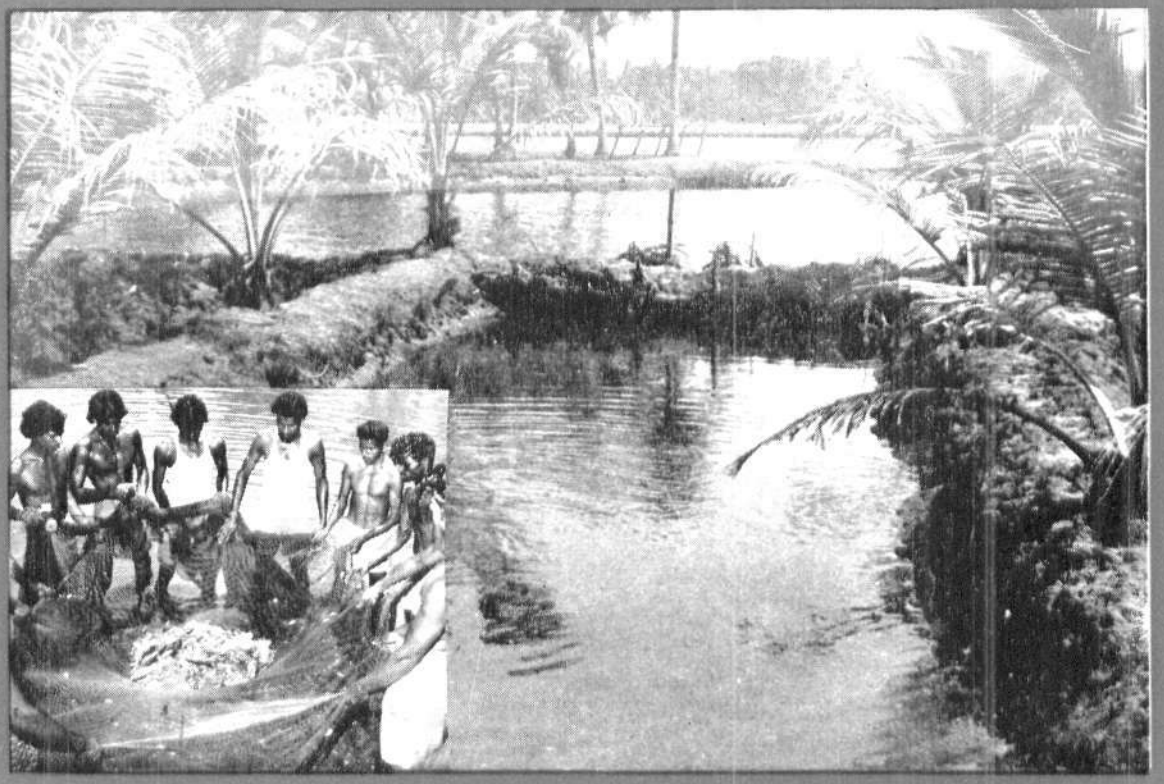
MARINE FISHERIES INFORMATION SERVICE



No. 62
MARCH, APRIL
1985

Technical and Extension Series

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
COCHIN, INDIA

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

THE MARINE FISHERIES INFORMATION SERVICE: Technical and Extension Series envisages the rapid dissemination of information on marine and brackish water fishery resources and allied data available with the National Marine Living Resources Data Centre (NMLRDC) and the Research Divisions of the Institute, results of proven researches for transfer of technology to the fish farmers and industry and of other relevant information needed for Research and Development efforts in the marine fisheries sector.

Abbreviation - *Mar. Fish. Infor. Serv. T & E Ser.*, No. 62: 1985

MASS MORTALITY OF CATFISHES AND OTHER BOTTOM FAUNA AT PUDIAPPA, CALICUT*

The sea off Calicut suddenly became rough on 7th April 1984 and severe wind, high waves and strong breakers flooded the coastal areas between Pudiappa and Beypore. The high breakers at several places crossed the narrow sand bar that divide the sea from the low lying areas and flooded many thickly populated pockets along the Calicut coast. Towards evening, breaches occurred along the sand bar and long stretches of low lying areas between Pudiappa and Marad, extending to about 15 km, were submerged in sea water. The wave height at certain places rose up to 2 to 2.5 meters and the rough condition of the sea prevailed till 9th April.

