah proses penanganan ikan di atas kapal.

Kata Kunci: Hasil Tangkapan, Kesegaran Ikan, Kondisi Fisik Ikan, Layang Deles

INTRODUCITON

Vessels based at the Kendari Ocean Fisheries Port (PPS) are dominated by fishing vessels with purse seine fishing gear (Sipahutar et al., 2019). Fishermen at the Kendari PPS generally use purse seines with dimensions of 400 m in length and 60 m in depth. According to Jaya et al. (2023), the purse seine is a type of medium-sized purse seine. KMN. Bukit Safa has a size of 30 GT using pelagic purse seine fishing gear with one ship. Purse seines produce a variety of catches, including mackerel, bigeye tuna, skipjack tuna, skipjack tuna, mackerel, lemadang fish and sunglir fish (Larasati et al., 2024). Based on the results of the study, mackerel (Decapterus macrosoma) is the dominant catch at KMN. Bukit Safa. The sustainable potential of mackerel in the northeastern waters of Southeast Sulawesi caught using purse seines is estimated to reach 5,747.61 tons per year, with a permitted catch quota of 4,598 tons per year (Mahmud & Bubun, 2015).

The fish caught must be handled properly and correctly. The procedure for handling the fish catch on board is carried out to maintain the freshness and quality of the fish, as well as slow down the rotting process, so that the fish can still be sold on the market (Tani et al., 2020). The quality of the fish will be maintained if the handling techniques are carried out correctly and according to standards (Pramesthy et al., 2022). Good fish handling is by applying the cold chain principle, namely keeping the fish in a cold condition (Tani et al., 2020).

According to Metusalach et al. (2014), the speed of fish quality decline varies depending on the type. Injured or bruised fish rot faster than fish in good condition. Fish with a body condition that is not deformed and fresh is more valuable than fish that are deformed and not fresh (Hapsari, 2014). Based on this, this study is needed to determine the description of the physical condition and quality of the catch of the layang deles fish at KMN. Bukit Safa.

RESEARCH METHODS

Place and Time

The study was conducted from February 23 to April 5, 2024, at KMN. Bukit Safa which is based at the Kendari Ocean Fisheries Port (PPS). The location of the scad fishing area is in the Banda Sea which is included in the Republic of Indonesia State Fisheries Management Area (WPP-NRI) 714.

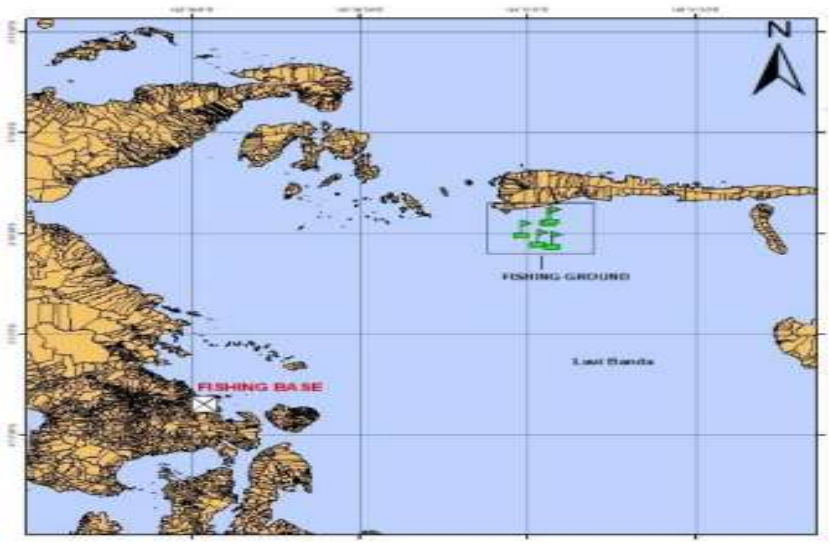

Figure 1. Map of research locations (Source: Map of the Republic of Indonesia Inageoportal, 2024)

Tools and Materials

This research is supported by a number of devices, including knives, trays, baseboards, organoleptic score sheets, stationery, notebooks, rulers and documentation equipment.

