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# Bottom Long Line profile for demersal fishing in Java Sea Coastal Area (Case Study: Cirebon District)

LantunParadhitaDewanti, DoniAlvian, Rita Rostika, IzzaMahdianaApriliani
*Department of Fisheries, Universitas Padjadjaran, Bandung, Indonesia*
*Corresponding Author:lantun.paradhita@unpad.ac.id*

***Abstract***
*Fishing activities in the traditional way (artisanal fisheries) are still one of the livelihoods of fishermen on the coast, one of the fishing gears used is the bottom longline. This study aims to analyze the fishing technique and productivity of bottom longline fishing gear in the Cirebon Regency. The research was conducted from September 2020 to June 2021. The method used in this study was a survey method. The analysis used is descriptive and productivity analysis. The results showed that fishing with bottom longlines in Cirebon Regency consisted of several stages from preparation to the handling of caught fish. Based on the research data obtained that the size of the ship used is 4 GT with an outboard motor engine powered by 12 PK. The number of bottom longline fishing units used every day is 50 units (fast) in each unit there are 100 fishing hooks. The operation of the fishing gear is carried out at night and is completed in the morning of the next day. The fish caught in the bottom longline fishing gear are Paraplotosusalbilabris as the main catch, while other fish such as Trygonsephen, Arius thalassinus, Lutjanus spp., and others fall into the category of bycatch. The types of fish caught were dominated by the main catch fish such as Paraplotosusalbilabris,Trygonsephen, followed by by-catch. Based on the results of the study, it can be concluded that the bottom longline fishing technique starts from the preparation stage, departure to location, the process of spreading the fishing line (setting) for 1-1.5 hours, waiting for the fishing line for 10-11 hours and until the lifting of the fishing line (hauling) in the morning for 1.5-2 hours and finally the hauling for 3 hours. almost all year round, except during the westerly season (December-January), but there are several different periods in terms of the number of catches, on peak season (February-March), middle season (April-August), and the low season (September-November). This is due to various factors such as weather, wind conditions, and decreasing fish populations*

***Keywords:****Trygonsephen, Paraplotosusalbilabris, bottom longline fishing, fishing techniques.*

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## I. INTRODUCTION

Fishing is a very dynamic activity. Changes in the environment, both from inside and outside that affect the existence of fish resources, will be responded to by fishermen by making changes to fishing operations in order to get optimal catches. In the technical implementation of fishing, there are several important factors that influence, including the size of the ship (GT), the type of fishing gear, the number and types of fishing gear, the number of crew, and others [1].

Demersal fish are usually caught by bottom trawling. The use of these fishing gears has been prohibited based on the Regulation of the Minister of Maritime Affairs and Fisheries (Permen KP) No. 2 of 2015 concerning the prohibition of drag nets and drag nets. One of the fishing units developed in Indonesia to catch demersal fish today are vertical and horizontal bottom longlines, hand lines, and traps. Bottom longline is an effective tool to operate in waters that have an uneven bottom topography, coral or rocky waters where other tools are difficult to operate in those places. Bottom longline has a much simpler construction. It has a simple construction and is used by most traditional fishermen in Indonesia because of its relatively low operating costs [11]. The success of the operation on bottom longline fishing gear always depends on oceanographic conditions, the presence of fish resources, and the means used in catching so as to get the desired demersal fish catch [10].

A bottom longline fishing line is a type of bottom longline that does not use bait. However, the bottom longline fishing line is a selective fishing tool, although its use is still not optimal because some other fishermen use a lot of drag nets, gill nets, danish seine, trammel nets, lift nets, mini bottom trawl. This bottom longline is mounted on the mainline in a position parallel to the seabed with a transverse position cutting the current.

