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The Relationship Between The Length And Weight of Puput Fish (Ilisha Elongata) Landed at Tanjung Tiram Fishery Port

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Abstract

Puput Fish (Ilisha Elongata) is an economic fish that is continuously utilized by fisheries actors to meet the demand for public consumption. Research on the Relationship between the Length and Weight of Puput Fish (Ilisha Elongata) Landed at Tanjung Tiram Batu Bara Port was conducted on August 5-September 4, 2025. This study aims to measure the length and weight of Puput Fish (Ilisha Elongata), To determine the body shape of Puput Fish (Ilisha Elongata), To determine the condition of the waters where Puput Fish (Ilisha Elongata) are caught, and the results of this study may be a reference in maintaining Puput Fish (Ilisha Elongata) resources for fishermen who catch Puput Fish (Ilisha Elongata) excessively using survey and analysis methods. The results of this study were obtained from a total of 50 fish, namely fish lengths ranging from 141 mm to 189 mm, where the dominant total length of fish caught was in the average range of 162.08 mm. Meanwhile, the weight of Puput Fish (Ilisha Elongata) ranges from 24 to 52 grams, with an average fish weight of 38.10 grams. The result of the b value calculation obtained in the Puput Fish (Ilisha Elongata) test is 1.3537. Based on the b value obtained, it can be stated that the length of the fish weight is <3, which means negative allometric which means that the length growth is faster than the weight growth. The result of the K calculation in the Puput Fish (Ilisha Elongata) test is 2.7609 which means that the shape of the fish is flat (plump).

Keywords: *Puput Fish; Relationship Between Fish Length and Weight; Negative Allometrics.*

INTRODUCTION

Fish resources are one of the renewable resources if managed by the community and obtain maximum results without damaging its sustainability. Puput fish (Ilisha Elongata) is one of the types of fish that is widely landed in Indonesian waters and has many enthusiasts because in addition to having a delicious taste, Puput fish (Ilisha Elongata) also contains quite high protein (Pratama & Farhan, 2023). Utilization that exceeds renewable limits can result in a decline or even extinction of fishery resources, considering that Puput fish (Ilisha Elongata) is an economic fish that is continuously utilized by fisheries actors to meet the demand for public consumption. This is a problem that can threaten the sustainability of Puput fish stocks (Ilisha Elongata) (Flura et al., 2022).

The Puput (Ilisha elongata) is a species of fish commonly caught in Indonesian waters. Exploitation beyond renewable resources can lead to the decline and even extinction of fishery resources. Given that mackerel is an economically valuable fish, it is continually exploited by fisheries operators to meet public consumption demand. This poses a problem that could threaten the sustainability of mackerel stocks (TARAKAN, 2020).

Batubara Regency is a regency in North Sumatra Province, Indonesia. It was formed from the division of the Asalah Regency, with its capital in Limapuluh District. It is one of 16 new regencies and cities created in 2006. According to data from the Central Statistics Agency (BPS), the population of Batubara Regency in 2024 was 413,171, with a population density of 486 people per km², and an area of 904.96 km² (BPS Batubara Regency) (Alam et al., 2024).

Fish Auction Places (TPIs) are a type of formal institution that plays a significant role in fishing areas. Fishermen use these institutions as a means of selling their catch. Fishing activities are typically conducted at ports or fish landing sites. TPIs also act as a driving force in increasing income and employment for the surrounding community.

The Fish Auction Place (TPI) functions to carry out auction activities that can protect fishermen so that they obtain fair selling prices, guaranteed security funds for fish sales profits. Sources of market information, namely to find out the development of daily fish prices and similar, statistical and production functions to determine the availability of fish production for the purpose of food security (Sari, Sutjipto, Setyohadi, Setyawan, & Aliviyanti, 2021). Production of fishermen's catches depends on weather factors, seasons and the number of vessels unloading their catch at the TPI.