Method of collecting data

Data collection methods in this study include observation, interview and documentation techniques. Observation is an instrument commonly used in qualitative research (Rahardjo, 2011). Observations that have been carried out in this study are by collecting data on the physical condition and quality of freshness of the mackerel (Decapterus macrosoma) after the handling process on the KMN. Bukit Safa, which refers to the organoleptic assessment attachment of SNI 2729:2021 concerning fresh fish with a minimum standard of fish freshness of 7.0 (Table 1). The fish from the handling were assessed before 24 hours after handling the fish on board. This study used mackerel samples with uniform sizes to ensure consistency in the assessment. Each fishing trip, 30 fish samples were taken, with three panelists for the organoleptic assessment. The three panelists were the ship's crew (ABK) who were in charge of handling the fish on board. The interview method was applied in the organoleptic test with the aim of facilitating respondents' understanding of the contents of the questionnaire. This study also enriches the data by collecting documentation including writing, images and other forms of recording (Imbron, 2022). Documentation is carried out by taking data objects such as the physical condition of the fish when they are loaded onto the ship and the quality of the freshness of the layang deles fish.

Data Processing and Analysis Methods

The research parameters used were organoleptic parameters including appearance (eyes, gills and body surface mucus), meat, odor and texture (Table 1). At the data processing stage, the researcher performed editing techniques on all data collected during the study. Referring to the opinion of Hamdi & Bahruddin (2014), the editing stage was carried out to verify the completeness of the data obtained from the sources. The verified data was then further processed using Microsoft Excel software. Furthermore, the data analysis used was descriptive-quantitative analysis. Quantitative data is processed and analyzed using statistics (Siregar, 2021). Hartinah (2025) defines descriptive analysis as a tool for collecting, organizing,

presenting, and analyzing numerical data in research. Its function is to facilitate understanding of data by summarizing it into a simpler form so that it can be used in decision making.

Table 1. Organoleptic assessment sheet SNI 2729:2021 on fresh fish

Specification	Value
1. Appearance	
a. Eyes	
- Convex eyeballs, clear cornea and pupil, shiny, specific to fish species	9
- The eyeball is flat, the cornea is slightly cloudy, and the pupil is slightly greyish, slightly shiny, specific to this type of fish	7
- Sunken eyeballs, cloudy corneas and greyish, non-shiny pupils are specific to this type of fish	5
b. Gill	
- The color of the gills is blood red or brownish red with a little slightly cloudy mucus	9
- The gills are dark red or reddish brown, bright with very little transparent mucus	7
- The color of the gills is gray or brown-gray with cloudy mucus	5
c. Body Surface Mucus	
- Clear, transparent, bright shiny mucus layer	9
- The mucus layer begins to become slightly cloudy	7
- Thick mucus layer for saltwater fish and changes color	5
2. Meat	
- The meat cut is very bright, type specific, the meat tissue is very strong	9
- Meat cut slightly less shiny, meat tissue strong	7
- The meat cuts start to fade, the meat tissue is less strong	5
3. Smell	
- Very fresh, strong type specific	9
- Fresh, specific type less	7
- Neutral, sour smell	5
4. Texture	
- Solid, compact	9
- Dense, less compact	7
- Less dense, not compact	5

The analysis to find the quality value of the fish refers to SNI 2346:2015 concerning guidelines for sensory testing of fishery products. The formula used to find the quality value of fish freshness can be seen as follows:

$$P\left(\bar{x} - \left(1{,}96.\frac{s}{\sqrt{n}}\right)\right) \leq \mu \leq \left(\bar{x} + \left(1{,}96.\frac{s}{\sqrt{n}}\right)\right) \cong 95\%$$

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

$$S^2 = \frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n}$$

$$s = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n}}$$

Information:

n : number of panelists;
S^2 : diversity of quality values;
1,96: standard deviation coefficient at the 95% level;
$\bar{x}$: average quality value;
x_i : quality score from panelist i, where i = 1,2,3…… n;
s : standard deviation of quality value.

