

DEVELOPMENT OF JAPANESE FISHERIES

by

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ABSTRACT

The development of Japanese fisheries as seen from statistics, improvement and evolution of production means, changes in exploitation of resources, fishery research and education, construction of fishing harbours, cooperative activities in fisheries, and objectives to be achieved in the future are discussed.

INTRODUCTION

Japan is a country surrounded with the seas and ocean, and these seas abound with fishing grounds. Under such a natural environment, the Japanese people have depended, since old days, upon fishery products for an important source of animal protein. This fact gave the fishing industry in Japan a very important position among her industries; and this is also the reason why the means of production and management of the fisheries in Japan has made a remarkable development since the turn of the century.

The total fisheries production of Japan in 1959 amounted to 5,800,000 metric tons, which represents 16% of the total catches in the world. Such high level of fisheries production cannot be attained in a short period of time and without some difficulties. It is the result of the very strenuous efforts made by our fishery people for the steady advancement of fishery techniques and for the solution of various difficult problems which stood in the way.

Even at present and in the future as well, there are yet a number of problems and matters to be solved or to be improved. For example, fisheries production of Japan is at the high level as mentioned just before. However, it should be noted at the same time that approximately 800,000 persons are engaged in these fisheries

with 400,000 or more fishing boats, large and small, including both powered and non-powered ones. This indicates that, in terms of the average catch per person or the average catch per boat, the level of Japanese fishing production is not so high as that of other advanced nations in fisheries in the world.

Since other industries in Japan have been showing rapid growth in recent years and are expected to make further developments in the future, bringing up the productivity of fisheries should be the paramount and ultimate objective of fisheries administration and management. But, in view of the fact that the fishing activities are in most cases, based on the exploitation of marine resources which are subject to wide fluctuation in abundance and that all fishing nations are obligated to exploit them effectively so as to maintain a sustainable yield, there arise various difficult problems peculiar to fisheries.

DEVELOPMENT OF JAPANESE FISHERIES AS SEEN FROM STATISTICS

In the history of the Japanese fisheries, there are two periods during which a striking development and a great promotion of their activities were made. The first period covers about 10 years from around 1920 to 1930, and the second period is from the World War II up to the present time. In the first period, their production increased by about 10 times; and in the second period, it has shown an increase amount to 50%.

In the meantime, a substantial evolution has taken place in the structure of fisheries management and a modernization in its character has been attained. However, it must be noted that, in terms of number fishing units, small scale fishermen, in the form of family labor

with only small boat or in some cases, like harvesting shellfish and seaweed, without any boat, still provide the motive force in fisheries. In other words, the highest percentage of the number of the total fishing enterprises is being occupied by such small fishermen which we call "fishing households".

Of the total fisheries enterprises amounting to about 230,000 in number, about 220,000 or more than 95% are fishing households and very small enterprises, and approximately 10,000 or about 3% are enterprises of medium scale, while only 500 or 0.02% are larger enterprises which are organized in the form of corporation.

In regard to the type of fisheries, those traditional fisheries conducted since the 19th century, such as drag-net fishery; surrounding-net fishery, skipjack pole and line fishery with comparatively large size boats in offshore waters and with comparatively large crews on board, still remain today as the mainstay of the Japanese fisheries. Whaling operations with harpoon guns may be said to be the only type of fishing of foreign origin. However, such traditional fisheries have changed completely from those of old days in their size of boats, methods of operation and so on through the renovations and improvements made by the continuous re-examination of their operation; and, from time to time, the developments by the fishing industries of other countries have also been introduced to improve their operation.

Such improvements, together with the readjustment and rationalization of enterprises of all scales as well as the establishment of well-equipped common facilities (like marketing facilities, cold storages, etc.) at landing bases, have promoted the productivity of fisheries and thus contributed to increase their production as already mentioned. Taking the total fishery production in 1953 as 100%, the rate of increase in the production during 5 years from 1955 to 1959 is 7% in the case of the production in coastal and inlandwater fisheries; 40% in the case of the production in offshore fisheries; and 86% in the case of pelagic fisheries.

Such increase in production can be taken as an index to the promotion of productivity of

fishery labour during these years. Through the improvement of fishing harbours, other facilities and fishing gear and method, labour hours for fishing operation have been reduced to some extent.

According to the statistics on fishery labour for 1959, we have approximately 800,000 fishermen. Though there is no great change in their number during these years, it should be noted that there is seen a slightly declining trend in fishing labour in general.

