The Effect of Different Bait on Squid Fishing Using Totabito

[1,2]Abdul Muin Lamela., [2]Alfi Sahri R. Baruadi, [2]Sitti Nursinar

[1]lamela.jr41@gmail.com
[2]Department of Aquatic Resources Management, Faculty of Fishery and Marine Sciences
Universitas Negeri Gorontalo

Abstract

The purpose of this study was to determine the effect of different types of bait on the catch of squid (*Loligo Sp*) using a totabito fishing gear, by comparing and seeing the effect of the catch on each bait used as treatment. This research was conducted in August 2017 - May 2018 in the waters of Tomini Gulf, in Kayubulan Village, Batudaa Beach District, Gorontalo District. The research is an experimental fishing method and uses analysis of variance in the RAL mathematical model. This study used 3 types of bait as treatment, namely mackerel as treatment A, squid as treatment B, shrimp as treatment C. The results showed that, based on the results of analysis of variance (ANOVA), the treatment of different types of bait had a significant effect, significantly different from the catch of squid. Furthermore, based on the results of further tests using the smallest significant difference (LSD), it was found that treatment C was significantly different from treatment A and B. So that treatment C could be used as an effective bait in catching squid.

Keywords: Bait; squid; Loligo sp.; *totabito.*

I. Introduction

Indonesia has extensive coastal and oceanic areas and has great potential in supporting the quality of life of the Indonesian people and improving the national economy. One of the Indonesian marine products that has high economic value after fish and shrimp is squid. The squid is one of the types of the Cephalopod class, which is a group of soft invertebrates (Sarwojo, 2012).

Gorontalo Province is one of the provinces in the Sulawesi Islands. Administratively Gorontalo Province consists of 5 (five) districts, one of which is Gorontalo District. Kayubulan Village is one of the villages located in Batudaa Pantai District, Gorontalo Regency. Kayubulan Village is located in a coastal area which has abundant fishery resources and most of the people work as fishermen.

One of the abundant fisheries resources that are well known among the Kayubulan village community is squid. *Suntung* is the local name for squid, this *suntung* is very popular with the community because besides it tastes good, it is also because the ink is believed to have many benefits. The process of catching squid in Kayubulan Village uses a fishing gear called *totabito*, a modified jigger with LED (light-emitting diode) light device. According to data from the Department of Fisheries and Marine Affairs (2016), Gorontalo Province, especially in the Tomini Gulf region, production of squid reaches 7,130 tons / year. This is very different from other capture fisheries which reach tens to hundreds of tons per year.

One way to increase fishermen's income is by increasing the production. This depends on the method of fishing and bait used to increase the catch.

Catching squid using the *totabito* in the Tomini Gulf usually uses squid obtained from the catch as bait, this can reduce the production of the catch. Therefore it is necessary to find a bait that can replace the squid by using a *totabito*.

The purpose of this study is to determine the effect of different types of bait on the catch of squid (*Loligo* Sp) with a *totabito,* so that it can be seen which types of bait are good for increasing the catch. The benefits of this research are expected to provide

information and insight regarding the bait used in catching squid in Kayubulan Village and can be used as a basic material in terms of efforts to increase fishing yields by using effective bait in catching squid.

II. Research Methods

This research was conducted from August 2017 to May 2018. The fishing base is located in Kayubulan Village, and the fishing ground is located around the waters about 20 minutes by using fishing boat in Tomini Gulf.

List of tools used in the research: *totabito* fishing gear, camera, utensils, LED lighting device, GPS gadget. Materials used are shrimp (*Caridea Sp)*, mackerel (*Rastelliger Sp)*, and squid (*Loligo Sp)* as baits.

Primary data collected during the study includes the number of catches, fishing gear and bait used. Secondary collection includes the general state of the location of the research article related to the research. The study used the help of 3 anglers, each uses 3 units of hooks with the three different baits uniform in size. Data was collected for 8 trips, the number of catches collected was counted on each trip.

The data analyzed were classified based on the number of squid caught according to the type of bait. To determine the effect of different types of bait in a catch, analysis of variety was carried out (Gaspersz, 1991).

