

A NOTE ON THE LENGTH-WEIGHT RELATIONSHIP IN DOLPHIN
FISH, *CORYPHAENA HIPPURUS* L.

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ABSTRACT

Length-weight relationship in *Coryphaena hippurus* almost follows the cube law and the weight of the fish increases more than the square of the length. The value of 'b' was higher in males as compared to females. The equations for length-weight relationship were: $\text{Log } W = -4.987 + 2.114 \text{ Log } L$ for females, $\text{Log } W = -4.177 + 2.510 \text{ Log } L$ for males and $\text{Log } W = -4.926 + 2.894 \text{ Log } L$ for combined sexes.

Key-words: Length-weight relationship, *Coryphaena hippurus*.

A total number of 42 specimens of *Coryphaena hippurus* were collected by long line from the Central West Coast (Lat 12°N to 19°N, Long 70°E to 70° 30'E) during the 89th cruise of RV *Gaveshani* in the month of March, 1981. Total length of each fish was measured to the nearest mm and weighed upto 0.1 g accuracy after determining the sex of each individual. The males weighed between 831 and 2137 g and ranged in size from 550 to 750 mm, whereas, the females weighed from 660 to 3311 g and ranged in size from 550 to 750 mm. For length-weight relationship, data were analysed following the method described earlier (Chatterji, Ali and Mumtaz, 1980). Regression equation $\text{Log } W = a + b \text{ Log } L$ was calculated and straight line relationship was obtained for each sex separately. The values of the two constants 'a' and 'b' were calculated by the method of least square.

The value of 'b' was higher in males (2.510) than in females (2.114). Analysis of covariance showed a significant difference in the elevation of regression between the two sexes and the values of 't' were calculated to be 2.866 and 2.067 for males and females respectively. At 1% level both the sexes showed a significant relationship ($r = 0.98$) with the value of 'b' ranging between 1.674-3.345 (male) and 0.353-3.874 (female) at 95% confidence interval.

The length-weight relationship of combined fishes is presented in Fig. 1. The straight line shows the calculated regression line (Fig. 1a) whereas, the smooth curve represents the calculated weight at each length interval (Fig. 1b). The parabolic relationship between the calculated weights and lengths of the fish in both the sexes indicates that at higher length, the increase in weight was much more rapid than the increase in length (Khan, 1972; Chatterji, Ali and Mumtaz, 1980). It was also noted that the length-weight curve of female lies below the length-weight curve of male at smaller size and above

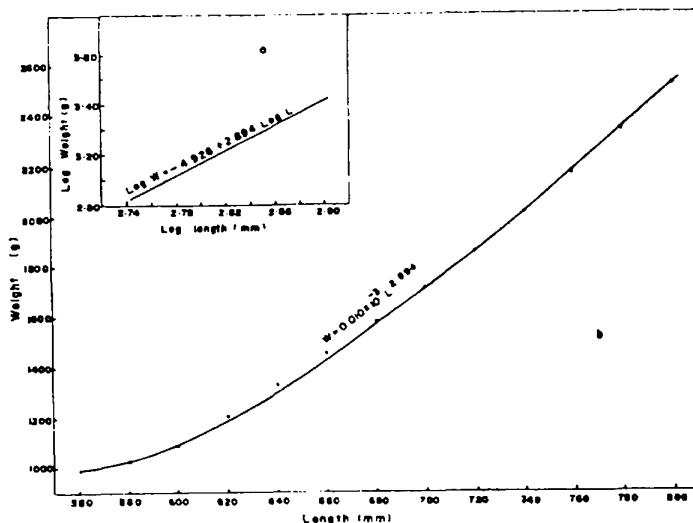


Fig. 1. Length-weight relationship of combined fishes: a) Straight line represents calculated regression line of log weight on log length and b) smooth line represents the calculated weight.

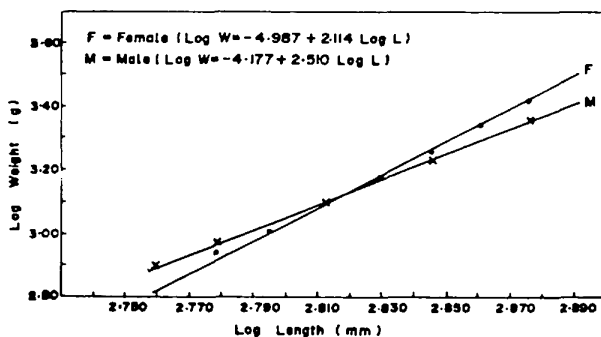


Fig. 2. Relationship between the logarithm of length and logarithm of weight of *C. hippurus*.

to that when the sizes were larger. Both the curves intersected between 652–665 mm (Fig. 2). This point of intersection of the two curves represents the size at first maturity of the fish (Olsen and Merriman, 1946; Chatterji, Siddiqui and Khan, 1977 and Chatterji, Ali and Mumtaz, 1980). This finding corroborates the earlier study of Chatterji and Ansari (1982) who on the basis of fecundity concluded that *C. hippurus* (both sexes) mature between 652–665 mm of total length.

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