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1214 Bivalve resources of Palar Estuary

Palar estuary is a bar-built estuary located about 70 km south of Chennai, runs perpendicular to the sea coast and enters into the Bay of Bengal near Pudupattinam colony. The Cheyyar river which runs towards east in the Kancheepuram District and the Buckingham canal which runs parallel to the sea coast, both of them confluences with the Palar estuary before entering into the Bay of Bengal (Fig.1). The width of the bar mouth vary between 30 to 500 m depending on the flow of water.

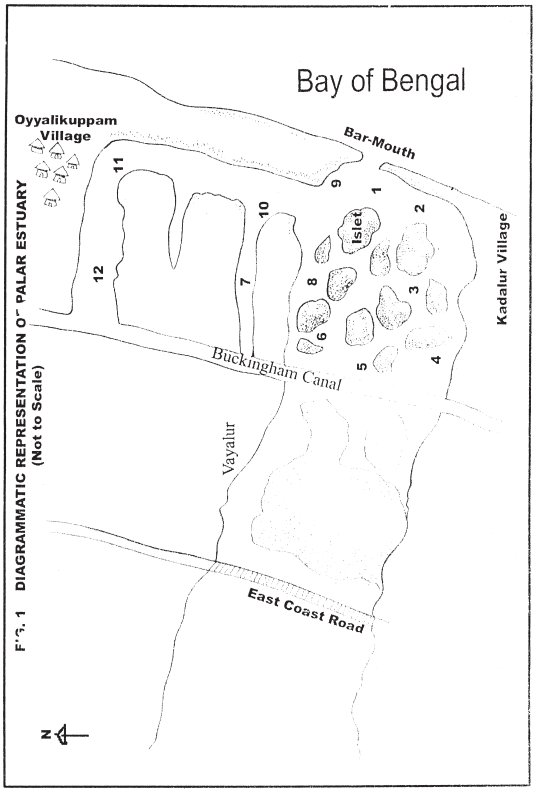

Fig. 1. Diagramatic representation of Palar estuary

The maximum width of the river is about 1.2 km. The maximum depth of the estuary is 1.5 metre and an average of 0.5 m. In recent years, the water level of the estuary has gone down, thereby several areas of the bottom is exposed in the form of small islets. There are 11 islets of different dimensions and shapes. In majority of the places the bottom is sandy and an admixture of sand and mud in the Buckingham canal area. The estuary branches out in the northern side and runs parallel to the sea up to Oyyalikuppam village. The width of this branch vary between 30 and 40 meters. This branch has further more 3 deviations.

The Palar estuary is surveyed in 12 stations for the distribution of bivalve resources from the bar-mouth and up to a distance of 3 kilometers, using rectangular quadrat of 50 x 50 cm. The quadrat was placed on the clam bed and all the bivalves present inside the quadrat were removed. The bivalves were sorted out species-wise, counted and weighed and length measurements were taken separately. In each station, an average of 5 samples were collected in different locations and then the data was pooled to represent the biomas.

Meretrix casta

Meretrix casta constituted 86.8%, *Mercia opima* 10.3% and *Crassostrea madrasensis*

Table:1. Distribution of bivalve resources in different stations of Palar estuary

Station No.	Area (in hectares)	*M. casta* (in tonnes)	*Mercia opima* (in tonnes)	*C.madrasensis* (in tonnes)	Total Biomass (in tonnes)
1.	12.0	96.0	-	8.2	104.2
2.	4.0	65.4	12.0	-	100.6
3.	3.2	30.8	35.2	3.6	48.5
4.	0.8	42.8	14.1	6.1	49.4
5.	5.0	156.2	0.5	-	156.2
6.	7.2	206.4	-	-	206.4
7.	2.0	3.4	-	7.6	11.0
8.	2.4	7.8	-	-	7.8
9.	6.0	30.6	-	-	122.9
10.	1.0	87.9	92.3	7.1	102.3
11.	1.6	461.0	7.3	10.2	471.2
12.	1.8	72.1	-	-	72.1
Total	47.0	1260.4	149.4	42.8	1452.6
%		86.8	10.3	2.9	100.0

formed to 2.9%. The other bivalves such as mussels and Pabhia sp. sporadically made the occurence, but very scanty.

The particulars regarding the clam bed area, density of population, the size range, mean weight and estimated biomass are given in Tables 1&2. *Meretrix casta* was distributed in all the 12 stations surveyed, but the size and shape of the clam bed, density and magnitude of population vary among the different stations. The largest clam bed was in stations 2 and 3, but the clam beds were comparatively small. The 4th station is the smallest one with rich clam distribution (208/ sq.m) and the bottom was sandy. There was a moderately high population of clams in 5th and 6th station representing 109 and 114 respectively. In the buckingham canal (7th station) the bottom is sandy and the depth varied between 30 and 50 cm. The clams buried even at a depth of 3 to 5 cm below the surface and the population is very less. Poor (8/sq.m) distribution of clams was observed in station 8. The richest (538/sq.m) clam bed was observed in station 11. The bottom in this station was muddy sand and water column was 80 cm. The size of the clams were also larger which ranged between 44 and 55 mm with a mean size of 49.44 mm. The total biomass in this locality was estimated to be 461 tons.

