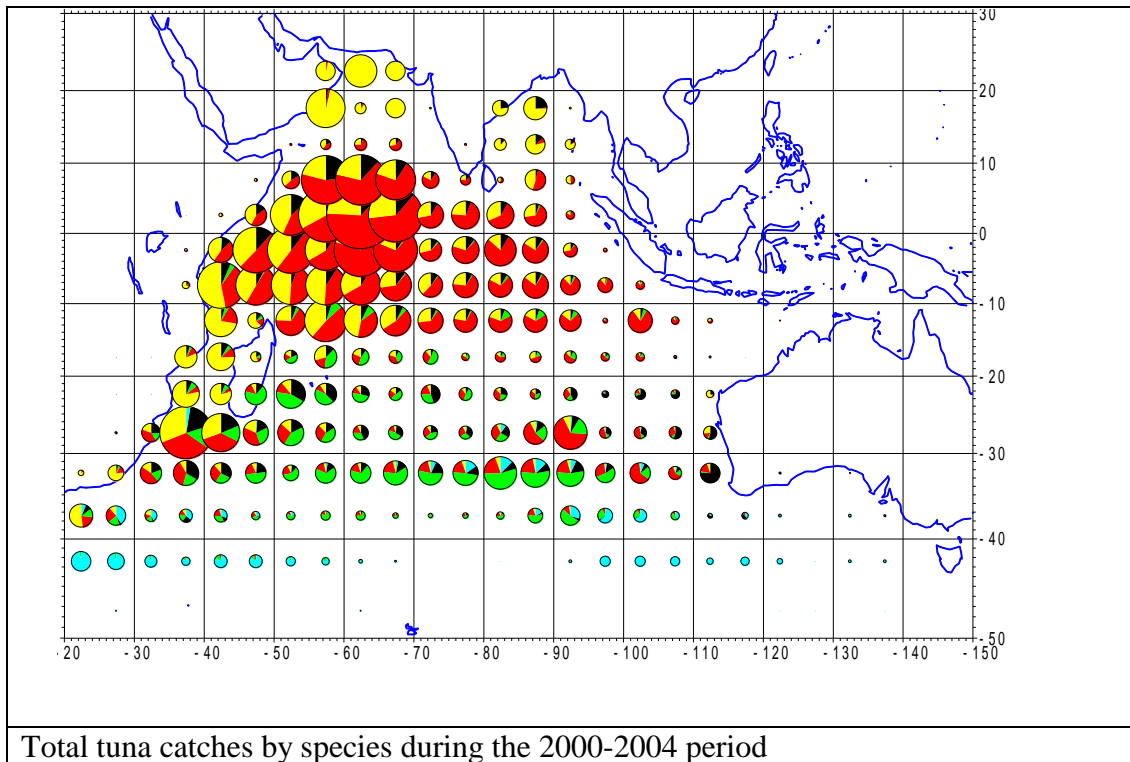


# Upon the IRD project to publish an atlas on Atlantic and Indian oceans tuna fisheries

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### Summary

This short note makes a presentation of an IRD project to realize and to publish soon under French funds an atlas on the Atlantic and Indian oceans tuna fisheries. The main goals and structure of this project are briefly presented and discussed. This atlas will show in details the changes in the tuna fisheries that have been active in each ocean since the early fifties. It is hoped that the ICCAT and IOTC scientists and secretariat will fully cooperate with the IRD in order to finalize this atlas which will be of great interest for all the interested parties.

### Résumé

Cette note fait une présentation sommaire d'un projet de l'IRD de réaliser et de publier bientôt sur financement français un atlas sur les pêcheries thonières des océans Indien et Atlantique. Les objectifs principaux et la structure prévus de cet atlas sont brièvement présentés et discutés. Cet atlas montrera en détails les changements dans les pêcheries thonières qui ont été actives dans chaque océan depuis les années 1950. Il est souhaité que les scientifiques et les secrétariats de l'ICCAT et de l'IOTC apporteront leur plein concours à l'IRD afin de finaliser au mieux cet atlas qui sera du plus grand intérêt pour toutes les parties intéressées.

# 1- Introduction

There is a global recognition among tuna scientists and tuna RFO that atlases showing all the geographical changes of the fisheries are very useful tools that can be of major interest to improve all the tuna stock assessments. This need was for instance well recognized by SCRS in 2001 and later by the IOTC and its scientific Committee. It is clear nowadays that fishery atlases are tools of a great general interest for a wide group of interested persons: scientists, fishermen, fishery administrators, students, etc.

Various tuna atlases have been published or made available on paper or on CD during recent years (for instance by IPTP, by FAO and by IRD) but none of them describes with enough details the complex histories of the Atlantic and Indian oceans tuna fisheries. On the other side, the powerful and extensive data bases built by the ICCAT and IOTC secretariats during recent years would now easily allow the realization of such an atlas.

In this context, the present IRD atlas project has been planned to give some priority to the main tropical tuna species (such as yellowfin, skipjack and bigeye), but it will cover the entire Indian and Atlantic oceans, and then indirectly all the major fisheries and of major tuna and billfish species caught in these two oceans.

