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HANDLING OF SQUID (*Loligo* sp.) ON THE FISHING VESSEL KM. BANDAR NELAYAN 118

Penanganan Cumi-Cumi (*Loligo* Sp.) di Atas Kapal Penangkap KM. Bandar Nelayan 118

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ABSTRACT

Fish handling is a series of treatments carried out on fish without changing the basic nature of the fish itself. Handling the catch quickly and carefully on board is very important to maintain the freshness of fish and squid. The importance of handling the catch is because fish and squid are commodities that are easily damaged if not handled properly. KM. Bandar Nelayan 118 is one of the types of fishing vessels that focus on catching squid (*Loligo* sp.). This study aims to determine the process of handling squid (*Loligo* sp.) on a squid fishing vessel. This study was conducted on the KM. Bandar Nelayan 118 fishing vessel anchored at Benoa Harbor, Bali. The method used in this study is qualitative analysis by directly following the process of handling squid on board. From the results of observations during the study it was known that the handling of squid on board KM. Bandar Nelayan 118 consisted of; storage in baskets, weighing, sorting, washing, arranging on trays, arranging and freezing in cast iron to loading and unloading squid in the middle of the sea.

Keywords: squid fishing vessel km. bandar nelayan 118, squid handling.

ABSTRAK

Penanganan ikan merupakan suatu rangkaian perlakuan yang dilakukan terhadap ikan tanpa mengubah sifat dasar dari ikan itu sendiri. Penanganan hasil tangkapan yang cepat dan cermat di atas kapal sangat penting dilakukan untuk tetap menjaga kesegaran ikan maupun cumi-cumi. Pentingnya penanganan hasil tangkapan dikarenakan ikan dan cumi-cumi adalah komoditas yang mudah rusak jika tidak ditangani dengan baik. KM. Bandar Nelayan 118 merupakan salah satu dari jenis kapal penangkap yang fokus melakukan kegiatan penangkapan cumi-cumi (*Loligo* sp). Penelitian ini bertujuan untuk mengetahui proses penanganan cumi-cumi (*Loligo* sp) di atas kapal penangkap cumi-cumi. Penelitian ini dilakukan di atas kapal penangkap KM. Bandar Nelayan 118 yang berlabuh di Pelabuhan Benoa Bali. Metode yang digunakan pada penelitian ini yaitu analisis kualitatif dengan mengikuti secara langsung proses penanganan Cumi-cumi di atas kapal. Dari hasil observasi selama penelitian diketahui bahwa penanganan

cumi-cumi di atas KM. Bandar Nelayan 118 terdiri dari; penampungan pada basket, penimbangan, penyortiran, pencucian, penyusunan pada nampan, penyusunan dan pembekuan dalam kastorit hingga bongkar muat cumi di tengah laut.

Kata Kunci: Kapal penagkap cumi KM. Bandar Nelayan 118, Penangana cumi.

INTRODUCTION

Cumi- Squid is a nutritious and highly sought-after marine product (Hasmawati, 2015). Squid is traded internationally as a fishery product, alongside fish and shrimp, with a selling price reaching IDR 90,000/kg. Currently, squid is widely caught using bouke ami (Puspasari & Triharyuni, 2013; Ilhamdi & Yahya, 2017), squid fishing rods (Rosalina *et al*., 2011), boat lift nets (bagan perahu), and fixed lift nets (Febrianto *et al*., 2017). According to the FAO (2022), global squid production reaches over 3 million tons per year, making it a significant source of foreign exchange for exporting countries.

Benoa, Bali, is a strategic fishing port in eastern Indonesia, serving as a landing center for fish, including squid catches. Based on current statistics from Benoa Port, Bali, the number of squid fishing vessels based at Benoa Port reached 290 in 2023. Squid fishing vessels, such as the KM. Bandar Nelayan 118, routinely conduct fishing operations in the Arafura Sea (WPP 718), catching *Loligo* sp.. squid.

The long operating hours of squid fishing vessels can affect the quality of the catch stored on board. The process of handling the catch on board aims to maintain its quality (slowing down spoilage) until it is marketed (Tani *et al*., 2020). Proper handling at low temperatures is a key method for maintaining squid freshness (Kasmiati *et al*., 2022). The maximum product temperature for handling the catch is 5°C (SNI 01-2729.3-2006). Therefore, vessels must have hatches capable of maintaining fish freshness during fishing gear operations, especially for vessels operating for long periods.

