

MONSOON FISHERY AND MUD BANKS OF KERALA COAST

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INTRODUCTION

The south-west monsoon period is generally an offseason for the fisherfolk who use non-mechanised fishing crafts along the west coast of India, on account of the extremely rough conditions of the sea. However, in some parts of Kerala, areas adjoining the coast become occasionally very calm due to the formation of mud banks while other coastal areas are highly surf ridden. The calm areas formed near to the shore are of varying extent, from about 10 km² to 25 km² and provide safe harbourage to the non-mechanised crafts when fishing in other regions is almost impossible. Launching and landing of vessels are easy at the mud bank areas.

The monsoon fishery of the mud banks constitute a small-scale fishery of high magnitude during the mudbank season (June-August). When fishing is almost suspended at other places owing to rough conditions, canoes from fishing villages of Cochin-Quilon and Cochin-Ponnani regions congregate at the mud bank areas, and these and the adjacent coastal fishing grounds are intensively fished by hundreds of canoes. Occasionally, the sea becomes calm all along the coast and fishing becomes possible at other centres, besides mudbanks.

The present account deals with the fishery associated with the mud banks at Ambalapuzha-Thottappally region in zone K-4 (Tharayil Kadavu-Ottamassery) and Valappad-Nattika region in zone K-6 (Attupuram-Ponnani) during the south-west monsoon months. An attempt has also been made for a critical study of the so called 'mud bank fishery' which is very popular among the fishermen as 'Chakara'. The catch statistics of the fish landed at mud bank and non-mudbank areas of the respective zones during the monsoon season have been compared. For the above studies the fish landing data from 1973 to 1977 have been made use of. A special study of the prawns landed at the mud bank region in zone K-4 from 1972 to 1976 has also been made.

FISHERY CHARACTERISTICS

Crafts and gears of the monsoon fishery

Fishing at the mud bank area is done normally from the early hours of the day till noon. On heavy fishing days, fishing has been observed to continue till late in the afternoon. Dug-out canoes and rigged canoes called locally as 'Vallam' or 'Vanchi' are the crafts used in fishing operations. The canoes are mainly of two lengths a larger one of 9.5 m manned by 15 persons and a smaller one of 6 m manned by 9 persons. The main gears of operation at the mud bank regions are drag nets (Thanguvala) and gill nets (Mathichalavala).

Species composition

The fish landed at the mud banks during the south-west monsoon season are typical of the fishing grounds off the south-west coast of India. About 50 species, of fish and 6 species of prawns are recorded from these regions. Fishes of the families Carcharinidae, Clupeidae, Dussumieridae, Dorosomidae, Engraulidae, Chirocentridae, Tachysuridae, Hemiramphidae, Sphyaenidae, Mugilidae, Polynemidae, Ambassisidae, Theraponidae, Sillaginidae, Lactaridae, Siganidae, Carangidae, Gerridae, Leiognathidae, Pomadasyidae, Sciaenidae, Trichiuridae, Scomberomoridae, Stromateidae, Cynoglossidae, Chirocentridae and Drepanidae were encountered in the landings. Of the prawn species *Penaeus indicus*, *Metapenaeus dobsoni* and *Parapenaeopsis stylifera* were the abundant ones. *Metapenaeus monoceros* and *M. affinis* were also encountered in smaller quantities.

Catch and effort

The total fish landed during the south-west monsoon at the mud bank and the non-mud bank areas of zone K-4 and K-6 in the year 1973-'77 are shown in Figs. 1 and 2 and the catch per unit effort is shown in Fig. 3. The highest rates of catch per unit effort for mud bank and non-mud bank area were obtained in the years 1975

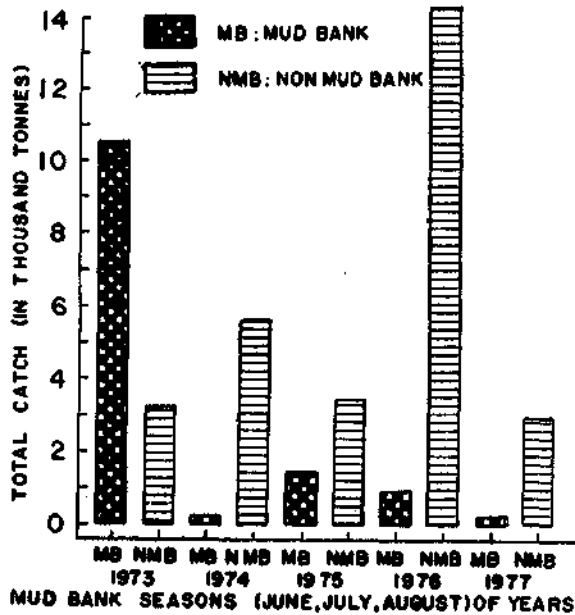


Fig. 1. Total marine fish landings for mud bank and non-mud bank areas of Zone K-4 (Tharayilkadavu-Ottamassery):

