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# ESTIMATION OF MARINE FISH PRODUCTION IN INDIA

The present exploitation of marine fisheries in India is limited to only a narrow belt of the continental shelf, harvesting about 1.35 million tonnes of fish. The necessity of developing and expanding the marine fisheries has assumed greater importance especially in view of the shortage of food on land and also to meet the deficiency in the much needed protein in our diet. A wide range of statistical informations are necessary to formulate a realistic plan for the development of marine fisheries in India. The more accurate the basic statistical data are, the plans or programmes drawn-up will be more realistic or correct.

In India, the fishing has been a traditional occupation of a section of people from time immemorial. The absence of any organised fishing industry in early times handicapped the scheme of collection of scientific data for the estimation of marine fish production, fishing effort etc. Although in recent times mechanisation of fishing craft has enabled the fishermen to cover a larger area and the improvements in craft and gear have made the catching of fish more efficient, many fishermen of the country still follow the traditional fishing methods using indigenous fishing crafts.

The marine fishes are landed at about 1300 landing centres spread all along the coastline at almost all hours round the year. Under these conditions collection of basic data by complete enumeration as done in some of the developed countries is not possible and the adoption of a suitable sampling technique is the only choice. The sampling design thus formulated should also take into consideration the collection of other biological data which will reveal the knowledge of either the absolute magnitude or some relative indices of abundance of various exploitable stocks of fishes which is so necessary that the optimum sustainable yield may be derived from these stocks, maintaining at the same time their level.

The first attempt to build up a planned survey for the estimation of fish catch on an all India basis was made after the establishment of the Central Marine Fisheries Research Institute in 1947. In the pilot survey conducted in 1948-49, village-wise data were collected on the area exploited, the number of persons engaged in marine fishing, the number of various types of fishing boats and nets, fishing season, type of fish caught and the number of fish landing centres. This brought forth a complete picture of fishing activities and threw light on the potentialities of marine fishery.

On the basis of this survey, fisheries data were collected on regular basis from 1950 by dividing the entire coastline of India into twelve homogenous survey zones—each zone put in charge of a well trained field staff for the purpose of collection of all basic data. Fairly accurate estimates of marine fish production in India were arrived at from the sample estimates of each zone. With the availability of more funds and additional staff, the survey zones were further increased from twelve to twenty in 1957 covering more landing centres. Additional data on fishing effort were also collected from that year. Between 1950–51 and 1954-55 the Indian Council of Agricultural Research also initiated a number of pilot surveys of various designs in different regions of the country with a view to evolving most suitable sampling design for the estimation of fish landings in the country. The pilot surveys and their results have influenced a great deal in moulding the currently designed sample surveys undertaken by the Central Marine Fisheries Research Institute. To bring out the nature of changing pattern of fishing industry and its consequent impact on fishermen and to develop the sampling design according to changing field conditions, census of fishing villages were repeated during 1957-58, 1961-62 and 1972-73. Since any betterment plan of fishing industry must also aim at betterment of the condition of fishermen engaged in fishing, socio-economic data with regard to them are also necessary. During the 1972-73 census this information was also collected.

The present sampling design involving space-time stratification was first put into operation in the Kerala State in the middle of 1959 and was slowly extended to other states of the west coast of India. From 1961 the design was introduced in the east coast of India also. A number of geographically contiguous landing centres form the stratum in space. A ten-day period of a

month is the time-stratum. The primary sampling unit is a centre-day or a centre-two days group. Sampling is also adopted over hours of the selected day and the enumeration units, which are landing boats, are selected on a systematic way. The night catches are obtained by enquiry from fishermen. On the basis of the estimates made for the primary sampling units, stratum estimates and their percentage error are arrived at. The period of estimation is a calendar month. Additional data on size composition of the catch of the most important fishes like oil sardines, mackerel and Bombay duck and also of penaeid prawns are collected for the study of stock assessment of these fisheries. This enables to get the abundance of size and age composition of the catch leading to estimation of mortality parameters.

Thus over the years the Institute has developed capability for providing variety-wise estimates of marine fish production with seasonal and regional break-up along with estimates of fishing effort according to different types of fishing units and also in terms of man hours.