

FISHERIES OF THE WEST COAST OF INDIA

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INDIAN FISHERIES—AN OVERALL VIEW

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RESOURCES

THE fishery resources of India include marine, estuarine and freshwater fisheries consisting of a very large number of species. Our present sea fish production is of the order of 7-8 lakh tons per annum and it is estimated that another 3 lakh tons of fish are produced in inland waters. There is in addition a considerable amount of subsistence fishing. This production is high and places India among the first seven nations having annual production of over a million tons. This is, however, inadequate to meet the country's needs which may be roughly computed at about 40 lakh tons per annum. The national income from fisheries is estimated at about 60 crores of rupees per annum and overseas trade in fish and fish products secures for the country about 3-5 crores of rupees as foreign exchange.

Whether as regards natural resources, human material or commercial activity, the Kerala coast has an important place in Indian fisheries. The location of an important centre of research in the field of marine fisheries at Kozhikode is based on the very advantageous position which this area enjoys for systematic scientific studies on the major fishery resources of the West Coast of India.

SEA FISHERIES

The sea fisheries resources comprise a large variety of fishes the most important of which are sardines, mackerel and prawns. Many other esteemed varieties exist, particularly pomfrets and seer fish. Fishing is generally confined to the narrow coastal belt of about 6-10 miles from the coast and production is in the hands of nearly a million fishermen. Coastal fisheries are largely seasonal which accounts for surplus production in some months with the attendant problems of transportation, marketing, processing and storage. Large-scale expansion of fishing in India depends on increased off-shore fishing activity which is being fostered by the mechanisation of the indigenous craft, introduction of small powered craft and by

off-shore fishing employing large modern fishing vessels. The West Coast of India at present accounts for over ^{three-fourths} ~~two-thirds~~ of our total sea fish production. Exploratory fishing has shown that there are rich deep sea fishing grounds off Kathiawar and extensive prawn resources exist off Bombay and Cochin.

Researches on marine fisheries have been going on at the Central Marine Fisheries Station, Mandapam, for the past ten years and as a result we now have a fairly accurate idea of our present sea fish production, important species, regions of the coast where they are found and their seasonal variations. Considerable progress has been made in the study of the biology of important commercial species and in the augmentation of coastal fishery resources by culture and farming practices. Latent resources in seaweeds and molluscan fisheries have been investigated to give some idea of their value in future development. Basic data on the productivity of the Indian seas, oceanographical conditions and their relation to fisheries are being obtained in an effort to understand and thereby foresee the magnitude and variations of the more important sea fisheries.

INLAND FISHERIES

The inland fisheries resources consist of the capture fisheries of the large number of rivers, lakes, irrigation dams, etc. and the culture fisheries in the thousands of fish ponds scattered throughout India. Fish cultural practices are particularly developed in Bengal, Bihar and Orissa, where there is an organised fish culture industry. Efforts in inland fisheries development lie in extending fish culture to all parts of India and in the adoption of scientific methods of fish farming. An acre of cultivated fish pond will yield, without artificial feeding, a quantity of about 1000 lb. of fish per acre per annum as against about 200 lb. from fish ponds not subject to cultural practices. Several lakhs of acres of water are now remaining fallow but with effort, all these could be brought to yield a regular harvest.

A major problem here is that the important culture fishes of India, viz., the major carps, Rohu (*Labeo rohita*), Mrigal (*Cirrhina mrigala*) and ~~Catla~~ (*Catla catla*) do not breed in the confined waters where they are cultured. Fish culture industry is, therefore, dependent upon naturally occurring spawn and fry for stocking purposes. As the spawning period is confined to the monsoon months (June to August) and the spawning areas confined to certain portions of rivers or adjoining waters subject to flooding, the available fish seed is limited. Researches at the Central Inland Fisheries Station have helped to reduce the mortality of fish seed while they are

collected and transported. A promising line of work has been successfully opened up whereby the Carps have been induced to spawn in the ponds by the administration of pituitary hormone. Experiments and field trials have been successful and it is hoped to extend this work on a practical scale to various states.

The estuarine fisheries mainly consist of capture fisheries in the coastal tracts like Chilka and Pulicat Lakes, large numbers of backwaters on the coasts and estuaries of the larger rivers. Important estuarine fishes are Hilsa (*Hilsa ilisha*), milk fish (*Chanos chanos*), Bhekki (*Lates calcarifer*), mullets (*Mugil spp.*) and prawns.

