

International Aspects of Fisheries

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Abstract

The paper briefly reviews biological, economic and political factors which have bearing on the international aspects of fishery development. Because of the biological characteristics of fishery resources and due to differences between nations in the stage of economic development, the social and political systems, the importance of the fishing industry and the pattern of fishery development, it is difficult to find principles of international fishery regulation which are workable on a world-wide basis.

Most of the nations are willing to cooperate to avoid serious decreases in the total landings from important stocks. It is also assumed that nations would prefer, at least for the time being, wide areas of the ocean to remain international waters and that they have diplomatic reasons for trying to avoid serious international disputes on fishery matters. But the interests of nations vary greatly in all other respects.

Regional, and often *ad hoc*, arrangements of various kinds will continue to be made by the nations directly concerned with the exploitation of resources in the respective areas. Greater emphasis should be placed on the development of new resources under international as well as national auspices.

MOST OF THE FISHERIES resources are made up of renewable wild stocks of animals which are mobile. They cannot be fenced in limited areas or marked for ownership. A great variety of marketable fishes are found in the same body of water and a number of species can be caught simultaneously by the same type of gear, such as trawl or trap, while the same species may be fished by a number of different types of gear. Most of them undergo planktonic stages in which they are members of plankton communities consisting of a much greater variety of organisms. Means to study their biological character-

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are not explored. Under these circumstances it is understandable that most of the fishery resources have remained common properties.

Legal framework for controlling the utilization of resources is certain to be much more complicated, but ineffective, than that for terrestrial resources. In addition, we have problems arising from the heterogeneity of the fishing industry. In most of the countries in which fishing is active, the industry consists of a variety of components ranging from traditional inshore fisheries, most of which are at subsistence levels, to well-organized industrial fisheries, some of which are operated by large companies. Most of these enterprises of different categories and sizes depend, to a large extent, on the same resources, with continuing conflict of interest among them. Small inshore fishermen, who are economically the least efficient, are not necessarily the weakest in political fights; in fact, they often defeat the big ones.

¹Views expressed in this paper are those of the author and do not necessarily reflect the views of the organization to which he belongs.

Internationally, problems are even more complex. Fishermen from nations at greatly different levels of economic development operate in the same international waters often using the same techniques and experiment. Among the countries fishing in the Northwest Atlantic, for example, the per capita gross national product for 1964 ranges from US\$340 to \$3020. It varies from \$240 to \$1520 in the Mediterranean region and from \$60 to \$1540 in waters off the west coast of Africa. It does not vary so greatly among the countries bordering the China seas, all of which are active fishing nations, but still ranges from \$100 to \$600. The organization of fishing activities is vastly different from country to country, as well as between the socialist and non-socialist nations. The degree to which the government can control the industry, as well as political and administrative machinery to do so, is also quite different from state to state, ranging from state monopoly to almost complete lack of control.

Because of the international nature of fishing activities and because some of the fish commodities can find markets in many parts of the world, there is a very complex network of international business arrangements, which is perhaps not fully understood by anybody. Often we do not know who is fighting whom or who is helping whom.

It should also be kept in mind that in many countries fishing is a matter of rather minor importance, which might be outweighed by diplomatic considerations to avoid serious international disputes. On the other hand, use of the ocean is a matter which has bearing on a variety of activities, of which fishing is only one. Nations may find it difficult to make concessions on legal problems of the sea in spite of their desire to solve fishery disputes.

It is not possible to draw up a set of principles for international fishery regulation which are acceptable and workable on a world wide basis. Most of the views so far presented in this regard reflect national interests and the stage of fishery development of particular nations. Let us examine what common factors we can find in the views of most nations on the question of international management of fisheries. First, we can perhaps say that no nation wishes to see an important stock seriously depleted by over-fishing. It is considered desirable to maintain the total physical yield from a stock at a high level. This consideration constitutes a common ground for entering into negotiations for international agreements with a view to maintaining yields from the resources concerned at levels higher than they would be without such agreements. Few countries, even if they are not members of the Convention on Fishing and the Conservation of the Living Resources of the High Seas, could refuse to enter negotiations for an international agreement for conservation if proposed by some other country or countries.