IMPROVEMENT AND EVOLUTION OF PRODUCTION MEANS

The increase in the production in the Japanese fisheries which started in the early part of the 20th century has made rapid progress since then. The increase at the beginning was realized chiefly through the use of cotton nets of larger type which became to be manufactured in quantities by machinery and through the extension of cruising radius of fishing boats equipped with engines.

In addition, the scientific and technical research work in fisheries vigorously driven forward in those days have greatly contributed toward the effective use of fishing craft and gear. After the war many steel hulled boats of larger type came into use for fisheries. In regard to the means of propulsion of boats, the traditional hot bulb engines widely used in pre-war times have been replaced by Diesel engines.

In the operation of small boats, Diesel engines are now being widely used. Those improvements have resulted generally in the simplification operation of all boats including smaller craft, and also in navigation safety, diminishing accidents which might have happened to them. Consequently, they have brought a remarkable increase in efficiency to fishing operations.

As for communications between land and boat, and between boat and boat, radio apparatus is widely used, and many land wireless stations have also been established.

All things taken together, however, it must be noted that the most noteworthy part in the

progress toward the promoted productivity of Japanese fisheries after the war has been played by fish finders and synthetic fibre nets. Fish finders of various types, which are now widely fitted on many fishing boats, large and small are doing much scouting for fish schools, and at the same time they are contributing to finding whether the fishing nets set in the water are in the right position or not during their operation. There are several kinds of synthetic fibre nets in varying materials; they are generally tougher, lighter and more durable than cotton nets.

These advances serve to save much time, labour and money in drying and repairing them during a long cruise on the sea. In the case of fishing with fixed-net set in the sea for a considerably long time of the season, tough nylon or similar synthetic nets have quite a big advantage over conventional cotton nets. Nylon gill nets, again, entrap fish more easily and more firmly than cotton nets.

For the purpose of popularization of modern fisheries techniques among coastal fishing villages which have a great number of small boats of rather poor efficiency, extension advisers appointed by the Prefectural Governments are stationed in those villages under Government subsidy. They are undertaking the task of training fishermen in setting-up and operation of Diesel engines and fish finders, and also in the use of fishing nets of synthetic fibre.

CHANGES IN EXPLOITATION OF FISHERY RESOURCES

In the prewar days, the production share by fish species in Japan was represented like this: 30% for sardine, 15% for herring, 4% for mackerels, 1% for saury, and 3% for squid. But it has changed since the war, and is now: 12% for sardine, 1% for mackerels, 10% for saury and 8% for squid. This shows that the high production percentage shared by herring and sardine in prewar days has shifted to other items of fish in these days. With regard to the production of bottom fish, no change can be seen between the two periods, maintaining about 20% of the total catch.

Generally speaking, the fishing efforts in western countries are rather concentrated to

catch various species of bottom fish. The Japanese fisheries are operated to catch not only bottom fish, but also various species of pelagic or surface fish. This tendency has been developed to a remarkable extent in recent years.

An outstanding increase is seen in the recent production which has developed in the fish culture industry in sea and fresh waters. By the active encouragement policy of the Government for cultivation of culture farms, intensive culture projects for oyster, algae, etc. are now in full swing. In addition, with the recent development of methods for quantity production of spores or eggs of seaweeds or shimps in ponds that are not generally subject to natural conditions, culturists are now provided with a great supply of seeds of fry. This gives us quite good expectations for increase in production of those items in the future.

In parallel with the intensive culture industry, the Government is now taking promotive measures for the productivity of fisheries by transplanting young fish and shellfish from densely populated areas to places most suitable for their growing and for harvesting, or by releasing into rivers and lakes those young fish which were reared in ponds.

In coastal waters, through the sponsorship of the Government, fish nests or so-called fish apartments have been widely built to induce fish, and, at the same time, artificial submerged reefs have been constructed for the purpose of propagation of seaweeds. These production means are intended to help, artificially, propagation of marine resources of high economical value and promote, actively, the production power of fishing grounds.

Special reference should be made to the programme of conservation of marine resources which is being enforced now in Japan. Strict restrictive regulations are in force for taking of the species of fish which may be easily caught or those which lay only a few eggs and which take a long time to grow, such as abalone, spiny lobster, crabs and whales.