FISHERIES IN THE PLAN

The Central and State Governments have taken several important measures for the development of Indian fisheries. The First Plan made a provision of Rs. 1 crore for Central Schemes and Rs. 4 crores for the State Schemes of which about Rs. 2.8 crores was actually spent. In the Second Plan there is a total allocation of Rs. 3.38 crores for Central Fisheries Schemes and about Rs. 8 crores for the State Fisheries Schemes. The major Central Schemes are (i) the expansion of fishery research, (ii) exploratory fishing in high seas, (iii) establishment of technological research, (iv) training, (v) fisheries extension activities, and (vi) fish transport by rail. Owing to the shortage of foreign exchange some of the schemes like large-scale exploratory fishing have had to be reduced, but in most of the other sectors work is in progress. The two fisheries research stations established in 1947, viz., the Central Marine Fisheries Research Station at Mandapam and the Central Inland Fisheries Research Station at Calcutta, have made substantial progress in their programmes.

State Schemes for developing marine fisheries include the supply of engines to indigenous craft, supply of new and existing fishery requisites (boats, yarn, etc.) at subsidised rates, and provision of fish curing, storage and transport facilities. In the development of inland fisheries the schemes are meant for the reclamation of tanks and swamps for fish culture, collection and distribution of fish seed for stocking, establishment of nursery ponds, transport, storage and marketing of fish. Organisation of fisheries co-operatives also figure in some of the State schemes.

TRAINING

It is realised that one of the essential requirements for modernising Indian fisheries is the establishment of training facilities for various categories of personnel. Apart from traditional methods of fishing the entire

approach to this subject is a new discipline to our country particularly in the field of application of mechanised methods and industrial practices. The Central Inland Fisheries Station is now giving a course in Inland Fisheries training to graduates who would become qualified to take fishery developmental activity in State Fishery administrations. With the operation of the Second Plan it has become more and more apparent that training facilities for administrative personnel in this country in the field of fisheries are inadequate and the Government of India has recently set up an Expert Committee to go into this question and make appropriate recommendations. The question of setting up higher training institutions for administrative and supervisory personnel on the one hand and for actual fishery operatives on the other is being actively studied by this Committee. Institutional training facilities should in the long run lead to the development of fisheries as a distinct discipline in applied science in this country on a par with Forestry, Agriculture and Veterinary Sciences.

In view of the rapid changes towards mechanisation of fishing craft special attention is being paid to training fishermen in the operation of mechanised craft and gear and in handling of engines. A small number of persons are trained in the deep sea fishing vessels belonging to the Government of India, where they complete a four-year course of study before being absorbed as Skippers of fishing vessels. Training in mechanised fishing for fishermen has been set up in fishing centres such as Veraval, Satpati, Mangalore, Calicut, Cochin, Tuticorin and Kakinada.

TECHNICAL ASSISTANCE

In the field of fisheries we have secured technical assistance from the Food and Agriculture Organisation of the United Nations, Technical Co-operation Mission of the U.S. Government and from the Government of Norway. The F.A.O. experts are contributing to fisheries development in various fields. They are in charge of specific projects with suitable Indian counterpart assistants. A fishing boat engineer, for example, has worked in maritime States of India and has helped in the designing of new types of small fishing craft suitable for certain regions of our coast. In this connection special attention is also being bestowed on the design of a suitable beach landing craft which can withstand the fury of the surf. This is a major problem on the East Coast of India where this peculiar characteristic of the coast has retarded the evolution of large local craft. Another activity has been in the designing of fishing harbours and ancillary facilities for accommodating fishing vessels in existing harbours. With the increasing tempo of deep sea fishing operations, advice on fleet management became

necessary and experienced specialists, therefore, were attached to deep sea fishing centres at Bombay, Cochin and Calcutta. Another field where specialist assistance has been sought is in technological work and in the organisation of marketing facilities.

The assistance from the Technical Co-operation Mission has been made mainly in the field of commodities for the modernisation of Indian fisheries. The commodities distributed have been engines for installation in indigenous craft, Nylon and other modern type of gear material and gear, ice plants and cold storage facilities. The most important contribution has been for exploratory fishing in the Indian seas. For this purpose various types of fishing vessels were supplied to the Central and State Governments. These vessels have been operated by the States for a few years but it has been found that the main purpose of exploratory activity could be better accomplished by management from a central pool. They have been re-organised into four fleets for exploratory work from Bombay, Cochin, Tuticorin and Vishakhapatnam. A specially designed research-*cum*-exploratory vessel will be taking up investigations on the estuarine resources of West Bengal particularly the Hilsa fisheries.

