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May
March 5, 1961.

The Minister of
Agriculture and Forestry
of Lebanon



ABOUT LEBANESE FISHERIES

الجمهورية اللبنانية
مكتب وزير الدولة لشؤون
المركز والدراسات القطاعية العامة

Dear Sir:

Here we give you the outline of Lebanese fisheries as an interim report as stated in the accompanying sheets.

→ This ~~short~~ report is the summary of the conclusion drawn out of the observation we made through our fisheries guidance and experiences on land and test operations on the sea till April 20, 1961 since we had arrived at our post in Lebanon on November 17 of 1960. But much still remains to be said. And yet we could make only a partial investigation and guidance contrary to our schedule by the facts that it was out of the fishing season when we arrived there, that the period of our investigation was short and that it was heavy weather at sea on account of the rainy season. We are afraid, therefore, that there are many matters missing the points here in the report. We should like to hit their marks by keeping further guidance and investigations hereafter. But we believe that we can largely correct the pessimistic viewpoints and opinions entertained or informed about Lebanese fisheries hitherto.

→ We are going to make a detailed statement later, and here we give you only the outline of it as a temporary measure, hoping that it may help you decide the future directions of Lebanese fisheries.

Sincerely yours,

Tsutomu Toda

Expert in Fisheries

Mission au Liban (5 mois)

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au 20 IV 61

THE OUTLINE OF THE PRESENT SITUATION OF LEBANESE FISHERIES

(1) The Outline of Topography

Lebanon is located in the eastern interior of the Mediterranean Sea and extends long and narrow from north to south. There are mountains close to the shore and spread broad flats at Tripoli and northward but there are very few flats in the other regions.

The configuration of the sea bed is much alike that of the land. There are wide sea shelves at Tripoli and northward, but there are only narrow ones in the other grounds. 100-fathom-deep line is 0.5 to 5 miles away from the shore.

The coast line is not so indented and is between lat. $33^{\circ}6'30''N$. and lat. $33^{\circ}38'N$. with a length of around 250 kilometers. But there are few good harbors along the line.

Sea shelves are narrow and seaweeds are not rampant. On the other hand there are dotted with many reef zones inhabitable for aquatic animals and you can find those of the temperate zone in quantities.

(2) Fish Catch

The annual total fish catch is estimated around at 1,500 tons. But judging from the conditions of operations in various fishing grounds, the present catch seemd to exceed the above figure.

According to fish catch by species, the catch of sardine and macherel is said to constitute the majority of the total. We cannot know the real condition now because it is out of the fishing season, but we may suppose that they get a much better catch by lantern net fishing and beach seine fishing, putting all the talks of fishermen together.

Bottom fish long line fishing and beach fish trinal gill net fishing are operated in various fishing areas all the year round. The catch by these methods is quite great and likely to equal that of sardine and mackerel.

(3) Fishing Boats and Fishing Gear

It is reported that there are 429 non-powered boats and 321 powered ones. But in reality almost all of the latters are small motor-boats less than 8 meters overall, built of the keel, apt to roll violently and having no deck on them. They cannot use them for fishing operations nor for loading of fish catch even when waves rise only a little.

about 4 knots an hour in the season of stormy weather from the middle of January to the middle of February. Usually they flow the speed of 1 or 2 knots an hour, and sometimes you cannot see the drift of them at all when the sea is very calm. And their speed is likely to change even in a day.

The main currents mostly flow from north to south, but they are different in their drift more or less according to geographical features. For example, currents along the north coast run towards west at such a point where the grounds form a peninsula, pushing out into the sea, as in Beirut, while they run towards east where they push out only a little bit.

(6) Water Temperature

We have no knowledge of the conditions and changes of water temperature in various fishing areas nor layers depending on water temperature. But we can show but the surface water temperature we observed along the coast of Beirut from the beginning of December up to now (April 20) as follows:

December	21 - 22°
January	20 - 21°
February	18 - 20°
March	18 - 19°
April	20 - 22°

(7) Plankton

There were large quantities of microbes off Beirut when we made our observation at the beginning of December. But we do not investigate their species and quantity yet.

A great quantity of the catch will be possible also by pole and line fishing and angling, judging from the conditions of stay of the fish and water temperature.

We believe it is also necessary to examine operations by drift casting net.

(6) Trinal Gill Net Fisheries

This type of fisheries is actively done in every fishing ground all the year round and one of the leading fisheries in Lebanon.

The structure of fishing gear and methods of operation have little difference in any countries, and there can be found no room for special and radical improvement but as to following points.

(a) Making meshes of central net larger.

Present central nets are 25 to 38 millimeters in mesh size. As small meshes do not catch fish well and landed price of fishing nets varies with their weight, it is an uneconomical way to use nets of small meshes on account of increase in their weight.

Trinal gill net catches schools of small fish well for its small meshes, and we think it is necessary to make the mesh size of central net around 60 mm. and set such schools of fish free as pass through the meshes from the standpoint of their breeding and preservation.

It will be more profitable from economical point of view to use the more nets in proportion to enlargement of meshes and reduction of weight and try to catch schools of big fish in larger quantities.

