
Report of the Seventh Session of the IOTC Working Party on Data Collection and Statistics

Victoria, Seychelles, 3-4 December, 2010

IOTC-2010-WPDCS-R[E]

TABLE OF CONTENTS

1. Opening of the Meeting and Adoption of the Agenda	3
2. Progress report of the Secretariat on data related issues	3
Data Collection and Statistics.....	3
Availability of IOTC statistics for 2009	3
Status of the IOTC databases.....	5
Main progress achieved during 2010.....	5
Problem Areas Identified.....	5
General Discussion on data collection.....	6
Minimum Data collection and reporting requirements for observers	6
Proposal for a scoring system.....	7
Use of alternative time-series of catches for stock assessment	7
3. Main data issues outstanding	8
Catches of IOTC and bycatch species by gillnet fisheries on the high seas	8
Minimum data requirements for gillnet and pole-and-line fisheries.....	8
Progress in the review of statistical systems for industrial purse seiners.....	9
Statistics of fresh-tuna longline fisheries of Taiwan,China, Malaysia and Indonesia.....	9
Statistics of commercial longliners of India and industrial purse seiners of Iran.....	9
Implementation of sampling systems for artisanal fisheries	10
Timely estimation of total catches of main IOTC species by month and fishery	10
4. Update on various national statistical systems	10
Progress in the completion of IOTC questionnaires on fisheries statistics systems	10
New reports on statistical systems	10
5. RECOMMENDATIONS TO IMPROVE THE QUALITY OF STATISTICS AT THE IOTC.....	11
6. ACTIVITIES TO ASSIST DATA COLLECTION AND PROCESSING IN COASTAL COUNTRIES	11
Activities under the IOTC-OFCF Project.....	11
Activities funded by the IOTC	11
Other activities	11
7. Distribution of the IOTC data and Documents.....	12
Data for the IOTC Meetings and the general public	12
IOTC Data Summary and field manual.....	12
IOTC Guidelines and forms for the reporting of statistics to the IOTC.....	12
8. Other business	12
Cooperation between IOTC and ISSF: Data from canning factories	12
Election of Chairperson for the next biennium	12
9. Adoption of the report.....	12

1. OPENING OF THE MEETING AND ADOPTION OF THE AGENDA

1. The 7th meeting of the Working Party of Data Collection and Statistics (WPDCS) opened on December 3rd 2010 in Mahé by the Chair, Mr. Miguel Herrera, who welcomed the participants (Appendix I).
2. The WPDCS was informed that the Commission has allocated funds for the participation of scientists to Working Parties and other meetings, noting that this had facilitated the participation of scientists from Maldives, Mauritius and Thailand to the WPDCS. In addition, the Southwest Indian Ocean Fisheries Commission (SWIOFC) covered the participation of scientists from Comoros and Madagascar.
3. The WPDCS agreed that the participation of scientists from coastal countries is extremely important, in particular considering that as much as half the catches of IOTC species in the Indian Ocean come from artisanal fisheries based in these countries. The WPDCS further noted that, in spite of the efforts from the Secretariat to invite scientists from other coastal countries in the region, it was not possible to secure the participation of scientists from those countries. The WPDCS stressed the need to maximize participation of scientists from coastal countries to future meetings of the WPDCS urging countries in the region to make the necessary arrangements to attend future meetings.
4. The Agenda for the Meeting was adopted as listed in Appendix II. The documents available for discussion are listed in Appendix III. The list of recommendations from the WPDCS is presented in Appendix IV. Mr. David Wilson acted as rapporteur.

2. PROGRESS REPORT OF THE SECRETARIAT ON DATA RELATED ISSUES

5. Document IOTC-2010-WPDCS-03, which included sections about the availability of IOTC statistics for 2009 and the general status of the databases held at the IOTC, was presented by the Secretariat. In addition, this presentation covered also documents IOTC-2010-WPDCS-04 and IOTC-2010-WPDCS-05 on the status of databases for albacore and neritic tunas, respectively. The following sections summarize this report.

Data Collection and Statistics

AVAILABILITY OF IOTC STATISTICS FOR 2009

6. Timeliness of reporting: IOTC statistics were available for 13 countries before the deadline of June 30 (cf. 15 in 2009). Partial statistics were provided in most cases. Requests were sent to over fifty countries¹ in March-April 2010. The amount of statistics available for the year 2009 before the deadline of submission was higher than that for 2008.
7. Completeness of statistical data²: Table 1 shows the extent to which 2009 statistics were available in the IOTC database by the deadline for data submission (30 June) and before the WPDCS Meeting (December 2010). 43% of the catch was available by 30 June and 66% of the catch was available by December. The proportion of statistics available for 2008 is shown for comparison. Levels of reporting were moderate in 2010, especially for nominal catch and catch-and-effort data.

¹ Note that separate requests were sent to EC countries having vessels known to operate in the IOTC Area (France, Italy, Portugal, Spain and the UK)

² Note that the IOTC Secretariat uses alternative sources to estimate the catches of non-reporting fleets; the percentages in this section represent the proportion that the NC, CE or SF available before the deadline or the SC represent over the totals estimated by the Secretariat. The amount of catches not reported is further reduced as countries that did not report statistics in time provide the missing datasets.

Table 1. Proportion of the NC, CE and SF statistics available at the IOTC Secretariat compared to the total catches estimated for 2009 (as of 15th November 2010).

Statistics available for 2009	Estim. Catch	NC		CE		SF	
		BD	WP	BD	WP	BD	WP
IOTC species (x1,000t)	1350	574	885	553	649	496	603
% Available for 2009		43	66	41	48	37	45
% Available for 2008		32	77	31	52	23	32
Tropical tunas (x1,000t)	802	476	656	465	561	435	446
Temperate tunas (x1,000t)	48	28	31	28	28	26	26
Billfish (x1,000t)	62	39	45	28	30	26	26
Neritic tunas (x1,000t)	437	31	154	31	31	9	105

Estim. Catch: Total catches estimated

NC: Amount of catch available

CE: Amount of catch for which catches and effort are available

SF: Amount of catch for which size frequency data are available

Available before the deadline for data submission (**BD**, 30th June) and at the time of the Working Party on Data Collection and Statistics Meeting (**WP**)

8. Tables i-v (Appendix V) list the fleets for which the Secretariat received or estimated catches for the year 2009. The fleets are listed according to the size of their most recent catches. The standing of the catch, effort, size frequency and craft statistics information received is indicated using colours. Timeliness of reporting and data source are also shown. The availability and standing of statistics for tropical tunas (i), temperate tunas (ii), billfish (iii), neritic tunas (iv) and sharks, seabirds and sea turtles (v) are presented separately. The availability of statistics on fishing crafts operating for each fleet is also presented in a separate table (vi).

9. **IOTC Species (i-v):** Nominal catches and catch-and-effort data are usually available before the deadline for the main industrial purse seine and longline fleets, reported as final statistics or preliminary statistics, respectively. However, the completeness of statistics is compromised by the lack of information for some important fleets, including longliners of India, coastal fisheries of Indonesia, Yemen, Madagascar and Comoros and oceanic gillnet fisheries of Iran and Pakistan. On the other hand, the amount of size frequency statistics that are available for the previous year both before the deadline and at the time of the working parties is usually low, with statistics not available or very poor for important industrial longline fisheries, in particular fresh tuna longliners from Taiwan, China and longliners from Japan and India. The availability of size frequency statistics from artisanal fisheries is, in general, very low. At present, only Iran, Oman, Sri Lanka and the UK (recreational fisheries in Chagos) have provided size data for their artisanal fisheries for the year 2009.

