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Size Structure of Female Senangin Fish (Eleutheronema Tetradactylum) Gill Net Catch in Tanjung Solok Village East Tanjung Jabung Regency

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Female Senangin fish is one of the main types of fish caught in the waters of Tanjung Solok, which has economic value. The purpose of this study is to determine the size structure of female Senangin fish caught by gill net in Tanjung Solok Village, East Tanjung Jabung Regency. The method used in this study is a survey. The determination of respondents was based on the purposive sampling technique on 3 fishermen with 4-inch gill nets for 20 arrests. The variables observed were the length of the female Senangin fish, the relationship between length and weight, as well as the size of the female Senangin fish and the size of the female Senangin fish. From the results of the study, the relationship between the length and weight of female Senangin fish is negative allometric with a value of 2.03. The percentage of catchable size of a 4-inch gill net shows that the catch of all female slick fish is 100% worth catching. The conclusion of this study is that female catfish caught using a 4-inch gill net fishing gear are included in the category of suitable for fishing

Keywords—Senangin Fish, female, Fishworthy, Gill Net, Tanjung Solok Waters.

I. INTRODUCTION

East Tanjung Jabung Regency has a relatively large fishing area, covering marine waters, swamps and tidal areas, with an area of 77,752 hectares of marine waters. Marine fisheries production in East Tanjung Jabung Regency in 2019 experienced an increase in production, where marine fisheries production reached 23,491.54 tons [2]. One of the largest productions is in Tanjung Solok Village [14].

Tanjung Solok Village is a center for collecting and trading fish caught by fishermen. Geographically, Tanjung Solok Village is located at the mouth of the Batanghari River. This condition makes Tanjung Solok Village an estuary water, namely the meeting area between river water and seawater [10]. The majority of people in Tanjung Solok Village work as fishermen. Fishermen in Tanjung Solok mostly catch fish in the middle of the sea and also on the beach.

Fishing activities in Tanjung Solok Village use fishing gear gill nets, rawai, sondong, trawls, folding bubu, splints and others. Gill net fishing gear is one of the fishing tools that is often used by fishermen in Tanjung Solok. Gill net fishing gear is a net that is rectangular in shape, has the same size net on the entire body of the net, the width is shorter when compared to the length. The number of fishermen who use a 4-inch gill net is 30 fishermen, people in Tanjung Solok Village generally call gill nets as fishing nets. Gill net has a size of 500 m x 2.5 m with a mesh size of 4 inches.

Senangin fish is one of the main fish caught in Tanjung Solok Village. This fish has a fairly high economy with a price of Rp. 40,000-45,000/kg so that fishermen tend to catch large quantities. The large demand and high exploitation of the Senangin fish without considering the catchable size will result in a decrease in the population of this fish. Efforts that need to be made to overcome the high level of exploitation are by managing these fish resources so that they are preserved. One of the efforts is to know the structure and size of the senangin fish catch, so that the sustainability of the senangin fish resources will be maintained.

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Based on the description above, it is necessary to conduct research on "The size structure of female Senangin fish *(Eleutheronema tetradactylum*) caught by gill net in the waters of Tanjung Solok Village, East Tanjung Jabung Regency"

II. RESEARCH METHODS

This research was carried out in Tanjung Solok Village, Kuala Jambi District, East Tanjung Jabung Regency, Jambi Province. From March 25, 2022 to April 13, 2022. The research material is the female Senangin fish caught by a 4-inch gill net mesh. The tools used are gill net fishing tools, baskets, cameras, digital scales to measure fish weight, rulers to measure sample length, writing stationery, and Microsoft Excel programs.

The method used in this study is a survey method. The sampling technique uses the purposive sampling technique, where there are 30 people using 4-inch gill net fishing gear, the samples taken are determined by 3 fishermen, with sampling carried out for 20 days. Purposive sampling is a technique of taking samples not based on randomness, but based on considerations to achieve a target or focus of a certain goal [1].