The way to catch fish on a bottom longline is by hooksing a fishing line on the seabed. The size of the hooks is one of the factors that affect the number and catches of bottom longline lines. The fishing line used is round without back hooks. The smaller the number of hooks, the bigger the size of the hooks [5]. The identification in this research is how to catch the fishing technique using the bottom-line fishing line in Cirebon

District, Java Sea Coast. The purpose of this study was to analyze the technical capture of bottom longline fishing gear operated in the waters of Cirebon Regency, the coast of the Java Sea.

## II. METHODS

Data collection of bottom longline catches was carried out from January to March 2021. The research location was in Ender Fishing Port, Cirebon District, West Java. The tools and materials used during the research were outboard motor boats, bottom longline fishing hooks, stationery to record data, and cameras to document research activities. This research was conducted by survey method. The analysis used is descriptive, namely problem-solving procedures investigated by describing the state of the object of research (individuals, communities, institutions, and others). The scope of research data includes primary data and secondary data. Primary data includes the construction of fishing gear, and how to operate the fishing gear.

In the analysis related to fishing techniques, it is obtained by observing and analyzing various aspects of the technical operation of bottom longline fishing, including the size/tonnage of the ship (GT) used for fishing, the type of ship engine used, the number of crew/crew, fishing areas and their catches as well as the technical operation of bottom longline fishing hooks from start to finish. All processes are described descriptively accompanied by illustrations or documentation obtained during the research activities

## III. RESULT AND DISCUSSION

### 3.1. Fishing techniques with

### 3.1.1 Description

fishing gear Bottom longlines can also be referred to as bottom longlines or bottom longlines. The bottom line is bottom ally classified as a bottom set long line which generally consists of parts of the main line, buoy, and buoy rope, branch line, ballast, ballast rope and hooks[5]. longline fishing was first introduced as a substitute for trawler fishing gear which was already prohibited under the Minister of Marine Affairs and Fisheries Regulation (Permen KP) No 2 of 2015 concerning the prohibition of drag and drag nets, making Cirebon fishermen start to switch to using longline fishing hooks base.

The use of bottom longline fishing hooks initially used vessels that were formerlytrawlers, but over time the use of these vessels was considered less economical because they used high operational costs, so the fishermen ended up using ordinary boats whose size was below the trawlers[10]. Bottom longline fishing is a kind of bottom longline that does not use bait in its operation. The way to catch fish on a bottom longline is by attaching the body of the fish to a fishing line that is installed on the seabed. The main catches from bottom longline fishing gear include *Paraplotosusalbilabris*and also *Trygonsephen*with operating areas in waters of 5-20 meters depth. A bottom-line fishing unit consists of several clamps.

### 3.1.2 Construction of Fishing Equipment

In general, the design of bottom longline fishing gear is not different from that of bottom longlines that exist throughout Indonesia. The construction of the bottom longline fishing line consists of the main line, branch line, hooks, buoy and float rope, ballast and ballast rope, marker buoy, and anchor [8]. The fishing line is made of stainless with the type of hooks that is not hooksed back with the aim of making it easier for the fish to be caught. The type of rope used for the mainline is a rope made of polyethylene (PE), a small float made of synthetic rubber, a floating rope, and stone weights weighing about 3-5 kg. The number of hookss and branch lines used for one wood clamp is 100 pieces, each tied to the main line with a distance between branches as far as 30 cm and the main line about 30 meters per unit of the wood clamp.

Bottom longline fishing line numbers commonly used are fishing hooks number 3 and 5. Fishing line number 3 is usually used at a depth of 15 – 30 meters, while fishing line number 5 is used for coastal areas. The materials used for the main line, branch line, buoy rope, ballast, and anchor rope are made of polyethylene. The diameter of the main line is 5 mm and the branch line is 3 mm. This is different from the results of Rahmat's research [7] which states that the bottom longline fishing line construction used by fishermen in Barru Regency, South Sulawesi consists of a flag, 0.5 Kg ballast, 4 Kg anchor, and the distance between fishing hooks is 5.5 meters with hooks size. number 6 or 8 with a total of 480 pieces.