10. **By-catch levels (v):** Australia and South Africa provided estimates of total bycatch levels for their fisheries for 2009, including bycatch levels for sharks, seabirds and marine turtles. In addition, other countries provided partial statistics for sharks for the year 2009, including some important purse seine (EU) and longline (Belize, China, Taiwan, China, EU, Japan, Republic of Korea, Malaysia, Mauritius, Oman and Seychelles) fisheries. In spite of the better reporting levels recorded for bycatch data during 2010, few statistics are still available for sharks, seabirds and sea turtles (and other non-IOTC species caught by fleets targeting tunas and/or tuna-like species); for this reason, the quality of the data available is still poor. The statistics are seldom available by species and refer usually to the shark carcasses that are retained on board, not including the amounts of sharks that are discarded. Almost no statistics are available for other shark products, such as shark fins.

11. **Discards levels:** Discard levels are only available for Australia, EU-France, EU-Portugal (nil discards), Sri Lanka (nil discards) and the UK (nil discards) in 2009. Discard rates are believed to be high for fisheries using longlines and oceanic gillnets (Iran, Pakistan) and moderate for purse seine sets on associated schools (mainly with FADs).

12. **Fishing craft statistics (vi):** The number of vessels fishing for IOTC species in the Indian Ocean is thought to be more accurate in recent years thanks to the information collected after the implementation of IOTC Resolutions that call for countries to report yearly lists of domestic and foreign fishing vessels, information collected through the IOTC Transshipment Programme and market data provided by the International Seafood Sustainability Foundation (ISSF). Fishing craft statistics are generally available for industrial fleets whose catches are available. Craft statistics are not available, incomplete or inaccurate for many artisanal fleets. The number of non-reporting vessels operating in the Indian Ocean was re-estimated this year from new information collected through the IOTC Sampling Programs and new vessel records.

Status of the IOTC databases

MAIN PROGRESS ACHIEVED DURING 2010

13. The Secretariat informed the Working Party on the progress achieved during 2010 in collection, validation and verification of catch, effort and fishing craft data in the IOTC databases.

14. New datasets were obtained in 2010 from:

- **Oman:** In 2009 the IOTC-OFCE Project provided support to the Ministry of Fish Wealth of Oman for the collection of length frequency data in two landing sites, to cover yellowfin tuna, longtail tuna and narrow-barred Spanish mackerel specimens caught by the gillnet and hand line fisheries in Oman.
- **Taiwan,China:** The Secretariat downloaded from the internet catch-and-effort data series for Taiwanese fresh-tuna longliners for the period 2007-09, which represent the first catch-and-effort available for this fishery. In addition, the Secretariat downloaded new size frequency statistics for the deep-freezing longline fishery for the period 2002-09, following a review conducted in Taiwan,China.
- **Maldives:** In 2010 Maldives provided complete sets of catch-and-effort and size frequency statistics to be used during the Working Party on Tropical Tunas. Maldives is currently preparing statistics by IOTC standards and will officially report this information soon.
- **Japan:** Japan facilitated the use of high resolution catch-and-effort data during the meetings of the WPTT and WPB in 2010.

15. Changes to data in the IOTC databases: The following reviews conducted during 2010 led to changes in the data in the IOTC databases:

- **EU:** The EU reported revised estimates of catches for purse seiners under EU flags and other purse seiners monitored by European scientists for the period 1991-2008. In addition, the EU provided revised datasets for the Portuguese longline fleet.
- **Madagascar:** The Secretariat estimated catches by year and species for years in which the catches were recorded aggregated using information from other coastal fleets in the region. This review affected mostly the catches of tropical and neritic tuna species for the entire catch series (1950-2009).
- **Indonesia:** The Secretariat estimated catches of Albacore for the longline fishery of Indonesia using Export statistics from Indonesia and import data provided by canning factories cooperating with the ISSF.
- **NEI fleets:** The Secretariat revised the catches of non-reporting longliners for 2005-09 using the new information available, especially third country reports. Most of the catches refer now to Indonesian and Malaysia vessels based in countries other than the flag country. The catches of longliners from India were also estimated using the number of vessels active (on the assumption that all authorized vessels were active during the year in which they were authorized) and average catches by vessel from a proxy fleet. Other than Indonesia, Malaysia and India, in recent years, around 20 longliners have been operating in the Indian Ocean under the flags of non-reporting countries. The Secretariat estimated the catches of these vessels as for India.
- **Bycatch levels:** The Secretariat estimated catches of sharks for some fisheries using catch rates from other fisheries or other information available.
- **The validation and verification of data** in the IOTC databases continued during 2010. Codes indicating poor quality were assigned where inconsistencies were found in specific records or complete series of catches or sizes.
- **Fishing Craft statistics:** In 2010, the number of active fishing vessels in the Indian Ocean was updated for some of the fleets using the new information compiled. The fishing craft statistics database is thought almost complete as refers the industrial fleets (purse seine and longline) in recent years.

PROBLEM AREAS IDENTIFIED

16. Despite improvements in the data held by IOTC, the Secretariat identified several problem areas undermining the completeness, quality and timeliness of the information stored for IOTC species.

17. Statistics not available: Non-reporting can be because the fisheries are not monitored or statistics are produced but not reported to IOTC. Estimates from alternative sources are more or less complete depending on the information available. The following fleets account for the majority of the catches within this category:

- Very incomplete statistics from the industrial longline fishery of **India**.

- Complete lack of statistics from the artisanal fisheries in **Yemen**.
- Complete lack of statistics from industrial longliners operating under flags of **non-reporting countries**.
- Lack of size frequency data for the fresh-tuna longline fisheries of **Taiwan, China**.
- Lack of statistics from industrial longliners of **Indonesia** and **Malaysia** not based in their territories.
- Lack of catch-and-effort data for longliners from **Indonesia**.
- Lack of catch-and-effort data and detailed size frequency data for the oceanic gillnet fisheries of **Pakistan** and **Iran** and the gillnet/longline fishery of **Sri Lanka**.
- Lack of catch-and-effort and size frequency data for the artisanal fisheries of **India**.
- Complete lack of statistics from the artisanal fisheries of **Madagascar** and **Comoros**.

18. Statistics incomplete: Incomplete reporting can be because the fisheries are not fully monitored, statistical systems cannot produce reliable estimates of catches or statistics are produced but not reported to IOTC according to the standards in place. The following fleets account for the majority of the catches within this category:

- Insufficient time-area coverage for size sampling data for important longline fleets, in particular **Japan**.
- Catches not fully by species and/or gear for large-scale and medium-scale purse seine fisheries of **Indonesia, Malaysia** and **Thailand** and for the gillnet/longline fishery of **Sri Lanka**.
- Size frequency statistics not reported by IOTC standards for the fisheries of **Japan, Indonesia** and **Malaysia**.
- Total levels of **bycatch** of sharks, seabirds and marine turtles unknown.

GENERAL DISCUSSION ON DATA COLLECTION

19. The WPDCS expressed its appreciation to the Secretariat for the excellent data and statistics support work undertaken over the past 12 months, particularly for the preparation and provision of data sets for use by the Working Parties in carrying out stock assessments.

20. The WPDCS noted that the current data collection and reporting by CPCs appears not to be improving, showing concern that there is a general lack of compliance with IOTC Resolutions on data collection and reporting.

