



Report of the Third Session of the Working Party on Data Collection and Statistics

Victoria, Seychelles December 3 , 2001

TABLE OF CONTENTS

OPENING OF THE MEETING AND ADOPTION OF THE AGENDA.....	3
1. PROGRESS REPORT OF THE SECRETARIAT.....	3
DATA COLLECTION.....	3
General Status of Reporting during 2001	3
STATUS OF THE IOTC DATABASES.....	5
Main progress achieved during 2001	5
Problem Areas Identified.....	6
GENERAL DISCUSSION ON DATA COLLECTION.....	8
DATA PROCESSING	8
2. REVIEW OF THE SITUATION BY SPECIES.....	9
3. DESCRIPTION OF NATIONAL STATISTICAL SYSTEMS.....	9
4. PROBLEM AREAS AND POSSIBLE IMPROVEMENTS.....	10
5. OTHER MATTERS.....	11
6. ELECTION OF THE CHAIR FOR THE BIENNIUM 2002-2003	13
7. ADOPTION OF THE REPORT	13
APPENDIX I. LIST OF PARTICIPANTS.....	14
APPENDIX II. AGENDA OF THE MEETING.	16
APPENDIX III. LIST OF PAPERS.....	17

OPENING OF THE MEETING AND ADOPTION OF THE AGENDA

The Third Meeting of the Working Party on Data Collection and Statistics (WPDCS) opened on December 3rd 2001 in Mahé, Seychelles by the Chairman, Ms. Rose Marie Bargain, from the Seychelles Fishing Authority, Seychelles, who welcomed the participants (Appendix I). The Agenda for the Meeting was adopted as listed in Appendix II. The documents available for discussion are listed in Appendix III.

1. PROGRESS REPORT OF THE SECRETARIAT

Document WPDCS/01/01, which included sections about the status of reporting during 2001 and the general status of the databases held at the IOTC, was presented by the Secretariat. The following sections summarize this report.

DATA COLLECTION

GENERAL STATUS OF REPORTING DURING 2001

Table 1 lists the countries to which the Secretariat sent data requests during the year 2001. The countries are sorted by their most recent catches and the status regarding the submission of catches, effort, size frequency and craft statistics indicated through different colours. Timeliness of reporting and data source are also shown in each case.

Timeliness of reporting: Initial requests were sent to **58 countries** between February and March 2001. Despite the fact that all requests were sent in dates earlier than in previous years only 13 countries (8 in 1999) submitted statistics to IOTC before the deadline. Furthermore, only partial statistics were submitted in most cases. Second and third requests were, thus, almost always needed.

Complete data series are not available for Working Parties because of the lack of timely catch, catch and effort and size frequency statistics. Late reports also make the validation and verification of data very difficult, especially when submissions occur in dates close to or during Working Parties.

Completeness of reporting: Netherlands Antilles, Australia, the European Community, United Kingdom and Singapore were the only countries to provide complete sets of data for 2000. More details about the reporting of each specific data set can be found below:

Nominal Catches: The levels of reporting of nominal catches are similar to those in 1999, 31 out of 58 countries having provided partial or complete sets of catches. To date, no or only partial nominal catch statistics have been received from twelve parties.

The catches of Illegal and/or Unregulated and/or Unreported (IUU) longline fleets operating under several flags will be estimated by the Secretariat from sources such as the sampling programmes and the vessel record, as was the case in previous years. A fleet of purse seiners, formerly belonging to Soviet interests, has been operating since 1995 under the flags of Panama and Belize and their catches are unreported so far.













- **Catch and effort and size-frequency statistics:** Catch and effort and size-frequency statistics were only submitted by 18 (12 members) and 10 (7 members) countries, respectively. Either incomplete or non-validated statistics were submitted by the Republic of Korea, Japan and Philippines.
- **Discards:** Only France(Réunion), China and Australia reported discard statistics for 2000, despite the fact that discard rates are presumed high, especially from longliners. These levels are also presumed substantial (8,000 t estimated in 1995) in purse seiners setting on logs.
- **Fishing craft statistics:** Fishing craft and nominal catch statistics are usually reported altogether. Craft statistics are not available, incomplete or inaccurate for some IUU and many artisanal fleets.
- **Vessel Record and Foreign Tuna Vessels Activity:** Belize, Panama and Netherlands Antilles submitted lists of ships operating in the Indian Ocean for the first time. Nevertheless, detailed information on ships operating under several flags such as Taiwan, China, Honduras, Equatorial Guinea, Cambodia, etc. is still uncertain.

Data source: The reporting of statistics is usually by the flag country. Nevertheless, the statistics of several fleets were partially (Belize, Panama) or fully (Honduras, Equatorial Guinea, Cambodia) submitted by countries other than the flag country.