and '76 respectively for the zone K-4 (Fig.3). In zone K-6 the high rate of catch per unit effort was recorded in 1977 for the mud bank area and the same was recorded for non-mud bank area in 1973. The catch per unit effort for the mud bank area in zone K-4 was more in 1974 and 1975; but in 1973, '76 and '77 it was the reverse. In zone K-6, the non-mud bank area

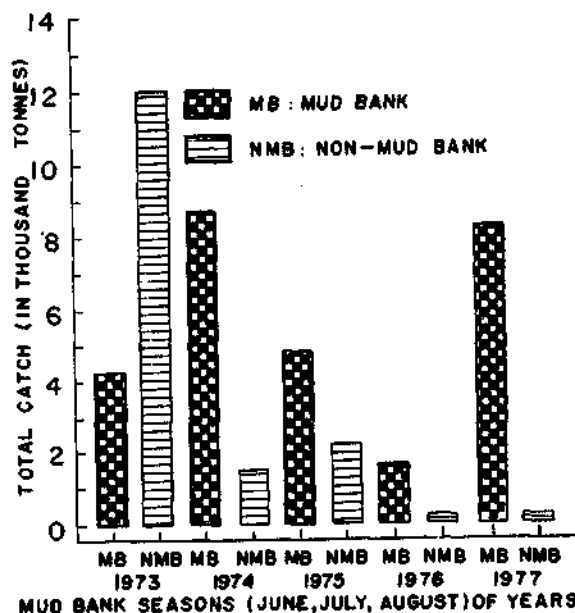


Fig. 2. Total marine fish landings for mud bank and non-mud bank areas of Zone K-6 (Attupuram - Ponnani).

yielded a higher catch rate over the mud bank area in 1973 and '74, while in all other years under consideration the catch per unit effort was higher at the mud bank area. However, the overall catch per unit effort was on the higher side for the non-mud bank area in zone K-4 and for the mud bank area in zone K-6.

Changing pattern of fish distribution

The pattern of fish distribution in the coastal grounds during the monsoon season has been observed to change very frequently, even day to day. The phenomenon is not only with the mud bank area but also for other region of the coast during the monsoon months. This is obviously due to the shoaling behaviour of the fishes. The daily changing pattern of the fish landed at the mud bank area in zone K-4 was studied in July 1971 and the results are given in the following table. Of the major species studied for 13 days in the month, *M. dobsoni*

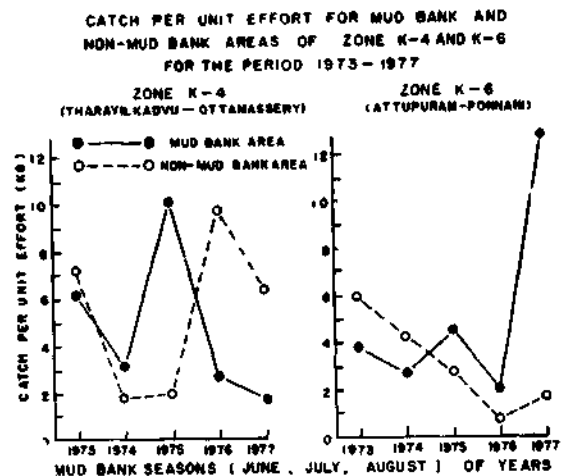


Fig. 3. Catch per unit effort for mud bank and non-mud bank areas of Zone K-4 and K-6 for the period 1973 to 1977.

dominated the catch for 6 days. During these six days, the second dominant species were *P. indicus* on one day, *Leiognathus* spp. and *Stolephorus* spp. on two days each. During the above 13 days, the oil sardine dominated on one day only, while *Leiognathus* spp. and *Stolephorus* spp. were the major catch for three and two days respectively. On one day, the catch was of mixed type without having any predominant species.

It has been found that fishes, especially prawns move towards the shore during the south-west monsoon period. This is probably

due to the process of upwelling (Banse, 1959) which starts from the deeper waters. During the monsoon period, the current has been observed to be southerly. The general tendency of fish is to swim against the prevailing current. Thus, as the fishes and prawns move in shoals, a portion may pass through the mud bank area also where they are caught by the numerous canoes operating in and outside the mud banks. The present observation shows that if one such shoal is not caught anywhere on their way, it moves off giving room for another shoal of entirely different composition. Even though there were some gaps in the observations, the overall picture obtained is enough to indicate the phenomenon of daily changing pattern of the fishes.