21. In particular, the WPDCS noted the uncertainty in the most recent years catch data held by the Secretariat agreeing that using this information in the assessments may be counterproductive in some cases, unless the uncertainty of the estimates can be assessed and incorporated into the assessment.

22. The WPDCS agreed on the need to incorporate more years in the tables presented by the Secretariat (Table 1 and Appendix IV), in order to be able to assess the reporting of statistics by the different parties over a longer period.

23. The WPDCS noted the changes in the estimates of catches of albacore following a review by the Secretariat using data provided by the ISSF and Export Statistics from Indonesia. The WPDCS noted that the new catches estimated for 2003-09 represent more than twice catch values in the past. It was also noted that the new catches derived for the fisheries in Madagascar may be too high. The WPDCS requested the Secretariat to follow-up on these issues to ensure that the catches in the IOTC database are as accurate as possible.

24. The WPDCS expressed concern on the status of reporting and quality of the statistics available at the IOTC for neritic tuna species, noting that the situation had not improved since the last meeting. The WPDCS urged countries having fisheries for neritic tuna species to collect the data requested as soon as possible and report this information to the IOTC.

25. The WPDCS reiterated the need for Japan to increase length frequency sampling on its longline fleet, including length frequency data for main shark species. Japan informed the WPDCS that it expects to increase sample numbers in the future thanks to data collected under the regional observer scheme.

Minimum Data collection and reporting requirements for observers

26. The Secretariat presented minimum data collection and reporting requirements for observers. In 2009 and 2010, the IOTC adopted Resolutions 09/04 and 10/04 on a Regional Observer Scheme. The Resolutions make provision for a Regional Observer Scheme, based on national implementation, to start on 1st July 2010.

27. The objective of the IOTC observer scheme shall be to sample catches and collect scientific data related to the fisheries for tuna and tuna-like species in the IOTC area. At least 5 % of the number of operations/sets for each gear type by the fleet of each CPC while fishing in the IOTC Area of 24 meters overall length and over, and under 24 meters if they fish outside their EEZs shall be covered by this observer³ scheme. For vessels less than 24 meters if they fish outside their EEZ, the above mentioned coverage should be achieved progressively by January 2013.

28. The number of artisanal fishing vessels landings shall also be monitored at the landing place by field samplers⁴. The indicative level of the coverage of the artisanal fishing vessels should progressively increase towards 5% of the total levels of vessel activity (i.e. total number of vessel trips or total number of vessels active).

29. The Secretariat held a workshop in May 2010 in order to set the minimum data requirements for observer projects under the framework of the scheme and to develop an IOTC Observer Manual, forms and an Observer Trip Report Template for the reporting of the collected data. Those documents will be reviewed for final endorsement by the SC at its 2010 Session.

30. The WPDCS thanked the Secretariat for this information. The WPDCS noted that, to date, no countries have provided lists of certified observers or observer reports to the Secretariat, urging the countries concerned to provide this information as soon as possible.

31. The WPDCS was informed that SWIOFP observer training was completed in September 2010 and included a range of tuna data recording issues. The SWIOFP observer programme will formally start in 2011.

Proposal for a scoring system

32. The Secretariat presented document IOTC-2010-WPDCS-06, which contains a first proposal of scoring system to assess the quality of statistics in the IOTC database. The system proposed is intended to assess the quality of statistics by country, type of fishery and species. The quality of statistics is assessed separately for each data type, including total catch, catch-and-effort and size frequency; and for all datasets combined. Initially, the system is intended to be used for IOTC species and main species of sharks as the same data requirements apply to both groups. An alternative system is proposed for other species.

33. The scoring system proposed covers a wide range of criteria involving, in some cases, information that is not fully available to the IOTC, including documentation on sampling designs and estimation procedures. This information will need to be collected prior to full implementation of the system.

34. In addition, this system, although informative, cannot be used to quantify uncertainty, in particular of catch series used for stock assessment. Estimates of precision and accuracy are not available for the catches or other data available at the IOTC; the IOTC Secretariat cannot derive such estimates at present, as catches and other information are reported to the IOTC in aggregated form and estimates of precision and accuracy are not requested by the IOTC.

35. The WPDCS endorsed the process currently being undertaken by the Secretariat to develop a scoring system to assess the quality of data being reported to the Secretariat. The WPDCS noted that the allocation of scores to all data items in the IOTC databases will require a lot of time and effort from the Secretariat, agreeing that the process shall be implemented gradually, with yellowfin tuna, bigeye tuna and swordfish assessed at the start.

36. The WPDCS noted that although the quality of data holdings by the IOTC is similar or better than those of other tuna RFMOs, the IOTC is the only RFMO that has a system to assess the quality of the statistics in its databases. In particular, it was noted that the IOTC has greater transparency in the quality of data holdings which was considered important.

Use of alternative time-series of catches for stock assessment

37. The Secretariat presented document IOTC-2010-WPDCS-10 including a proposal to use alternative time-series of catches for stock assessment. It was noted that there is clearly uncertainty in the total catches of the IOTC fisheries, and this uncertainty varies considerably by species and fishery over time. This fundamental source of uncertainty has not been included in the IOTC stock assessment process to date, other than through the data scoring system that provides a qualitative summary of problems that underlie the 'best guess' time series generated by the Secretariat. The

³Observer: a person that collects information on board fishing vessels. Observer programmes can be used for quantifying species composition of target species, bycatch, by-products and dead discards, collecting tag returns, *etc.*

⁴Field sampler: a person that collects information on land during the unloading of fishing vessels. Field sampling programmes can be used for quantifying catch, retained bycatch, collecting tag returns, *etc.*

Secretariat presented some ways in which this uncertainty might be explicitly recognized and admitted into the stock assessment process. This would provide further guidance for prioritizing improved data standards and assessment methods, and it may enable the formulation of management advice and strategies that are more robust.

38. The WPDCS noted that although there are some concerns in describing additional uncertainty in stock assessment advice to the Commission, it was agreed that the inclusion of upper and lower bounds for possible catch histories would be important to include in sensitivity analysis during the stock assessment process.

39. The WPDCS recommended that the Secretariat develop a range of uncertainty estimates (alternate catch histories) for a single species for consideration by the WPTT and/or WPDCS in 2011.

3. MAIN DATA ISSUES OUTSTANDING

Catches of IOTC and bycatch species by gillnet fisheries on the high seas

40. The WPDCS noted with concern that the status of statistics for oceanic gillnets from Iran, Pakistan and Sri Lanka has not improved since its last meeting.

41. The WPDCS was informed that, at present, the number of Iranian registered gillnetters under the IOTC list of authorized vessels is 1294 of which 500 operate in coastal waters and the remaining operate both in and beyond coastal waters. Iran does not have a logbook programme for its gillnet fishery with catch, effort and size data for coastal and non-coastal vessels. The catch data are collected only through sampling at the landing place. Catch and size data are subsequently reported to IOTC. Iran informed that it has prohibited the use of gillnets of more than 2.5 km for all vessels operating in the IOTC area of competence. Iran is committed to extend data collection and sampling for gillnet vessels under its flag.

42. The WPDCS noted that Iran has requested the assistance of the IOTC Secretariat to address the recommendations from the IOTC Scientific Committee, recommending that the Secretariat plans for a visit to Iran during 2011 and reports back on the findings to the next meeting of the WPDCS.