In such a context, the French IRD<sup>1</sup> with a financial support of the French ministry of Agriculture and Fisheries, has recently decided to publish such a comprehensive tuna atlas for the Indian and the Atlantic oceans. This note will summarize the present IRD plans concerning this atlas project, in order to obtain a scientific feedback from the ICCAT and from the IOTC scientists allowing an improved realization of this atlas.

## 2- Proposed framework of the IRD Tuna Atlas

The present IRD project is to publish two atlases prepared using the same format and the same structure: one covering the Indian ocean and the other the Atlantic ocean (each of these 2 atlases with about 200 pages in format A4, most of them in full colors). Such an atlas would provide a wide range of fishing maps at the most detailed geographical scale (1° squares for surface fisheries and 5° squares for longline and other fisheries) but it should also include various types of figures on the time and space variability of fisheries (catches, efforts, sizes taken). In its concept, this atlas would be similar to the Fonteneau 1998 world tuna atlas, but it would be done at a more detailed scale and covering a wider range of parameters (all these data belonging to the public domains of the IOTC and ICCAT data bases).

The species and fisheries targeted by the atlas are all the fisheries for which the corresponding detailed time and area data have been submitted by the fishing countries. This basic rule will limit the number of maps and figures (for instance for major artisanal fisheries such as Sri Lanka, Indonesia, Yemen or Iran)

In this atlas, the IRD would cover in parallel, and with the same maps and figures, the entire histories of the tuna fisheries active since the early fifties in the Atlantic and in the Indian oceans, but it has not yet been decided if these maps and figures will be published in the same book or in two separate volumes. This/these book(s) will be edited and printed under the IRD framework and they will be sold at a reasonable scientific cost (by IRD and/or by the IOTC and ICCAT secretariats).

The present IRD project would be to prepare in each ocean, Atlantic and Indian oceans, a “3 stanzas atlas” following the subsequent framework:

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<sup>1</sup> IRD : Institut de Recherches pour le Développement

- 1) **Book:** A color printed book (with 1 or 2 volumes) will be edited showing the most important maps and figures that have been selected by the editors of the book
- 2) **DVD:** Each book will include a DVD, where a much wider range of detailed data, such as yearly and monthly maps by gear and countries, changes in sizes taken, etc.
- 3) **WEB:** It is also recommended and planned that the basic maps published in the printed book would be updated yearly in a WEB site (belonging to the IRD or to the tuna RFOs: ICCAT and IOTC), and then easily available to interested users. This potential development has been accepted by the IRD but it would still need to be further studied, organized and budgeted in the long term (and it would be dependent of the future IRD framework and tuna research programs).

### 3- Planned content of the atlas

The detailed content of this tuna atlas has not yet been chosen, but it has been agreed that it should cover:

- a) Briefly, the trends of **yearly catches** by gear for the major species (a plot already available in various documents)
- b) **Fishing maps:** good fishing maps (e.g. with pie charts with areas proportional to the parameters shown) should show at the smallest possible geographical scale (e.g. by 1 degree squares for most surface fleets or for some longline fleets, when data are available) the geographical distribution of catches by species and efforts (and of CPUE in some cases). All these maps will be done for **average periods of 5 years** (in order to limit the number of maps to reasonable numbers). All these maps will be done by country, for some selected major countries, as well as combining all the countries ( $1/5^\circ$  squares), and at the levels of total catches by species.
- c) **Space & time diagrams:** these space and time pie diagrams are very useful tools to show all time and spatial heterogeneity in the fisheries and they should be usefully incorporated in the atlas (by selected area, year and months).
- d) **Sizes caught:** Histograms of sizes of fishes caught should also be shown in the atlas as multi-gear pie diagrams of yearly catches by size.
- e) **Environment:** As the environment is playing a major role in the distribution, availability and movement patterns of tunas, the atlas should also map selected environmental components and ecosystems and their seasonality at a similar scale as in the fishery maps (in a similar way to the world atlas by Fonteneau 1998 ). (SST, chlorophyll, currents, thermocline, etc)
- f) **Text:** The atlas should not be a simple series of maps and figures, but a short and good text should be added to each set of figures, written by experts in tuna fishery. This text should be written in a comprehensive style easily understood by a wide range of potential readers (probably only in English).

- g) **Photos:** Photographic information would be usefully incorporated in the atlas and such photos could well cover a wide period and a wide range of Atlantic tuna fisheries.
- h) **Other information and plots:** Furthermore, the atlas could show the results of GIS analysis crossing geographical information obtained from various sources, for instance crossing catch and environmental data (catches and thermocline depth, sea surface temperature, oxygen, depth, etc).

## **4- Conclusion**

This IRD atlas project that has been planned to be realized under proper French funds has been recently initiated. This project will be mainly based upon the ICCAT and IOTC public data bases, but it will also need an active and full cooperation between the IRD scientists in charge of the project and the ICCAT and IOTC staff in charge of the data bases. It is expected by the IRD concerned staff that, as in the past, this full cooperation will be efficiently conducted!