(b) Planning of deep-sea operations by using net haul.

It will become possible to operate in the deeper sea by making meshes of nets larger and partial improvement of float line and sinker line. It will be effective to contrive to increase net pieces used and reduce operation time by use of net hawler.

(c) Adoption of leading fishing boat system

In the fishing areas where many fishing vessels are conducting operations, it is important to lead fishermen to form their organizations, set a leading boat equipped

organizations, set a leading boat equipped with various sorts of apparatuses such as fish finders and water thermometers per ten fishing boats, make it continually observe tidal currents, the movements of schools of fish and change of fish catch according to time, and inform the boats under its control of the results of the observation so that they may operate in the light of the circumstances. Fishing Operations under this type of organization avoid such a wasteful action as each fishing boat searches for fishing grounds itself and raise the fishing efficiency of all fishing boats. Moreover it can cultivate fishermen who are apt to rely only upon their senses and bring up their conceptions for scientific fishing methods. It can be said to bear quite much fruit.

As mentioned above we have enumerated the matters we notice. It will bring forth only confusion without much profit to carry out those improvements at one time and you should lead them to improve on step by step.

(7) Long Line Fisheries

(a) Bottom fish long line fisheries

Shallow-seas long line fishing has little difference both in fishing gear and fishing methods in any countries and we have nothing to say particular except about the baits by species of fish catch on which you should make researches. On existing fishing gear, they are using those made of nylon silkworm gut as main lines. But when they use main lines of nylon silkworm gut for the catch of deep-sea fish, the fishing efficiency rises little. Or it is rather more effective to use main lines made of hard twisted cotton thread of around 3 mm in diameter and increase the number of lines by using line hauler. At the same time we should like to recommend you to use fish finders for this type of fisheries.

(b) Skipjack and tuna long line fisheries

We think it is a good idea to try test operations of this type of fisheries in future. We can say nothing about the fishing efficiency yet.

(8) Other Fishing Gear

There is no room for special improvement of beach seine and mullet surrounding gill net. But we should like to say something about cotton thread. In many districts they use cotton thread without boiling it nor applying antiseptic treatment to it, but it cannot be fit for use in the sea-water long time because it decays easily in it, being used without any proper dispositions. In order to prevent cotton thread from decaying, they should use antiseptics. No antiseptics permeate bare thread except oil antiseptics owing to fats contained in it. Therefore they should boil thread in clear water first to exclude its fats and then soak it in antiseptics.

It is estimated that bare thread and thread soaked in such tannin as cutch have the rate of 1 to 3 in the period of use, because water temperature is comparatively high in the Lebanon Sea.

But as for trinal gill net with which they catch fish by thrusting, they cannot use tannin, which hardens thread and lowers fishing efficiency down. They should be careful to use chemical antiseptics which do not make thread hard.

(9) Fishing Boats

All fishing boats are small-sized ones having similar styles and unfit for fishing operations. We suppose that it will result only in confusion to make fishermen rebuild their boats at once which they have used for a long time, and you should lead them to improve on the following points one by one: (1) laying down the vertical keel in order to check rolling of boats and make landing operations easier; (2) equipping powered-boats at least with low decks in order to make fishing operations easier, increase the load capacity of fishing gear and fish catch, and make operations possible even in a little waves; (3) making the bow wider and management of boats and fishing operations easier; (4) equipping powered boats of small harbor with propellers both up and down in order to make their shipping movements easier.

(10) The Construction of Loading Boats and the Settlement of Investigation and Research Organizations

Those who engage in fisheries industry must face with nature and it is remarkably governed by natural phenomena. It is necessary to make continual observations of those phenomena to know, but no investigation or research on them is done at present. It is impossible to request individual fishermen to make the investigation or research, and in other countries their official organization are taking the leadership in these movements. In Lebanon, however, there is no organization of this type nor loading boats, and investigation and research is scarcely carried on in regard to the sea.

We believe off Lebanon has potential productivity to be developed in the future. In order to develop it, it is necessary to build loading boats for researches equipped with various kinds of apparatuses, make them investigate the conditions of the sea, living and distribution conditions of schools of fish, states of their migration and fisheries resources, and make them research and lead as to fishing vessels, fishing implements and fishing methods fitted for the Lebanon Sea. We think it is also essential to settle investigation and research organization necessary for these movements. Lebanese fisheries will make rapid progress and greatly contribute to national welfare and industry if you guide fishermen, collecting the results of test operations by new types of fishing gear and methods and results of various matters investigated or researched.

(11) Conclusion

Lebanese fisheries are not in good conditions now, judging from the fact that they use fishing boats of improper styles for fishing operations, all of which are simple ones for coastal fisheries. We believe that Lebanese fisheries will make striking progress by exploiting the sea in future and it is necessary for you to throw more energy into its development. With the growth of fisheries production, you should also consolidate distribution systems and facilities of fish catch, study processing methods and solidified fishing port facilities.

We suppose that it is impossible to place your hope greatly upon multiplication in shallow seas, but, as far as inland water fisheries are concerned, you should make your further efforts for development of this type of fisheries.

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