

Length Frequency Distribution, Length-Weight Relationship and Condition Factor of *Pomadasys Jubelini* (Cuvier, 1830) From Lagos Lagoon

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Abstract: Length –Frequency Distribution, Length – Weight relationship and condition factor of *Pomadasys jubelini* from the Lagos lagoon were investigated for 6months in order to study the growth pattern and wellbeing of *P.jubelini*. A total of 305 specimens of *P.jubelini* were purchased from local fisher-folks on landing sites at different locations within the Lagos lagoon (Majidun, Makoko, Ibese, Bayeiku) from January 2012 to June 2012 and used for this study. Their Total length ranging from 12cm to 29.5cm and body weight ranged from 21.3g to 367g. The frequency distribution showed a polymodal distribution of *P.jubelini*. The size class of 18.0cm to 20.9cm (TL) was more abundant. The length weight relationship was determined by regression coefficient equation $\text{Log } W = -1.8357 + 2.9628 \text{Log } L$ ($n = 305$, $r = 0.9213$). *P.jubelini* showed negative allometric growth ($b = 2.96$). The mean condition factor 1.31, indicates that *P.jubelini* were in good condition in the lagoon. The result from this study is relevant for fishery management and stock assessment studies of *P.jubelini* from the Lagos lagoon.

Keywords: Length –Frequency Distribution, Length – Weight relationship, *P. jubelini*.

1. INTRODUCTION

Pomadasys jubelini is one of the members of the family Haemulidae (formally called Pomadasyidae) which are commonly referred to as Grunters. It is a demersal fish that lives in soft sandy and muddy bottoms at depths between 15–50m of coastal, brackish or marine waters[1]. *P.jubelini* is an economically important fish species in Nigerian coastal waters where it forms part of the major commercial catches. *P.jubelini* is culturable and its seeds are available in Nigerian coastal and inland waters [2].

The length- weight relationship of a fish is very important in stock assessment [3],[4],[5]. It is also very useful in the management and exploitation of fish populations. The condition factor (K) of a fish compares the well-being of a fish based on the hypothesis that heavier fish of a given length are in better condition. Condition factor has been used as index of growth and feeding intensity, it is also important in understanding the life cycle of fish species and it contributes to adequate management of the fish species hence maintaining the equilibrium in the ecosystem [6].

Despite its commercial importance in Nigerian waters, information on the growth studies has not been well documented; therefore this work is aimed at study the Length frequency distribution, length- weight relationship and condition factor (K) to know the state of wellbeing and the growth pattern of *P.jubelini* in the Lagos Lagoon

Data Analysis:**Length frequency distribution:**

The fish were grouped into size classes and the percentage frequency and total length were used for the length frequency distribution.

Length – Weight Relationship (LWR)

The total length and body weight of fish were used for the Length –Weight Relationship. The L-W relationship was represented by the regression equation described by [10].

$$W = aL^b \text{ [10].} \text{----- Equation (1)}$$

Where W = weight of fish in grams, L = Total length of fish in centimeter, a = constant / intercept

b = an exponent / gradient.

The above equation (1) and data were transformed in to logarithms before the calculations were made. Therefore equation (1) becomes:

$$\log W = \log a + b \log L \text{ -----Equation (2)}$$

Condition factor:

The condition factor was calculated for both males and females combined as follows;

$K = 100W/L^b$ [11]. Where by K = condition factor, W = the weight of the fish in gram (g), L = the total length of the fish in centimeters (cm), b = the value obtained from the length-weight equation.

3. RESULTS**Length – frequency distribution:**

The total length of *P.jubelini* ranged from 12 cm to 29cm with a mean of 20cm. The length –frequency distribution showed polymodal distribution. The modal size class was 18.0 to 20cm as shown in figure 2.