Observed Variables

a. Length of Female Senangin Fish

   Length measures include maximum length, minimum length and average length of Senangin fish in millimeters.

b. Weight Size of Female Senangin Fish

   The weight size of the female senangin fish is measured with a digital scale with an accuracy level of 1 digit after the comma in grams.

c. Relationship Length and Weight

   To find out the relationship between the length and weight of the fish's body, the following formula equation is used [4]:

$$W = aLb$$

If it is linear through logarithmic transformation, then the equation will be obtained:

$$\text{Log } W = \text{Log } a + b \text{ Log } L$$

To obtain parameters a and b, regression analysis is used with Log W as 'y' and Log L as 'x'.

Information:

W = Body weight of Senangin Fish (grams)

L = Length of Senangin Fish (mm)

a and b = Constant

Value b = 3, Isometric growth pattern (weight gain balanced with length increase).

Value b ≥ 3, Positive allometric growth pattern (weight gain faster than length increase).

Values b ≤ 3, Negative allometric growth pattern (length gain is faster than weight gain).

The size of the Senangin fish that is worth catching, based on the Lm (Length maturity) value. The male Senangin fish that is worth catching is 29 cm [11]. The female Senangin fish that is suitable for catching according to is 40.39 cm [7].

How to calculate class intervals using the following formula:

$$\text{Class Interval} = 1 + (3.3 \log n)$$

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Information:

Log n = Amount of data

How to calculate the percentage of Senangin fish that are suitable for catching and not worth catching is:

$$\text{percentage (\%)} = \frac{\text{number of Senangin fish suitable for catching or unsuitable for catching}}{\text{total number of samples}}$$

III. DISCUSSION

A. Length and Weight of Female Senangin Fish

The length of the senangin fish caught using a 4-inch gill net fishing gear in Tanjung Solok Village, East Tanjung Jabung Regency can be seen in Table 1.

Table 1. The length and weight of female Senangin fish use a 4-inch gill net fishing gear.

Size	Female Length (cm)	Female Weight (grams)
Maximum	57	1.992
Minimum	42	957
Average	50,04	1.416,36
Many were caught	48-51	1.092-1.891

Table 1 shows the maximum length of a female Senangin fish of 57 cm with a weight of 1,992 grams while the minimum length is 42 cm with a weight of 957 grams. The average length of female Senangin fish is 50.04 cm with an average weight of 1,416.36 and the length of the most caught is 48-51 cm with a large catch weight of 1,092-1,891 grams.

The results of the study showed that the female Senangin fish caught in the waters of Tanjung Solok ranged in size from 42-57 cm. This result is far different from the waters of the Musi River estuary, South Sumatra where the Senangin fish obtained ranged in length from 11.3-38 cm [5]. The difference in size is caused by different aquatic environments so that the size of the fish caught varies, the difference in size is suspected to be caused by differences in the aquatic environment such as habitat and food [18].

The average length of female Senangin fish in Tanjung Solok during the study showed that the size varied due to several factors, namely physiological and environmental factors. The difference in catch size occurs due to the influence of several factors, one of which is that the physiological factors of each species are different, as well as environmental conditions such as food availability, currents, waves, depth, temperature, brightness, and so on [15].

B. Length and Weight of Female Senangin Fish

The relationship between the length and weight of female senangin fish using a 4-inch gill net fishing gear in Tanjung Solok village, East Tanjung Jabung Regency can be seen in Figure 1.