43. The WPDCS noted that the National Aquatic Resources Research and Development Agency (NARA) of Sri Lanka has been collecting catch-and-effort data from gillnet and longline fisheries in Sri Lanka in recent years. It was also noted that the Directorate of Fisheries and Aquatic Resources of Sri Lanka is in the process of implementing a logbook programme for its fisheries including compulsory reporting of logbooks from most fisheries. The WPDCS further noted that the IOTC-OFCF Project is considering assistance to Sri Lanka in the areas of Database Development and strengthening of sampling activities. The WPDCS thanked the OFCF and encouraged Sri Lanka to implement the new logbook system as soon as possible. In addition, the WPDCS recommended that Sri Lanka reports the catch-and-effort data available to the IOTC, as per the existing IOTC standards.

44. The WPDCS was informed that, during the last meeting of the WPEB, Pakistan acknowledged the shortcomings of its statistical system. The WPDCS expressed concern that, to its knowledge, no actions have been undertaken to address these issues, recommending the Secretariat to contact Pakistan to follow-up on these issues.

Minimum data requirements for gillnet and pole-and-line fisheries

45. The WPDCS noted that the Commission has not adopted minimum requirements for the collection of operational data (logbook) from gillnet and pole-and-line fisheries, in particular those fisheries that operate in offshore waters. The WPDCS agreed on the need to implement minimum requirements for gillnet and pole-and-line fisheries as soon as possible, in line with those implemented for industrial purse seine and longline fisheries.

46. The WPDCS agreed on the minimum requirements for gillnet (as presented in Appendix VI) and pole-and-line (as presented in Appendix VII) fisheries. The WPDCS also agreed that initially these requirements should apply only to decked vessels 15 meters length overall or greater.

47. The WPDCS noted that the identification of bigeye tuna, marlins, sharks and marine turtles by species may be difficult by fishermen onboard fishing vessels, recommending that the Secretariat disseminate identification cards for these and other species, in particular to countries having gillnet fisheries.

Progress in the review of statistical systems for industrial purse seiners

48. The WPDCS was informed by the EU that, following the “International working group on tuna purse seine and baitboat catch species composition derived from observer and port sampler data” that was held in Sète in June 2009⁵, a research proposal was written to obtain a 2-year funding for a statistical study to analyse the multispecies sampling and processing in use for the EU purse seiners. The funding has been obtained within the EU Data Collection Framework (DCF) and the statistician should be hired in early 2011 to provide the results of the analysis by the end of 2012. First results might be presented at the IOTC WPDCS in 2011.

49. In parallel, an IRD-financed project on the re-engineering of the data processing chain used to correct for the species composition of the catch based on port multispecies sampling has started since mid-2009. The project will run until the beginning of 2012 and aims to (i) to simplify the algorithm steps of the processing (ii) to improve the flexibility of the processing, mainly parametrisation and access to input data, and (iii) to well document the data processing to make it available to other institutes and RFMOs.

50. The WPDCS noted that the statistics of Thai purse seiners are derived directly from logbooks, noting that this may be a source for bias in species composition. The WPDCS recalled its recommendation for scientists from the EU and Thailand to explore the use of size data collected on EU vessels for the same areas and periods to adjust the species composition from logbooks reported by Thai purse seiners.

Statistics of fresh-tuna longline fisheries of Taiwan, China, Malaysia and Indonesia

51. The WPDCS was informed that, as from 2010, Taiwan, China’s small scale longliners operating in the Indian Ocean are required to submit weekly catch reports to the Fisheries Agency, and this data will improve the catch estimation in the future. Also in 2010, some on-board scientific observers have been deployed on small scale tuna longliners to collect fishery data, including catch and length data. In addition, from 2007 to 2009, sampling has been conducted in Mauritius to collect catch and length statistics for albacore unloaded in port. A report is being prepared and will be presented to the next meeting of the Working Party on Temperate Tunas.

52. The WPDCS noted with concern that Indonesia and Malaysia have not reported catches or other statistics for longliners under their flag based outside their territories. The WPDCS urged these countries to make the necessary arrangements for these data to be collected and provided in the future.

Statistics of commercial longliners of India and industrial purse seiners of Iran

53. The WPDCS expressed concern that the quality of statistics for commercial longliners of India has not improved, urging India to establish proper data collection as soon as possible, in accordance with all IOTC requirements.

54. The WPDCS was informed that, in 2009, the Iranian purse-seine fleet was made of 8 vessel but only 5 of them were active. The total fishing effort for the fleet in 2009 was of 675 days, averaging 135 days per vessel. Catch and effort for the Iranian purse-seine fleet is much lower than for other purse-seine fleet operating in the Indian Ocean, and this is due to:

- Iran purse seiners are not equipped with modern technologies (satellite data on SST and chlorophyll, etc) that could assist in finding tuna schools.
- Most of the vessels of the industrial purse seine fleet of Iran are old (some more than 30 years old), experience frequent breakdowns and require heavy maintenance.
- No security personnel is onboard Iranian purse-seine vessels to ensure their security while fishing in areas with high risk of piracy.
- The fleet has no fishing agreement or license with any other coastal countries of the Indian Ocean.

55. The WPDCS thanked Iran for this information, recommending that the Secretariat assist Iran in the estimation of catches and reporting of data to the IOTC.

⁵ Anonymous 2010. Report of the international working group on tuna purse seine and baitboat catch species composition derived from observer and port sampler data. ICCAT Col. Vol. Sci. Pap. 65(2): 486-511

Implementation of sampling systems for artisanal fisheries

56. The WPDCS noted that the Commission had implemented Resolution 10/04, including provisions for countries having coastal fisheries for tuna and tuna-like species to gradually implement sampling schemes, in order to cover 5% or more of the vessel activities.

57. The WPDCS agreed that some countries in the region may need assistance in the implementation of this resolution. The WPDCS invited countries to contact the IOTC Secretariat in the case that they require assistance in the implementation of the sampling scheme, requesting the Secretariat to assist these countries, where possible.

58. The WPDCS noted that the 5% coverage established by the Commission may be insufficient, agreeing that it is too premature to recommend increases in coverage, as sampling programmes are yet to be implemented. The WPDCS recommended that countries having sampling schemes or planning to implement those assess the precision of estimates of catches from those schemes considering different levels of coverage and report the results to the WPDCS. The WPDCS requested the IOTC Secretariat to assist countries, as required.

59. The WPDCS noted that paragraph 9 of Resolution 10/04 contains provisions for the reporting of numbers of fishing vessels monitored and the coverage achieved by gear type and by year, to both the Executive Secretary and the Scientific Committee. The WPDCS recommended that this information is also provided along with the statistics reported to the IOTC (IOTC Resolution 10/02).

Timely estimation of total catches of main IOTC species by month and fishery

60. The WPDCS noted the requirements in Resolution 10/01, calling for the Secretariat to assess reporting systems for IOTC fisheries in order to determine if countries can report catches of main IOTC species each month, no later than 15 days after the end of the month concerned.

61. Some WPDCS participants indicated that reporting catches in the format requested will not be possible, as more time is needed to process the information collected, especially in the case of coastal fisheries. The WPDCS further noted that, although the reporting of monthly catches might be possible for some surface and longline fleets, the catches provided will represent preliminary estimates in most cases.

62. The WPDCS noted that the provision of this type of information will not be possible in the short-term. It was agreed that this issue could be revisited after the implementation of sampling schemes (IOTC Resolution 10/04).

4. UPDATE ON VARIOUS NATIONAL STATISTICAL SYSTEMS

Progress in the completion of IOTC questionnaires on fisheries statistics systems

63. The Secretariat informed the WPDCS regarding progress in the compilation of questionnaires on fisheries statistics systems from countries having fisheries for IOTC species. A summary of the information provided is presented in Appendix VIII.