Prompt and careful handling of the catch on board is crucial to maintain fish freshness. This is crucial because fish and squid are perishable commodities if not handled properly. Good or bad handling of fresh squid will affect their quality (Adawyah *et al*., 2021). Fresh fish and squid contain up to 80% water and are highly perishable, thus having a short shelf life (Ahadi & Setiadanu, 2019). Regarding the decline in fish quality, knowledge is needed on how to maintain fish freshness from pre-production through processing (Hadiwiyoto, 1993).

RESEARCH METHODS

This research was conducted from October to November 2023 on a squid fishing vessel, namely KM. Bandar Nelayan 118, which was anchored at Benoa Harbor, Bali. The tools and materials used in the research on board were cameras, notebooks, pens, and questionnaires. The method used in this study was interviews with crew members and active participation by participating in handling activities on the squid fishing vessel. The work procedure was carried out by following the stages and processes of squid handling activities on board. Handling activities followed started from the process of lifting the squid onto the ship to loading and unloading the squid. Data on squid catches on board will also be collected. Furthermore, for data analysis using qualitative analysis. Qualitative analysis can describe squid handling techniques on board, including catch results that can be presented in the form of tables or diagrams. According to Arkham *et al*., (2015) where the collected data is described and presented in the form of tables and diagrams.

RESULT

Based on observations during the activities on the KM. Bandar Nelayan 118, we found *Loligo* sp.. squid and no bycatch. The total catch during the study can be seen in Figure 1.

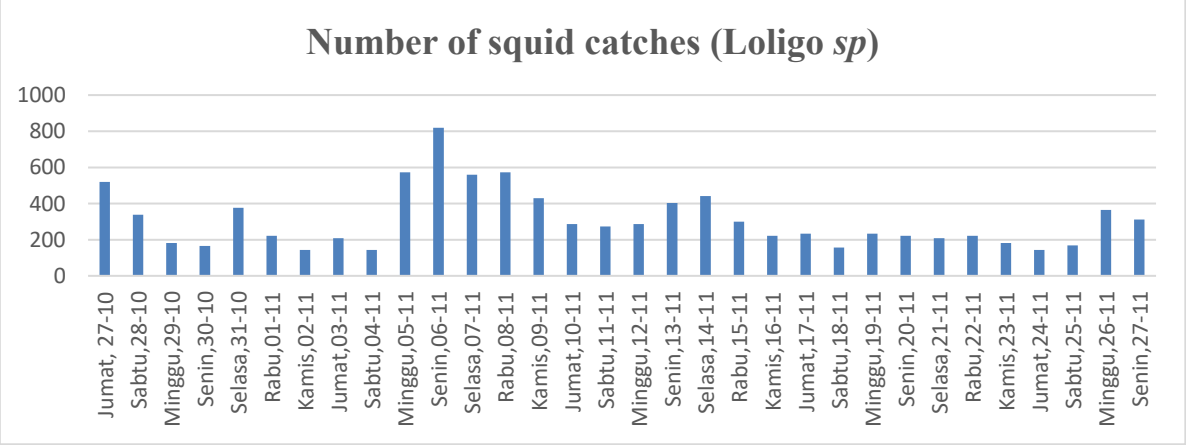

Figure 1. Squid fishing catch results for 1 month on KM. Bandar Nelayan 118

Based on Figure 1 above, it is known that during 1 month of observation, the highest squid production occurred on November 6 with a catch of 819 kg, and the lowest catch occurred on November 2, 04, and 24 with a catch of 143 kg. The varying catch numbers in this study were caused by several factors, including currents, bait colors, and the determination of fishing areas. According to Panucci & Wasielesky (2017), fish distribution influenced by currents can affect fishing pressure in an area. Squid also responds to the color of Jigs bait lowered into the waters so that during fishing operations, the color treatment of jigs used produces different catch results based on the color treatment (Ulaş & Aydin, 2011). Fishing location is one of the important factors that affect the volume of catch even though the operational factors of the vessel are similar (Fahrezy & Perangin-angin, 2024).

Handling of the catch

Catch handling is one of the methods used by fishermen and/or crew members to preserve fish to ensure they remain in good condition until they are unloaded onto the ship or at the dock. Catch handling is crucial and must be implemented on board, both before and during fishing, during transportation, distribution, shipping, and marketing (Tani et al., 2020). The squid caught onboard the KM. Bandar Nelayan 118 is handled using a freezer system to preserve/freeze the caught squid. The hold is equipped with cooling pipes (evaporator pipes) to distribute cold air/refrigerant. The refrigerant absorbs heat from the squid or the refrigerated space, thereby freezing the squid. The stages and processes of squid handling onboard the KM. Bandar Nelayan 118 can be seen in Figure 2.