Secondly, I would like to assume that most nations still wish to keep broad areas of the ocean as international waters outside of national jurisdiction. It has been a general trend in the past two decades to increase the breadth of the territorial sea, or exclusive fishing zone. Even if a nation does not officially recognize a 12-mile zone, it is becoming increasingly difficult for her to conduct fishing freely within 12 miles of the coast of a state claiming it. The merits of this practice, from the point of view of fishery development in the world ocean as a whole, are debatable. But to the extent it is accepted, *de jure* or *de facto*, by major fishing nations it contributes to the orderliness of international fishing activities. A substantial number of countries claim zones broader than

12 miles and up to 200 miles, although other nations do not officially recognize them. In most cases, however, fishing by nationals of some other nation or nations is taking place within these zones under some arrangement or other. The Convention on the Continental Shelf, which has been in force since 1964 with most of the major fishing nations participating, may have considerable bearing on the international activities to exploit animals living on the seabed. While the definition of mineral resources under the convention is reasonably clearcut, there is much room for argument as to the definition of living resources. Perhaps the most likely procedure is for the member countries concerned with the utilization of particular seabed stocks to determine, through negotiations, whether they should be subject to the convention.

Thirdly, I assume that most nations have diplomatic reasons for trying to avoid serious international disputes arising from fishery matters.

These factors constitute only a very general framework for development of international agreements on highseas fisheries. I believe that, at least for the next 20 years or so, the main trend will be for the continuation and further development of regional, and often *ad hoc*, arrangements among the nations directly concerned with the exploitation of resources in the respective areas. The principles under which such arrangements are made may vary, depending upon the biological characteristics of the resources under exploitation, the stage of development of the fisheries in question, the interests and the organization of fisheries of the nations concerned, etc. Actual arrangements made will probably be not entirely satisfactory to any of the parties involved but should generally contribute to minimizing international disputes, avoiding the disruption of major fishing activities and maintaining yields from the resources concerned at levels higher than they would be without international agreements. To push forward views strongly reflecting national interests for adoption as common international principles of fishery regulation will not contribute to the solution of fishery problems let alone to the improvement of international relationships in general.

We should perhaps give more serious consideration to the question of development of new resources. The matter might be considered at three levels. First, we should accelerate development of the potential resources which are exploitable by known methods of harvest and which can either be sold fresh or be processed into forms salable on existing markets. Based on available information, I speculate that, without major technological breakthroughs, the total food production from the ocean would be roughly doubled within the next 20 years, but with a gradually decreasing rate of growth, as readily exploitable new resources will become more and more difficult to find.

Development at the next level would require rather dramatic technological developments. Despite various improvements in the technology of catching fish in recent years, the methods used now are not basically different from those employed many years ago. For food production from the ocean to continue to grow at a high rate, some technological breakthroughs would have to take place before long so that the enormous potential resources, which are at present beyond the reach of our technology, could be utilized economically. There is a need for initiating new types of research towards this end. Most of the marine scientists concerned with exploitation of food resources would agree that the logical direction is towards the utilization of marine animals (we are mainly concerned with animal protein materials) at lower trophic

levels, particularly at the level of zooplankton. Some experimental work has been carried out by the Russians and Japanese in the Antarctic. To this, I would add the possibility of utilizing enormous stocks of lanternfishes and other organisms found in the subsurface layers of wide oceanic areas, more or less associated with the deep-scattering layer.

Development at the third level would require even more spectacular technological innovations. The ocean covers roughly 70 percent of the earth's surface with a mean depth of nearly 4,000 meters. But the depth of the lighted zone is very small compared with the mean depth. Taking the ocean as a whole, most of the primary production takes place within 100 meters of the surface. Under this very thin productive layer of the ocean, there exist virtually unlimited resources of inorganic nutrients. Whether we can consider them as potential resources for food production would depend on the ingenuity of future generations in the field of ocean engineering.

In this short paper, I cannot go into further discussion of this subject, but would like to emphasize the need for much more serious efforts than are now being made to develop potential food resources of the ocean under international as well as national auspices.