TRENDS IN CRUSTACEAN FISHERIES

K.H. MOHAMED
Central Marine Fisheries Research Institute, Mandapam Camp

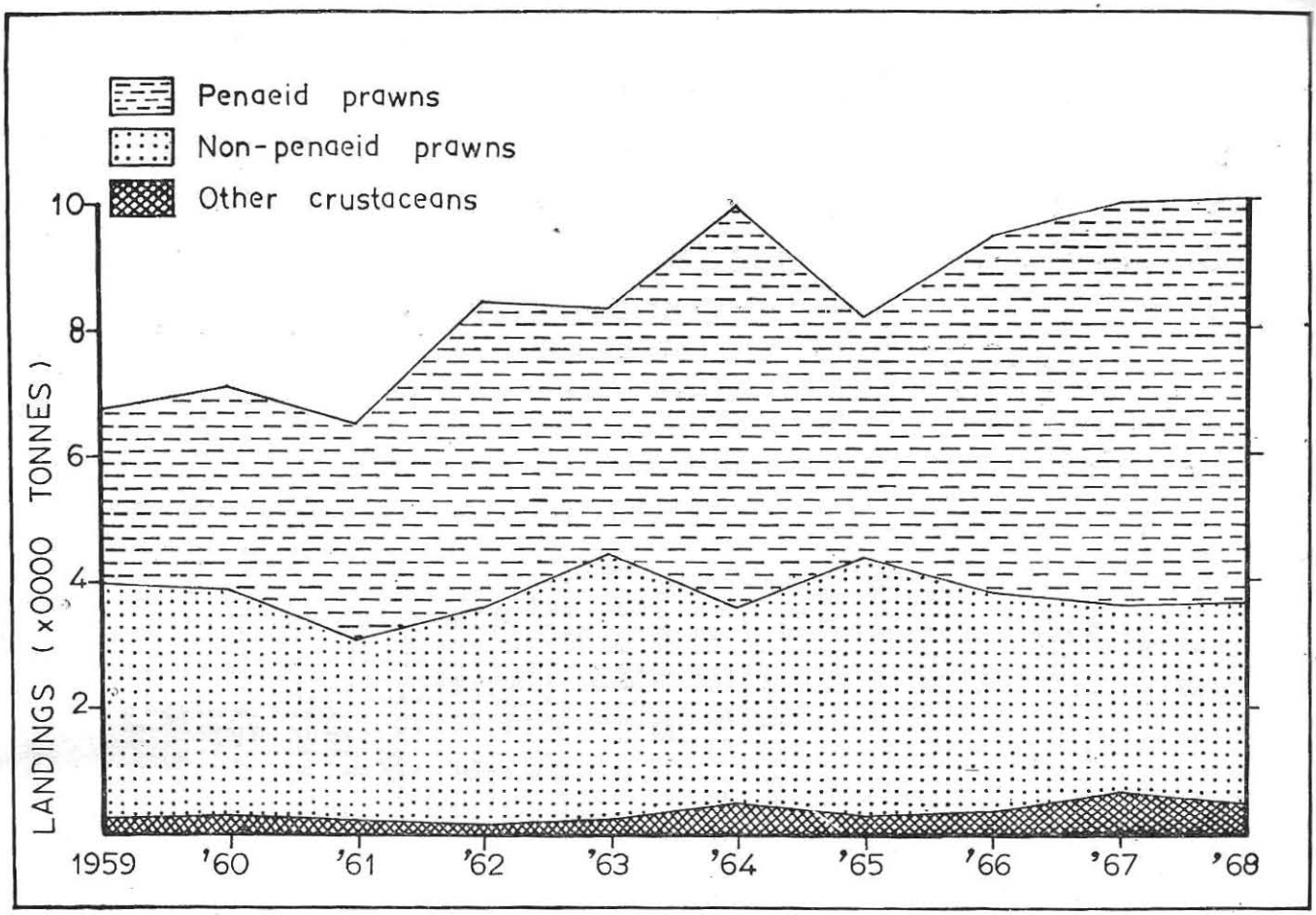
CRUSTACEAN fisheries have great economic importance in this country. Although fishing for prawns, lobsters and crabs has been the traditional occupation of the coastal fishermen in India for considerable length of time, reliable information about them was not available till recently. Similarly, the export trade of prawn pulp from west coast of India to Burma and Ceylon was as old as the rice trade of the latter countries with India. At present, among the prawn and shrimp producing countries of the world India ranks second only to the United States. Accurate statistics of the various components of marine fish landings in India became available only from 1950 onwards from which time we had begun the introduction of modern methods of capture and processing. The commercial crustaceanlandings of the country are classified into three distinct groups—the penaeid prawns, the non-penaeid prawns and 'other crustaceans'. The group penaeid prawns includes several species of large-sized marine prawns and it totally supports our prawn export industry. Several species of small-sized shrimps belonging to different genera are classified under the group non-penaeid prawns which are of lesser commercial value. The group 'other crustaceans' includes mostly lobsters and crabs.