The puput fish, also known as gemprang, is a species of longfin herring native to the coastal and estuarine waters of the North Indian Ocean and Northwest Pacific. It is a relatively large species, reaching 45–60 centimeters in total length. It is an important fishery species. Puput fish (Ilisha elongata) are distributed in the coastal and estuarine waters of the Indian Ocean, particularly in the northern and Indo-Pacific regions. These fish live in shallow waters, rivers, estuaries, and brackish waters, where they are often found in the surface layers of the water as they are small pelagic fish. Puput fish caught and auctioned at the Batu Bara Fish Farming Center (TPI Batu Bara) are likely to originate from the waters around the West Coast of Sumatra or the North Indian Ocean, as this fish is a herring species that lives in coastal and estuarine waters. Therefore, the puput fish caught by fishermen at the Batu Bara Fish Farming Center will originate from waters geographically close to the fishing location, namely the waters around Batu Bara, which are part of the west coast of Sumatra, and the Indian Ocean. Puput fish (Ilisha Elongata) landed at TPI Batu Bara is irregular, all sizes will be caught by fishermen without thinking about Puput fish (Ilisha Elongata) resources for the future (Sam, Nursia, Maradhy, & Munira, 2024).

Therefore, the author wants to conduct research with the title "The Relationship between Length and Weight of Puput Fish (Ilisha Elongata) Landed at Tanjung Tiram Batu Bara Port".

METHOD

Field of Work

The intern had the opportunity to carry out Field Work Practice (PKL) at the Fisheries Service of Batubara Regency which was located on Jalan Lintas Perupuk, Perupuk Village, Lima Puluh Pesisir District (Yanti, Masengi, & Penina Palemba, 2023). By adapting to the intern's title entitled "The Relationship between the Length and Weight of Puput Fish (*Ilisha Elongata*)", the field work practice activities were carried out for 30 days of PKL

implementation. During the PKL period, the intern was guided by Mr. Jogi Arleston S.St.Pi, MP as the Head of the Brackish, Sea, and Freshwater Fish Cultivation Substance Team (Nugraeni, Prakoso, Ambariyanto, Firdaus, & Ransangan, 2021).

Work Implementation

The intern began his internship according to the title on August 5, 2025. On the first day, the intern went to the Batu Bara Regency Fisheries Service, specifically to the room of the head of the cultivation division and after that went to History Beach. Next, he was given initial instructions regarding the rules and regulations that apply within the Batu Bara Regency Fisheries Service (Kartikaningsih, 2023). He continued by meeting with Mr. Djiji as the head of the mangrove love group management to provide direction regarding the work that the intern would carry out for 1 month of internship at that place (Salim et al., 2024). From the start of the internship until the end of the internship period on September 4, 2025.

Tools and materials

The tools and materials used in the field practicum can be seen in table 3.3.

Table 1. Tools and materials

No	Tool	Material
1	Millimeter Paper	Puput Fish (*Ilisha Elongata*)
2	Scales	

Data Collection Method

The data collection method uses a survey and analysis method to obtain a picture that can represent the relationship between the length and weight of Puput Fish (*Ilisha Elongata*). which was landed at Tanjung Tiram Batu Bara Port. The data obtained was in the form of analysis or observations of Puput Fish (*Ilisha Elongata*) During the 1 month data collection period (Salim et al., 2022).

Data analysis

Analysis of data used in the research on the length and weight of Puput fish (*Ilisha Elongata*) are as follows :

$$W = a \times L^{b}$$

Information:

W : Weight (grams)
L : Length (mm)
a : Inter n sep (intersection of the length-weight relationship curve with the y-axis)
b : Estimation of the coefficient of the length-weight relationship

Obstacles Faced

The obstacles faced by the intern during the internship period at the Batu Bara Fisheries and Animal Husbandry Service were:

1. Puput Fish (*Ilisha Elongata*) only available on certain days.
2. Lack of information regarding the presence or absence of Puput Fish (*Ilisha Elongata*) at the TPI Batu Bara Port.
3. Lack of information about fish landings which only take place once a day.

How to Overcome the Obstacles Faced

The challenges faced include preparing for the lab's effectiveness, engaging in discussions with students, TPI Batubara staff, and other relevant parties to broaden their knowledge and address the challenges (INDARJO et al., 2021). Obstacles such as physical readiness and health must be maintained during the lab's fieldwork, and challenges in the field are addressed by selecting a favorable day and monitoring weather conditions to ensure the safety of the research and the data collected (Indarjo et al., 2021).