RESULT

Physical Condition of the Deles Mackerel (Decapterus macrosoma)

Fish that have been caught by fishermen must be raised as quickly and as well as possible, so that the condition of the fish remains good and intact. Fresh fish that are not physically damaged will be separated from fish that are physically damaged (Putri & Manengkey, 2024). The good physical condition of fish at KMN. Bukit Safa is fish with an intact physical condition and the freshness of the fish is maintained. Through the results of interviews and direct observations at KMN. Bukit Safa, fish are categorized into three conditions based on the physical condition and selling value of the fish, including the physical condition of intact fish, lightly damaged and severely damaged.

Table 2. Physical condition of fish (Source: Personal documentation, 2024)

Physical condition of fish	Information	Figure
Intact	The fish's physical condition is not deformed, solid and the fish is predominantly fresh	
Slightly damaged	The fish fins are torn, the tail is broken, the fish body is bruised, the gills are torn and the fish skin is peeling	

Heavily damaged	The fish is torn and even tends to be destroyed	

Freshness Analysis Results of Deles Mackerel (Decapterus macrosoma)

Observations made by the panelists included the eyes, gills, mucus, body surface, flesh, smell and texture of the fish (Figure 2).

(a) (b) (c) (d) (e) (f)

Figure 2. Fish assessment process: (a) eye assessment; (b) gill assessment; (c) body surface mucus assessment; (d) meat assessment; (e) odor assessment; (f) texture assessment.

Based on the assessment as in Figure 2, data analysis of the quality assessment of the mackerel (Decapterus macrosoma) has been carried out during three fishing trips. The value of the results of the analysis of the freshness of the fish quality data was taken from the lowest interval value of each parameter. The freshness results can be seen in Tables 3, 4 and 5.

Table 3. Results of data analysis on trip 1

No	Parameters	Number of samples	Number of Panelists	$\bar{x}$	S^2	s	$\sqrt{n}$	Interval	Value
1	Eyes	30	3	8	0	0	1,73	8–8	8
2	Gills	30	3	9	0	0	1,73	9–9	9
3	Body Surface Mucus	30	3	9	0	0	1,73	9–9	9
4	Meat	30	3	8,33	0,22	0,47	1,73	7,80–8,87	8
5	Smell	30	3	9	0	0	1,73	9–9	9
6	Texture	30	3	8	0	0	1,73	8–8	8

The results of data analysis on trip 1 for the parameters of eyes, meat and texture received a quality value of 8 and for the parameters of gills, body surface mucus and odor received a value of 9. The freshness value of fish quality on trip 1 was greatly influenced by the fish handling technique on board that was in accordance with applicable standards. The assessment of fish freshness was carried out 20 hours after handling on board.

Table 4. Results of data analysis on trip 2

No	Parameters	Number of samples	Number of Panelists	$\bar{x}$	S^2	s	$\sqrt{n}$	Interval	Value
1	Eyes	30	3	8	0	0	1,73	8–8	8
2	Gills	30	3	8	0	0	1,73	8–8	8
3	Body Surface Mucus	30	3	8	0	0	1,73	8–8	8
4	Meat	30	3	8	0	0	1,73	8–8	8
5	Smell	30	3	8	0	0	1,73	8–8	8
6	Texture	30	3	8	0	0	1,73	8–8	8

The results of data analysis on trip 2 for all parameters such as eyes, gills, body surface mucus, meat, odor, texture obtained a freshness value of 8. The freshness value of fish quality obtained on trip 2 was influenced by the longer handling time due to the abundance of catches. The ice used when handling the catch was less due to the abundance of catches. The assessment period for the freshness of the fish, for the first assessment was carried out 19 hours after handling the catch for the styrofoam box media and the second assessment was carried out 15 hours after handling the catch for the hatch media.

Table 5. Results of data analysis on trip 3

No	Parameters	Number of samples	Number of Panelists	$\bar{x}$	S^2	s	$\sqrt{n}$	Interval	Value
1	Eyes	30	3	9	0	0	1,73	9–9	9
2	Gills	30	3	9	0	0	1,73	9–9	9
3	Body Surface Mucus	30	3	9	0	0	1,73	9–9	9
3	Meat	30	3	8,67	0,22	0,47	1,73	8,13–9,20	8
5	Smell	30	3	9	0	0	1,73	9–9	9
6	Texture	30	3	8,67	0,22	0,47	1,73	8,13–9,20	8

The results of data analysis on trip 3 for meat and texture parameters received a quality score of 8, for gill eye parameters, body surface mucus and odor received a freshness score of 9. The quality of fish on trip 3 was maintained because the handling techniques on the ship were in accordance with applicable standards. The amount of ice used to handle fish on the ship was sufficient, the assessment of the freshness of the quality of the fish was carried out 5 hours after handling the catch for the box media and 8 hours after handling the catch for the hatch media.