A joint Indo-Norwegian project has been set up in Kerala following a tripartite agreement between the United Nations, Government of Norway and the Government of India. The project is aimed to develop the fishing activities of a small area north of Quilon by an integrated approach to the various problems confronting the fishing communities. Here new designs of smaller boats have been developed and with engines these have been supplied to fishermen. A boat-yard builds the newly designed boats in large numbers. A cold storage and ice plant has been set up to deal with the increased catches that would come by the mechanised fishing activities. Larger type of schooners do exploratory fishing. A sales organisation for marketing the products in the interior is being organised. The social conditions of the fishermen are being bettered by improved water-supply, health services and sanitation. The whole project is an experimental approach to find out the best method of effecting large-scale changes in the economy of the fisherfolk through modernisation.

FISHERIES TECHNOLOGY

A large part of our sea fisheries is seasonal and based on shoaling species like sardines and mackerel. This fact combined with the inadequacy of transportation facilities to send fish in good condition to the interior, has led to the development of a fish curing industry. The surplus marine catches

of fish are either directly sun-dried or salt cured and later sun-dried. Prawns are often boiled and sun-dried. Pit-curing and wet-curing by different methods are also practised throughout India, but the curing industry is best developed on the Kanara, Konkan and Malabar Coasts. Recently cold storage and ice plants have been established in various places and private industry has come into the field of freezing good quality prawns and fish. The bulk of cured fish produced in India is exported to Ceylon and other eastern countries and there is a growing market for frozen prawns in the United States. In addition, small quantities of fish meal, fish guano, fish manure and fish oil have been exported to other countries for many years.

In order to step up the quality of cured fish and to introduce new methods in the processing of fish, special attention is being paid to this subject in the Second Plan by the establishment of an institution for technological research at Cochin. The results obtained in this field of research will be directed to the improvement of fish products and for the development of suitable methods for inspection and quality control of the products for export. Technological research is also being extended to the problems of fishing craft and gear where intensive work on boat designing, improvement of existing fishing gear and introduction of new gear, are all engaging attention. The Craft and Gear wing of the Fisheries Technological Research Station was established at Cochin in 1957. The Processing Wing is now being set up.

ADMINISTRATION OF INDIAN FISHERIES

Fisheries has been looked upon for many years as a revenue department. It took many years to have it orientated as a development department and the pioneer efforts in this direction were made in the States of Madras, Bengal and Bombay. Other States are slowly following. The Travancore-Cochin part of Kerala had a fisheries department for many years. Some of the early researches relating to Indian fisheries were carried out at the West Hill Marine Biological Station at Calicut. A Fisheries Advisory Section was created in the Ministry of Food and Agriculture in 1944. In recent years administrative organisations to deal with fisheries have come into being in most States but much more remains to be accomplished, if fisheries development is to contribute its full share to national economy. The Central Government is, in accordance with the provisions of the Indian Constitution, paying special attention to fisheries research and fishing outside territorial waters.

In the international field India is a Founder-Member of the Indo-Pacific Fisheries Council. A Central Board of Fisheries has recently been estab-

lished to effect better co-ordination of activities in the States and the Centre and for taking decisions at policy level. A Standing Fisheries Research Committee reviews from time to time the problems of research to be taken up and those relating to the application of recent results of research. For the latter the Central Ministry of Food and Agriculture have set up an extension organisation with units located in different parts of the country. The Ministry of Community Development is also proposing to pay special attention to inland fisheries in Community Development areas and National Extension Service blocks.

Although we are doing much in the field of developing our fisheries it is realised that much more remains to be done in this technical field which is somewhat new to the country. Unfortunately the fishing industry of India has been associated all these years with a section of people who are very poor and in a low position in the socio-economic fabric. Things are fast changing. With the various measures which the States and Central Governments have taken, the organisational activities developing among fishing communities and the interest taken by the public in the fishing industry, there is, however, reason to hope that this industry, which can play an important part in food production and commercial activities, will be placed on a stable footing.