64. The WPDCS noted that, to date, many countries have not completed questionnaires, encouraging countries to provide this information as soon as possible and requested the Secretariat to report progress to the next meeting of the WPDCS.

New reports on statistical systems

65. The WPDCS received information concerning the statistical systems in Comoros, EU-France, Iran, Kenya, Madagascar (IOTC-2010-WPDCS-09), Thailand (IOTC-2010-WPDCS-09), Maldives and Mauritius. A summary of the information provided is presented in Appendix IX.

66. The WPDCS noted that Madagascar is implementing a Project to collect statistics from the fisheries operating in the country and that the activities implemented through the Project will be maintained in the future. The WPDCS encouraged Madagascar to maintain these activities and report catch statistics to the IOTC as soon as possible.

67. The WPDCS noted that Thailand and Mauritius are currently the only source for size frequency data for fresh-tuna longliners, as Indonesia has discontinued data collection for its fishery. The WPDCS recommended that, in order to increase sample numbers, the IOTC Secretariat considers providing assistance to these countries, where required.

68. The WPDCS recommended that the Secretariat continue to provide assistance to the Maldives to improve its data holdings.

69. The WPDCS noted that, in addition to the activities implemented with the assistance of the IOTC-OFCF Project, the SWIOFP is to implement a catch assessment survey for fisheries around anchored FADs, recommending that IOTC-OFCF and SWIOFP coordinate their work so as to avoid duplication of efforts.

70. The WPDCS noted that the EU has reported information concerning the numbers of fish aggregating devices and supply vessels used by purse seiners under its flag. The WPDCS noted that the same number of natural and artificial FADs have been reported for purse seiners under EU-France, agreeing that these figures are not reliable, as the numbers of FADs are likely to change significantly depending on the season. The WPDCS recommended EU scientists to look into this issue and report to the next meeting of the WPDCS.

5. RECOMMENDATIONS TO IMPROVE THE QUALITY OF THE STATISTICS AT THE IOTC

71. The Secretariat informed the WPDCS concerning the status of implementation of recommendations on data and statistics from IOTC Working Parties. The Secretariat has published the recommendations and status of implementation, where known, in the IOTC Web Site, requesting countries to provide details on the implementation of recommendations where necessary. The WPDCS thanked the Secretariat for this initiative, requesting the Secretariat to maintain the list of recommendations and follow-up on the issues outstanding and report progress at the next meeting of the WPDCS.

72. The WPDCS noted that the issues listed on paragraphs 17 and 18 of the WPDCS Report represent a first attempt to identify the main problems existing at present, recommending that these issues be addressed as a matter of priority.

6. ACTIVITIES TO ASSIST DATA COLLECTION AND PROCESSING IN COASTAL COUNTRIES

Activities under the IOTC-OFCF Project

73. The IOTC-OFCF Project reported the major activity during 2002 to 2010 and tentative plans for March 2011 (IOTC-2-10-WPDCS-08). The Project activities included fact-finding missions and country reports, implementation of sampling or strengthening of existing programs, training and workshops, provision of database software and hardware, and recovery of historical data. Activities were implemented in 16 countries of the Indian Ocean region. Main activities included implementation of sampling programs in (1) Indonesia to monitor the activities of fresh tuna longliners, (2) Thailand to monitor activities of foreign fresh tuna longliners based in Phuket, (3) Sri Lanka to monitor the activities of offshore and coastal fisheries for tuna and billfish, (4) Maldives to strengthen size data collection from pole and line vessels and (5) Oman to monitor the activities of artisanal fisheries operating in the Arabian Sea. The implementation of these activities led to significant improvements in the quality of statistics in the IOTC database.

74. The WPDCS thanked the OFCF for extending its support to improving statistical systems in the region, to assist countries in the implementation of sampling schemes (IOTC Resolution 10/04), recommending that the Project considers extending assistance in the future.

Activities funded by the IOTC

75. The IOTC Secretariat informed the WPDCS that, in addition to the activities implemented through the IOTC-OFCF Project, additional funds are available from Japan and the Commission for the implementation of observer programmes and port sampling schemes (IOTC Resolution 10/04). The Secretariat informed that it is considering implementing a sampling scheme in Comoros and strengthening of the sampling in Sri Lanka in 2011.

76. The WPDCS recommended that countries that benefitted from activities funded by the IOTC or the IOTC-OFCF Project make every possible effort to maintain these activities once the support is discontinued.

Other activities

77. The WPDCS received an update on the activities conducted under the South West Indian Ocean Fisheries Project SWIOFP is implementing activities that will complement the data collection on large pelagic fish undertaken by the IOTC. Those activities cover two main domains. First, following the deployment of anchored FADs in five countries of the SWIO (Comoros, Kenya, Madagascar, Mozambique and Seychelles), protocols to ensure a species catch assessment survey relevant to FADs fishing activities will be introduced, which concern mainly tuna and tuna-like

species. Second, new detailed data on fishing operations at sea, catch and by-catch levels, will be produced by the observer program developed in SWIOFP as from 2011. Those data will be collected under the responsibility of the national institutions and forwarded to the IOTC Secretariat at least for the member countries of the IOTC.

78. The Secretariat informed the WPDCS about its participation to a data collection and statistics meeting of the Bay of Bengal Large Marine Ecosystem Project (BOBLME), following an invitation from the Project. The WPDCS noted that the BOBLME will establish activities to improve the status of information for sharks in the Bay of Bengal, requesting the IOTC Secretariat to follow-up on this work, as some of the information collected may be useful to the IOTC.

7. DISTRIBUTION OF THE IOTC DATA AND DOCUMENTS

Data for the IOTC Meetings and the general public

79. The IOTC Secretariat informed the WPDCS about the procedures used at the Secretariat for the preparation and dissemination of data for the Commission, Scientific Committee and Working Parties, including maintenance of datasets at the IOTC website and distribution of information following specific requests from the Commission or the general public. During 2009 the Secretariat prepared datasets for the assessments of tropical tuna and billfish species.

80. The WPDCS thanked the Secretariat for making all this information available noting that, in some cases and due to the type of information that is reported to the Secretariat - e.g. catches in number instead of weight for catch-and-effort from some longline fisheries -, it is difficult for scientists to use the raw data. The WPDCS recommended that, where possible, the Secretariat provides alternative catch-and-effort series, including catches in weight.

IOTC Data Summary and field manual

81. The IOTC Secretariat informed the WPDCS that, due to lack of time and resources, it had been unable to complete this job. The Secretariat noted that funds are now available for developing a new IOTC Data Summary, the plan being to outsource this work. The WPDCS requested the Secretariat to go ahead with its plans.

IOTC Guidelines and forms for the reporting of statistics to the IOTC

82. The Secretariat informed the WPDCS that it had published Guidelines and new sets of forms for the reporting of data to the IOTC. The WPDCS noted that some countries have reported statistics as per the new requirements urging other countries to report the data specified in the Guidelines.

83. The WPDCS noted that the forms for the reporting of activities under the IOTC observer scheme are not available as Excel forms recommending that the IOTC Secretariat develops forms in Excel to facilitate the reporting of these data.

8. OTHER BUSINESS

Cooperation between IOTC and ISSF: Data from canning factories

84. The Secretariat informed the WPDCS that since 2010 it has been receiving information on catches processed by canning factories under the International Seafood Sustainability Foundation (ISSF) and these data have proved useful in the identification of data gaps for some fisheries. The WPDCS thanked the ISSF for this initiative.

