

Effect of different bait towards eel (*Monopterus Spp* and *Anguilla Spp*) catching results in Kampung Baru, Bakongan Subdistrict, South Aceh

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Abstract. Kampung Baru is a village in South Aceh Regency. The fishing gear used by most fisherman is a traditional fishing gear. The traditional fishing gear usually used is trap. It is usually used by fishermen to catch eel fish. This study aims to find out the most effective type of bait to catch eel by using trap fishing gear in Kampung Baru Village, Bakongan subdistrict, South Aceh. The types of bait that are tested are congealed, earthworms, chicken intestines and shrimp paste at sampling locations that are usually used by local fishermen. The study used experimental fishing testing methods conducted from April to May 2023. Data analysis used is to determine the influence of different bait by using a complete randomized design. Research results show that the most catch uses a type of earthworm bait 20 eels. Data analysis using Analysis of Variance averages 2.05 eel per day. The smallest real difference test results show that each treatment has a different value and significant. So, it can be concluded that the effect of using different bait has an effect on the catch of eel fish (*Monopterus spp* and *Anguilla spp*), and the most effective of bait is earthworms.

1 Introduction

South Aceh is one of the regencies in Aceh Province which consists of 18 sub-districts, 43 settlements and 260 villages with its capital, Tapakuan [3]. Bakongan District is one of the districts of South Aceh Regency. The population is predominantly live-eyed as fishermen, farmers and traders. Kampung Baru Village is one of them. Most of the villagers of Kampung Baru work as fishermen. The fishermen of Kampung Baru Village still use traditional fishing gear. The traditional fishing gear usually used is trap. Trap is a passive trap that makes it difficult or impossible for prey to escape again. This fishing gear is well known among fishermen. This bubu is usually used by fishermen in Kampung Baru village to catch eel fish.

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Eels are fierce predators in swamp and rice field environments. The food is small fish, worms and crustaceans. Its habit is to nest in muddy holes and wait for passing prey. Eels hide under rocks and mud during the day [11]. This happens because eels cannot tolerate direct sunlight. Eels are animals that actively search for food at night [12].

Bait is one of the important factors affecting the success of eels caught [13]. The type and size of the bait used must provide stimulation for the target fish to approach and eat the bait. The rivers and canals of the village of Kampung Baru, Bakongan District, are full of rice paddies, and fishermen use them as bait to catch eels. Additionally, the use of bait in the form of earthworms (*Lumbricus rubells*) is also often used to catch eels [1].

The fishermen of Kampung Baru Village usually only use earthworm bait and golden eggplant. For other kinds of bait fishermen have never tried. Sintia [8] also concluded that the use of golden bait, worms and trash fish in trap in Pemayung subdistrict resulted in the same number, weight and length of eel caught. So that the bait is suitable for farming areas.

Fishermen use traps as a fishing gear for catching eels. This trap is made from woven wire resembling a cylindrical tube with a diameter of 10 - 15 cm and a length of 100 - 120 cm, with a conical shape towards the tip [14]. At the front, a valve is installed as a trapping so that eels that enter the fishing gear cannot get out [4]. Some of the traps are covered using black plastic and on the back a lid is attached using an old drink bottle. The purpose of covering the trap with black plastic is to follow the characteristics of eel fish which actively search for food at night [12].

Traps is a fishing gear commonly known among fishermen. Traps are often also called traps and guiding barriers. This fishing gear is often used by fishermen in Kampung Baru village to catch eels. This trap is made from woven bamboo, woven rattan and woven wire [15]. According to Sudirman and Mallawa [16], traps are a type of trap that is installed permanently in the water for a certain period of time which makes it easier for fish to enter but difficult to get out. In operation, it can use bait or without bait. The use of bait in a fishing gear operation serves to invite or stimulate fish so that the operating system will be more effective [17].

Based on the initial survey, the problem of bait to catch this eel still does not have a solution point. At certain times of the season these gulls and earthworms are difficult to find. As a result, many of the fishermen do not carry out the fishing process because the main bait that is commonly used does not exist. So that in this case, a study needs toward on the effect of different bait on the catching eel. The bait tested on this assessment are rice, earthworms, chicken intestines and shrimp paste.

2 Research Methods

Research was conducted in April–May 2023. The research site was conducted in Kampung Baru Village, Bakongan District, South Aceh Regency. The research location map is as follows:

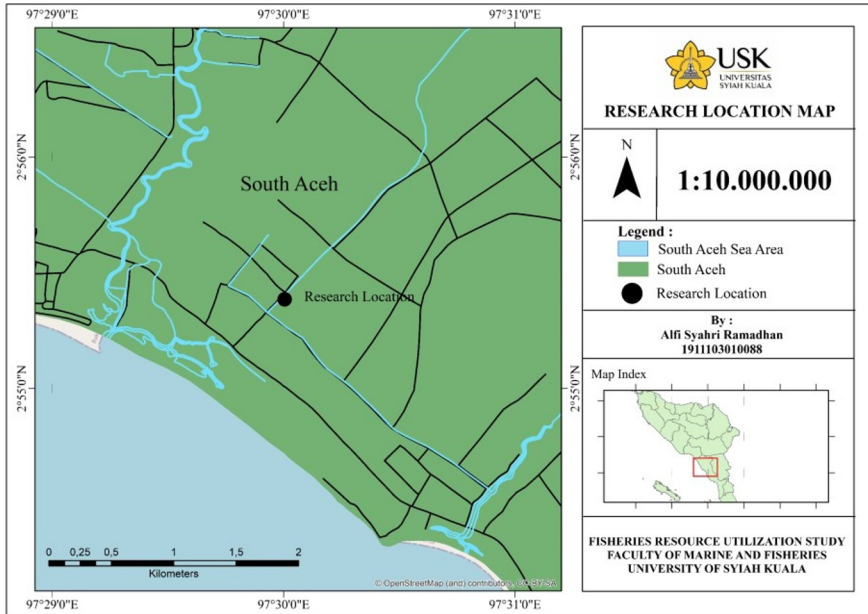


Fig. 1. Caption of the Figure 1. Below the figure.

2.1 Sampling Procedure

The types of bait tested were earthworms, golden snails, shrimp paste and chicken intestines. The bait was tested using trap fishing gear. Traps are installed along oil palm plantation ditches which are usually used by fishermen to catch eels using traps. At this location, 8 units of trap fishing gear were placed, each trap fishing gear used different bait and was installed randomly. The distance for installing eel traps was 5 – 10 meters. Sampling was carried out 4 times a week, so the total sampling for 1 month 5 days was 20 times.

2.2 Data Analysis

Analysis of the data to find out the construction description of this eel-baking device using descriptive analysis, and the influence of the difference in the bait type of bubu-baking device in Kampung Baru Village using the Complete Random Design (RAL) model. The RAL equation [6] is as follows:

$$Y_{ij} = \mu i + \tau i + \varepsilon_{ij} \quad (1)$$

Explanation:

- i = 1, 2, ... , t and
- j = 1, 2, ... , r
- Y_{ij} = Observations on the i -th treatment and the j -th trial.
- μ = General flatness
- τi = Effect of i -th treatment
- ε_{ij} = Random effects on the i -th treatment and the j -th trial.

The effect of treatment on variability is observed using either the Analysis of Variance (ANOVA) test method or the analysis of a variety print using the SPSS program. If the results of variety analysis show a distinctly different effect between each treatment, it will be conducted with the BNT Test.

The hypotheses tested in this study are as follows:

H₀: There is no effect of different types of bait on the catch of fish

H₁: There is an effect of different types of bait on the catch of fish

The test decision rules according to [6] are as follows:

a. If F-count < F-table > (0.05) then H < reject H>

b. If F-count < F-table > (0.05) then H < reject H>

3 Results and Discussion

3.1 Results

Based on research results that the catch showed eel fish were caught with all kinds of bait tested. During the study conducted, the number of caught fish was 43 consisting of 41 *Monopterus albus* and 2 *Anguila spp.* The range of fish obtained is from 15 g to 270 g with a total weight of 3,740 g. The catch can be seen in Table 1 as follows:

Table 1. Eel Fish Caught

No	Day/Date	The bait				Heavy (g)
		Snail	Earthworm	Chicken intestines	Shrimp paste	
1.	Sunday 30/4/2023	0	0	2	0	230
2.	Monday 01/5/2023	0	0	0	0	0
3.	Tuesday 02/5/2023	0	0	0	0	0
4.	Wednesday 03/5/2023	0	0	0	0	0
5.	Sunday 07/5/2023	0	2	0	1	440
6.	Monday 08/5/2023	1	0	0	0	80
7.	Tuesday 09/5/2023	0	0	1	0	90
8.	Wednesday 10/5/2023	1	0	0	0	100
9.	Sunday 14/5/2023	1	0	1	0	180
10.	Monday 15/5/2023	1	0	0	0	80
11.	Tuesday 16/5/2023	0	2	0	0	180
12.	Wednesday 17/5/2023	0	3	1	0	205
13.	Sunday 21/5/2023	1	1	0	0	75
14.	Monday 22/5/2023	1	3	1	0	395
15.	Tuesday 23/5/2023	1	3	0	0	570
16.	Wednesday 24/5/2023	0	0	1	0	160
17.	Sunday 28/5/2023	0	3	0	1	330
18.	Monday 29/5/2023	2	0	0	0	85
19.	Tuesday 30/5/2023	1	2	1	0	235
20.	Wednesday 31/5/2023	0	1	1	0	205
Total		10	20	9	2	3.635

Research has shown that eel is widely caught in traps that use earthworm bait, snail and chicken intestines. Meanwhile, in trap using shrimp paste bait, less fish caught eel. The most

common catch is in ground worm bait, with 20 eels at the same location or an average of one day.