Table 1: Availability of IOTC statistics for the year 2000

Country	Catch	M/C	NC	CE	SF	DI	FC	FT	VR	TI	SO
EUROPEAN UNION	225	M									
CHINA	5	M						N/A			
TAIWAN, CHINA	135							N/A			
INDONESIA	140										
MALDIVES	105										
INDIA	95	M									
IRAN	75										
SRI LANKA	75	M									
JAPAN	50	M						N/A			
THAILAND	50	M									
PAKISTAN	35	M									
OMAN	30	M									
BELIZE	20							N/A			
UNITED ARAB EMIRATES	15										
PANAMA	15							N/A			
NETHERLANDS ANTILLES	15							N/A			
KOREA	10	M						N/A			
SEYCHELLES	10	M									
MADAGASCAR	10	M									
MALAYSIA	10	M									
COMOROS	10	M									
YEMEN	10										
SAUDI ARABIA	10										
EGYPT	10										
AUSTRALIA	10	M									
MAURITIUS	5	M									
MOZAMBIQUE	5										
PHILIPPINES	5	C						N/A			
TANZANIA	1										
KENYA	1										
FRANCE	1	M									
HONDURAS	1							N/A			
SOUTH AFRICA	<1										
QATAR	<1										
KUWAIT	<1										
ERITREA	<1	M									
BAHRAIN	<1								N/A		
JORDAN	<1										
DJIBOUTI	<1										
BANGLADESH	<1										
EAST TIMOR	<1								N/A		
UNITED KINGDOM	0	M									
SINGAPORE	0										
SUDAN	Unkn	M									
IRAQ	Unkn								N/A		
MYANMAR	Unkn										
SOMALIA	Unkn										
CAMBODIA	Unkn							N/A			
COTE D'IVOIRE	Unkn							N/A			
EQUATORIAL GUINEA	Unkn							N/A			
GUINEA	Unkn							N/A			
VANUATU	Unkn							N/A			

Key Table 1

Catch	Recent catches amounting to (thousands of tonnes)	
M/C	Is Member (M) or Cooperating Non Member Party (C)	
NC	Nominal Catch	
DI	Discards	 Fully reported
CE	Catch and Effort	 Partially Reported
SF	Size Frequency	 Not Reported
FC	Fishing Craft	 No catches
FT	Foreign Tuna Vessels Activity	 N/A Not Applicable
VR	Vessel Record	
TI	Timeliness of Reporting	 Good (before deadline)  Fair (within a month after deadline)  Poor (more than one month after deadline)
SO	Data Source	 All statistics from responsible country  Statistics from both responsible and third country  All statistics from third countries  No statistics reported at all

STATUS OF THE IOTC DATABASES

MAIN PROGRESS ACHIEVED DURING 2001

The Secretariat informed the Working Party on the progress achieved during 2001 in collection, validation and verification of catch, effort and fishing craft data in the IOTC databases.

Structural changes in the databases: All databases were modified during 2001 through addition of two new fields, the first related to the quality of each individual record in the databases and the second to record the flag reporting the information. These provide the user with valuable information about the quality of the records in the IOTC databases and permit catches to be kept separately for identified fleets. Thorough reviews were conducted subsequently in order to complete, as much as possible, the new fields.

New datasets available: Besides the data submitted by the countries following the standard requests from the Secretariat, important data series were also available during 2001:

- **IOTC Sampling Programs (Malaysia, Thailand):** The first estimates of catches of fresh tuna longliners at the flag level were conducted using new information collected in Phuket and Penang, along with information from other sources. The retrieval of historical records in ports where fresh-tuna longliners land, especially in Indonesia, would help to estimate more accurately the complete series of catches (from the mid-eighties to date). More than 150,000 individual weights and 10,000 length-weight measurements have been collected to date through sampling and retrieval of historical records from tuna operators in Phuket and Penang. The IOTC Vessel Record has also been updated to include the more than 700 vessel names and characteristics collected through these schemes.
- **South Africa:** The 1973 to 1999 series of catches and efforts of South African vessels operating within the ICCAT Convention Area, close to the IOTC western boundary, was provided by ICCAT as the tropical tuna stocks are believed to be from the Indian Ocean.
- **Indonesia:** Some 25,000 length-weight measurements from samplings in processing plants in Benoa during 1992-2000 were provided by the RIMF in 2001. The samplings were conducted on fish landed by fresh-tuna longliners from Indonesia and Taiwan, China. Southern bluefin tuna is the species most sampled, with coverage of more than 70% of the total number.