Prawn landings at the mudbank region in zone K-4

Special studies on the catch statistics of prawns for the period 1972-76 (Fig. 4) showed great annual fluctuations in total landings and species composition. Prawn fishery in general showed a declining trend during the period of observation. The prawn fishery which was of

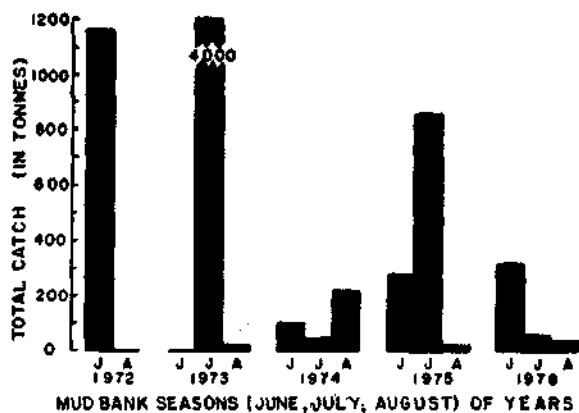


Fig. 4. Total prawns landed at mud bank area (Ambalapuzha-Thottappally), of Zone K-4 during 1972 to 1976.

low magnitude in 1972 with a total catch of 1186.9 tonnes showed a spurt in 1973 with 4284.8 tonnes to dip down to a mere 444.0 tonnes in 1974. The year 1975 showed an improved catch of 1174.4 tonnes to fall again to 490.0 tonnes in 1976.

The month-wise percentage composition of the prawn species during the mudbank season of 1972 to '76 is given in Fig. 5. The fishery is chiefly composed of *M. dobsoni*, *P. stylifera*, *P. indicus* and small quantities of *M. monoceros*

and *M. affinis* (George, 1961; Kurup and Rao, 1974). During July 1972 and July and August 1973, *M. dobsoni* constituted solely the bulk of the prawn catch while the same species domina-

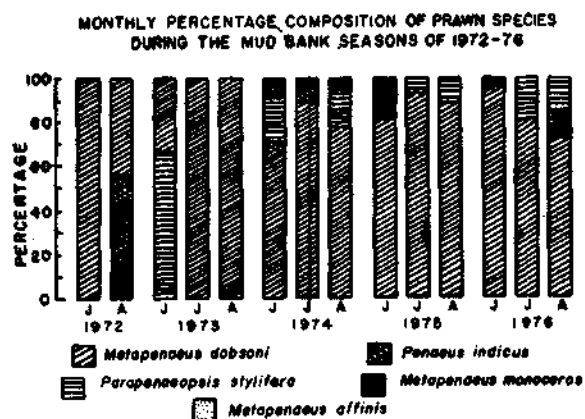


Fig. 5. Monthly percentage composition of prawn species during the mud bank seasons of 1972 to 1976.

ted the catch in the other months except August 1972. The modal size of this species was at 81-85mm for males and 86-90 mm for females, with a size range of 52 - 104 mm for males and 55-130mm for females. *P. indicus* was the dominant species in August 1972. The principal modal sizes were observed at 126-130mm and 146-150 mm in males and 130-140 and 151-155 mm in females. Among *P. stylifera*, dominance of larger size groups, namely 81-85 mm for males and 101-105 mm for females were recorded.

INFRASTRUCTURE AND SOCIO-ECONOMICS

Infrastructure

With the onset of the monsoon fishery at the mud banks, a small fishing village all on a sudden turns into a big business centre. Thousands of fishermen and other people assemble here. To meet the fishing requirements and other human needs an elaborate infrastructure is needed. Sufficient number of crafts and gears, preservation and marketing facility and also means of quick transportation of fish are the essentials in this regard. Above all every fisherman has to be guaranteed for a reasonable price of his commodity. It will be worthwhile to examine how far these needs are met with at the mud bank region during the monsoon fishery.

The establishment of ice plants in the vicinity of mudbank areas has ensured a steady

supply of ice for the preservation of the catch. At times when there used to be heavy landings, more quantities of ice have to be brought from distant places to meet the requirements. There are very good transportation facilities all along the Kerala coast and hence quick movement of the catches by insulated trucks is possible.