**Figure 1. Bottom Longline**

**3.1.3 Fishing**

Vessel The vessel used to operate the bottom longline fishing gear in Ender is a shriveled boat. This ship is 7.5 meters long, 2.5 meters wide, 2.4 meters deep with a ship GT of 4 GT. On this boat there are several supporting equipment needed to support fishing operations, including lights both LED and petromax, which are used as lighting when bottom longline fishing operations are carried out at night.

In addition, ice cubes or *cool boxes* as a place to store the caught fish so that the freshness is maintained and the quality of the fish remains good. Other supporting tools are scoops and hooks to help pick up or lift the caught fish and also some boats provide oars to make it easier to adjust the position of the ship [1].
or lifting the caught fish and also some boats provide oars to make it easier to adjust the position of the boat [1]. Based on the research of Kisworo*et al.* [8] fishing vessels used for bottom longline fishing gear are made of wood. The ship is driven by a 90 HP diesel engine, and runs on diesel fuel. The ship has a size of 37 GT, with a length of 18 meters, a width of 5 meters, and a depth of 2.1 meters. In contrast to the research of Franjaya*et al.* [5] stated that the size of the bottom longline fishing boat in Kota Bani Village, Bengkulu Regency is 3 GT with a length of 10 meters, a height of 1 meter and a width of 1.5 meters. According to Rahmat[7], boats used by bottom longline fishermen are *jukung* boats or boats (*katinting*), the main material is wood with a length of 7 to 9.5 m, a width of 50 to 65 cm, and a depth of 60 to 70 cm. The engine driving the Honda brand is 13 PK or Mitsubishi 16.5 PK. This boat is manned by 2 to 3 people but in general it is manned by 2 crew members.

**3.1.4 Ship**

Engine The ship's engine used is an outboard motor with an old technology compressor engine. This engine is located at the rear of the ship adjacent to the left side of the ship. The year of purchase of this ship's engine is 2017. This ship's engine comes from the Dongfeng brand which has a power of 12 PK. The fuel used is a type of diesel fuel. For daily fishing activities, the amount of fuel needed for the journey back and forth is about 8 liters. The average amount of oil (lubricant) consumed by the ship is 4 liters for a period of 2 months. This ship has a maximum speed of 5 miles per hour and a carrying capacity of about 500 quintals.

**3.1.5 Fishermen**

The crew of the boat that usually operates is about 2-3 fishermen. Generally, only 2 fishermen leave, but under certain conditions, the number can increase. The number of fishermen who are not too many make their work must be done by the two fishermen alternately, both as helmsmen, as well as in *setting* and lifting fishing hooks.

**3.1.6 Fishing Gear Operation**

Bottom longline fishing hooks are operated passively by leaving the fishing line attached to the bottom of the water. The installation position of the bottom longline is transversely cutting the seawater current. With

this installation position, the goal is that the target fish that swim with the ocean currents will be caught by the bottom longline. The operation of the bottom longline fishing line consists of *setting*, waiting for fishing, andhauling. The stage of spreading the fishing line or setting is carried out after the boat and fishermen arrive at the fishing ground. Fishermen will start removing the bottom (quick) longline unit for stock. The number of fasts brought is usually 50 fasts and each fast consists of 100 fishing hooks.

**Setting**

The settingis carried out in 3 stages, each stage consists of 16 dials that are spread, on the 16th speed a buoy and a marker flag will be given. Process settingis repeated up to 3 times until the 50th fast, all done slowly until all fishing hooks have been successfully stocked. The process of spreading the fishing line (setting) is carried out in the condition of the boat/ship while running at a constant speed of about 1 mile/hour, the settingbegins with slowly removing the fishing line from the wooden clamp, then continues until all the fishing hooks consist of 100 fishing hooks. in each speed successfully spread.