- **United Kingdom:** MRAG provided some 5,000 length frequency measurements for 2000-01 of tuna and tuna-like species caught by purse seine and longline vessels within the 200 miles off the Chagos Archipelago.
- **Republic of Korea:** Korea reported size frequency statistics for yellowfin and bigeye tunas caught on longliners from 1990 to 2000 for the first time. These data, unfortunately, cannot be used as many inconsistencies were found during validation and verification by the Secretariat.
- **Maldives:** The complete set of size frequency statistics available in Maldives were reported to IOTC. The new size frequencies provided, mostly of skipjack and yellowfin tunas caught by baitboats, replaced those formerly in the IOTC database, almost completing the series for this country.
- **Singapore:** Singapore has provided lists of vessels fishing for tuna and tuna-like fishes in the Indian Ocean, landing at Jurong fishing port, for the period 1995-2000. These, along with records coming from other sources, are used as basic data for the estimation of the catches of IUU fleets.
- **Belize, Netherlands Antilles, Panama, Oman and Madagascar:** All these countries submitted for the first time lists of foreign and/or domestic vessels operating in the Indian Ocean during 2000.

Changes to data in the IOTC databases: The following reviews conducted during 2001 led to major changes in the data in the IOTC databases:

- **Nominal catches:** A thorough review of the nominal catches database was conducted during 2001 in order to add or update catches not yet in the database. The main sources used were the FAO FishStat database and other data holdings kept at the Secretariat. The review led mainly to changes in the catches of neritic tunas and billfish, especially for the early years of the fishery (1950-69).
- **Indonesia:** The complete series of catches of Indonesian longliners in the Indian Ocean was re-estimated during 2001. The new review was conducted using information from many sources, most of them collected during a field mission by a Secretariat staff to that country. The new estimates place Indonesia as the second longline fleet in the Indian Ocean, both in number of vessels and catches. More than 1,000 vessels with catches of around 90,000 t were estimated in recent years.
- **Catch and Effort and Size Frequency:** The compilation of catch and effort and size frequency records assigned to heterogeneous spatio-temporal strata continued during 2001. This led to main changes in the database, especially regarding the statistics of Maldives, which the complete series, from 1970 to 2000, were re-input according to the atoll reporting the catches and size samples.
- **The validation and verification of data in the IOTC databases continued during 2001.** Codes indicating poor quality were assigned where inconsistencies were found in specific records or complete series of catches or sizes. The catch, effort and size frequency statistics available for the Republic of Korea were all assigned poor quality due to numerous inconsistencies.
- **Fishing Craft, Foreign Tuna Vessels Activity and Vessel Record:** The data in these databases were compared in order to complete, as much as possible, the craft statistics series. Each data series was also reviewed in order to give consistency to the data recorded, especially regarding changes due to inconsistent reporting of vessel characteristics or numbers throughout the years.

PROBLEM AREAS IDENTIFIED

Despite all progress achieved regarding the collection and upgrading of the databases held at the IOTC, the Secretariat identified several problem areas undermining the completeness and quality of the information stored:

- **Data availability:** Incomplete or non-reporting can be because the fisheries are not monitored, statistical systems cannot produce reliable estimates of catches or statistics are produced but not reported to IOTC.

Estimates from alternative sources are more or less complete depending on the amount of information available. The following cases can be distinguished:

- **Catches provided by a third source:** the statistics of several fleets operating in the Indian Ocean have been usually reported by third countries as these fleets were monitored in the same way as those

operating under the flag of the countries reporting the information. Thus, some purse seine fleets are monitored by the European scientists and complete statistics are provided together with those for the domestic fleets.

- The IOTC sampling schemes provide estimates of nominal catch and size-frequency, for fresh tuna longliners, but no data are available for effort and catch location.
- The reporting of statistics of poor quality from the Republic of **Korea** and the **Philippines** and the low coverage rates regarding the size frequency statistics collected on longliners from **Japan** are also of concern, especially regarding the general scarcity of size data.
- No size frequency statistics are available from **Taiwan,China** since 1989: These statistics are of utmost importance, especially for albacore and billfish caught by longliners.
- With the exception of the baitboat fishery for the Maldives where complete data sets are available, artisanal fisheries, which produce nearly half the total catch in the Indian Ocean, particularly of neritic species, provide no effort data and very few size-frequency data.
- More than 30% of the countries have been reporting most of the catches (above 80%) under species and/or gear aggregates in recent years. These include **Thailand, Sri Lanka, India** and, especially, **Indonesia** where More than 30% of the catches, about 140,000 t, mostly tropical tunas and billfish, are aggregated.
- IUU deep-freezing longliners provide no data and, at best, nominal catch is estimated from vessels records using reporting fleets as comparators. The same is true for a fleet of about ten purse seiners flying various flags. These catches amount to about 200,000 t, in recent years, up to 25% of the total catches of tropical tunas and billfish in the Indian Ocean.
- FAO statistics are used to complete the series of nominal catches of some non-reporting countries, this involves allocation to gears.
- No information is available for some artisanal fleets known to operate in the Indian Ocean, mainly in the early years of the fishery. Although these catches are probably small, the existence of historical records in each country might be investigated.
- **Data Quality:** The main reasons why poor quality codes are assigned to partial or complete series of catches are the many inconsistencies found during the validation of the catches or the large number of assumptions that were made in the estimates. Sharp increases in catches recorded as poor quality have been noted since the mid-eighties, because of the increase in the activities of **IUU fleets** in the Indian Ocean.