Right of fishing the mud banks

The coastal monsoon Fishery has a legal protection from the state government which provides exclusive operational rights for canoes and catamarans especially in the vicinity of the mud banks. Fishing by mechanised trawlers is prohibited at the mud bank and nearby areas.

Socio-economics

Majority of the fishermen who used to engage in fishing at the mud bank area are not permanent dwellers of this region; but have come from far off places for the sake of fishing during monsoon season. They come with own or hired crafts and gears. At the mud bank region they stay with their relatives, friends or in rented apartments or on the beach itself.

The fisherfolk who assemble at the mud banks are not a homogenous group. They belong to various castes and religions and speak different languages and have their own ways of living. In spite of such diversity in social behaviour, worship and way of life, they all live in perfect harmony.

Majority of the boats and nets operated in the mud bank are hired ones. A major portion of the income may have to be given as rent for the boat and net. Fishermen used to get fairly good amounts as advance from either money lenders or other agents before they start to the mud bank area. Such advance become a burden on them as they are forced to pay heavy interest or give their fish catch at the rates prescribed by the agents.

The business is done through agents and middlemen. In fact they are the people who set the market price every day on knowing the trend in fish landings. The intervention of middle men surely reduces the income of fishermen in the absence of other marketing facilities like Fishermen Co-operative Societies. The fishermen who come to the mud bank area with the hope of prosperity will have to go

back with empty hands. There are exceptions too. Many people make good fortunes at the mud banks and with that they purchase boats and nets of their own.

GENERAL CONSIDERATIONS

The monsoon fishery along the south-west coast of India is often called as mud bank fishery. There is a common belief that mud bank and fishery are interrelated (Govindan, 1972; Kurien, 1966). A good mud bank or 'chakara' means a good fishery to the public. The fishermen believe that a good mud bank formation will provide them a good catch. In fact, it has been found that the mud bank and the fishery are independent. During 1974, '75 and '77 when a well-formed mud bank existed at Ambalapuzha - Thottappally region (zone K-4), the fishery was at very low magnitude (Fig.1). Similarly there have been cases of heavy catch from the coastal waters even when there was no mud bank formation. It is evident from the data that the mud bank fishery suffered a set back after 1973 while the non-mud bank fishery improved quite appreciably. The highest figure for mud bank (10,425.21 tonnes) and non-mud bank area (14,231.55 tonnes) were recorded in 1973 and 1976 respectively. Similarly, the lowest was in 1977 for both mud bank (37.81 tonnes) and non-mud bank areas (2,884.70 tonnes) in zone K-4. While the highest for mud bank (8,776.84 tonnes) and non-mud bank areas (12,100.61 tonnes) was recorded in 1974 and 1973 respectively for zone K-6, the lowest was recorded in 1976 (2,638.19 tonnes) and 1977 (0.25 tonnes) respectively (Fig.2).

It may be noted that the catch per unit effort (C. P. U. E.) for zone K-4 (Fig.3) was 4.6 kg and 5.4 kg for mud bank and non-mud bank area respectively; showing a high C. P. U. E. for non-mud bank area. In the case of zone K-6, the C. P. U. E. was 5.2 kg for mud bank and 3.0 kg for non-mud bank area. The variation in C. P. U. E. clearly shows that the catch is determined by the fishing facility, man power and gear and craft and not by formation of mud banks during the monsoon months. So the present study reveals that the season 1973-77 was favourable for fishing all along the coast and the non-mud bank area having a long coastline and more number of canoes and manpower was able to dominate the catch in the monsoon fishery. The

The Changing Pattern of Fishery in July 1971

(Based on Fish landed at mudbank area in Zone K-4)

No data available for missing dates

		JULY 1971												
Date		1	5	13	14	16	17	18	23	25	26	28	29	30
<i>M. dobsoni</i>		●	+	●	●						●		●	●
<i>P. indicus</i>		+												
<i>S. longiceps</i>			●											
<i>Leiognathus</i> spp.				+	+	●	●				●			
<i>Stolephorous</i> spp.								●	●		+		+	
Miscellaneous						+	+	+	+	+		●		+

● Abundant species + Second abundant species.

overall landing figures for both the zones show a higher catch for the non-mud bank areas (45,301.53 tonne) than the mud bank areas (41,605.11). It is doubtful at this stage whether the catch of the non-mud bank area would have been realised in the mud bank area if there had been good mud banks and monsoon had been active to prevent fishing at the non-mud bank areas.

During the monsoon months when the sea is roaring and fishermen count upon the fishing days, the formation of mud banks at restricted places is really a blessing for the small-scale fishermen to make their livelihood.

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