

LENGTH -- WEIGHT RELATIONSHIP OF GIANT OYSTER,
CRASSOSTREA GRYPHOIDES (SCHLOTHEIM)

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ABSTRACT

Relationship between shell length and total weight, shell weight and meat weight of giant oyster, *Crassostrea gryphoides* (Schlotheim) revealed that the growth of these parameters is very fast and significant. It indicates the suitability of the species concerned for intensive culture, where the attainment of marketable size, in minimum time is advantageous.

Key-words : Length-weight relationship, giant oyster, *C. gryphoides*.

In spite of considerable economic importance (Parulekar and Qasim, 1981) only a little information is available on the growth of giant oyster (Durve and Bal, 1962). In Goa waters, a comprehensive study on the biology and culturing of Indian giant Oyster, *Crassostrea gryphoides* is being carried out (Parulekar, Nair, Ansari, Harkantra, Chatterji, Ingole and Roy, 1984) and the results on length-weight relationships are reported in the present paper.

344 specimens of *C. gryphoides* collected from the natural oyster bed in Chapora estuary, Goa (Lat. 15°50'N; Long 70°50'E) were used in the present study. Specimens were cleaned off all extraneous matter and then measured for their length to the nearest 1mm (dorsoventrally at right angle to the hinge line) with a Vernier calipers. The total weight, shell weight and meat weight of each animal was recorded to 0.1 g on a single pan balance. Data were analysed following the method given by Chatterji, Siddiquie and Khan, (1977). In all the three cases, shell length was considered as basic index to establish the relationship (Seed, 1973).

A parabolic relationship obtained when the values of total weight, shell weight and meat weight were plotted against the values of shall length (Figs. 1a, 2a and 3a). On logarithmic transformation of the values, a linear relationship was observed in all the three cases (Figs. 1b, 2b & 2b).

Coefficients of correlation also derived in all the three cases and the apparent linear perspectives when tested, were found to be highly significant (Table I).

Observations on the length-weight relationship of an organism are important in predicting the total production of the said organism in terms of weight

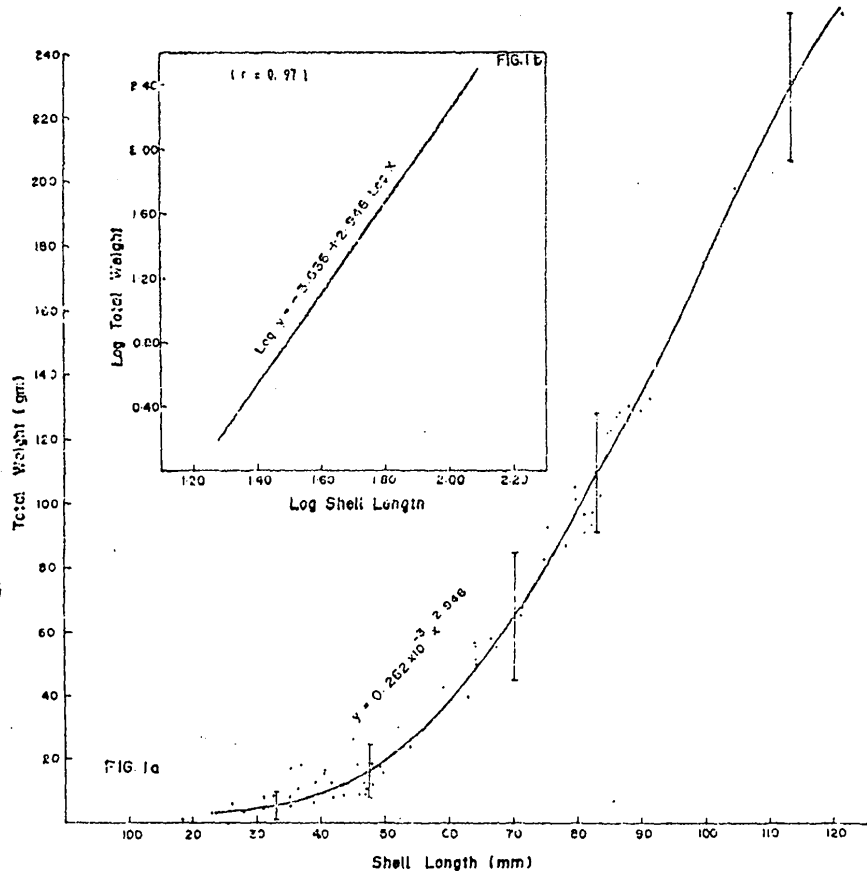


Fig. 1 Shell length and total weight relationship of *C. gryphoides*
 a) parabolic relationship b) linear relationship

(Durve and Shrikhande, 1976). In the present case, parabolic equation describes the relationship more adequately and towards it shell length is considered to be the most appropriate parameter (Bayne, 1975). The parabolic nature of the plot obtained reflects the isometric growth of the parameters considered. The relationships between shell length/total weight; shell length/shell weight and shell length/meat weight followed the cube-law as values of 'b' are found to be more or less 3 (Figs. 1-3). A higher growth rate in shell weight compared to other two parameters was observed. Similar observations have also been reported where the length-weight relationship followed the cube-law in case of pearl oyster of Hawaii (Galtsoff, 1931) and Thaloyiram paar (Alagaraswami and Chellam, 1977). In edible oyster, *Ostrea edulis* 'b' values were reported to be 3.531 and 2.736 in British waters (Orton, 1935) and Galician Bay in Spain (Andreu, 1968) respectively.