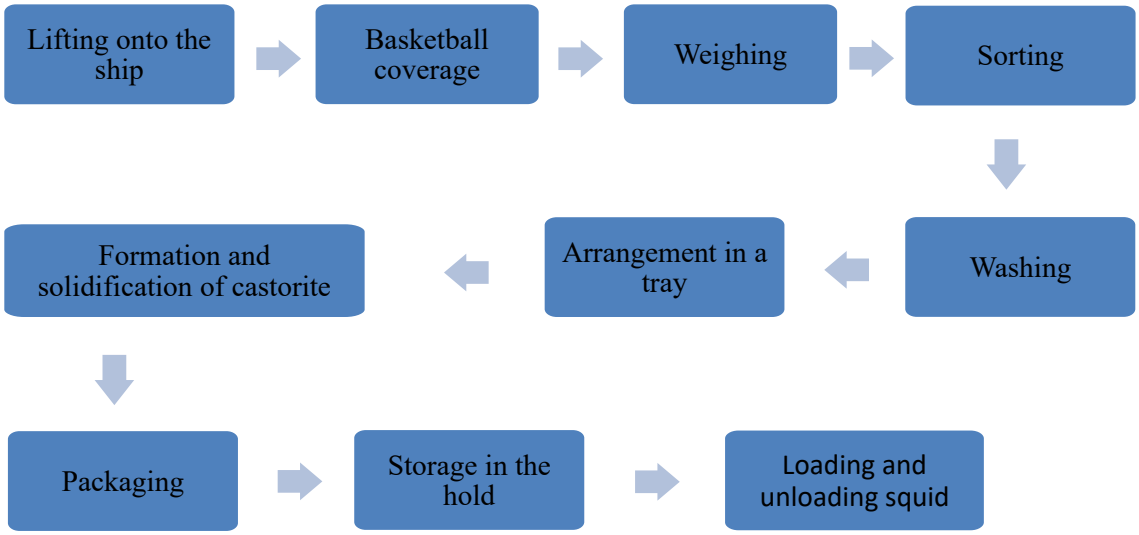

Figure 2 Handling flow on the KM. Bandar Nelayan 118 ship

DISCUSSION

Lifting squid onto the ship and storing it in a basket

On the KM. Bandar Nelayan 118, when the squid is caught and loaded onto the boat, it is stored in a holding basket that is continuously supplied with seawater from a pipe. The goal is to keep the squid alive and fresh while awaiting the weighing process. According to Siahaan *et al*. (2025), the initial stage in handling on board is loading the fish onto the boat. This stage is crucial because it is the initial parameter for fish quality before further handling. The following is a holding basket supplied with seawater from the pipe:

Figure 3 Squid basket and water supply pipe

Weighing the caught squid

After fishing is complete, the squid is immediately weighed by placing the caught squid in a special basket for weighing squid. The squid weighing tool uses a hanging scale. In one night, the squid is weighed twice, namely at 00:00 and 05:30 WIT, the aim is to keep the caught squid fresh. According to Mulyandari *et al*, (2025) a good fisheries supply chain is able to know the traceability of the catch including the weight of the fish, the type of fish, the location of the catch and several other parameters. The following is the process of weighing squid on board:

Figure 4 Weighing the caught squid

Sorting the caught squid

Squid sorting is the separation or selection of squid based on size, including defective squid (squid with damaged body parts). On board the ship, damaged squid are collected for consumption and those that are not suitable for consumption are immediately discarded.

According to Suryanto *et al*. (2020), the sorting stage is carried out to separate fish according to their type, size, and quality. Tani *et al*. (2020) also stated that fish caught that are damaged, unsold in the market, and not the target fish will be discarded. Sari *et al*. (2019) also stated that fish grouping can be distinguished into fish that are reused for consumption or sale (retained species) and fish that are discarded (discarded species). Sorting or selecting squid carried out on the KM. Bandar Nelayan 118 ship is by using a bamboo stick that has been marked for the size of each squid to facilitate sorting. Squid is separated based on size starting from 10 cm to 35 cm with a weight of 25-300 grams and the sorting results are put into a storage basket which is divided into six storage baskets, namely for squid number 1 measuring 35 cm with a weight of 250-300 grams, squid number 2 measuring 30 cm with 200-250 grams, squid number 3 measuring 25 cm with a weight of 150-200 grams, squid number 4 measuring 20 cm with a weight of 100-150 grams, squid number 5 measuring 15 cm with a weight of 50-100 grams and squid number 6 measuring 10 cm with a weight of 25-50 grams. Then the squid that has been sorted is immediately washed. The following is the squid sorting process on the ship:

Figure 5 Squid sorting process and sorting tool

Washing the caught squid

Squid washing is carried out after sorting is complete, the catch is cleaned by washing or dousing it with running seawater to remove any ink still attached to the squid. This is supported by the results of previous research by Litaay *et al*, (2020) who stated that during the washing process the fish are occasionally sprayed and doused with seawater. Sipahutar et al, (2019), also stated that water for the fish washing process can be taken from the middle of the sea to wash the fish so that blood and other dirt attached to the fish can be removed so that the fish is clean. This washing process is an important stage in squid handling because it can affect the selling price of squid. The following is the process of washing squid caught on board:

Figure 6 Squid washing process

Arranging squid in a tray

After washing the squid, the next step is to arrange the squid on the tray. The arrangement of the squid is done based on the size of each squid. The trays used on the KM. Bandar Nelayan 118 ship use two types of trays, a 60 x 40 cm tray for squid number 1 and a 48 x 28 cm tray for squid numbers 2 to 6. The following is the arrangement of the squid on the tray.

Figure 7 Arranging squid on a tray

Preparation and Freezing of squid in castor oil

Squid is arranged in the cast iron according to its size. The squid is stacked on racks according to size, stacking or weighing them down to reduce the water content. The process of freezing the squid in the freezing chamber takes approximately 8-10 hours. The temperature used for freezing the catch is approximately -28°C to -30°C.

According to Pujianto & Septiandi (2020), freezing caught fish is a special treatment to maintain its quality. Zahrah (2018) stated that the freezing process plays a crucial role in converting the water content in fish into ice, thus inhibiting microbial and enzyme activity. The squid freezing process is a crucial step in maintaining the freshness and quality of squid. This is supported by previous research, which states that one of the fish handling systems that significantly influences fish quality degradation is the cold chain system, in this case the freezing process (Rossarie *et al*. 2021).

Figure 8 Squid preparation and freezing room

Squid packaging

After freezing for 8-10 hours, the squid is removed from the freezer for packaging. According to Mulyawan *et al*. (2019), proper packaging is one way to extend the shelf life of

food products. The following are the squid packaging steps carried out on the KM. Bandar Nelayan 118:

a) Removing the squid from the castorite freezing chamber;
b) Removing the squid from the container (tray) by turning it upside down so that the top of the squid faces down, then slamming it down until the frozen squid is released or separated from the container (tray). (nampan).

Figure 9 Releasing squid from the tray

c.) Squid packaging is done by putting the squid that has been removed from the container into (1) Putting it into a cardboard lined with plastic, based on the size of each squid; and (2) packing it in sacks, sewn and numbered according to the size of the squid. According to Wibowo *et al*. (2017), good fish storage facilities are needed so that the quality and quality of the fish are maintained.

Figure 10 Squid packaging

Storage in the hold

The catch that has gone through the packaging process is then neatly packed into the hold. According to Tani *et al*. (2020), the packaged fish are immediately loaded into the hold and stacked. This is done to maintain the quality of the catch; the hold temperature must be at -20°C. According to Tani *et al*. (2020), the hold temperature during storage is maintained at around -20°C.

Figure 11 Squid storage in the hold

Loading and unloading squid

Unloading is carried out when the ship or ship's hold is full. Unloading activities are carried out by the ship itself searching for a container ship at a predetermined location. The unloading process is carried out by attaching the ship itself to the container ship. The unloading process usually takes 2-3 hours. And the unloading process is carried out according to the request from the container ship, usually each fishing vessel can unload 500 boxes of squid. According to Siahaan *et al*., (2025) the process of handling fish is not only carried out on board, but this process also includes the process of unloading the catch on land. The unloading process is carried out carefully, cleanly, and also quickly to maintain the quality of the squid being handled. The unloading process is as follows:

Figure 12 Squid dismantling

CONCLUSION

From the results of this study, it can be concluded that the squid handling procedure on the KM. Bandar Nelayan 118 fishing vessel includes several stages, namely lifting the squid onto the ship, storing it in baskets, weighing, sorting, washing, arranging it on trays, arranging it and freezing it in cast iron, and loading and unloading the squid in the middle of the sea.

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