The hypotheses to be tested in this study are:

H0: Different bait has no effect on the amount of catch of squid.

H1: Different types of bait has effect on the amount of catch of squid.

If F count > F table, then there is a real effect of the treatment given. Then further analyzed using the LSD test. If F count <F table, then there is no real effect from the treatment given, so there is no need for further testing.

III. Results and Discussions

3.1 General description of the research site

Kayubulan Village is divided into 6 hamlets namely East Pentadu, West Pentadu, Padengo, Dunggala, Apitalawo, Tenilo (Kayubulan Village Profile, 2016). Geographically and administratively

Kayubulan Village is one of 9 villages in Batudaa Pantai District and has an area of 2.793 hectares. Topographically, Kayubulan Village is located at an altitude of 14 meters above sea level.

The total population of Kayubulan Village based on the Village profile in 2016 is 7.303 people, consisting of 3.678 men and 3.625 women. The basic livelihoods of the people of Kayubulan Village are very diverse, ranging from farmers, fishermen, traders, civil servants, builders, laborers and others.

The basic livelihoods of the people of Kayubulan Village vary, after civil servants and farmers, the livelihoods of the people in this village are fishermen. Most of them are squid fishers who depend on capture fisheries. Fisheries resources is very abundant, this is used by the local community as a source of income (Kayubulan Village Profile, 2016).

3.2 Totabito the fishing gear

Totabito is a fishing gear that has a special construction that is different from other forms of fishing. In general, several types of squid fishing gear found in Kayubulan Village waters are payang, *rambo* lift net, pole and line and hand line. All types of fishing gear for squid have different constructions but have the same luring aid, namely lighting devices to attract the squid. In the operation of the *totabito*, it requires a boat that is always moving in front of the target squid horde, using the help of light to focus the target right around the ship. Before carrying out the operation, first determining the area of the squid fishing ground, an approach is made based on the technical experience of local squid fishers (Kasmudin, 2011). An image of the *totabito* can be seen in Figure 1.
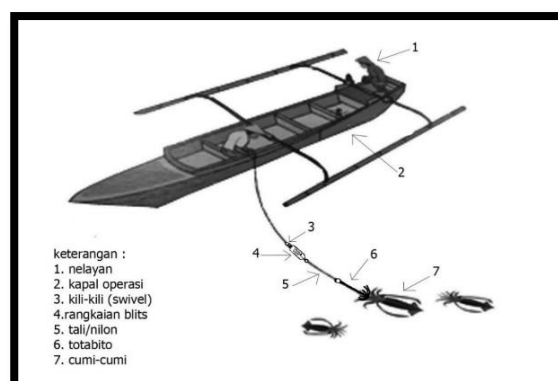

Figure 1. The *totabito* construction with the boat

The operation of the *totabito* using three types of bait is carried out at night around 19.00 - 22.00 WITA. Before carrying out the operation of fishing gear, first the fishing gear, the bait, and the storage box for the catch are to be prepared.

From the fishing base, all the needs have been prepared, supplies and fuel as well as fishing tools. The boat is then rowed to a rather deeper water and then start the engine so it does not run aground and then move to the fishing ground. Upon arrival at the area of the operating point, the ship is tied to a raft (the *rumpon,* a kind of floating platform as fish aggregating devices/FAD) and is given a distance of about 15 meters between the ship and the raft.

After the engine was turned off and the ship was tied to the raft, it was prepared to turn on the lighting devices, and the totabito was immediately installed with bait. After that the fishing gear is then prepared to be lowered, each fisher prepares the totabito with the specified bait, namely fisherman 1 using squid bait, fisherman 2 using shrimp bait and fisherman 3 using mackerel bait. After the fishing line is thrown simultaneously then the fisherman starts to pull (hauling) and roll it slowly with a gentle jolt until it approaches the boat and then it is lifted and thrown back as usual, until the fisherman feels the squid attached to the hook and is pulled and lifted onto the boat. Then the catch of each fisherman is separated into three bucket containers. And so, the process repeated until the appointed time.