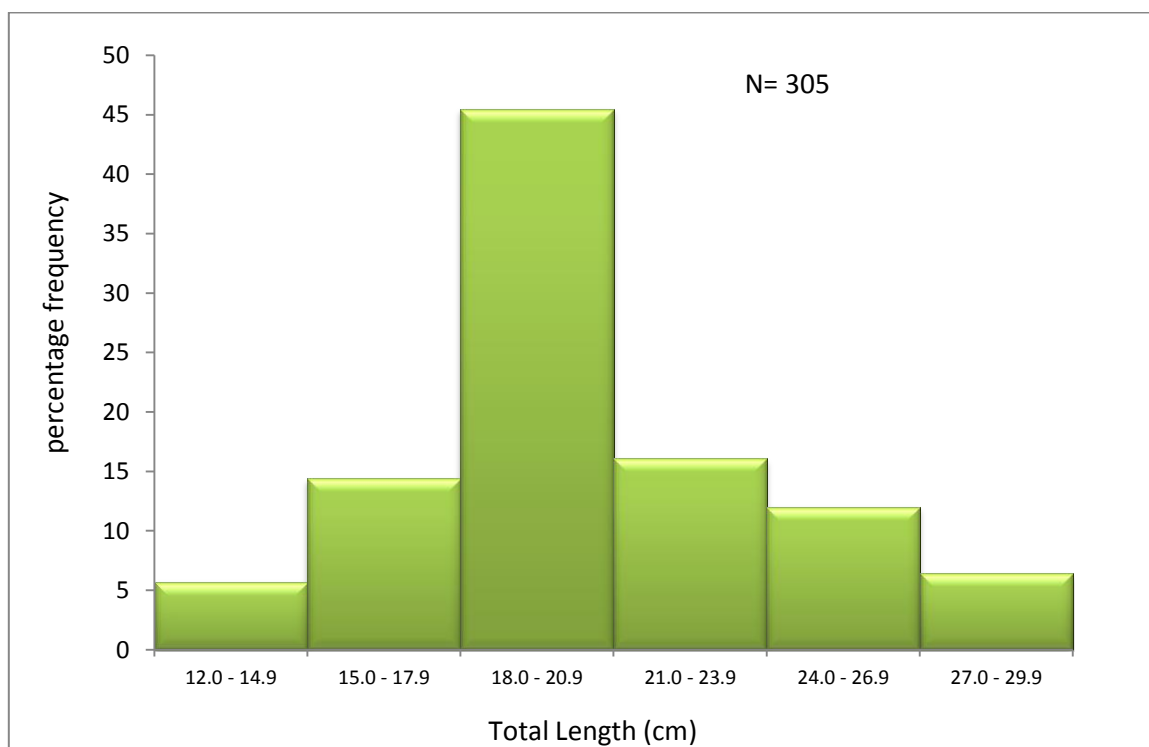


Fig. 2: Length - frequency distribution of *Pomadasys jubelini* from Lagos lagoon.

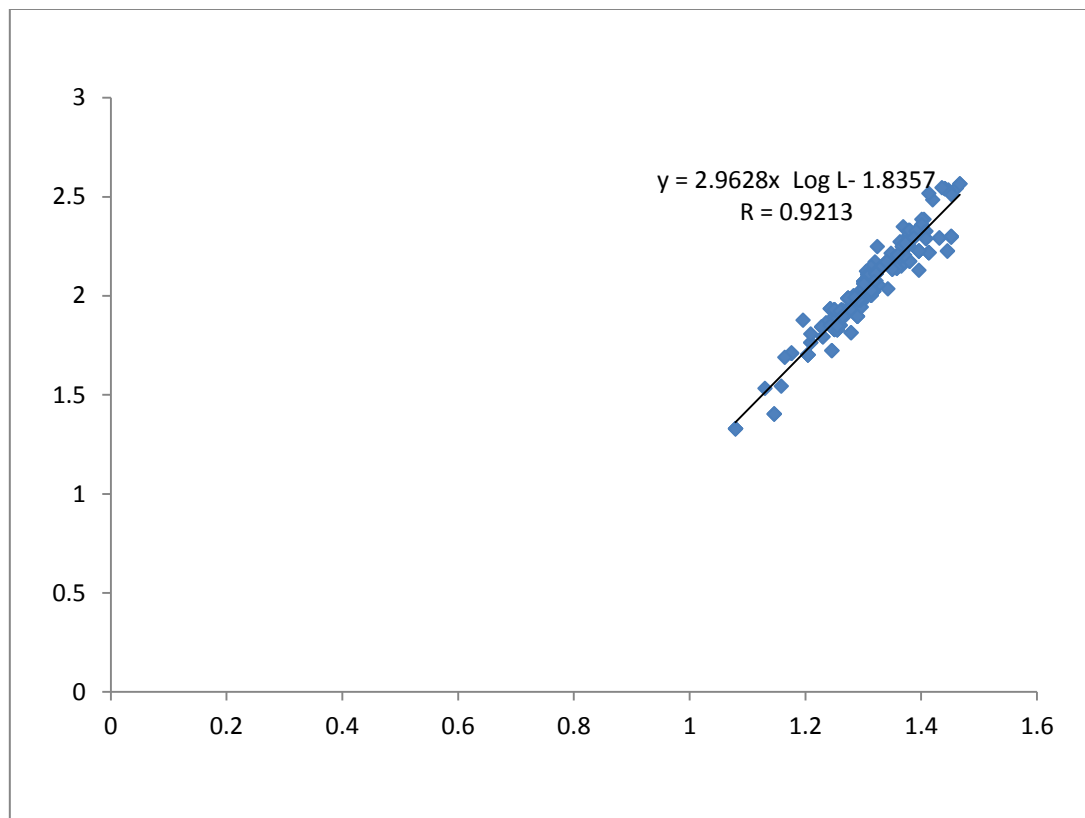


Fig. 3: Length- weight relationship of *Pomadasys jubelini* from Lagos Lagoon

Condition factor:

The condition factor, k for the combined sexes ranged from 0.95 to 1.89 with a mean value of 1.37.

4. DISCUSSION

From This, The length – weight relationship of *P.jubelini* Study shows positive correlations indicating an increase in length as well as an increase in weight. The pattern of growth was a negative allometry ($b < 3$), as shown by the regression coefficient 'b' value of 2.96, the b value of 2.96 is almost close to an isometric growth. This indicates that the fish population sampled is well adapted to their environment. A similar result of negative allometric growth of *P.jubelini* ($b = 2.91$) was also reported by [5] from the Lagos coast,[12] also recorded a negative allometric growth pattern for *P.jubeni* ($b = 2.81$) from the Qua Iboe estuary. [13] reported a positive allometric growth of $b = 3.38$ from the Ibeshe river. The correlation coefficient (r) for length weight relationship of *P.jubelini* was high (0.92).The length weight relationship in fishes can be affected by several factors such as; gonad maturity, diet, seasonal variation, habitat and availability of food. [14];[15].The length frequency distribution from this study showed that *P.jubelini* belongs to more than one size class with a modal class of 18cm – 20 cm which represented about 45% of the total population examined.

P.jubelini are in good condition in the Lagos lagoon as indicated by the mean condition factor $k = 1.37$, which is greater 1, In science, the condition factor is used in order to compare the condition, fatness or wellbeing of fish [16] and is based on the hypothesis that heavier fish of a

5. CONCLUSION

The results obtained from this study provide information on the growth parameters (length frequency distribution, length-weight relationship, condition factor) of *P. jubelini* from the Lagos lagoon. The condition factor obtained showed that *P. jubelini* are in good condition in the Lagos lagoon, this information is relevant for fishery management and stock assessment in the lagoon.

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