# SOUVENIR

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# PRIORITIES IN MARINE FISHERIES RESEARCH, DEVELOPMENT & MANAGEMENT

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Marine fisheries research programmes did undergo gradual changes during the last four decades, ever since the establishment of the Central Marine Fisheries Research Institute. The ship board research and data support provided by the Fishery Survey of India, Integrated Fisheries Project and the National Institute of Oceanography has also been too significant to be left aside. The changes that took place can be grouped under two categories. The first was a gradual shift from ichthyological studies to one of quantitative fishery resource research although the former was necessary for a meaningful approach for the latter. The second was to broad base the investigations from near shore areas to the off-shore and oceanic zones and to connect the two wherever necessary to get a full picture of the nature and extent of availabiility of the living resources in time and space.

However, these investigations were masked to a considerable extent by the so called "cultural revolution" that took place in the Central Marine Fisheries Research Institute. The development of improved technology in coastal aquaculture with a strong bias to shrimp culture became so pronounced an activity in the Institute in the last decade (with all its publicity and support from the marine export industry) that scientists and techno-administrators began to express fears of a possible shift in emphasis taking place in the priorities of activities, although the contribution by the Institute in culture techniques was quite significant to be proud of. This has also called for steps to put back the programme in their proper perspective.

In the meanwhile, as many as more than a hundred coastal countries, noting the emerging trends of the 3rd UN Conference on the Law of Seas, declared a two hundred mile exclusive economic zone (EEZ) reserving sovereign economic rights to explore, exploit, conserve and manage the living and non living resources in this area including safeguards for marine protection and

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pollution control. The immediate impact of this was that more than sixty percent of the known resources came under exclusive jurisdiction of coastal states, practically depriving the distant water fishing nations free entry into conventional fishing grounds not far away from coasts. While the convention conferred rights of exploitation to the coastal states, most of which were actually developing states, they did not have the necessary technology, management expertise or financial backing to organise optimum utilisation of the resources. They also lacked the necessary information base on the resources that suddenly came under their exclusive jurisdiction. However, the Food and Agriculture Organisation and other Co-operating agencies, initiated programmes of technical support to coastal states although the main responsibility to develop and manage resources rests on the national agencies themselves. In this context, national institutions engaged in living resource development and management and similar organisations carrying out marine science studies started stepping up efforts to achieve national self sufficiency in expertise and information base. In other words, research, development and management of living resources of the EEZ sprang into the fore-front of priorities for practically all the marine living resource study programmes. India cannot be an exception nor it can lag behind in any such programme because of its vast coastline of more than five thousand kilometres and an EEZ of over two million square kilometres.

Although the coastal zone is by and large more rich in nutrients and consequently supports the major share of marine catches, a better knowledge of the off-shore environment helps to improve management information particularly for those fish stocks that are migratory in habits. In addition, off-shore fisheries, both demersal and pelagic, supplement the catches of the conventional varieties. Oceanic varieties of fish that move in and out of the Economic Zone and those that move into and move away from the EEZ of one state to another also require careful study and monitoring for rational exploitation and sound management. The conventional fishing grounds identified and charted during periods of early exploitation a few decades ago can undergo changes as pressure of fishing increases. It has also been found that in several areas of the oceans, feeding and breeding grounds also undergo changes in quality and quantity due to environmental changes and due to pollution and environment damage. Migratory varieties are also subjected to pressures of diversion of flowing waters and artificial barriers and are often found to adjust to changes and restrict their sojourn to lower reaches of estuaries or become endemic and all these changes call for detailed investigations for developing management options.

The situation mentioned above is not unkown to fishery scientists and marine ecologists. However, these are seldom taken into consideration when progress is reviewed and new priorities identified. As far as the EEZ of India is concerned, there is more or less sufficient information on the resources of the

coastal zone, say upto the forty fathom limit. The resource availability data beyond that is fragmentary and do not provide adequate and reliable information for detailed planning and for investment. Hence, one of the main priorities in Marine Fisheries Research and Survey Programmes is to complete and consolidate the information base on resource availability. Another area of priority research is to scientifically assess the impact of fishing pressure on such stocks as the marine shrimp which is much sought after by the private industry. In addition, the drastic reduction in the breeding stock of marine shrimp may have an adverse effect on regular availability of "wild shrimp fry" for culture. A continuous monitoring of what is happening in the shrimp ground due to pressure of fishing, has to be a standing programme of work to be undertaken pooling all the resources at the disposal of the marine research agencies. Environmental damage, as is well known, can be remedied if detected early.

The mid water and the pelagic resources have to be reassessed periodically in view of the large fluctuations in their availability year after year and also because of the large variations in the estimates provided by various organisations and agencies. Unfortunately these resources which do not fetch an attractive price in the international market, are not getting the attention they deserve although they still offer us the main source of fish protein particularly for the vlunerable section of the coastal population. In practice, the "lab to land" programme which is claiming success in the agricultural extension set up should be a model for a "lab to sea" programme. In other words, there appears to be urgency to devote more time to stock assessment and management and in monitoring of mid water and pelagiic resources and to assess commercial possibilities through analysis of commercial catch data and confirmatory surveys.

It is well known that marine fishery resources from open waters cannot be raised to substantial levels through adoption of any technology. All that we can do is to carry out intensive studies of the parameters that contribute to the fluctuations in the availability and to use this information for short and long term forecasting and thereby render technical advice to the industry for optimum harvest of the resources with an eye on conservation. In other words, Marine Fisheries Research Scientists will have to remain vigilant on the changes that takes place in the marine environment due to natural or man-made cause in order to keep the resource as truly renewable. Although this is being done with a certain degree of regularity in all institutions, there is need for allotment of top priority for such research programmes to reap full benefits from the Exclusive Economic Zone.