Yearly Landings

Yearly landings of crustaceans in the country fluctuated considerably but the overall trend of production showed increasing tendency during the past 20 years. The total landings of 75 thousand tonnes recorded in 1950 has increased to over 105 thousand tonnes in 1968 (table I). The catch rate of total crustaceans also increased from 0.27 kg/man-hour in 1959 to 0.55 kg/man-hour in 1968. During this period the fishing effort showed decrease from 313 million man-hours to 188 million man-hours. The upward trend of production, together with the decreasing trend of all India fishing effort, is particularly noteworthy as it indicates substantial improvement in the efficiency of the unit effort. This improvement could, no doubt, be a result of introduction of modern fishing methods and increased application of mechanisation in the field of capture fishery brought into effect during the development plans.

A detailed analysis of the commercial landings of each of the constituting categories of crustaceans showed diverse trends of production. Within normal fluctuations, the landings of penaeid prawns are seen to increase year after year and its total production of a little over 37 thousand tonnes recorded in 1950 has reached about 70 thousand tonnes in 1968. The trend of production of all crustaceans is, therefore, a reflection of the trend of this group. The landings of non-penaeid prawns, however, do not seem to follow any definite trend; its production having fluctuated year by year. The 'other crustaceans' comprising lobsters and crabs, although landed in comparatively smaller quantities, showed definite increasing trend of production. Using a quadratic equation, Banerji (M.S.) constructed trend lines in respect of all these three groups of crustaceans. His findings are in conformity with the present observations.

This increasing trend of production was noticed in all the maritime states of India except Gujarat, Maharashtra and Mysore. Prawn landings in Mysore State were however, exeedingly good in 1968. In Maharashtra, while the yearly landings of non-penaeid prawns fluctuated, those of penaeid prawns showed increasing trend. Definite increasing trend was noticed in Kerala prawn landings too, although the catches in recent years were slightly low. Production in all the east coast states was seen to increase steadily.

