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INTERNATIONAL TECHNICAL CONFERENCE ON THE CONSERVATION  
OF THE LIVING RESOURCES OF THE SEA

Principal specific international fishery conservation problems  
of the world... for the resolution of which international  
measures and procedures have been instituted...

In accordance with the advice of experts consulted by the Secretary-General, technical papers on certain items of the provisional agenda were invited from a number of authorities. The Secretary-General has the honour to communicate the following summary of a paper by Dr. Milner B. Schaefer, Director of Investigations of the Inter-American Tropical Tuna Commission, La Jolla, California, United States of America. The full text of this paper is available in English as A/CONF.10/L.11.

SCIENTIFIC INVESTIGATION OF THE TROPICAL TUNA  
RESOURCES OF THE EASTERN PACIFIC

by

Milner B. Schaefer

## SUMMARY

1. The tropical tunas of the high seas off the shores of the Americas from California to Peru constitute the marine resources supporting the most valuable fishery of the Eastern Pacific Ocean. The resources consist of two species, the yellowfin tuna and the skipjack.

2. The major share of the catch is made by United States fishermen, with a smaller quantity by Peru and still smaller shares by Chile, Ecuador, Panama, Costa Rica and Mexico. Most of what is landed outside the United States is then shipped frozen to the United States for processing.

3. The fishery as a whole is of recent origin, dating mainly from the end of World War I. There was a very rapid increase in the fishery for yellowfin and skipjack tunas in the area after World War II, which caused concern about possible depletion of stocks. There was very little scientific information available and to remedy this the Inter-American Tropical Tuna Commission was established under a Convention between the United States and Costa Rica, ratified in 1950. The Commission has a scientific staff, and its purpose is to gather and interpret factual information needed to facilitate maintaining the populations of tunas and other kinds of fishes taken by tuna fishing vessels at a level which will permit maximum sustained catches year after year. It is provided by the Convention that any other nations having an interest in the tuna fishery may adhere by a simple exchange of correspondence with the existing members. Panama thus adhered to the Convention in the autumn of 1953.

4. The Commission is unusual in that it has been able to start its investigations at a stage when serious overfishing of the fishery has not yet occurred.

5. The commercial fishing area for the yellowfin and skipjack tunas in the Eastern Pacific extends from approximately latitude 32° N. to 20° S., and extends offshore from the mainland about 300 miles, but the distribution is uneven, concentrations occurring in regions of high production of food organisms. Both species are found right across the Pacific; it has been tentatively concluded that yellowfin tunas of the Eastern Pacific constitute

populations distinct from those further to the westward, but similar conclusions cannot yet be drawn for the skipjack. Also it is not yet possible to determine whether within the region of the East Pacific fishery these species are further subdivided into distinct or semi-distinct populations.

6. Both species aggregate in schools near the surface of the water, and the live-bait and purse-seine methods of fishing have been developed in response to this behaviour. Tunas tend to school by sizes, so that members of a school are more similar in size than members of a random sample of the population.

7. It appears that both species are relatively quick-growing. Because of a rather long spawning season, large variations in year class strength are relatively unlikely.

8. In determining the effect of the amount of fishing on the tuna resources, a very great part of the labours of the Commission has been spent on the compilation, on a continuing basis, of detailed information on the amount caught of each species, dates and locations of fishing and effort required to make the catches, not only for the period since the establishment of the Commission but also before it. The types of information required, the sources and methods of compilation are described.

9. From information available, it appears that the intensity of fishing has been great enough to affect the average abundance of the yellowfin tuna, and it has been tentatively estimated that this intensity is, in the aggregate, near or perhaps slightly beyond the level corresponding to maximum sustainable yield, but there is no imminent danger of serious overfishing, largely because of economic conditions. In the case of the skipjack, it would appear that intensity of fishing is still below the level of maximum average sustained yield.

10. The two tuna species occur generally at the same places at the same times, sometimes in mixed schools. Since it appears that the two species are at different stages of exploitation, this will create a problem at such time as it becomes necessary to establish conservation regulations.