Election of Chairperson for the next biennium

85. The WPDCS re-elected Miguel Herrera as Chair for the next biennium.

9. ADOPTION OF THE REPORT

86. The report of the WPDCS was adopted on the 4th December 2010.

Appendix I: List of Participants

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Appendix II: WPDCS Agenda**1. OPENING OF THE MEETING****2. PROGRESS REPORT OF THE SECRETARIAT ON DATA RELATED ISSUES**

- Report on IOTC Data Collection and Statistics (IOTC-2010-WPDCS-03)
- Reports on the status of IOTC databases for ALBACORE (IOTC-2010-WPDCS-04) and NERITIC TUNAS (IOTC-2010-WPDCS-05)
- Proposal for a scoring system to assess the quality of datasets at the IOTC (IOTC-2010-WPDCS-06)
- Use of alternative time series of catches for stock assessment (IOTC-2010-WPDCS-10)
- Minimum data collection and reporting requirements for observers (IOTC Resolution 10/04: Regional Scientific Observer Scheme)

3. MAIN DATA ISSUES OUTSTANDING

- Catches of IOTC and bycatch species by gillnet fisheries on the high seas (Iran, Pakistan, Sri Lanka)
- Minimum data requirements for gillnet fisheries (gillnet logbook template)
- Minimum data requirements for pole-and-line fisheries (baitboat logbook template)
- Progress in the review of statistical systems for purse seiners under EU, Seychelles and Thailand flag
- Statistics of fresh-tuna longline fisheries of Taiwan, China, Malaysia and Indonesia
- Statistics of commercial longliners of India and industrial purse seiners of Iran
- Implementation of sampling systems for artisanal fisheries (to cover 5% of vessel activities) (IOTC Resolution 10/04)
- Timely estimation of total catches of main IOTC species by month and fishery (IOTC Resolution 10/01)

4. UPDATE ON NATIONAL STATISTICAL SYSTEMS

- Progress in the completion of IOTC questionnaires on Fisheries Statistics Systems
- New reports on statistical systems (participants invited through IOTC funds or other participants)
 - Madagascar (IOTC-2010-WPDCS-09)
 - Thailand (IOTC-2010-WPDCS-07)

5. RECOMMENDATIONS TO IMPROVE THE QUALITY OF THE STATISTICS AT THE IOTC

- Status of implementation of recommendations from WPDCS 2009
- New recommendations

6. ACTIVITIES TO ASSIST DATA COLLECTION AND PROCESSING IN COASTAL COUNTRIES

- Activities under the IOTC-OFCF Project (IOTC-2010-WPDCS-08)
- Activities funded by the IOTC
- Other activities (COI, BOBLME, SWIOFP)

7. DISSEMINATION OF THE IOTC DATA AND DOCUMENTS

- Data for the IOTC Meetings and the general public
- IOTC Guidelines and forms for the reporting of statistics to the IOTC
- IOTC Data Summary and Field Manual

8. OTHER BUSINESS

- Cooperation between IOTC and ISSF: Data from canning factories
- Election of Chairperson for the next biennium

9. ADOPTION OF THE REPORT

Appendix III: List of Documents

Document	Title
IOTC-2010-WPDCS-01	Draft agenda of the Working Party on Data Collection and Statistics
IOTC-2010- WPDCS-02	WPDCS List of documents
IOTC-2010-WPDCS-03	Report on IOTC data collection and statistics - <i>Herrera, M., L.Pierre and J.Million</i>
IOTC-2010-WPDCS-04	Status of IOTC databases for ALBACORE - <i>Herrera, M. and L.Pierre</i>
IOTC-2010-WPDCS-05	Status of databases for NERITIC TUNAS – <i>Pierre, L. and M.Herrera</i>
IOTC-2010-WPDCS-06	Proposal for a system to assess the quality of fisheries statistics at the IOTC - <i>Herrera, M.</i>
IOTC-2010-WPDCS-07	Foreign Tuna Fleets Unloading in Phuket, Thailand During 1995-2009 - <i>Nootmorn, P., S.Rodpradit and T.Chaïyen</i>
IOTC-2010-WPDCS-08	Activities of the IOTC-OFCF Project Phase I (April 2002-March 2007), Phase II (June 2007 to March 2010), and New IOTC-OFCF Project (June 2010). <i>Fujiwara,S. and M.Herrera</i>
IOTC-2010-WPDCS-09	Programme USTA Madagascar
IOTC-2010-WPDCS-10	Should the IOTC be Representing the Uncertainty in the Catch Time Series in the Stock Assessment Process? <i>Kolody,D. and M.Herrera</i>
Information documents	
IOTC-2010-WPDCS-Inf01	IOTC-OFCF Project Phase I Report
IOTC-2010-WPDCS-Inf02	IOTC-OFCF Project Phase II Report
IOTC-2010-WPDCS-Inf03	Summary questionnaire completed