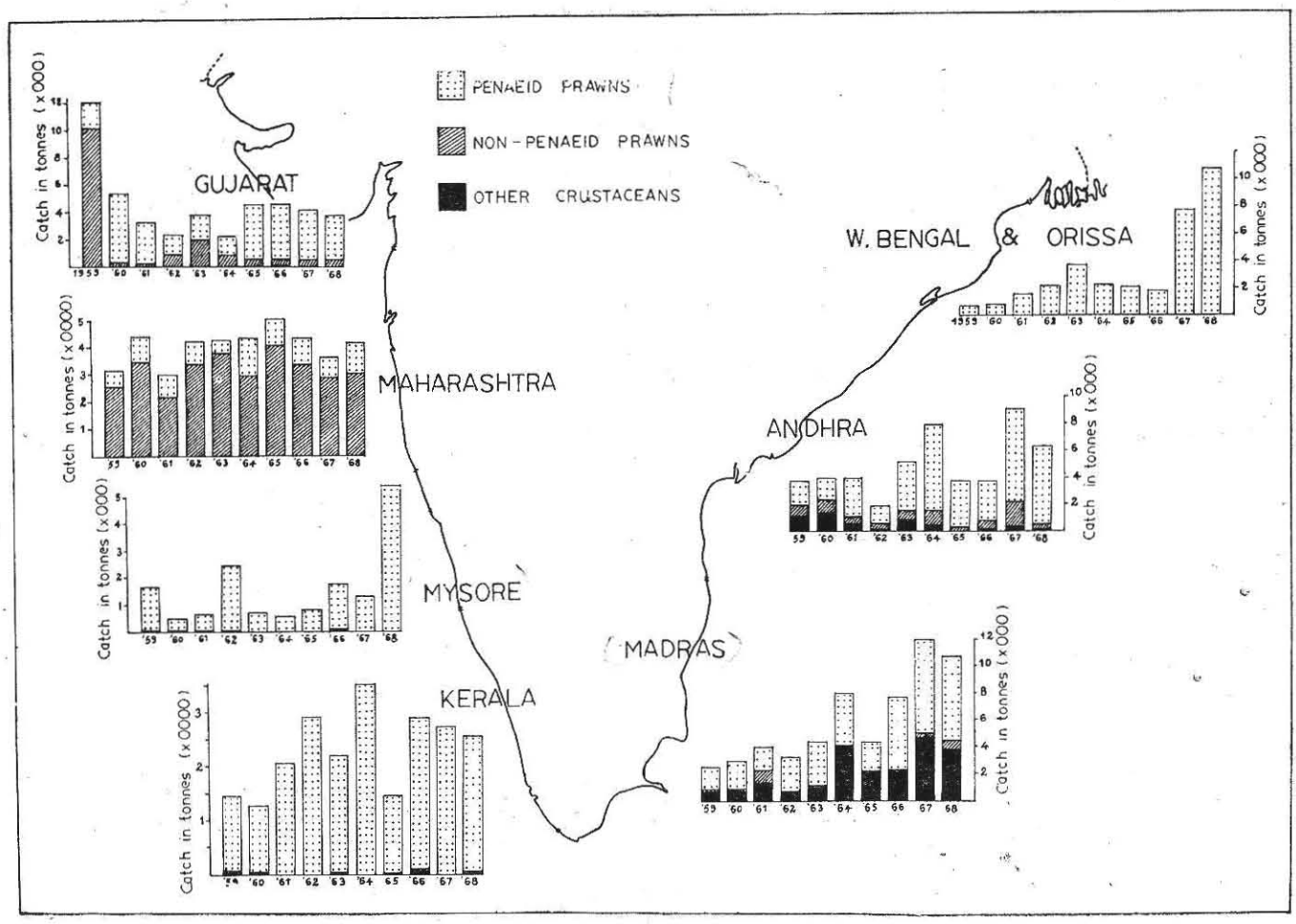


Annual landings of crustaceans in India

The south-west coast of India comprising the southern part of Mysore coast. the entire Kerala coast and west coast of Madras state accounts for over 50 per cent of the penaeid prawn landings of the country. In view of the greater involvement of the prawn export industry the various aspects of the capture fishery for prawns of this region need careful attention. While the trend of overall catch rate of prawns here is also on the ascent, that of the catch-rate of mechanised vessels operating here does not seem to conform to this pattern. Regular sampling carried out on the catches of the mechanised fishing vessels working from Cochin bar mouth for the past 4 years indicates that catch-rate for prawns has decreased during this period. The estimated annual catch-rate of prawns observed as 23.59 kg/hour in 1964-65 season has decreased to 16.30 kg/hour in 1968-69 season. This decrease is possibly a local phenomenon emerged out of the concentration of a large number of fishing units in a limited area. Another significant aspect that came out by the analysis of fishing data of the vessels working from Cochin is that the general area of fishing of these vessels has shifted to relatively shallow inshore regions during this period. In early 1950s, when the mechanised fishing boats were introduced into the capture fishery of this area their operations were generally in the region of 25 to 30 metres depth. This has undergone considerable change and the present operations are mostly in the region of 16 to 17 metres depth.

Fishing Units

The number of fishing units introduced into the capture fishery of this area has increased year after year and this has resulted in competition between fishing units. As a consequence of this competition it would appear that the fishing units are forced to fish in shallower regions. Examination of the sizes of different species of prawns landed by these vessels from this area showed gradual decrease in their mean sizes over these years. Since the overall prawn catch in Kerala has not decreased in quantity during the period, the reduction of mean size indicates that greater numbers of small sized prawns are being caught every year. The annual recruitment to the fishery is, therefore, not affected in any detrimental way. The decrease in mean size observed could be due to reasons such as change in the gear of



Crustacean landings in different maritime states

capture or shifting of the fishing ground. As neither the trawl nets used by the mechanised fishing boats nor the seine nets used by the country crafts of this area have undergone any significant change during the period the effect of gear need not be considered as a possible reason.

A shoreward shifting of the fishing ground has already been indicated. The life-history of most of these prawns is such that the entire recruitment to the trawling ground takes place from the estuaries and backwaters, which habitat they abandon when they reach specific sizes to migrate into the offshore grounds. This process of movement of prawns to the offshore grounds takes place more or less throughout the year and is possibly accomplished in a few months' time when they feed and grow. The shifting of the trawling grounds to shallower waters, therefore, subjects the smaller prawns which are on the course of movement to deeper grounds to capture too soon. From the foregoing it would appear that the available prawns in these grounds are at present subjected to capture and that the present exploitation is probably at a level from where further increase may not be advisable. Under the circumstances, further introduction of fishing effort into the capture fishery becomes meaningless as it will not only be unprofitable but also create difficulties to the existing units unless they are deployed in different fishing grounds.

