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27. AGE AND GROWTH OF *M£RETR/XCA-STA* ***(CHEMNITZ)*** IN VELLAR ESTUARY, PARANGIPETTAI

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ABSTRACT

Age and growth of *Meretrix casta* (Chemnitz) in Vellar estuary was studied from April 1975 to March 1976, Employing length-frequency method growth of *M. casta* at the end of I year was found to be about 24.0 mm. Months mode curve showed that this clam attained growth of 23.2 mm, 38.4 mm and 49.2 mm at the end of 1,11 and III year respectively. Growth estimated by probability plot method was 23.0 mm in 1 year, 38 3 mm In II year and 50.6 mm in III year.. The life span of M. *casta* was found to be 3 years in Vellar estuary.

INTRODUCTION

Salih (1973), Parulekar (1973) and Harkantra (1975) have reported the rates of growth in *tiAeretrix casta* (Chemnitz) from the west coast of India while Abraham (953), Durve (1970, '73) and Sreenivasan (1980) reported the the growth of *M casta* from the east coast of India. *M. casta* being an economically important bivalve in Vellar estuary (Lat.11°29'N; Long. 79°46'E) was studied by various methods from monthly collections of this clam made from April 1975 to March 1976. Clams were measured to the nearest 0.1 mm by Vernier Calipers and the length was the greatest measurement in antero-posterior axis parallel to the axis of the hinge.

OBSERVATIONS

Lengtti-frequency mettiod

The total length range of/If. *casta* collected was from 1 mm to 60 mm and the clams were grouped into 3 mm class intervals. The length frequency distribution (Fig 1) was bimodal for most months and unimodal or multimodal only in a few months. The mode at 1-3 mm size in April 1975 shifted to 4-6 mm in May, 10-12 mm in June, 13-15 mm in August and 16-18 mm in October, thus attaining a mean growth of 17mm in six months. The same group can be traced to 22-24 mm in February 1976. A new mode appeared in March 1976 due to fresh settlement of spat. Thus growth at the end of 1st year was found to be about 24.0 mm. Among the larger size groups, the growth pattern was difficult to trace because of frequent back shifts in the modes,

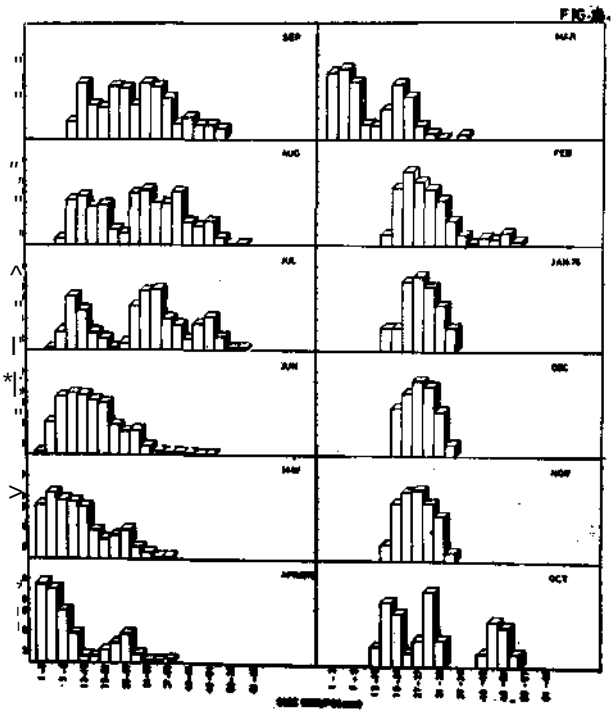

Fig. 1. Length frequency histograms from April 1975 to March 1976.

Month and modes curve

Modes recognised in the length-frequency data for various months were represented in the form of a scatter diagram of mod«s for *lVl.* casfa following the method used by Devaraj

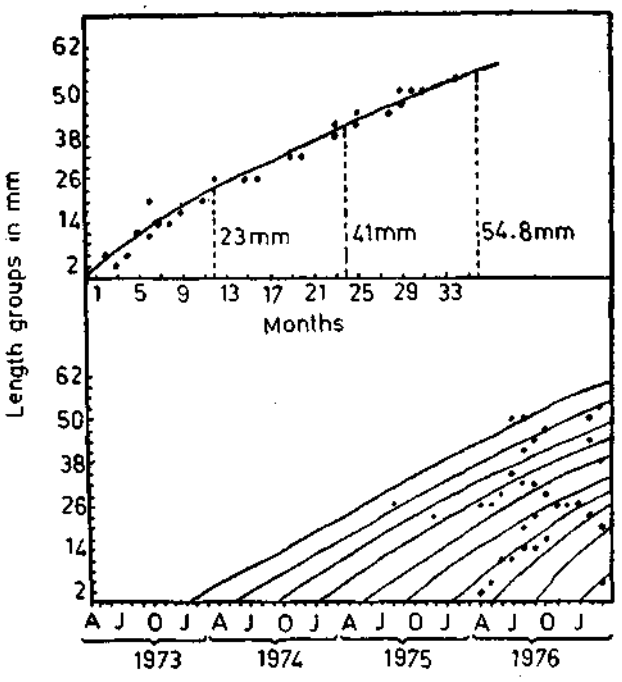

Fig. 2. Monthly distribution of length frequency and modal values.