Appendix IV: Recommendations from the WPDCS

Par.	Recommendation
3	The WPDCS stressed the need to maximize participation of scientists from coastal countries to future meetings of the WPDCS urging countries in the region to make the necessary arrangements to attend future meetings.
72	The WPDCS noted that the issues listed on paragraphs 17 and 18 of the WPDCS Report represent a first attempt to identify the main problems existing at present, recommending that these issues be addressed as a matter of priority.
17	Statistics not available: <ul style="list-style-type: none"> • Very incomplete statistics from the industrial longline fishery of India. • Complete lack of statistics from the artisanal fisheries in Yemen. • Complete lack of statistics from industrial longliners operating under flags of non-reporting countries. • Lack of size frequency data for the fresh-tuna longline fisheries of Taiwan, China. • Lack of statistics from industrial longliners of Indonesia and Malaysia not based in their territories. • Lack of catch-and-effort data for longliners from Indonesia. • Lack of catch-and-effort data and detailed size frequency data for the oceanic gillnet fisheries of Pakistan and Iran and the gillnet/longline fishery of Sri Lanka. • Lack of catch-and-effort and size frequency data for the artisanal fisheries of India. • Complete lack of statistics from the artisanal fisheries of Madagascar and Comoros.
18	Statistics incomplete: <ul style="list-style-type: none"> • Insufficient time-area coverage for size sampling data for important longline fleets, in particular Japan. • Catches not fully by species and/or gear for large-scale and medium-scale purse seine fisheries of Indonesia, Malaysia and Thailand and for the gillnet/longline fishery of Sri Lanka. • Size frequency statistics not reported by IOTC standards for the fisheries of Japan, Indonesia and Malaysia. • Total levels of bycatch of sharks, seabirds and marine turtles unknown.
23	The WPDCS noted the changes in the estimates of catches of albacore following a review by the Secretariat using data provided by the ISSF and Export Statistics from Indonesia. The WPDCS noted that the new catches estimated for 2003-09 represent more than twice catch values in the past. It was also noted that the new catches derived for the fisheries in Madagascar may be too high. The WPDCS requested the Secretariat to follow-up on these issues to ensure that the catches in the IOTC database are as accurate as possible.
24	The WPDCS urged countries having fisheries for neritic tuna species to collect the data requested as soon as possible and report this information to the IOTC.
25	The WPDCS reiterated the need for Japan to increase length frequency sampling on its longline fleet, including length frequency data for main shark species.
30	The WPDCS noted that, to date, no countries have provided lists of certified observers or observer reports to the Secretariat, urging the countries concerned to provide this information as soon as possible.
35	The WPDCS endorsed the process currently being undertaken by the Secretariat to develop a scoring system to assess the quality of data being reported to the Secretariat. The WPDCS noted that the allocation of scores to all data items in the IOTC databases will require a lot of time and effort from the Secretariat, agreeing that the process shall be implemented gradually, with yellowfin tuna, bigeye tuna and swordfish assessed at the start.
38	The WPDCS noted that although there are some concerns in describing additional uncertainty in stock assessment advice to the Commission, it was agreed that the inclusion of upper and lower bounds for possible catch histories would be important to include in sensitivity analysis during the stock assessment process.
39	The WPDCS recommended that the Secretariat develop a range of uncertainty estimates (alternate catch histories) for a single species for consideration by the WPTT and/or WPDCS in 2011.
42	The WPDCS noted that Iran has requested the assistance of the IOTC Secretariat to address the recommendations from the IOTC Scientific Committee, recommending that the Secretariat plans for a visit to Iran during 2011 and reports back on the findings to the next meeting of the WPDCS
43	The WPDCS recommended that Sri Lanka reports the catch-and-effort data available to the IOTC, as per the existing IOTC standards.
44	The WPDCS expressed concern that, to its knowledge, no actions have been undertaken to address these issues, recommending the Secretariat to contact Pakistan to follow-up on these issues.
45-46	The WPDCS agreed on the need to implement minimum requirements for gillnet and pole-and-line fisheries as soon as possible, in line with those implemented for industrial purse seine and longline fisheries. The WPDCS agreed on the minimum requirements for gillnet (as presented in Appendix VI) and pole-and-line (as presented in Appendix VII) fisheries. The WPDCS also agreed that initially these requirements should apply only to decked vessels 15 meters length overall or greater.
47	The WPDCS noted that the identification of bigeye tuna, marlins, sharks and marine turtles by species may be difficult by fishermen onboard fishing vessels, recommending that the Secretariat disseminate identification cards for these and other species, in particular to countries having gillnet fisheries.
50	The WPDCS recalled its recommendation for scientists from the EU and Thailand to explore the use of size data collected on EU vessels for the same areas and periods to adjust the species composition from logbooks reported by Thai purse seiners.
52	The WPDCS noted with concern that Indonesia and Malaysia have not reported catches or other statistics for longliners under their flag based outside their territories. The WPDCS urged these countries to make the necessary arrangements for these data to be collected and provided in the future.
55	The WPDCS recommended that the Secretariat assist Iran in the estimation of catches and reporting of data to the IOTC.
58	The WPDCS recommended that countries having sampling schemes or planning to implement those assess the precision of estimates of catches from those schemes considering different levels of coverage and report the results to the WPDCS. The WPDCS requested the IOTC Secretariat to assist countries, as required.

Par.	Recommendation
59	The WPDCS noted that paragraph 9 of Resolution 10/04 contains provisions for the reporting of numbers of fishing vessels monitored and the coverage achieved by gear type, by year to both, the Executive Secretary and the Scientific Committee. The WPDCS recommended that this information is also provided along with the statistics reported to the IOTC (IOTC Resolution 10/02)
64	The WPDCS noted that, to date, many countries have not completed questionnaires, encouraging countries to provide this information as soon as possible and requested the Secretariat to report progress to the next meeting of the WPDCS.
67	The WPDCS noted that Thailand and Mauritius are currently the only source for size frequency data for fresh-tuna longliners, as Indonesia has discontinued data collection for its fishery. The WPDCS recommended that, in order to increase sample numbers, the IOTC Secretariat considers providing assistance to these countries, where required.
68	The WPDCS recommended that the Secretariat continue to provide assistance to the Maldives to improve its data holdings.
69	The WPDCS noted that, in addition to the activities implemented with the assistance of the IOTC-OFCF Project, the SWIOFP is to implement a catch assessment survey for fisheries around anchored FADs, recommending that IOTC-OFCF and SWIOFP coordinate their work so as to avoid duplication of efforts.
70	The WPDCS noted that the same number of natural and artificial FADs have been reported for purse seiners under EU-France, agreeing that these figures are not reliable, as the numbers of FADs are likely to change significantly depending on the season. The WPDCS recommended EU scientists to look into this issue and report to the next meeting of the WPDCS.
74	The WPDCS thanked the OFCF for extending its support to improving statistical systems in the region, to assist countries in the implementation of sampling schemes (IOTC Resolution 10/04), recommending that the Project considers extending assistance in the future.
76	The WPDCS recommended that countries that benefitted from activities funded by the IOTC or the IOTC-OFCF Project make every possible effort to maintain these activities once the support is discontinued.

Appendix V: Availability of IOTC statistics for the year 2009

Key Tables i - v

Gear	Industrial purse seine (PS), industrial longline (LL) and artisanal gears (ART)	NC	Nominal Catch		Fully available
Catch	Recent catches amounting to (thousands of tonnes)	CE	Catch and Effort		Partially available
		SF	Size Frequency		Not available
TI	Timeliness		Good (before 1st July)		Fair (within July)
			Poor (after 1st August)		
		SO	Data Source		Statistics fully available from flag country
					Statistics partially available from flag country
					Statistics available from sources other than flag country

i – Tropical tunas (YFT, BET, SKJ)

Gear	Fleet	Availability of statistics					TI	SO	Comments
		Catch	Sps	NC	CE	SF			
P S	EUROPEAN UNION	175.7	SY						Information on number of FAD used not provided
	SEYCHELLES	68.3	SY						FAD and supply vessel information not provided
	FRANCE-TERRITORIES	12.6	SY						Information on number of FAD used not provided
	THAILAND	11.0	SB						FAD and supply vessel information not provided
	JAPAN	5.6	SB						FAD and supply vessel information not provided
	IRAN I R	1.7	Y						SF not by IOTC standard grid
	AUSTRALIA	0.9	S						
	MALAYSIA	0.3	S						
	INDONESIA								
L L	CHINA	3.1	BY						
	TAIWAN CHINA	43.7	BY						SF not available from fresh-tuna longliners
	INDONESIA	15.4	BY						
	JAPAN	13.9	BY						
	INDIA	10.7	BY						NC not reported for all longliners
	OMAN	6.6	Y						
	SEYCHELLES	5.0	B						
	MALAYSIA	2.2	BY						NC not reported for all longliners
	KOREA REP	1.4	YB						
	EUROPEAN UNION	1.2	BY						No data available for France; No CE data available for Spain
	PHILIPPINES	0.9	BY						CE not collected according to IOTC minimum requirements
	SOUTH AFRICA	0.3	BY						
	THAILAND	0.2	BY						
	MAURITIUS	0.1	Y						
	AUSTRALIA	0.1	Y						
	BELIZE	0.1	Y						
	KENYA	0.0	BY						
	MADAGASCAR	0.0	BY						
	GUINEA	0.0	BY						
TANZANIA	0.0	BY							
SENEGAL	0.0	BY							
O t h e r f l e e t s	NEI-FRESH ¹	5.5	YB						
	NEI-FROZEN ²	2.3	BY						
	SRI LANKA	121.2	SY						NC aggregated; CE and SF not by standard grid
	MALDIVES	86.8	SY						Complete CE and SF provided for WPPT; not officially released
	IRAN I R	65.7	SY						
	INDONESIA	52.2	S						
	INDIA	26.1	YS						
	MADAGASCAR	15.6	SY						
	YEMEN AR RP	13.7	Y						
	COMOROS	12.6	YS						
	PAKISTAN	10.3	YS						
	OMAN	7.0	Y						NC not by gear (aggregated)
	FRANCE-TERRITORIES	0.8	SY						
	EUROPEAN UNION	0.2	Y						
	TANZANIA	0.1	Y						
	MAURITIUS	0.1	Y						
	KENYA	0.1	Y						
JORDAN	0.0	S						Catches not significant; not estimated	
UK-TERRITORIES	0.0	S						SF only available for YFT	
SOUTH AFRICA	0.0	Y							
EAST TIMOR	0.0	Y							
AUSTRALIA	0.0	Y							
SEYCHELLES	0.0	Y							