Table 2. Anova test number of catches (tails)

Source of Variation	SS	def.	MS	F	P-value	F crit
Between Groups	8.2375	3	2.746	4.561		2.72494392
Within Groups	45.75	76	0.602			
Total	53.9875	79				

Therefore, further tests with the Real Differential Test (BNT) need to know the effects of different bait. The results of the BNT test are shown in Table 3 as follows.

Table 3. BNT Test

Treatment	Average	Average BNT
Earthworm	1	1.4887
Snail	0.5	0.9887
Chicken intestines	0.45	0.9387
Shrimp paste	0.1	0.5887

The smallest real difference (BNT) test results show that each treatment has a different value and significance.

3.2 Discussion

The eel fishing process in this research uses trap fishing gear. A trap is a fishing tool in the form of a trap and guiding barriers. This trap fishing tool is made from woven bamboo, woven rattan and woven wire [15]. This trap is installed permanently in the water for a certain period of time and in operation it can use bait or without bait [16]. The process of operating trap fishing equipment is carried out in the afternoon because eels are nocturnal fish. This statement is also in accordance with the opinion of Saparinto and Cahyo [12] who state that eels are animals that actively search for food at night. The process of removing/checking the bubu is carried out in the morning.

This research was done for 30 days, on research there are several types of bait used as a test for fish capture by using trap. It is seen from the results of many fish caught in every treatment is not only based on using the use of trap but large influence is caused by water conditions and bait used. The bait factor is very influenced by trap catch. The bait used (type and size) must provide stimulation for fish and other catch targets to approach and eat bait [2]. These factors have closely related relations with aspects of the capture target [7]. Water conditions play an important role in the success of fishing operations, this is because water is a medium for soaking traps [5].

The highest eating activity of eels occurs at night, this is proven by the fact that eels caught in the morning have full stomachs, while eels caught in the afternoon tend to have empty stomachs [18]. Researched the eating habits of two species of eel fish *A. bicolor* and *A. marmorata* in Segara Anakan, Cilacap, and found that eel fish are nocturnal and carnivorous, their main diet is crustaceans [19].

The most interested bait fish on this research is land worms. This relates to the prey that eels are most interested in. The most interesting prey are worms, small fish and insects [20]. Tsukamoto and Kuroki [10] also added that the land worms have a typical smell so liked by eels. This bait is a common bait used by fishermen in the fishing process.

Apart from land worms, bait of chicken intestines also obtained almost the same catch. Each bait has distinctive smell and quickly rotting because many contain water. According to Purwanto et.al [4] more water content on the bait and faster also smell on the bait. This causes on both baits didn't give a maximum catch result. Meanwhile, the bait is very much different from the third bait. It was caused because the bait with the time of trap, this bait will be late in water so that bait will be not effective. Furthermore, the result of environmental pollution and capture of eels that continue to reduce the population of eels [9].

The number of eels caught as much 41 tails. Land worms are the most interesting bait on the Sampling location. The total amount of capture is 20 eels with an average result of the capture of land worms are one eel/day fish bait. Apart from earthworm bait, golden snail bait also resulted in a catch of 10 eels with an average catch of 0.5 eel/day. For example, the eels of a catch during research are 9 eels with an average of 0.45 eel/day. Meanwhile, traps using shrimp paste bait had the lowest of catches, namely 2 eels with an average catch of 0.1 eel/day. Apart from the main catch, there is also a by-catch obtained using traps, namely 2 eels.

Judging from the catches obtained, it is known that there is an influence of differences in the type of bait used to catch eel using trap fishing gear, using analysis of variance (ANOVA). Based on Table 2, it can be seen that the F-calculated treatment value = 4.651 is greater than the F-table at the 5% level. So, it can be concluded that the different of bait used as treatment have a significant effect on fish catches using trap fishing gear. To find out which treatment and group has the most influence, it is continued with the Least Significant Difference (BNT) test. Based on the Least Significant Difference (BNT) test, there are differences in each treatment. Judging from the average value of using different types of earthworm bait, it is very significant, golden snails with chicken intestines are not significantly different and earthworm bait with shrimp paste is very significantly different.

High catches were found in the third, fourth and fifth weeks. Meanwhile, in the first week and second week there were fewer catches because they were influenced by natural factors like flooding. Floods result in an abundance of food availability so that when the process of operating the trap fishing equipment is carried out there is less catch. Seasonal variations cause changes in food availability, temperature, feeding activity and spawning activity [21]. If we look at the catch, many eels are caught in rivers that are overgrown with aquatic plants and are quite muddy. Eels really like aquatic environments where water plants grow and are muddy because these places are rich in prey [12].

Hook rods fishing gear is the most widely used fishing gear for catching eels, and is a selective eel fishing gear [22]. In contrast to Baru Village, South Aceh, fishermen use traps to catch eels and this is an effective fishing tool because the catch does not hurt like fishing rods and can live longer in the trap.

4 Conclusion

The use of different types of bait had an effect on the catch of eel, and that the most effective bait for catching eel using traps was earthworms. Judging from the average value of using different earthworm bait, it is very significant, golden snails with chicken intestines are not significantly different and earthworm bait with shrimp paste is very significantly different.

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