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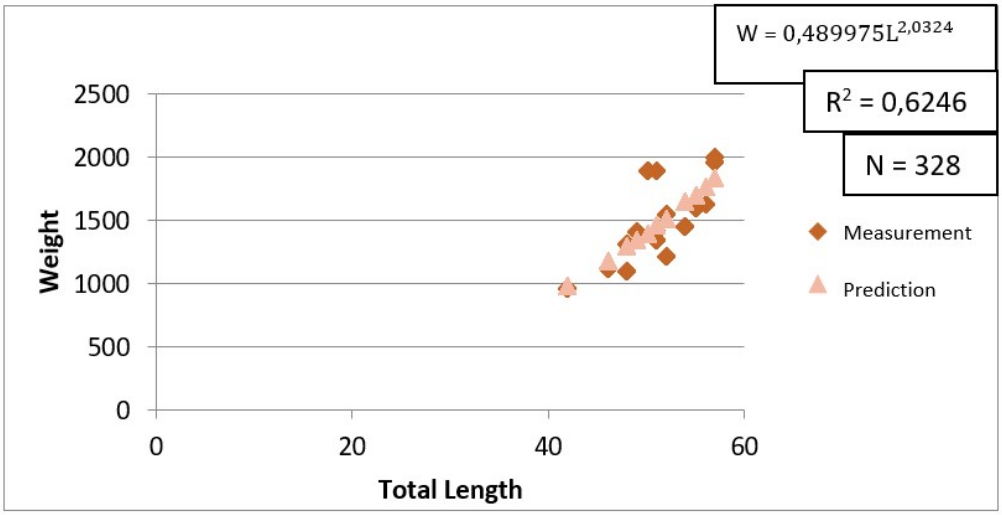

Figure 1. 4-inch Female Senangin Fish Length and Weight Graph

Based on Figure 1, the results of the analysis of the relationship between the length and weight of female Senangin fish obtained the equation, namely W = The value $0{,}489975L^{2{,}0324}$ of the determination coefficient (R2) of 0.6246 shows that the length of the female senangin fish can affect the weight of the fish by 62.46% while 37.54% is influenced by other unknown factors. The relationship between length and weight of fish will have a high value which can indicate that the increase in length will be followed by the increase in weight [13]. The analysis of the relationship between length and weight of fish can be used as a basis for determining biomass to estimate fishery production [17]. The analysis of the length of fish weight was carried out as a biological indicator of the aquatic ecosystem [3]. In addition, age-related measurements of length and weight can provide information on stock composition, gonadal maturity, mortality, life cycle and growth [6].

The results showed that the pattern of increase in female senangin fish had a negative allometric growth pattern, where the value of b was 2.0324. This shows that the growth of female senangin fish is $b \leq 3$, the fish has a pattern of increasing length faster than gaining weight in general, the value of b depends on physiological and environmental conditions such as temperature, pH, salinity, and geographical location as well as biological conditions such as gonad development and food availability [9]. This phenomenon may be caused by the behavior of the fish. The size of the b value is also influenced by the behavior of the fish, for example, fish that swim actively (pelagic fish) show a lower b value when compared to passive swimming fish (mostly demersal fish) [12]. In addition, factors that affect the size of growth are gonad maturity, food, habitat, or migration processes that can cause changes in the energy of a species, catch, season, body shape and effort as well as natural factors [8].

C. Size Suitable for Catching Senangin Fish

The fishable size of the senangin fish caught using a 4-inch gill net fishing gear in Tanjung Solok village for 20 catches can be seen in Table 2.

Table 2. Female senangin fish class hose caught using a 4-inch gill net fishing gear

Hose Grade (cm)	Number (tail)	Catchable (tail)	Unfit to Catch (tail)
42,0-44,0	39	39	-
44,1-46,0	27	27	-
46,1-48,0	47	47	-
48,1-50,0	56	56	-

50,1-52,0	69	69	-
52,1-54,0	38	38	-
54,1-56,0	31	31	-
56,1-58,0	21	21	-
Total	328	328	0
Percentage(%)	100	100	0

Based on Table 2, the most catch of female Senangin fish is in the 50.1-52.0 cm class size, which is 69 fish, and the lowest is at 56.1-58.0 mm, which is 21 fish. The percentage of the size suitable for catching female Senangin fish is as much as 100% while the size is not suitable for catching Senangin fish as much as 0%, this shows that as many as 100% of Senangin fish caught using gill net fishing gear in Tanjung Solok village are fishworthy of catching. The length indicator of the size of the caught fish equipped with Lm value data/information can be known to dominate the legal/illegal size in the utilization of fish resources [16].

IV. Conclusion

Based on this research that has been carried out, it can be concluded that the relationship between the length and weight of the female Senangin fish gill net 4 inches is negative allometric with a value of 2.03. The catch of the 4-inch gill net shows that the catch of female Senangin fish is 100% worth catching.

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