The Secretariat put forward two measures which might help to reduce the uncertainties regarding the statistics of tropical tunas, billfish, temperate tunas and neritic tunas:

- a) Fact finding missions to coastal countries having important fisheries of tunas, with four main goals:
 - To promote the cooperation of local institutions and/or individual scientists with the IOTC,
 - To retrieve all current and historical data available in the country not yet reported to the IOTC,
 - To assess the data collection and processing systems used in each country, in order to be able to find ways to improving the report of statistics to the IOTC,
 - To collect information regarding the activities of foreign fleets licensed to operate in the EEZ or putting in to ports in the countries, in order to improve the knowledge about the amount and activity of IUU vessels in the Indian Ocean.
- b) Continue the data collection activities under the scope of the IOTC Sampling Programs, which are, to date, the only source of information regarding the activities of IUU fresh tuna longliners in the Indian Ocean. In this respect, the implementation of a sampling program in Indonesia is considered crucial, considering that fresh-tuna longline fleets both domestic and foreign have been based in that country for many years, with very high catches reported

since the late eighties. The collection of historical and current data would help to estimate the catches of IUU fleets much more accurately.

FISHING CRAFT STATISTICS, FOREIGN TUNA VESSELS ACTIVITY AND VESSEL RECORD:

The craft statistics of many coastal countries, having fleets operating artisanal gears, are unknown, incomplete or inconsistent. This is the case with the statistics of **India, Indonesia, Iran, Madagascar and Yemen**. The number of **IUU longliners**, mainly from **Taiwan, China and Indonesia**, operating in the Indian Ocean is also uncertain, although the numbers estimated recently are believed more accurate.

The lack of vessel characteristics or identification as regards many records in the three databases is also of concern.

GENERAL DISCUSSION ON DATA COLLECTION

The WP noted that new countries (Netherlands Antilles, Belize, and Panama) were now reporting fleet information to the Secretariat. Although some of these data were available to the Secretariat from other sources, the commitment of these countries to provide this information was considered important.

The participants were briefed about the attendance of the Secretariat to three international meetings:

- The annual meeting of the tuna agencies and programs, which was held in Rome in conjunction with COFI. The key discussions involved mechanisms to keep agencies informed of management measures adopted by each agency, as well as cooperation between agencies to exchange vessel information to combat IUU fishing. The Secretariat has been an active participant on both of these issues, sharing and obtaining fleet information. It was also proposed that interagency meetings to discuss methodological issues should be arranged, which would be of interest to the WPDCS and the WPM.
- The Secretariat also was represented in the 19th Session of the Coordinating Working Party on Fishery Statistics. During the session the Secretariat presented a report on progress in statistical issues. Among the issues discussed, it was noted that the CWP has implemented the statistical area changes between areas 51 and 57 and between areas 57 and 71. The CWP was informed that the decision to change the boundary between areas 57 and 81 would result in an overlap between the IOTC and WCPO Convention areas with regards to the area between 140°E and 150°E, which will require agreement between the two Commissions on the handling of catches from this area.
- The Secretariat was also invited to the Commission de l'océan Indien (COI) Monitoring, Control and Surveillance Meeting. A major planned activity of this regional program is to improve data collection activities with a view to management of tunas. In this context, it was agreed that WinTuna would be an appropriate tool to handle vessel registers, statistical data and possibly even Vessel Monitoring System reporting. The project will have Information Technology staff to adapt the software as needed and to train staff in each country.

DATA PROCESSING

A short update was presented by the Secretariat on the current state of development of WinTuna. Apart from the lack of user manuals, the system is functional and can be deployed. Currently, WinTuna can be used to handle information for vessel registries, trip registries, logbooks (in a generic way that is useful for many fisheries) and longline-specific logbooks (containing data unique to the longline fishery), landings, sampling (at different levels of the fishing process) and transshipments. The software also includes a reporting tool that allows users to create customized reports, multi-lingual capabilities, customizable data-entry screens and ARDTUS, a system that facilitates data transfer and updates at an institutional level as well as among organizations. The system has been installed on a test basis by the Seychelles Fishing Authority. The Secretariat also plans to use WinTuna as a replacement for the older software used for sampling programs and to handle its fisheries database.