3.3 Catch

This research was conducted at night because the squid is active at night in search of food. As explained by Roper et al (1984) in Kasmudin (2011), that squids carry out diurnal movements, namely during the day they will group near the bottom of the water and will spread out in the water column at night.
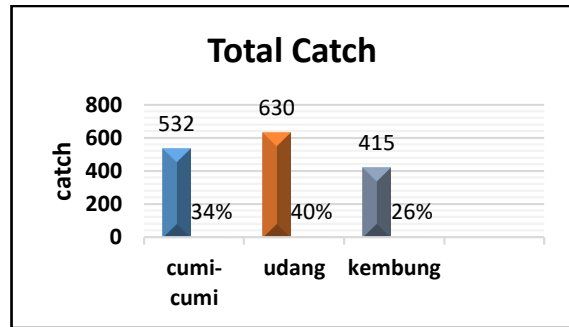

Figure 2. Total catch of squid by different baits

The bait used during the study had a varied number of catches which showed that the highest number of catches was obtained using shrimp bait, followed by squid bait and the lowest was obtained by fish bait. The relationship between the amount of catch and the fishing trip can be seen in Figure 3.
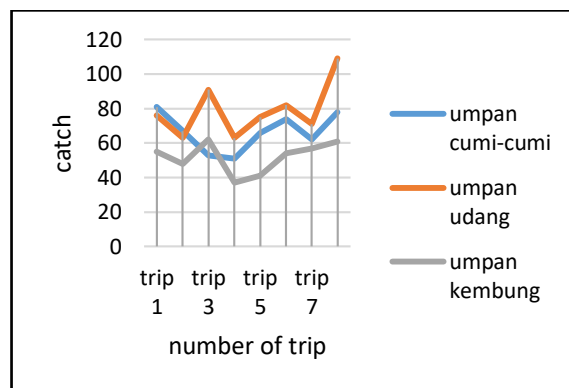

Figure 3. Catch – trip relation

The graph in Figure 3 shows the total number of catches on 8 trips, with the average obtained, namely, with each number obtained the highest value for shrimp bait with a catch between 63 - 109 fish on each trips with a total of 630 catch. Followed by squid bait with a catch between 51 - 81 fish on each trips with a total of 532 catch. Then, followed by mackerel bait with a catch between 41 - 62 fish on each trips with a total of 415 catch.

The least catch is obtained by mackerel bait. The squid is thought to be less interested in fish bait because it is cut into pieces, not in its original shape. Fish bait conditions are not durable and spoil quickly compared to other bait. This is explained in the research of Purwaningsih (1999), that fish bait contains a lot of free fatty acids which have more

carbon chains and double bonds (Polyunsaturated Fatty Acid) which are easily oxidized and accelerate the smell of rancidity.

Based on the analysis of variance (ANOVA), at the 5% level of confidence, the difference of bait have a significant effect to the number of catches. This means that there is an effect of one type of bait on the amount of catch. The value of F-count = 9.89 is greater than the F-table at the 1% level and the 5% level, so it was decided to reject H0 and accept H1, which means that the effect of differences in treatment is said to be significantly different (F-count is marked with *).

To determine the effect of each treatment, a further test of the least significant difference was carried out (LSD). The type of bait that has a significant effect on the catch of squid is seen based on further tests, the smallest significant difference (LSD) between squid and fish bait shows significantly different results at the 5% confidence level. Shrimp and mackerel bait are significantly different, because the difference in the average number of catches is greater than the LSD value (25.17), the average catch value is 26.87. The catch of squid with mackerel and squid bait was not significantly different. Because the average value of the number of catches is 14.62. This value is smaller than the LSD value (25.17). The catch of squid and shrimp was not significantly different. Because the average value of the number of catches is 12.25. This value is smaller than the LSD value (25.17).

IV. Conclusion and Suggestion

The use of different types of bait in catching squid had an effect on the amount of squid caught using *totabito*. Shrimp bait is a good type of bait to use in catching squid, because shrimp bait gets a higher yield. So that, it is better to use shrimp to increase fishing production.

Further research that needs to be done to complement the results of this study is the relationship between the type and size of the bait, the season for the squid, the size of the fishing hook, the speed of the lighting device, and the oceanographic factors that influence the successful operation of the squid fishing.

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