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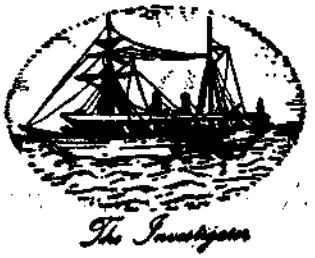

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DISTRIBUTION OF SEED CLAMS OF *MERETRIX CASTA* (CHEMNITZ) IN VELLAR ESTUARY

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ABSTRACT

A survey conducted in Vellar Estuary during April and May 1978 on the abundance of the seed of *Meretrix casta* (Chemnitz) indicated that the densest population occurred in the mid-portion of the estuary. The population was from scarce to absent near river mouth and moderate in the upper reaches. From the environmental characteristics associated with such distribution, it is evident that *M. casta* prefers a salinity range of 30 - 32‰, a depth of 50 - 100 cm and a sandy muddy substratum.

INTRODUCTION

THE BACKWATER clam *Meretrix casta* (Chemnitz) occurs commonly in estuaries along both the coasts of India. Observations on the ecology of this species are available in the works of Parulekar *et al.* (1973) from Mandovi, Cumburjua and Zuari Estuaries and Harkantra (1975) from Kali Estuary. Though extensive beds of this species occur in Vellar Estuary (Lat. 11° 29' N and Long. 799 49' E), so far no information is available on its pattern of distribution. Therefore a survey was undertaken in April 1978 and was repeated in May 1978 to find out the areas of higher and lower densities of the seed and the associated environmental parameters. Results of this survey are presented in this account.

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MATERIAL AND METHODS

During the investigation, it was observed that the tidal influence in Vellar Estuary extended from the river mouth to 10 km interior and *M. casta* was available even at that distance. This 10 km stretch was sampled by fixing 30 stations, with 3 stations in each km range, numbered 1 to 30 commencing from the upper reaches of the estuary to river mouth. The samples were taken from 1 m^2 area using a frame. Specimens inside the frame were collected with a hand showel, washed and weighed. The total number of live specimens was estimated by direct counting or by sub-sampling. A maximum of 100 specimens were measured for length. Mud samples were taken using an iron core sampler.

For grade analysis of sediment, the class units 0.5 mm, 0.25 mm, 0.125 mm and 0.025 mm based on Wintworth System were used. Twenty gram of the sediment was treated with 20 ml of H_2O_2, heated for 30 minutes in order to oxidise the organic matter and then dried. The residue was sieved through a set of sieves of apertures 0.5 mm, 0.42 mm, 0.25 mm, 0.125 mm, 0.063 mm and 0.025 mm. Following Wells

TABLE 1. *Distribution of the seed of* M. casta *in Vellar Estuary (in order of abundance) and associated environmental characteristics*

Density by weight (in g)	Density by numbers	Length range (in mm)	Station No.	Depth (in cm)	Salinity (‰)	Temperature (°C)	Substratum	Sediment particle size (in mm)
7015	108355	1-12	20	100	32.90	29.4	Sand mud	0.063-0.125
4384	11159	4-27	16	50	31.50	29.3	Sand mud	0.063-0.125
3590	8608	4-21	15	75	31.05	29.5	Fine sand	0.125-0.250
3151	7544	1-25	14	100	30.89	29.0	Sand mud	0.063-0.125
1977	11367	1-12	23	50	33.07	30.0	Sand mud	0.063-0.125
1746	4689	1-21	12	100	29.09	29.0	Fine sand	0.125-0.250
1713	15900	1-12	22	100	33.45	30.0	Sand mud	0.063-0.250
1367	571	16-30	1	200	14.61	28.2	Medium sand	0.125-0.420
1287	6935	1-18	11	25	29.08	29.4	Mud	0.025-0.063
1134	10095	1-12	9	100	27.84	28.7	Medium sand	0.125-0.500
942	23495	1-12	10	25	25.52	29.2	Sand mud	0.025-0.125
910	3291	1-33	4	50	18.82	29.5	Fine sand	0.125-0.250
893	1219	1-42	8	200	25.66	28.7	Fine sand	0.125-0.420
736	110	22-39	2	100	14.74	28.3	Sand mud	0.063-0.250
728	9257	1-12	24	100	32.98	28.9	Sand mud	0.063-0.125
720	12145	1-21	7	75	27.04	29.4	Sand mud	0.063-0.125
683	112	16-42	3	25	15.34	29.2	Medium sand	0.125-0.420
262	16650	1-12	6	100	25.44	29.0	Sand mud	0.063-0.125
68	1533	1-18	13	50	30.88	28.7	Sand mud	0.063-0.250
3	212	1- 9	5	100	24.53	28.8	Fine sand	0.125-0.250
2	112	1-12	26	50	32.80	29.8	Fine sand	0.125-0.250
1	75	1- 9	30 & 27	25	33.04	29.4	Fine sand	0.125-0.250
0	—	—	17, 18, 19, 21, 25, 28 & 29	50-150	31.60-33.60	29.1-30.1	Clay or Fine sand	0.025-0.063 0.125-0.250

(1957), broader grouping of the substratum was made as coarse sand : 0.5 mm, medium sand : 0.250 — 0.5 mm, fine sand : 0.125 — 0.25 mm, mud : 0.063 — 0.125 mm and clay : 0.025 — 0.063 mm. Combination of these groups such as sandy—muddy was used when any of the combinations exceeded 90%.

Results

Abundance of *M. casta* in different stations (average of the two sets) and the associated environmental characteristics are presented in Table 1. Most dense populations were observed at stations 20, 16, 15 and 14 which are located in the middle portion of the estuary. Populations were moderate in the upper reaches where only large individuals were present. Near the river mouth the population was from scarce to absent. According to Durve (1963), both high and low salinities affect the physiological activities of *M. casta* and this explains low abundance in these two areas.

According to Wells (1957), at a given location the abundance of clam depends upon the number of larvae set and survived at the spot since there is little movement among larger individuals. Therefore, the distribution of seed and adults of *M. casta* would depend upon the factors which influenced the larvae to settle.

Very high concentration of *M. casta* was observed in areas where the depth was 50 cm to 100 cm, salinity between 30 — 32‰ and the substratum sandy muddy. Moderate population was recorded in areas both with low and higher salinities, shallow and deeper areas and with sandy and sandy muddy bottom. The population was totally absent in clayish substratum as well as in high saline areas. Preference of *M. casta* towards fine sandy to sandy muddy areas may be due to its burrowing habit as well as to the fact that the clam larvae prefer to settle on solid substratum covered by a thin layer of sediment (Carricker, 1952).

Based on the above observations, it can be suggested that to achieve better results of clam culture with *Meretrix casta*, the site should preferably be of sandy muddy substratum at a depth of 50 to 100 cm and in salinity of about 30‰.

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