

## CLAM FISHERY OF MULKY ESTUARY DURING 1978-1982

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### ABSTRACT

The magnitude of production of and effort spent in the clam fishery of Mulky estuary from 1978-79 to 1981-82 are presented. An estimated average of about 475 t of clams were landed annually, comprising *Meretrix casta* (76%) and *Paphia malabarica* (24%). *M. casta* is utilised for its meat and shells, whereas *P. malabarica* exclusively for its meat. The methods of fishing, utilisation and price structure are indicated. Heavy precipitation during S.W. monsoon appears to influence the clam fishery in the succeeding months.

### INTRODUCTION

The numerous estuaries in Dakshina Kannada district in Karnataka have vast resources of clams, which form a source of sustenance fishery. Mulky, a coastal town, is situated about 30 km north of Mangalore. Two rivers, the Sambhavi and the Pavanji, which originate in the western ghats, open into the sea at Chitrap, a place near Mulky.

The estuary with a total area of about 750 ha has extensive clam beds and sub-fossil deposits. Alagaraswami and Narasimham (1973) had referred to the clam fishery here. Gopal et al (1976) estimated the sub-fossil shell stock at about 500,000 t. The clam fishery was studied during the years from 1978 to 1982 with a view to estimating production.

### METHODS

Weekly observations were made to collect data on effort, catch and species composition of clams, based on random sampling, during four years, from 1978 to 1982. Annual estimates are for the period April to March. The effort is total number of persons (men, women and children) actually engaged in the collection. In 1981-82, particularly during November-March, canoes were employed to collect clams, mainly for making lime. Prior to that the canoes were employed only to collect shell-deposits. The number of men employing canoes were taken into account for calculating the effort, disregarding the canoes which were used only for transportation and storage of clams.

## FISHERY

*Fishing methods*

The fishing activity was concentrated mainly at four centres, namely, Sasihitlu, Chitrap, Nadikuduru and Bappanadu (Fig. 1). Clam fishing took place only during low tides and, if the tide was favourably low, continued for about 4-5 h. Most of *Meretrix casta* beds were located in the shallow areas. Generally fishing for this species was done in 30-60 cm depth, where it was easy to manoeuvre the nets and to clean the clams. Collection in the exposed area was difficult as the clams burrow deep into the substratum. The larger *M. casta* occurring in the exposed area were hand-picked. *Paphia malabarica* occurred at 1-2 m depth (at low tide) and was collected by diving.

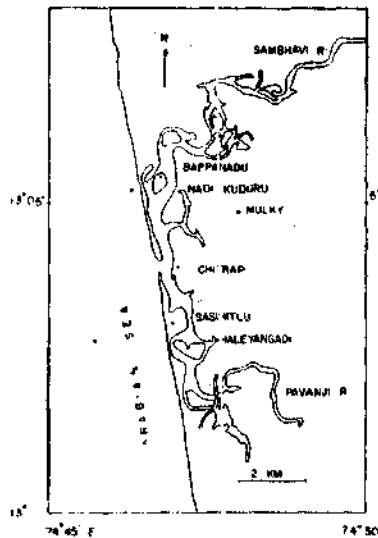


FIG. 1. Map showing the clam fishing centres in the Mulky estuary.

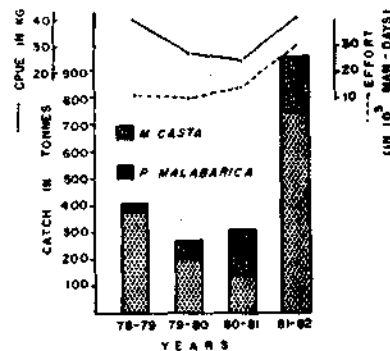


FIG. 2. Species composition of clam landings, effort and C.P. U.E. from 1978-79 to 1981-82.

The implement used for the exploitation of clams was generally a scoop net. The net frame was a semi-circle, the arch of which was made of 1.3-cm-diameter iron rod and the base of 5-cm-wide plain iron plate, fixed slantingly to act as a plough. A nylon net of 30-35-mm mesh size and about 50 cm length was fastened to this frame. When the clam beds were dense, a pickaxe or spade was used to loosen the substratum and gather the clams into the net. This method was mainly employed by men with canoes.

*Production and effort*

Clam fishery occurred almost throughout the year, but it was intense during March-August period. The total quantity of clams landed during 1978-79

was about 407 t, which declined to 271 t during 1979-80, but improved to 307 t in 1980-81. The highest landing of 951 t was recorded during 1981-82 (Table 1). The effort however remained almost the same, 10,554 and 10,125 man-days, during 1978-79 and 1979-80 respectively, but increased in 1980-81 to 13,070 and in 1981-82 to 29,463 man-days. The average landing was 38.6 kg per man-day effort in 1978-79, which declined to 26.8 kg in the succeeding two years, but rose to 38.9 kg during 1981-82.

TABLE 1. Estimated month-wise clam landings from Mulky estuary during 1978-79 to 1981-82.