Table : 2. Total area, average number, mean weight, size range, mean size and total biomass of *Meretrix casta* of Palar estuary.

Station No.	Area (in hectare)	Average No per m^2	Mean weight (gms)	Size range (mm)	Mean size (mm)	Biomass (in tonnes)
1.	12.0	32	25.0	38-43	40.4	96.0
2.	4.0	76	21.5	35-45	40.7	65.4
3.	3.2	40	24.1	36-46	39.4	30.8
4.	0.8	208	25.7	39-45	45.6	42.8
5.	5.0	114	27.4	40-45	42.3	156.2
6.	7.2	109	26.3	35-42	39.7	206.4
7.	2.0	8	21.4	31-52	39.3	3.4
8.	2.4	12	27.1	39-45	41.2	7.8
9.	6.0	26	19.6	28-39	33.9	30.6
10.	1.0	174	50.5	48-55	51.3	87.9
11.	1.6	538	53.5	44-52	49.4	461.0
12.	1.8	140	28.0	40-45	43.3	72.1

The 12th station is near Oyyalikuppam village where the clam distribution was very sparse which may be due to black muddy bottom. The biological observations indicated that both the sexes are equally represented more ore less in these stations (1,2,6,7 and 10). The females out-numbered males in station 4,5,11 and 12. The males were dominant in stations 3,8 and 9. The percentage edibility was 12.7%. Both maturing and ripe gonads were represented more are less equally in majority of the stations. The spent ones were recorded only a few numbers during the period of observation.

Mercia opima

M. opima was distributed in shallow areas of the Palar estuary from 300 metre away from the bar-mouth extending to about 2 kilometres in the upper reaches of the estuary. The extent of *M. opima* bed was estimated to be 15 hectates with an estimated biomass of 149.4 tonnes (Table-3). Among the 12 stations, *M. opima* was distributed in five station only (2,3,4,9 and 10). The maximum depth in all those station varied between 0.4 and 1.5 metre. Among the five stations noted for their occurrence, the biggest clam bed was in station 9 with a wide area of 6 hectares with an estimated biomass of 92.3 tons, followed by station 2 having 4 hectares with a total biomass of 35.2 tons. The population density was very less in all other stations. The size of the clam varied between 25 and 46 mm with an average size of 39.7 mm. The

Table : 3. Extent of *Mercia opima* bed area, average number, mean weight, size range, mean size and total biomass of Palar estuary.

Station No	Area (in hectare)	Average No per m^2	Mean weight (gms)	Size range (mm)	Mean size (mm)	Total Biomass (in tonnes)
1.	-	-	-	-	-	-
2.	4.0	32	27.5	40-42	41.2	35.2
3.	3.2	18	24.5	25-44	39.4	14.1
4.	0.8	4	15.2	30-43	34.8	0.5
5.	-	-	-	-	-	-
6	-	-	-	-	-	-
7.	-	-	-	-	-	-
8.	-	-	-	-	-	-
9.	6.0	57	27.0	30-46	39.4	92.3
10.	1.0	24	30.8	32-45	38.8	7.3
11.	-	-	-	-	-	-
12.	-	-	-	-	-	-
Total	15.0					149.4

distribution was 57 per sq.m. in station 9 which is particularly high among the five stations observed, followed by station 2 where 32 / sq.m and there after gradually declining to 24, 18, 4 numbers in station 10, 3, 4 respectively. Both the sexes are equally represented in station 10. Females outnumbered males in station 2,3 and 4 and males out numbered females in station 9. The condition index was 14.3%

Crassostrea madrasensis

The distribution of the edible oyster *Crassostrea madrasensis* was very sparse in this estuary. Among the 12 stations surveyed, the oysters were found to occur in 6 stations only. Though the extent of the oyster bed was estimated to be 20.6 hectares, the oyster population was very sparse and the oyster biomass was estimated to be 42.8 tonnes only. The maximum oyster biomass was estimated to be 10.2 tones in station 11 and 8.2 tonnes in station 1. The distribution of oysters in all other stations are very less. The maximum density of oyster population was 24 / sq.m in station 4 and low density was 1/sq.m. in station 1. The size ranged between 34 and 102 mm with a mean size of 70 mm. Females were found to be dominant in all the stations. The gonadal stages showed

that the ripe oysters were dominant in all the station observed. The condition index was 8.1%.

Fishery

There was no organized fishery for clam and oysters in this estuary, however, the fishery is conducted for clams and oysters whenever there is a scarcity for fish. Some people from Vayalur are engaged in clam picking for local consumption. As per local enquiry, about 100 to 120 tons of clam shells collected from the Palar estuary are transported to the nearby area for lime-burning. About 15 to 25 tons of edible oysters are fished annually for local consumption. Live clams were sold at the rate of Rs. 25/- per basket of about 15kg. The shucked shells of one basket was sold at the rate of Rs. 15/- per basket, which is exclusively used for lime burning.

The present survey has brought to light that the Palar estuary is a rich source of clams and oysters in a total area of 47 hectares harbouring 1452.6 tones. The clam *M. casta* forming the major resource (86.8%) followed by *M. opima* (12.36%) and *C. madrasensis* (1.22%).

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