Besides, regarding our important fishery resources, statistical surveys, as well as biological and oceanographical research have been, and are

being, conducted with the co-operation of both the Government and the fisherman, and a keen interest is exhibited by both parties in the proper exploitation of the resources on the basis of conservation.

FISHERY RESEARCHES AND EDUCATION

Research and education, in the case of fisheries as in other fields, are the most effective means for promoting their productivity. It is absolutely necessary for the effective operation of modernized fishing craft and gear, and of culture and processing facilities, to have experts who have been well trained in fisheries sciences and techniques, and it is also essential to foster specialists well qualified to achieve the high and reasonable exploitation of fishery resources.

For the purpose of training such experts and specialists, there have been established 33 fisheries high schools at prefectural level, and fisheries colleges or universities with fishery faculties mostly at national level, totalling 13 in all. Fisheries high schools, which are established in most of the coastal prefectures, conduct technical education for students who wish to be trained in special matters regarding fisheries, in addition to the regular curriculum for liberal arts and sciences such as mathematics, physics, chemistry, biology and foreign languages.

Prefectural Governments, with financial aid from the Central Government, have extension advisers for technical improvement as well as home advisers for improvement of living conditions in fishing villages. They reside permanently in fishing villages and are responsible for general education of fishermen, and for training them in special subjects such as navigation of boats and operation of engines.

Fisheries researches in Japan are conducted, in addition to the universities with fisheries faculties mentioned before, by the 8 National Fisheries Research Laboratories and about 50 prefectural fisheries experimental stations with close coordination between themselves. Besides the important study on the condition of fishery resources referred to already, the subjects of research handled by these organizations include various aspects of propagation

of fish and shellfish, fishing gear and methods, as well as processing and other utilization of products. The results and data obtained by these researches are made available to the general public. Some of them may be included in the teaching subjects in schools and some may be utilized in making national plans for fisheries.

CONSTRUCTION OF FISHERIES HARBOURS

In older days when our people used only small non-powered boats for fishing, the fishing boats were drawn up on shore, or they were moored in natural fishing ports such as river mouths or estuaries. With the motorization and enlargement of fishing boats in the early part of this century, dredging of fishing harbours and construction of breakwaters were started.

With regard to the construction of modern fishing harbours, however, its history may be traced back only to approximately 1930 or later. It was mainly postwar that we got so many modern harbours. The Government worked out after the war a long range plan for repair and construction of 604 fishing ports all over the country. This plan is in operation at present for repair and construction work.

The modern fishing harbour must be equipped with such facilities as breakwaters, quay walls and moorages for safe anchorage of fishing boats, landing and marketing facilities for the catch, transport facilities, ice-making, freezing and cold storage facilities, crews' rest houses and others. Only with such modern fishing harbours can the efficiency of fisheries be attained to full extent, can an appropriate marketing of catches be performed, and can fishermen enjoy increased incomes.

For these reasons, parallel with the improvement of fishing boats and other fishing gear, the construction and repair of fishing ports are considered to be essential elements for the promotion of fisheries productivity. Otherwise, modernized fishing gear could not utilise its full capacity. There is an urgent demand now in Japan especially for construction of modern fishing harbours which are equipped with improved

landing places, expanded ice-making, freezing and cold-storage facilities together with transportation networks such as railroads and truck roads. It is a matter of course that we should be provided with reinforced breakwaters and enlarged mooring space in the fishing harbours located within typhoon areas.

Most of the fishing bases and villages in Japan have fishing harbours, large or small, according to the number and size of boats, which may anchor. These fishing harbours have been constructed by fishermen's co-operatives, cities and towns or prefecture government under the subsidy of the Central Government.

In this way, all around the coasts of Japan there has been established an extensive network of fishing harbours of different types in form and facilities to conform with the respective geographical features and fishery types.

In view of the importance of fishing harbours in the promotion of fisheries productivity, the Government has drawn up with the greatest possible care an all-round plan for their allocation all over the country, taking into consideration the reciprocal relation among fishing harbours of large, medium and small types, to keep pace with the enlargement and modernization of boats.

COOPERATIVE ACTIVITIES IN FISHERIES

In the course of the promotion plan for fisheries productivity in Japan, one of the most important matters to be kept in mind is the structure of fisheries management. The fisheries management is now conducted by enterprises of various scales covering a limited number of enterprises of very large type, a considerable number of medium enterprises and a very great number of small enterprises. Large enterprises may command sufficient credit to be able to borrow money from banks for the acquisition or improvement of fishing craft and gear and for the equipment of facilities for processing and marketing of catches. But many small enterprises and fishing households in general cannot enjoy such favour, and they are apt to stay in a disadvantageous position for marketing their

catches and purchasing materials necessary for fishing.