FAO delegated a programmer from the Fisheries Information, Data and Statistics Service to audit the design and implementation of WinTuna. Following this mission, FIDI has engaged a consultant to convert their sample survey data collection and statistics tool, ArtFish, into a WinTuna module. This was recognized as an important

development as it extends the use of WinTuna into the artisanal fishery statistics field and, through the partnership with FAO, will provide more long-term support for this system.

2. REVIEW OF THE SITUATION BY SPECIES

The chairman of the Working Party on Tropical Tunas presented the report on the data situation for tropical tunas (Document WPDCS-01-06). The report identifies a number of problems in this area, among them the poor knowledge of catches, effort and size frequencies for fresh tuna longliners (in particular Taiwan, China and flags of convenience), deep-freezing longliners with flags of convenience, recent years of the Indonesian longline fishery and the ex-Soviet Union purse seine boats that currently fly flags of convenience.

The report also noted the improvements by the Secretariat in a number of areas, including: better levels of reporting (in particular for the Korean and Maldives longline fleets and deep-freezing Taiwanese vessels), new submissions by Pakistan and Vanuatu, collection of vessel record information, estimation of NEI catches and effort, recovery of historical data, sampling programmes and revision of the holdings in the Secretariat database. The report of the WPTT also elaborated on the data situation for yellowfin, bigeye and skipjack tunas.

The Secretariat presented the report on the data situation for billfish on behalf of the Chairman of the Working Party on Billfish (Document WPDCS-01-07). The report indicates that the main problem areas described in last year's report still continue to affect the quality of the data available for these species. The main issues include high level of aggregation of the reported data, under-reporting of discards, species misidentification and lack of size-frequency information. The report also remarks on some important improvements in the data situation, including the complete revision of the nominal catches in the IOTC database and an increase in the available information resulting from the implementation of the sampling programmes in Penang and Phuket, recovery of historical data (Indonesia) and better reporting by some countries (Sri Lanka).

3. DESCRIPTION OF NATIONAL STATISTICAL SYSTEMS

Document WPDCS-01-03 provides a summary of the tuna statistical system of the Seychelles Fishing Authority. The document provides background on the history of the industrial longline, purse seine and semi-industrial longline fisheries in the country. It indicates that the logbook return rate for the industrial longline fleet (especially the South Koreans and Taiwanese vessels) has been low. The returning rate for the purse seine fleet (composed mostly of EU, French or Spanish vessels with Seychelles flag of convenience) is close to 100%. The semi-industrial longline fleet is currently composed of 10 vessels between 10 and 50 GRT, all Seychelles owned, and with logbook return rates oscillating around 75%.

The possibility of double counting of pelagic longliners was raised during the discussion, as it is possible that some of these vessels have reflagged repeatedly. It was also noted that data collection and analysis can be complicated by the fact that many of these vessels tranship catches on the high seas. It was suggested that the law obliges vessels flying the Seychelles flag to turn in logbook information, so logbook recovery rates could be improved. The Working Party commended the Seychelles efforts in fishery data collection, in spite of being a small fishing country.

Document WPDCS-01-11 provides information about the activities of the Chinese longline fleet in the Indian Ocean from 1995 to 2000. Between 12 and 120 longliners operated during this period, with fishing mainly occurring in the Eastern Indian Ocean and catches around 6000 tonnes in recent years. Both yellowfin and bigeye tuna are targeted by the Chinese fleet with similar catches recorded in recent years.

Document WPDCS-01-12 provides information about the collection and processing of fishery information in Mauritius regarding the industrial fleets both domestic and foreign based in that country. Logbooks and landing statistics are usually collected as well as length frequency data obtained through port sampling. Domestic longliners targeting swordfish started operating in 1999 amounting to six vessels in 2000. No purse seiners operate currently under the Mauritian flag.

4. PROBLEM AREAS AND POSSIBLE IMPROVEMENTS

PROPOSED IOTC-OFCF PROJECT

Document IOTC-SC-01-08 was presented for consideration, as it involves elements falling within the remit of the Working Party. The document describes a proposal for an IOTC-OFCF project to improve statistical systems in Indian Ocean countries. The project will be funded by OFCF and is based on three main principles: the activities will follow recommendations of the Commission and its subsidiary bodies; there will be no financial implications to IOTC member countries; and the activities should be directed to improving the statistical systems of developing countries in the region. The overall plan of action includes a series of fact-finding missions to Indian Ocean coastal States, followed by a workshop on data collection and processing systems with the participation of the countries concerned, as well as direct assistance as required in each participating country. The Secretariat has tentatively identified the main areas of concern that could be tackled by the project, based on their significance for stock assessment and future management measures. A priority is to improve data collection and reporting in Indonesia, in particular for the fresh-tuna longline fleet. Another priority is to improve the quality of the statistics of the gillnet fisheries (primarily in Iran, Oman, Pakistan and Sri Lanka), as they are an important and poorly documented component of the fisheries for tropical tuna. It is also necessary to assess and improve the quality and completeness of the current statistics in developing coastal countries with undocumented data collection systems. These countries include India, Oman, Pakistan, South Africa, Sri Lanka, Thailand, United Arab Emirates and Yemen.