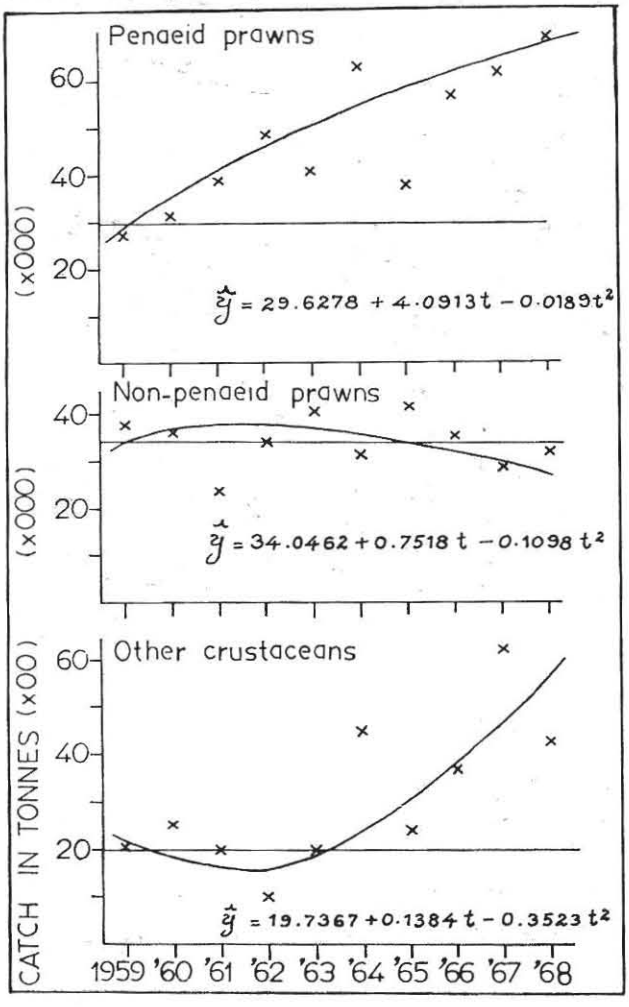
A word about the recent discovery of a totally new resource of prawns and lobsters will not be out of place here. The deep water exploratory fishing carried out by the Indo-Norwegian Project showed the presence of several species of deep water prawns and one species of deep water spiny lobster on the continental slope off the south-west coast of India. In some of these areas very high catch-rates (120 kg/hour) of prawns have been obtained. In the case of deep water spiny lobster, high catch-rates of over 2000 kg/hour have been recorded during regular fishing operations. Although the scope of this new resource is not fully assessed at present, its commerical possibilities cannot be overruled.

In the field of processing industry, tremendous developments have taken place during the past 15 years. Although prawns were processed and exported from India from the distant past, sophisticated methods of

TABLE 1. ANNUAL LANDINGS OF CRUSTACEANS IN INDIA 1950-1968 (in tonnes)

Year	Prawn penaeid	Prawng non-penaeid	Other crustaceans	Total crustaceans	Percentage of crustaceans in marine landings	Total effort man hours in million	Catch of crustaceans per man hour kg-hour
1950	37022	36369	1486	74877	12.90	—	—
1951	37972	37302	1523	76797	14.38	—	—
1952	38072	37401	1528	77001	14.57	—	—
1953	44839	44049	1799	90687	15.59	—	—
1954	76255	74912	3058	154225	26.22	—	—
1955	52720	51972	2114	106626	17.89	—	—
1956	66910	92372	270	159552	22.19	—	—
1957	74648	61374	791	136813	15.62	—	—
1958	29204	55987	1508	86699	11.47	313	0.276
1959	27632	37805	2093	67530	11.55	247	0.273
1960	31759	36271	2571	70601	8.03	216	0.326
1961	39083	23685	2038	64806	9.48	210	0.309
1962	48251	34984	1031	84266	13.08	218	0.386
1963	41071	40522	2061	83654	12.76	196	0.427
1964	63389	31506	4565	99460	11.57	175	0.568
1965	38085	41415	2392	81892	9.83	187	0.438
1966	56146	34768	3716	94630	10.64	198	0.478
1967	63310	31112	5261	99683	11.17	187	0.533
1968*	69467	31922	4301	105690	11.32	189	0.559
Average (19 Years)	49254	43976	2321	95552	13.34	212*	0.402**

*Provisional figures only
**Average of 11 years



←Trend lines of different groups of crustaceans (after Banerji)

processing and diversification of trade came into being from early 1950s. At present Indian prawns and other crustaceans are frozen and canned in several ways and are hygienically packed in attractive cartons for export over 50 countries of the world. The steep rising trend of export of crustacean products from India is creating records year after year. In 1968 India exported 18,359 tonnes of crustacean products valued at 200 million rupees.

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be graphic : one eloquent illustration is worth pages of explanation.