	Effort (in man-hours)				Production (in tonnes)			
	1978-79	1979-80	1980-81	1981-82	1978-79	1979-80	1980-81	1981-82
April	1446	585	1950	3180	43.8	18.4	47.3	72.4
May	3216	805	1898	3131	107.0	29.6	46.6	55.6
June	1149	875	750	1230	31.3	26.5	14.6	21.8
July	775	1007	775	3030	26.8	24.4	18.5	58.8
August	630	1085	1302	1470	33.1	27.7	39.1	26.6
September	192	750	825	1566	3.5	19.0	20.6	27.2
October	102	390	697	1100	2.3	9.9	15.5	18.4
November	394	600	610	1876	13.2	19.2	20.4	38.0
December	750	496	504	1030	77.7	10.6	12.4	25.4
January	483	775	713	2230	23.8	16.9	13.4	91.8
February	621	1414	700	1820	12.6	36.4	13.4	131.0
March	796	1343	2356	7800	25.3	32.8	45.6	384.2
Total	10554	10125	13080	29463	40.4*	271.4	307.4	951.2

\* other clams = 7.0 t.

*Meretrix casta* (var. *ovum*), on an average, contributed to about 76% of the total clam landings. The next important species was *Paphia malabarica* with 24%. *Katelysia opima* and *Meretrix meretrix* were seen in negligible quantities. The landings of *M. casta* amounted to 377 t in 1978-79, which decreased to 203 t and 141 t respectively in 1979-80 and 1980-81 (Fig. 2). However, 1981-82 witnessed a record landing of 747 t, an increase of 198% over that of 1978-79. The percentage of this species in the clam landings was 92, 75, 46 and 79 during the above four succeeding years.

The landings of *P. malabarica* showed a steady increase from 23 t in 1978-79 to 68 t, 166 t and 204 t in the succeeding three years. In 1980-81 its contribution to the total clam landings was significantly high. The percentage of this species in the clam landings was 8, 25, 64 and 31 respectively during the four years.

### Utilization

The meat of *P. malabarica* was preferred for consumption as food. The demand for clam meat as a whole was less during post-monsoon, when the marine fish landings were good. Good demand occurred during March-August, particularly during S.W. monsoon, when fish was scarce and costly. Though exploitation of clams during monsoon was difficult owing to continuous flooding of the estuary, they were harvested during low tides. The clams were stored alive for about a week if necessary and marketed as and when demand occurred. About 65% of the annual landings took place during March-August period

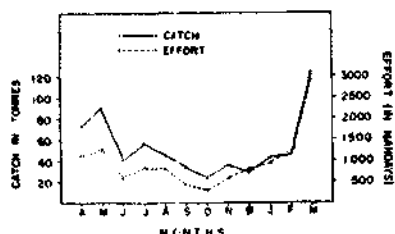


FIG. 3. Trend of clam landings and effort at Mulky (1978-79 to 1981-82).

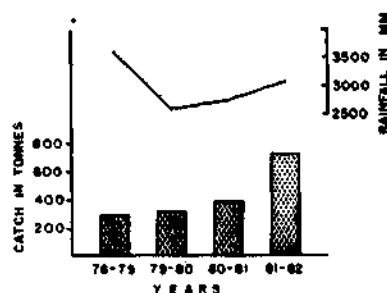


FIG. 4. Clam landings in different years (September to August) and the rainfall during the preceding S.W. monsoons.

(Fig. 3). But in 1981-82 the clam landings were high even during October-March, on account of dense population of *M. casta* over a wide area in the estuary. Immediately after the peak season (September-December) of purse-seine fishery in Karnataka, some fishermen, owing to poor returns in the coastal fishery, resorted to clam collection in the estuary. This might be another important reason for the increase in the effort and landings during 1981-82. Employing canoes, scoop nets and pickaxe as much as 250 to 350 kg of clams could be harvested by a single unit per day, which would provide an average daily income of about Rs. 15 per fisherman. On days of good production, only about 25% of the catch was used for human consumption, the rest was used for making lime. After the clams were heaped on the shore for about six weeks for the meat completely to decay, the shells, which formed about 85% of total weight, were sold. Those *M. casta* which were 30 mm and above were generally sold for their meat, and a bag of 25-30 kg of clams fetched about Rs. 10 at the landing centre. At the consumer level, the cost was Rs. 0.50 per hundred clams during off season and Rs. 1.0 during monsoon, *P. malabarica*, solely collected for its meat, cost Rs. 2.50 per hundred during off season and Rs. 3.50 during monsoon. The estimated value of clams from Mulky estuary during 1981-82 was about Rs. 400,000 as detailed below.

	Utilisation	Quantity	Unit value	value
<i>M. casta</i>	meat	187*	Rs. 0.30/kg	Rs. 56,100
<i>M. casta</i>	lime shell	476**	Rs.70.00/t	Rs. 33,320
<i>P. malabarica</i>	meat	204	Rs. 1.50/kg	Rs.306,000
Total				Rs.395,420

\* 25% of 747 t.

\*\* at 85% shell weight of 75% of 747 t.

#### REMARKS

Dakshina Kannada receives about 3900 mm of rainfall annually, of which about 3150 mm (81%) occurs during June-August (1970-1981 average). The stocks of clams in estuaries are highly dependent on monsoon (Rai 1932, Abraham 1953). If the monsoon is severe the floods carry away clams. *M. casta* is observed to spawn extensively from September to April-May, and the survival of seed clams depends on the quantum and duration of floods during the S.W. monsoon. The seed clams do not seem to tolerate dilution for long periods, although the adult clams are adapted to this condition. The effect of S.W. monsoon (June-August) on clam production can be understood from Fig. 4. The period September-August is taken into account for calculating annual production. The clam fishery in 1978-79 is very poor seemingly due to the heaviest rainfall (3655 mm rainfall) during the preceding monsoon. However, the monsoon rainfall in the subsequent years have become normal (2603, 2770 and 3161 mm) resulting in better landings.

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