The Working Party strongly endorsed the approach proposed and commended Japan and the OFCF for this initiative.

REVIEW OF CATCH-AT-SIZE ESTIMATION PROCEDURES

Catch-at-size information, raised so that it represents the total catch for a particular time-area stratum, gear, and fleet, has been of interest for scientists as they represent the basic data for exploratory data analyses and some traditional stock assessment methods. Therefore, the WPDCS discussed the feasibility of providing such information on a routine basis.

Size frequency data both raised and not raised to total catches are recorded in the IOTC database. The group noted that the size frequency data stored in the IOTC databases was difficult to use for analysis as it is highly heterogeneous. The lack of detailed descriptions about the sampling methodology, coverage rates and raising procedures, if any, regarding each dataset available makes it very difficult to extrapolate non-raised data to total catches or to assess whether raised data can be used for analysis.

It was agreed that a review on the catch-at-size estimation procedures is needed in order to assess whether the sampling designs, sampling coverage, and data processing systems are consistent for the different fleets.

The group recognized that this kind of exercise is beyond the scope of the WPDCS and that it would be more appropriate to deal with it in a Working Party on Methods.

SITUATION OF THE STATISTICS FROM TAIWAN, CHINA

The group noted with great concern the lack of size frequency statistics from Taiwan, China, which have not been reported since 1989, and the inconsistent catch and effort statistics available for some years. It was stressed that this had major implications during the Working Party on Billfish, hampering the group from conducting stock assessment on swordfish this year.

The Taiwanese scientists informed that historical reviews of the catch and effort data were recompiled in late 1996. This first involved a review of the catch and effort statistics collected in the Atlantic Ocean, and this is already finalized. As regards the Indian Ocean data, this review is still under way and new datasets will probably be made available to IOTC within the next two years. The Taiwanese size frequency statistics were reviewed in 1999. Nevertheless, the existing data is scarce and the sample sizes very low, due to the very low coverage recorded during some years. Thus, new revisions have been scheduled and will conclude in the near future.

The Japanese scientists noted that the duration of the revision could be shortened and the results improved if Japan and Taiwan,China worked together on this issue. The WPDCS was informed that it might be possible to conduct some joint work based on this data with IOTC scientists in the near future.

SPECIAL STATISTICAL NEEDS FOR THE INDIAN OCEAN TUNA TAGGING PROGRAM

The Working Party agreed on the need for more detailed statistics of all species selected for tagging. This would imply the collection of detailed statistics by landing location, including the fishing area and time whenever it is possible. Considering the large number of artisanal fleets operating in the Indian Ocean, for which the landing locations are numerous and scattered, it was agreed that the efforts should concentrate on important landing places for these species rather than be spread all over the area.

REQUEST FOR INFORMATION ON THE ACTIVITY OF SUPPLY VESSELS AND FISHING ON FLOATING OBJECTS

The WPDCS noted that the use of supply vessels and Fish Aggregating Devices (FAD) are integral part of the fishing effort exerted by the purse-seine fishery in association with floating objects. The WPDCS recognised that more information is needed to obtain an appropriate measure of the fishing effort in this fishery. Therefore, the WPDCS recommends that countries fishing for tunas in association with floating objects submit information to IOTC on:

- Number and characteristics of supply vessels: a) operating under their flag, b) assisting purse-seine vessels operating under their flag, or c) licensed to operate in their economic exclusive zones, and that have been present in the Indian Ocean during the previous year.
- Levels of activity of supply vessels, including number of days at sea, by one-degree area and month during the previous year.

The WPDCS further noted that to properly assess the effective effort exerted by this fishery, it will be necessary to obtain data on:

- Total number, type and status of Fish Aggregating Devices (FADs) operated by the fleet by one-degree area and month.

The Working Party recognised that an observer programme with appropriate coverage might be the only effective way of collecting this information.

5. OTHER MATTERS

DISSEMINATION OF THE IOTC DATA

Two proposals regarding dissemination of data by the Secretariat were discussed by the Working Party.

The first proposal was that the Secretariat should make the original information, as received, available in a standardized format, so scientists that require it can make use of it. In particular, it was suggested that catch, effort and size frequency data should be included in such distributions. The Secretariat indicated that facilitating the dissemination of data was among its main objectives. IOTC databases were designed with the intention of avoiding, as much as possible, modification of original submissions, and that for practical purposes it could be considered to be original data. The Working Party agreed on the need to create standard formats for the data to be distributed in order to avoid this confusion.