DISCUSSION

Based on this study, fish that have been caught must be immediately loaded and handled quickly and properly. The quality and speed of fish decomposition are influenced by internal factors (type and biological condition of the fish) and external factors (death process, time, handling method and available facilities) (Herawanty et al., 2021). The physical condition of the mackerel (Decapterus macrosoma) is also influenced by the same factors after being loaded onto the ship. There are three groups based on the physical condition and selling value of the fish (Table 2). The physical condition of the fish on the ship is certainly influenced by the condition of the fishing gear which is operated properly. In addition, the handling of fish on the ship and the unloading process on land are also important factors in maintaining the quality of the catch (Larasati et al., 2024). The good physical condition of the fish also affects the freshness of the fish. The quality of the fish cannot be improved, but can only be maintained, because fish is a food ingredient that is easily damaged and must go through various stages of distribution before reaching consumers (Asni et al., 2022). According to Hapsari (2014), the physical condition of fish that are not damaged has a higher price than the physical condition of fish that are not damaged.

The physical condition of fish that are slightly damaged is also influenced by the amount of catch. The abundance of fish catches on the ship has the potential to cause more damage to the physical condition of the fish, because the load obtained by the bottom fish will be greater than the fish above it, the load of the fish causes the physical condition of the fish to become soft and bruised. According to Metusalach et al. (2014), injured or bruised fish experience a faster decline in quality than fish that are still intact. In addition, fish caught on ships that are damaged are usually stored as food while on board (Putri & Manengkey, 2024).

The physical condition of fish that is severely damaged can be caused when pulling the net onto the ship. The more fish caught, the more fish that are caught in the net cannot all be released and are buried so that the fish can be stepped on by the crew. Fish that are released are done by pulling them forcibly from the net. This happens because handling must be done

quickly to ensure that the quality of the fish that are still intact is maintained. The main principles in handling the catch are fast, cool, clean, and careful (Handoko & Yuniarti, 2023), but the implementation carried out by the ABK KMN. Bukit Safa in handling the caught fish prioritizes speed over caution, and is carried out quickly and forcibly which results in potential damage to the physical condition of the fish such as the fish's head being cut off and the fish's physical condition being destroyed. Fish that are severely damaged cannot be consumed and sold or are usually thrown into the middle of the sea because they have no economic value. The catch that is thrown away is fish that has no economic value or selling value (Ramdhani et al. 2019).

In this study, an analysis of the freshness of the scad fish was carried out from three KMN fishing trips. Bukit Safa. The analysis refers to SNI 2729:2021 by obtaining a freshness value of the scad fish above 7.0. The highest fish freshness value was obtained on trip 3. This value was obtained because the amount of ice used during handling was sufficient and the period for assessing the freshness of the fish was carried out faster than on trips 1 and 2. According to Metusalach et al. (2014) factors that affect the freshness of fish on board are fishing methods that do not physically injure the fish. The suitability or otherwise of the tools and techniques for handling the caught fish after the fish are loaded onto the ship, the amount of ice used when handling the caught fish and the length of time the fish are handled on board or landed at the port. According to Lacapa et al. (2021) also stated that at cold temperatures the caught fish tend to experience a small decline in quality and the length of time the fish are stored will result in changes and decreases in the value of the fish parameters being assessed.

CONCLUSION

The physical condition of the scad fish that has been lifted onto the KMN. Bukit Safa is divided into three criteria, namely intact, lightly damaged (torn fins, broken tail, bruised body, torn gills), and severely damaged (fish head cut off and fish body destroyed). Furthermore, for the quality of freshness of the scad fish (Decapterus macrosoma) on the KMN. Bukit Safa after handling the fish on the ship in a fresh condition.

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