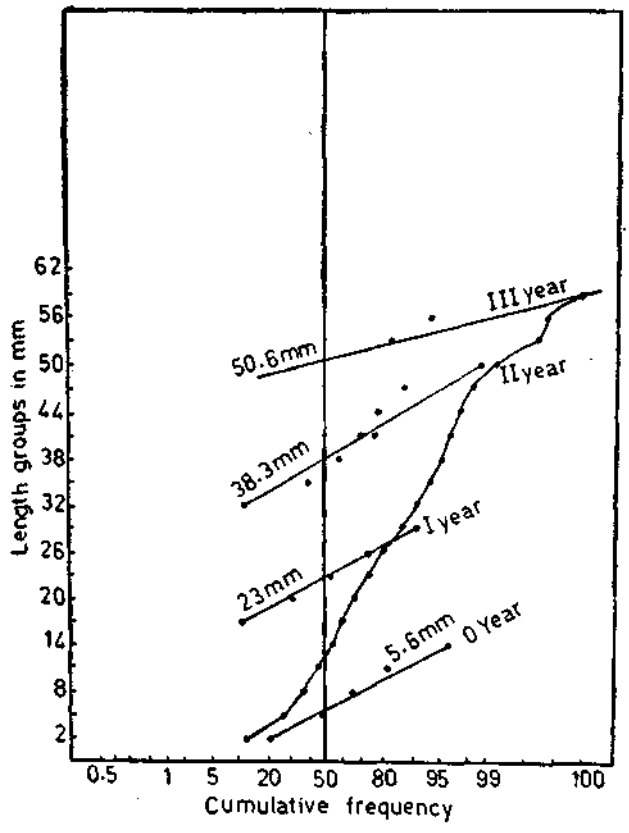

Fig. 3. Probability plot curve showing length attaintd in different year groups

(1977), Sriraman (1978) and John (1980). The progression of modes through successive months, along the series of trend lines representing growth of various broods is summarised in Fig 2 and the fitted trend lines therein represent growth in *M. casta.* From the graph, it was possible to trace 3 broods in a year. The growth of *M. casta* traced from observation was 23.2 mm, 38.4 mm and 49.2 mm at the end of 1,11 and III years respectively.

Probability plot method

The length frequency data can be interpreted again by another method known as probability plot method of Harding (1949) and Cassie (1954). This method has been used to find the modal values of different year classes. Sometimes, certain year classes may not be represented in the collected samples and Petersen method will give erroneous results. So, in such cases, the probability plot method is used for seperating the polymoda! length-frequency distribution into modal lengths of different year classes. The probability plot drawn for *M. casta* is given in Fig 3 and shows that 0 year class measures 5.6 mm while I, II and III year classes attains 23.0 mm, 38.3 mm and 50.6 mm respectively.

DISCUSSION

In Japanese waters, Hamai (1935) found that growth was cyclical and confined to the period May to September in *Meretrix meretrix* and he reported a growth of 20 mm, 32 mm and 44 mm respectively for 9, 21 and 33 months. In India, Abraham (1953), who studied growth of *M. casta* in Adayar estuary at Madras on the east coast found that growth was suspended twice atleast in a year and he reported a growth of 29.5 mm in 9 months, i. e. 3.3 mm per month. Salih (1973) reported a growth rate of 3.7 mm per month (i. e. 33.5 mm for 9 months) in one case (earlier brood) and 3.2 mm per month (i. e. 35.4 mm for 11 months) in another case (later brood) of *M. casta* occurring in Cochin bar mouth on the west coast of India. Further studies on the west coast of India by Parulekar et al. (1973), in estuaries at Goa and by Harkantra (1975; in Kali estuary at Karwar, Karnataka, showed a

growth rate of 2.7 mm and 2.9 mm per month in *IVl. casta* occurring in these places.

Durve (1970), who studied the growth of *iVl. casta* in the marine fish farm at IViandapam reported a monthly, average growth of 0.79 mm and he attributed this slower growth rate in the fish farm at Mandapam to high saline conditions which is not a natural habitat of this clam. Sreenivasan (1980) who studied the growth of *IW casta\n* vellar estuary by transplantation, recorded, a growth of 34.0 mm in 13 months. In the present study, the growth of. *M casta* in Vellar estuary was found to be 23.0 mm during the I year, 38.3 mm at the end of the II year and 50.6 mm at the end of 111 year. Growth of *M. casta* was slower when compared to growth rates reported by other workers. The slower growth rate found in *M. casta* occurrmg m Vellar estuary can be due to various hydro-biological factors prevailing in Vellar estuary which may differ in other places studied by others.

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