The WPDCS also recommended that such database be provided, upon request, to interested scientists on a CD.

A second proposal was that the Secretariat should also make available a set of data that have been raised (extrapolated) to the total catch, taking size distribution and effort into consideration. It was agreed that the production of such data set would be desirable, as this is the preferred kind of data for most analyses. However, the Working Party also recognized that producing such data set would add a heavy workload on the current staff of the Secretariat. In addition, it is necessary to discuss and decide the most appropriate methodology for the extrapolations. In this sense, it was agreed that the feasibility of both actions should be discussed in the context of the Working Party on Methods.

BY-CATCH DATA

The Working Party noted that the Secretariat has been instructed to start collecting information on the by-catch of fleets fishing for tuna and tuna-like species. However, to date, the data that has been submitted to the Secretariat has been scarce. The new information reviewed under this section

Document WPDCS-01-02 presents preliminary scientific estimations on the landings of by-catches by species, carried out by the Spanish surface longline fleet targeting swordfish (*Xiphias gladius*) in the Indian Ocean. From the beginning of this activity in 1993 until the year 2000, the mean figures of by-catches landed by the Spanish fleet accounted for 54.7% of the total number of catches landed. Some of the by-catches landed that are worthy of note include the group of large pelagic sharks, representing a mean percentage of 88.3% of the total number of y-catches landed, followed by the tuna group (10.4%) and lastly, the billfish species (Fam. Istiophoridae: 1.2%).

The Working Party expressed great concern about the high level of incidental catches estimated for some years. It was indeed noted that shark species were predominant. The Secretariat informed that information collected in the IOTC Sampling Programmes indicated that similar levels of incidental catches could be assumed for fresh-tuna longliners operating in the Eastern Indian Ocean, although they are much more difficult to quantify as only shark-fins are usually landed.

The Working Party agreed that the only way of fully quantifying by-catch rates in longline fisheries is through observers. It was also noted that similar studies could be carried out on fisheries recording high catches of sharks and no discards, as in the longline fishery in Sri Lanka.

The Working Party strongly recommended that observer programs be initiated on purse seine and longline fleets in order to quantify the actual amount of by-catches occurring in these fisheries.

Document WPDCS-01-09 was presented and discussed. The document shows the results of a bootstrap analysis to study de effects of sample size on bycatch estimations. The analysis was made with data collected by IATTC's observers aboard purse seine vessels fishing for tunas in the Eastern Pacific Ocean (EPO), and was restricted to log sets. The document concludes that a 20-30% sampling coverage may provide reasonable estimates of total bycatch without the additional costs involved in higher observer coverage. It was indicated that in the case of the Indian Ocean, which seems to have a lesser degree of variability than the Pacific Ocean, it could be feasible to obtain acceptable results with even lower observer coverage. In addition, because the spatial distribution of the effort can be relatively well defined on each season, it might be possible to implement a lower level of sampling by concentrating on zones such as the Mozambique Channel where there is more bycatch. The meeting was informed that recent EU laws make it mandatory to produce estimates of bycatch and as a consequence, the EU will be implementing for the next two years an observer program for their purse seine fleet, possibly with around 10% coverage.

HARMONIZATION OF CATCH CERTIFICATION INFORMATION

The Working Party was informed of an Inter-Agency Working Group on Harmonization of Catch Certification to be held in 2002, to which representatives of all Regional Fishery Management Bodies are invited.

Catch certificates or similar systems are already used by ICCAT, for bluefin tuna, swordfish and bigeye tuna, and CCSBT for southern bluefin tuna. These documents are used whenever the catches of the species mentioned in each case are traded to international markets, including details about the country of origin (the flag of the vessel unloading the catch) and the weight traded.

The Working Party agreed that the use of catch certificates would help in the estimation of the catches of IUU vessels.

Document WPDCS-01-05 analyzes the frequency of large sets (more than 100 t) in the European and NEI associated purse seine fleets in the Indian and Atlantic oceans. The analysis includes a comparison of various characteristics and trends from 1991 to 2000 between the two oceans. The results showed a higher percentage of large sets in the Indian Ocean (average 7%, exceeding 12% in the last two years) than in the Atlantic (average 4%). Similarly, catches from this type of sets in the Indian Ocean account, on average, for 28% of the total catch, compared with 19% in the Atlantic. It was also noted that the number of large sets in the Indian Ocean have been steadily increasing since the beginning of the fishery, concentrating in waters around the equator, mainly in fishing

to skipjack dominant schools associated to FADs. It was also observed that catch rates in sets larger than 100 t increase with the size of the boat.

