

PRELIMINARY COMPARATIVE OVERVIEW OF THE ENVIRONMENT AND THE FISHERIES FOR YELLOWFIN, SKIPJACK AND BIGEYE TUNAS IN THE ATLANTIC, INDIAN AND PACIFIC OCEANS

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ABSTRACT

GLOBAL GOAL OF THE PRESENT WORK

The goal of the paper is to develop, at a worldwide level (Atlantic, Indian and Pacific Oceans), a comparative analysis of the trends in fisheries catching yellowfin, skipjack and bigeye tunas, and their relationship with the environment. This topic may be of major scientific interest: it is surprising that, although tunas are a biologically homogeneous zoological group world-wide, most of the research programs on their biology and stock assessment are conducted more or less independently by the scientists working in each area on each species. Such a multi-species worldwide comparative analysis needs to incorporate the major environmental component of the oceans: each ocean shows the characteristic patterns of its environment (distribution and variability). It will then be of major interest to determine for each area how the tunas have adapted their biology (for instance spawning and feeding zones and periods), migrations, and levels of absolute biomass in each area, as a function of a variable environment over millions of years.

A WORLD-WIDE TUNA PROGRAM

This paper is a first and preliminary result of the research program, conducted by the author at the headquarters of the Inter-American Tropical Tuna Commission, aiming at a world-wide comparison of the tropical tuna stocks and fisheries, based upon a comparative analysis of all existing catch and effort data about tuna fisheries. The short-term goal of this program will be to publish, in early 1996, a scientific atlas of tuna fisheries worldwide and their environment (including the sizes of the fish).

The final goal of this program will be to review and discuss in various scientific papers (in cooperation with interested scientists) the results of the world-wide comparison, and subsequently the various methods used to conduct the stock assessment for tropical tuna species (yellowfin, bigeye and skipjack). This comparison should provide a better understanding of the real potentials and limitations of the various methods used by tuna scientists. This comparative study of tuna stocks and fisheries worldwide could lead to a significant improvement of the stock assessment work done in each geographical area.

TOPICS COVERED

The first part of this paper will summarise the data used in the present analysis and their potential improvement.

The second part will develop a comparison of the catch levels and trends for yellowfin, skipjack and bigeye in the various oceans (Atlantic, Indian, western and eastern Pacific), based on the best available statistical information from various sources in each of -those three oceans.

The third part, based on a comparison of average fishing maps, will review the geographical changes in the global distribution of the fishing activities of surface and longline fleets in each ocean.

The fourth part will summarise some major environmental characteristics of the areas where the tuna fisheries targeting yellowfin, skipjack and bigeye are active.

A fifth chapter will compare the changes in area fished and the tuna catches per area in each ocean. The conclusion will review the prospects of this worldwide comparative analysis of tuna stocks and fisheries



Proceedings of the Sixth Expert Consultation on Indian Ocean Tunas

**Colombo, Sri Lanka
25-29 September 1995**

Distribution:

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FAO Fisheries Department
FAO Regional Fisheries officers
Regional Fisheries Councils and
Commissions
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Bibliographic entry:

Anganuzzi, A.A., K.A. Stobberup, N.J. Webb (eds.) 1996.
Proceedings of the Expert Consultation
on Indian Ocean Tunas, 6th Session,
Colombo, Sri Lanka,
25-29 September 1995
373 p.

INDO-PACIFIC TUNA DEVELOPMENT AND MANAGEMENT PROGRAMME

INT/94/010 - GCP/RAS/099/JPN

Colombo, 1996

FOREWORD

Since 1985, the Indo-Pacific Tuna Development and Management Programme (IPTP), a UNDP/FAO regional programme, has been convening and sponsoring the Expert Consultations on Indian Ocean Tunas, to provide a forum for the dissemination of research results and the exchange of information on the status of the tuna stocks and tuna fisheries in the Indian Ocean.

The latest meeting, the 6th Expert Consultation on Indian Ocean Tunas, was held in Colombo, Sri Lanka, on 25-29 September, 1995. It was attended by 51 scientists from the national institutions of 20 countries and representatives of two international bodies responsible for tuna management in other oceans, in addition to staff from FAO and IPTP, and 62 national reports and scientific papers were presented, a record for these Consultations. The increasing participation of scientists from nations bordering the Indian Ocean is particularly encouraging, as a measure of the interest that the tuna fisheries are generating in the nations of the region. The collection of working documents presented in this volume is a significant sample of the most recent research on Indian Ocean tunas and the status of the fisheries.

This volume includes the working documents made available to the participants in the Consultation. Frequently, comments made during the discussions that followed each presentation put the results presented in context; these discussions are summarised in the companion volume, *Report of the Sixth Expert Consultation on the Indian Ocean Tunas (IPTP/95/GEN/23)*, published earlier this year by IPTP. Since the working documents formed the basis for the discussions and conclusions reached by the Consultation, they are reproduced here in substantially the same form in which they were presented at the meeting, with editorial changes.

The editors would like to acknowledge the support of all the staff of IPTP who participated in the preparation of this volume, and in particular Mrs. M.C.R. Perera-Meherdeen, Mr. S. Amarasekera, Mr. A.C.M. Ifthihar, Mr. M.E. De Costa and Mr. S. Nellanpitiya.

The Editors:

A. A. Anganuzzi,
K. A. Stobberup, and
N. J. Webb.

Colombo, 1996

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