Results of the present study give an overall idea about the relative growth of body parts of *C. gryphoides*. However, for specific biological appraisal of the

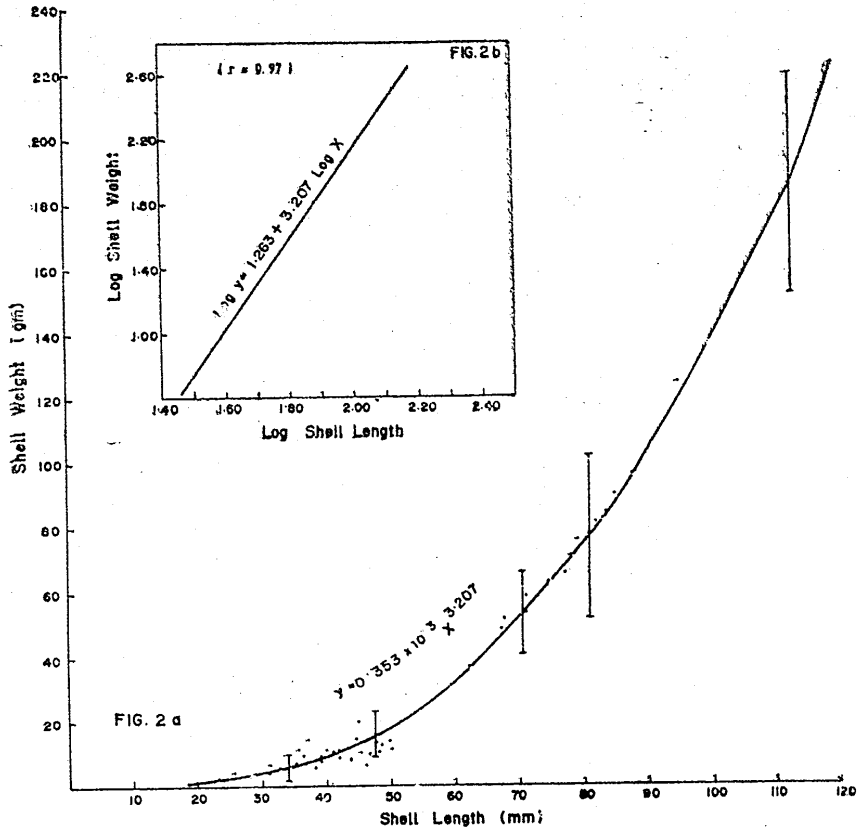


Fig. 2. Shell length and shell weight relationship of *C. gryphoides* (a) parabolic and (b) linear relationship.

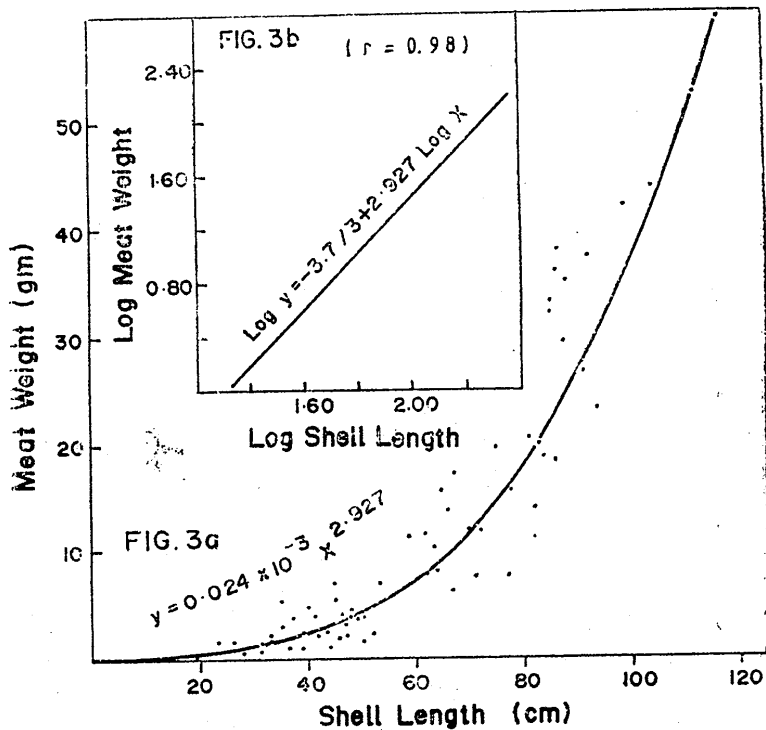


Fig. 3. Shell length and meat weight relationship of *C. gryphoides* (a) parabolic relationship (b) linear relationship.

growth, it is essential to study the growth progression, on a long term basis so that the data generated can fruitfully be used for growth enhancement in commercial cultivation of the species concerned.

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