RESULTS AND DISCUSSION

Results

The total number of samples used was 50 Puput Fish (Ilisha Elongata), The minimum length and maximum length of Puput Fish (Ilisha Elongata) obtained were 141 mm and 189 mm in August-September 2025 while the minimum weight and maximum weight of Puput Fish (Ilisha Elongata) obtained were 24 gr and 52 gr in August-September 2025. The results explain that Puput Fish (Ilisha Elongata) caught in August-September 2025 have different lengths and weights, depending on the season (Firdaus, Haryono, & Salim, 2022). Data on the Length-weight Relationship of Puput Fish (Ilisha Elongata) landed at Tanjung Tiram Batu Bara Fishery Port within a period of 1 month can be seen in graphic image

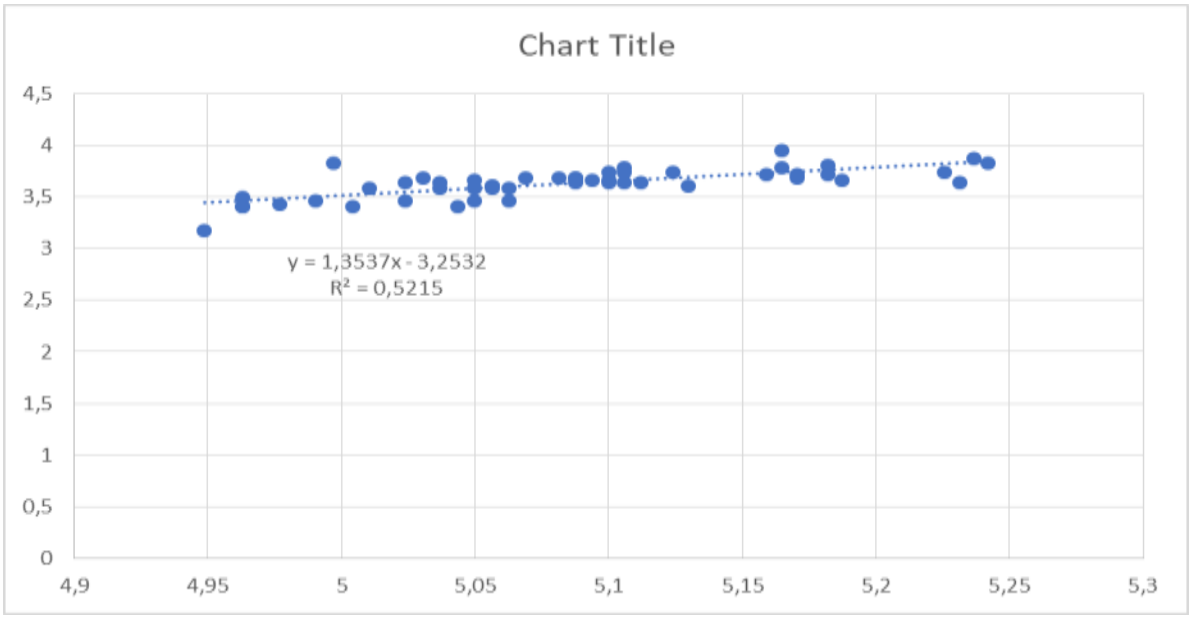

Figure 1. Graph of the Relationship between the Length of Puput Fish (Ilisha Elongata)

Discussion

The total number of Puput Fish (Ilisha Elongata) samples taken was 50. With the overall length of the fish samples ranging from 141 mm to 189 mm, the dominant total length of the fish caught was in the average range of 162.08 mm. Meanwhile, the weight of Puput Fish (Ilisha Elongata) ranged from 24 to 52 grams, with an average weight of 38.10 grams. The results of the b value calculation obtained from testing Puput Fish (Ilisha Elongata) landed at Tanjung Tiram Batu Bara Port were 1.3537 and the a value was 3.2532 (Azmi Afriansyah

& Khasanah Cahyani, 2024). Based on the b value obtained, it can be stated that the length of the weight of the fish is ≤ 3 (less than three) which means negative allometric which means that the growth in length is faster than the growth in weight/weight, this agrees with Manik (Nagaraj, 2021) who stated that the difference in the b value usually occurs due to the influence of ecological and biological factors, but along with changes in environmental conditions and the condition of the fish, the relationship between the length and weight of the fish will deviate slightly from the cubic law (b≠3).