Small fishermen had started to combine themselves at the turn of the 19th century in fishermen's cooperatives. Since then, through such organizations, small scale fishermen came to be able to sell their catches at their own landing markets, to ship their catches in cooperation to consuming centers and to purchase necessary materials en bloc for their use.

With regard to credit facilities, fishermen deposit their money with their cooperatives as joint investment, and they may borrow their necessary funds from them. This is the so-called cooperative finance or cooperative credit loan. We have a central cooperative banking institution for fishermen as well as for farmers. It is called the Central Cooperative Bank for Agriculture and Forestry. This banking institution was established with cooperation of farmer's and fishermen's cooperatives. Individual fishermen and farmers may ask the institution for a loan of money through the cooperatives to which they belong.

There are a number of fishermen's cooperatives which are provided with cold storage, radio stations, ship repair shops or work shops which may be used by their members and others. In short, the cooperation of fishermen is making it possible to have profitable marketing of their catches, to borrow money on credit from financing institutions and to make use of modern fishery facilities.

Fishing industry is an industry highly susceptible to natural conditions and phenomena; especially so, in the case of fisheries operated by small scale fishermen whose fishing boats and other facilities are very small and exposed to storms or tidal waves. In order to facilitate rehabilitation from damages, legislative measures have been taken for insuring fishing boats, fishing gear and catches as well as for prevention and relief of disasters on the basis of cooperation.

To stimulate the supply of rehabilitation funds, the Government insures loss compensation to banking institutions. At the same time

encouragement measures are taken under laws for fishermen's cooperatives by granting appropriate subsidy to facilitate the stabilization of business and capital accumulation of small fishing enterprises and households.

OBJECTIVES TO BE ACHIEVED IN THE FUTURE

The development of Japanese fisheries, as mentioned above, is an aggregated result of the improvement of fishing craft and gear, the consolidation of equipment of fishing ports and their supplementary facilities, the promotion of research and education, the solid cooperation of small scale fishermen, and the increased exploitation and proper conservation of resources.

There are, however, some other factors which have brought about to-day's development in fisheries. One of them is the active demand for fisheries products by people in these days, that is, the recent enlargement of the domestic fish market which has partly been caused by the comparatively slow development of the live-stock industry in Japan.

The items of fishery products served on the table have a wide variety, and considerable changes are observed among people in their preference or demand for these items. Though it may differ according to the category of consumers and fish species, its general trend of late years is indicated in the increased consumption of fresh of high quality and processed products of modern type.

Another is an all round exploitation of fishing grounds. The exploitation of fishing grounds or areas before 1910 was rather limited to those very near the shore, mostly along the coasts of the central and northern districts of Japan. The exploitation of off-shore and high-sea fishing grounds has been gradually developed ever since, with the motorization and enlarge-

ment of fishing boats. Since the war, Japanese fishing boats are operating in waters farther off the shores. At the same time new fishing grounds have been found in waters adjacent to the coasts of the home land. This is a direct outcome of the scientific investigations conducted by our experts as well as of the modernization of equipment and the improvement of fishing techniques. Culture farms or beds in coastal and inland waters have also been cultivated to a great extent in these years, and new species of fish and shellfish together with traditional species are being raised in these farms. Such favourable result has been brought about by the recent extension of farms and the improvement in culture techniques.

In order to maintain the stabilized growth of the Japanese fisheries in the future and thereby promote their productivity, we are undertaking two projects which we must push forward with patience. One of them is the well-balanced improvement in all sorts of fisheries techniques and facilities. The techniques and facilities currently used in fisheries from the stage of production to that of consumption are very complicated and some of them, I should say, are not working as intended. In order to demonstrate the full capacity of the facilities and techniques, a well-balanced improvement must be made and a comprehensive policy for techniques and facilities must be established by the Government.

The other project is the establishment of a fisheries management structure of high productive power. The structure of fisheries management undergoes perpetual changes and will gradually attain a structure of high productivity. The complicated structure in Japan comprising large, medium and small enterprises may not change easily, partly because of the pressure from correlated industries. The Government, however, has set to work to carry out a long range plan for steadily improving the structure of management of fisheries from low productivity to high productivity.