USE OF WEIGHT MEASUREMENTS

The use of weight as a size measurement was discussed by the Working Party. Weight data is inherently more variable than length as a size measurement, in particular, as a response to changes in the physiological condition of the fish (e.g.: reproductive state). However, length-frequency information is missing for past periods of important fisheries of tropical tunas. For those periods, weight records of individual fish caught have been kept by processing plants. These records are valuable as they represent the only available data on size distribution of the catch for those historical periods.

However, it is important to have a better understanding of the spatial and temporal variability of condition factors (the weight as related to length) as well as the variability of weight-length relationship for each of the species involved. Part of information necessary to study these effects is being collected in the IOTC sampling programs, where length and weight as measured for the same fish. It was agreed that a project to tackle these issues should be brought forward in the future.

6. ELECTION OF THE CHAIR FOR THE BIENNIUM 2002-2003

The WPDCS unanimously agree to re-elect Mme Rose-Marie Bargain as Chair for the next Biennium

7. ADOPTION OF THE REPORT

The Report of the Third Session of the WPDCS was adopted on December 4th, 2001.

APPENDIX I. LIST OF PARTICIPANTS

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APPENDIX II. AGENDA OF THE MEETING.

1. PROGRESS REPORT OF THE SECRETARIAT.

The Secretariat will review its work on the compilation and processing of the information relevant to the fisheries for tunas and tuna-like species in the Indian Ocean. The Secretariat will also report on CWP and Inter-Agency meetings.

2. REVIEW OF THE SITUATION BY SPECIES

The species' Working Parties will provide summaries of the data situation concerning their species of interest.

- WPTT
- WPB
- Other spp

3. DESCRIPTION OF NATIONAL STATISTICAL SYSTEMS

Briefly review national reports describing the data collection systems utilised, currently and in the past.

4. PROBLEM AREAS IN THE DATA SITUATION AND POSSIBLE IMPROVEMENTS

The WP is invited to identify problem areas affecting the timeliness and completeness of data submissions in the data collection and to discuss possible solutions.

- **Proposed IOTC-OFCF project**

The WP is invited to comment on the technical aspects of a proposal for a joint project between IOTC and the Japanese Overseas Fishery Cooperation Foundation (OFCF) to address the main problems regarding data collection and statistics in developing countries of the region.

- **Review of catch-at-size estimation procedures**

The WP is invited to comment on a proposed review of procedures to estimate catch-at-size from the different fleets fishing in the Indian Ocean.

- **Situation of the statistics from Taiwan,China**

The reporting of statistics for longline vessels from Taiwan,China has been a source of concern at the WPTT and WPB meetings during 2001, in particular the lack of reporting of size-frequency data. The WP is invited to comment on the situation.

- **Special statistical needs for the Indian Ocean Tuna Tagging Programme**

The Working Party on Tagging discussed during its last meeting about the potential need for statistics being collected at a port level. The WP is invited to discuss the issue and provide advice on the technical aspects.

5. OTHER MATTERS

6. ELECTION OF THE CHAIR FOR THE BIENNIUM 2002-2003

7. ADOPTION OF REPORT

APPENDIX III. LIST OF PAPERS

WPDCS-01-01	Progress Report of the Secretariat. <i>IOTC Secretariat</i>
WPDCS-01-02	Preliminary scientific estimations of by-catches landed by the Spanish surface longline fleet targeting swordfish in the Indian Ocean: years 1993-2000. <i>Garcia--Cortes, B. & Mejuto, J., (IEO. Spain)</i>
WPDCS-01-03	Seychelles Tuna Statistical Systems . <i>Bargain, R.M., Lucas, V., Thomas, A.</i>
WPDCS-01-04	This document was withdrawn
WPDCS-01-05	Analysis of large sets of the tropical purse seine fisheries in the Indian and Atlantic Oceans. <i>Pallares,P., Areso,JJ., Fonteneau, A.</i>
WPDCS-01-06	Report from the WPTT on the data situation of tropical tunas.. <i>WPTT</i>
WPDCS-01-07	Report from the WPB on the data situation of billfish.. <i>WPB</i>
WPDCS-01-08	Comments on the Tuna Sampling Programme Indonesia.. <i>National Research Institute of Far Seas Fisheries, Japan</i>
WPDCS-01-09	Effects of sample size on bycatch estimation using systematic sampling and spatial post-stratification: Summary of preliminary results.. <i>Lennert-Cody, Claridy</i>
WPDCS-01-11	National Report of China. <i>Dai Xiao Jie & Xu Liu Xiong</i>
WPDCS-01-12	Collection and Processing of Statistical Data of Tuna Industrial fishery & Semi-Industrial Swordfish fishery of Maurittius. <i>Norungee, D.</i>