Then Muchlisin, et al., (Nagaraj, 2021) added that the size of the b value is influenced by fish behavior, for example, fish that swim actively show a lower b value when compared to fish that swim passively. Research by Sasmita, et al., (Salim et al., 2021) states that growth or increase in length and weight of fish is influenced by heredity, sex, food, parasites and diseases, but can also be influenced by water quality, for example temperature, dissolved oxygen, carbon dioxide in its habitat. Puput fish is a fish that has high economic value because it has a fairly high protein value, so this fish is worthy to be used as a neritic pelagic fish that has high economic potential and can change the perspective of fishermen that puput fish is not a side fish because this fish has a high protein value of 77.46%, so it can be used as a benchmark to utilize this fish sustainably and responsibly and remain sustainable so that the existence of this fish in the Juata waters habitat is not endemic .

(Supeni, Lestarina, & Saleh, 2021) stated that fish growth is influenced by two factors, namely: intrinsic (internal) factors and extrinsic (external) factors. Intrinsic factors are factors that arise from within the fish itself, namely: hereditary traits, age, heredity, resistance to disease, and the ability to utilize food. While extrinsic factors include: physical and chemical properties of waters and biological components such as food availability and competition. The influence of each extrinsic factor in nature is difficult to separate from one another, because they often work together in causing influence. Then from the data processing carried out, the k value was obtained as 2.7609 which means that the shape of the Puput Fish (Ilisha Elongata) caught was less flat (Montok) because 2.0-4.0 means the size of the processed fish was flat (Montok). In this study, the Wr value was also obtained at 67,274, which means that the water quality where the puput fish (Ilisha Elongata) was caught was poor/not good because the value obtained was below 100, a Wr value of 100 or below means that the water quality where the fish was caught was said to be poor, while above 100 the water quality where the fish was caught was said to be good. Marasabessy (Napisah & Machrizal, 2021) revealed that the emergence of differences in fish can be influenced by 2 factors, namely: environmental factors and food condition factors in the waters. In addition, the value of the condition factor also affects the ability of fish to adapt to environmental changes (Ningsih & Machrizal, 2022).

Fish growth is defined as an increase in size, whether weight, length, or volume, over a period of time. Two factors must be considered in an organism's growth: air temperature, water conditions, and feeding patterns. Fish growth also depends on the availability of food in the waters where the fish live and how they digest it. Growth depends on the organism's energy uptake; the greater the energy intake, the faster the growth (Siregar & Khairul, 2022). When interviewing several fishermen who catch Puput Fish (Ilisha Elongata) the good month to catch Puput fish in the Strait of Malacca is the dry season (around February-August) and the new or full moon phase is considered a good time for fishing because of higher fish activity (Nasution & Machrizal, 2021). You can try fishing in these months, especially when there is a change in weather such as after rain or at sunrise/sunset. While the bad month to catch Puput Fish (Ilisha Elongata) is in the month (September-January)

usually during heavy rain at that time the fish are scattered to deeper waters or away from the coastline, making it difficult to catch this is reinforced by the results obtained are Puput Fish (Ilisha Elongata) small, from the results of data analysis (b) and (k) that the practitioner obtained (Putra, Munasik, & Taufiq-Spj, 2023). Even so, fishermen still catch Puput Fish (Ilisha Elongata) because of the high demand from the community to always consume Puput Fish (Ilisha Elongata) (Hasan, 2021).

CONCLUSION

Based on the results of the observations, it can be concluded:

1. The length range of puput fish (Ilisha Elongata) obtained was 141 mm-189 mm.
2. The weight range of puput fish (Ilisha Elongata) obtained is 24 gr-52 gr.
3. The growth pattern of puput fish (Ilisha Elongata) obtained was negative allometric.
4. The shape of the puput fish (Ilisha Elongata) that is obtained is flat and plump.

Suggestion

The suggestion that the author provides is that there should be further research on the meristics of puput fish (Ilisha Elongata) or research on the maximum number of catches.

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