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Mass morality of fishes at Pudiappa

Along the coast of Calicut, Pudiappa is a semi-protected calm bay area. During the days when rough sea conditions prevailed the flow of water was from south to north. Along with this northward flow of water, probably the churned up bottom sediments in the shallow regions also would have shifted towards north and got accumulated in the semi-protected Pudiappa bay. This observation was further substantiated by the lack of any mud formation north of Pudiappa. Thus, there was a total churning up of the bottom mud in the bay consequent on high waves, strong breakers and an influx of mud from south. In the morning of 8th

TABLE 1

Station	Temp. (°C)	O_2 (ml/l)	Sal. (‰)	PO_4	NO_2	NO_3	SiO_3
				(μ gram atom/l)			
Date: 9–4–1984				Condition of the sea: Rough and turbulent			
1. Pudiappa	35.8	0.73	33.81	10.57	0.47	4.93	52.63
2. Kothi beach	34.1	4.68	32.92	6.00	0.08	3.00	26.31
3. Marad beach	32.2	5.18	32.64	0.32	1.30	3.60	13.15
Date: 5–4–1984				Condition of the sea: Calm			
4. West Hill	31.0	4.69	33.14	1.33	0.02	1.65	8.55

Fig. 1. The sunken boats (manchi) at Pudiappa in the mud flat (Fore ground: bags of rice washed ashore).

Fig. 3. Dead and decaying catfishes remained at the beach after the devastation.

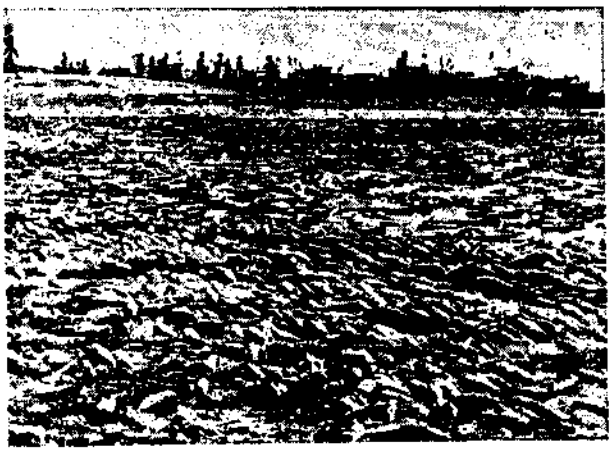

Fig. 2. Mass mortality of catfishes at Pudiappa.

Fig. 4. Large pallets of mud washed ashore when the bay became calm.

April the thick muddy water of Pudiappa was virtually teeming with thousands of fishes gasping for breath. The waves washed huge quantities of fishes and mud to the shore. Within a short time the whole of Pudiappa beach, extending to about 3–4 ha, was carpeted by fishes and loose mud. Along with fishes, huge quantities of bivalves and gastropods were also washed ashore. It was found that more than 90% of the fishes washed ashore were catfishes of a single species, *Tachysurus maculatus*. Other fishes suffered mortality were sciaenids, soles, eels, platycephalids, *Squilla* sp. and prawns. Roughly it was estimated that about 15 tonnes of fishes suffered mortality. The catfishes were in the size range of 92 to 338 mm in total length. Analysis of fish samples showed that the gills were completely clogged with soft mud and in many cases mud was found in the stomachs. The large scale mortality suffered by catfishes indicated their behaviour pattern and their aggregation in the bay. *T. maculatus* which is essentially an estuarine catfish, also occur along shallow coastal waters and seldom move beyond 10 to 15 meters in depth. Since the species is a scavenger, large shoals congregate in fishing harbours and coastal fish landing areas where more food is available. And as such, Pudiappa is a nourishing ground for these fishes. The sudden influx of mud together with the churning up process would have made the water of Pudiappa turbid and thereby reducing the oxygen content of the water to sub-lethal level. Thus, asphyxiation seemed to be the causasive factor for the sudden large scale mortality of the fishes.

For Pudiappa villagers 8th April morning gave rich catches of fishes without much effort. The asphyxiated fishes were hand picked from the surf. Since there was no fishing on 7th and 8th the fishes washed ashore found a good market and as such truck loads of catfishes were taken to various markets.

For a study on the physico-chemical characters of the turbulent sea, water samples were collected from three stations, Pudiappa, Kothi and Marad beach on 9th April. Eventhough there were no mass mortality or mud formation at the latter two stations, these areas were also seriously affected in the calamity and hence selected for the study. Analysis of the turbid water of Pudiappa showed that the concentration of find mud in the sea water was 38.2% by volume. The sea water samples from all the stations were analysed for salinity, dissolved oxygen, phosphate, nitrite, nitrate and silicate and the values are given in Table 1 along with the values from West Hill on 5th April for a comparative study.

The very low values of dissolved oxygen and very high values of silicate and phosphate of the affected waters compared to the unaffected waters give clean evidence to the condition that led to the mass mortality of fishes at Pudiappa. However, the actual cause of the sudden changes in the coastal areas remains enigmatic. A detailed study of such phenomena when they do occur would help in understanding the oceanographic processes associated with them.