**Towing**

The next process after setting is that fishermen will move from the DPI to a more shady area to rest while waiting for the time to lift the fishing line (hauling). Generally, fishermen will leave the fishing area at 19.00-20.00 WIB and will wait for the next stage for about 8-10 hours.

**Hauling**

The process of lifting the fishing line (hauling) is the opposite of the setting, therefore the steps taken are also the opposite of the setting. The hauling begins with lifting the buoys and marker flags from the sea, followed by pulling the fishing hooks from each fast, while taking the fish caught/entangled by the fishing hooks using a fishing rod or hooks. Each fish that has been caught will be transferred to the storage tank by the second fisherman, while the other fisherman pulls each hook and also the weight back into the boat.

The next process that is carried out after the lifting of all fishing hooks is complete is *nyepeti. Nyepeti*is an activity carried out by fishermen to reattach each fishing line that has been used in wooden clamps. Each dial consists of 100 hooks, and all of this is done until all the dials that have been brought have been reassembled into their clamps. Process *nyepeti*is quite long about 3.5 - 4 hours after the fishing rod removal process.

**3.1.7 Fishing Areas**

Fishing areas (DPI) for bottom longlines are waters with a muddy or sandy bottom but are also operated in rough waters [10]. In the Ender Village area, each fisherman already has a fishing area, including bottom longline fishermen. Bottom line fishermen usually fish within 3 miles of the boat landing site and about 1-2 miles from the nearest shore end. The fishing season lasts most of the year, but there are peak seasons and lean seasons. The peak period or peak season occurs in February-April, in this time span, the number of bottom longline catches is high. The famine season occurs in September-November, at that time the catch of bottom longline fishing hooks is low, while in December-January generally, fishermen do not go to sea due to the west wind season which is quite dangerous for the safety of fishermen who use small boats to go to sea.

Based on various observations and experiences by fishermen who have gone to sea in the Gebang area, Cirebon Regency generally fishing ground must meet the following requirements [6]:

- The bottom of the water consists of sand, mud, or a mixture of both.
- In general, the depth of the *fishing ground* is sloping, which is between 5 – 35 meters - When *setting* and *hauling*, current and wave conditions are quite good and stable, and
- *The fishing ground* should not be too crowded for fishermen, because if it is too crowded then the catch bottom longline fishing line will be less than optimal.

Some of these requirements are suspected to be closely related to the behavior and habitat of the fish that are the target for catching, including finfish, stingrays, and others. Type of fish that is classified as demersal fish that has the habit of burying themselves or hiding in sand or mud which aims to make it easier for them to get their food in the form of *crustaceans* and several types of mollusks found on the bottom of sand or mud [4].

**3.1.8 Catches**

Fish caught from bottom longline fishing gear are generally *Paraplotosusalbilabris*as the main catch and sometimes there is also *Trygonsephen*. Fish obtained as a result of bottom-line fishing generally consist of demersal fish. The main catches from bottom longline fishing hooks include *Paraplotosusalbilabri*and sometimes *Trygonsephen*. While other catches by bycatchincludes*Arius thalassinus*, *Lutjanus campechanus*, and others. In Fatah and Asyari's[3] research, the character of eating fish is seen from the type of food including

carnivores because the dominant type of food is animal and generally has a shorter intestine length than the total body length. Fish can be classified as euryphagicbecause there are several types of food found in their intestines.

## IV. CONCLUSION

Based on the results of the study it can be concluded that the bottom longline fishing technique starts from the preparation stage, departure to the location, stocking process fishing hooks (*setting*) for 1-1.5 hours, waiting for fishing hooks for 10-11 hours and until the lifting of the fishing hooks (*hauling*) in the morning for 1.5-2 hours and finally the *fishing* for 3 hours. The fishing season runs almost throughout the year, except for the westerly monsoon season (December-January), but there are several different periods in terms of the number of catches, namely the peak period (February-March), the middle season (April-August), and the lean season (September-November). This is due to various factors such as weather, wind conditions, and declining fish populations.

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