Sps Yellowfin tuna (Y), bigeye tuna (B) and skipjack tuna (S)
Gear Industrial purse seine (PS), industrial longline (LL) or other gears (pole-and-line; small purse seines, large and small gillnets, and small lines)
Conf Catches confidential (included in NEI)
1 Freezing longliners whose catches are not reported by the flag states concerned
2 Fresh-tuna longliners whose catches are not reported by the flag states concerned

ii – Temperate tunas (ALB, SBF)

Gear	Fleet	Availability of statistics					TI	SO	Comments
		Catch	Sps	NC	CE	SF			
P S	AUSTRALIA	4.3	S						
	EUROPEAN UNION	0.4	A						Information on number of FAD used not provided
	SEYCHELLES	0.0	A						FAD and supply vessel information not provided
L L	INDONESIA	14.8	A						
	CHINA	0.4	A						
	TAIWAN, CHINA	14.2	A						SF not available from fresh-tuna longliners
	JAPAN	5.5	AS						Sample size represents less than 1 fish by ton caught
	INDIA	2.9	A						NC not by species and not reported for all longliners
	KOREA REP	1.0	SA						
	EUROPEAN UNION	1.0	A						No data available for France; No CE data available for Spain
	SEYCHELLES	0.5	AS						
	MALAYSIA	0.2	A						NC not reported for all longliners
	BELIZE	0.2	A						
	PHILIPPINES	0.1	A						CE not collected according to IOTC minimum requirements
	SOUTH AFRICA	0.0	AS						
	GUINEA	0.0	A						
	TANZANIA	0.0	A						
	SENEGAL	0.0	A						
	MADAGASCAR	0.0	A						
	THAILAND	0.0	A						
	AUSTRALIA	0.0	A						
MAURITIUS	0.0	A						SF data not by IOTC grid & combined for domestic and foreign vessels	
NEI-FRESH	1.4	A							
NEI-FROZEN	0.3	A							
O T H	INDIA	1.1	A						
	EUROPEAN UNION	0.0	A						
	SOUTH AFRICA	0.0	A						
	AUSTRALIA	0.0	S						

Sps Southern bluefin tuna (S) and albacore (A)
Gear Industrial purse seine (PS), industrial longline (LL) or other gears (OTH: pole-and-line; small purse seines, large and small gillnets, and small lines)
1 Freezing longliners whose catches are not reported by the flag states concerned
2 Fresh-tuna longliners whose catches are not reported by the flag states concerned

iii – Billfish (SWO, MARL, SFA, SSP)

Gear	Fleet	Availability of statistics					TI	SO	Comments
		Catch	Sps	NC	CE	SF			
L L	CHINA	0.4	S						
	TAIWAN, CHINA	12.1	SM						SF not available from fresh-tuna longliners
	EUROPEAN UNION	5.8	S						Data not available for NC/CE France; CE/SF incomplete for Spain
	INDIA	2.8	SM						NC not reported for all longliners
	INDONESIA	2.8	SM						
	JAPAN	1.9	SM						
	SEYCHELLES	1.0	S						
	OMAN	0.6	MF						
	GUINEA	0.5	S						
	TANZANIA	0.5	S						
	SENEGAL	0.5	S						
	AUSTRALIA	0.3	S						
	MAURITIUS	0.3	S						
	MALAYSIA	0.3	S						NC not reported for all longliners
	KENYA	0.3	S						
	SOUTH AFRICA	0.2	S						
	KOREA REP	0.2	S						
	THAILAND	0.1	S						CE only available for swordfish
MADAGASCAR	0.0	S							
BELIZE	0.0	S							
PHILIPPINES	0.0	S						CE not collected according to IOTC minimum requirements	
NEI-FRESH	1.1	SM							
NEI-FROZEN	0.5	SM							
O t h e r f i l l e e t s	IRAN I R	8.0	F						
	SRI LANKA	6.3	F						NC aggregated; CE and SF not by standard grid
	INDIA	6.1	F						
	PAKISTAN	3.1	M						
	INDONESIA	1.7	MF						
	MADAGASCAR	1.5	F						
	OMAN	1.2	F						
	COMOROS	0.6	F						
	TANZANIA	0.4	M						
	YEMEN AR RP	0.3	F						
	MAURITIUS	0.3	M						
	KENYA	0.2	F						
	UN ARAB EMIRATES	0.2	M						
	EUROPEAN UNION	0.1	M						
	FRANCE-TERRITORIES	0.0	M						
SAUDI ARABIA	0.0	M							
SEYCHELLES	0.0	F							
UK-TERRITORIES	0.0	F							

Sps Swordfish (S), blue marlin and/or black marlin and/or striped marlin (M), Indo-Pacific sailfish (F) and short-billed spearfish (P)
Gear Industrial purse seine (PS), industrial longline (LL) or other gears (pole-and-line; small purse seines, large and small gillnets, and small lines)
Conf Catches confidential (included in NEI)
1 Freezing longliners whose catches are not reported by the flag states concerned
2 Fresh-tuna longliners whose catches are not reported by the flag states concerned

iv – Neritic tunas (FRZ, LOT, KAW, COM, GUT)

Gear	Fleet	Availability of statistics					TI	SO	Comments
		Catch	Sps	NC	CE	SF			
P S	IRAN I R	2.2	L						
	THAILAND	0.1	F						Statistics incomplete; refers mostly to discards
	EUROPEAN UNION	0.0	F						Statistics incomplete; refers mostly to discards
	SEYCHELLES	0.0	F						Statistics incomplete; refers mostly to discards
O t h e r f l e e t s	INDONESIA	117.6	KL						
	INDIA	105.0	CK						
	IRAN I R	80.7	LK						SF not by IOTC standard
	THAILAND	21.8	KL						
	MALAYSIA	18.6	KL						
	PAKISTAN	16.1	CL						
	OMAN	14.9	LC						
	YEMEN AR RP	11.2	KL						
	MADAGASCAR	10.5	CK						
	SRI LANKA	9.0	CK						NC aggregated; CE and SF not by standard grid
	MALDIVES	8.2	FK						Complete CE and SF provided for WPTT; not officially released
	SAUDI ARABIA	7.8	CK						
	UN ARAB EMIRATES	3.9	L						
	QATAR	2.6	C						
	BANGLADESH	1.6							
	KENYA	1.2	CK						
	COMOROS	1.1	K						
	TANZANIA	0.9	C						
	ERITREA	0.5	C						
	EGYPT	0.3	CK						
	AUSTRALIA	0.3	C						
	BAHRAIN	0.2	K						
	SEYCHELLES	0.1	K						
	KUWAIT	0.1	C						
DJIBOUTI	0.1								
JORDAN	0.1	K							
EUROPEAN UNION	0.0								
SUDAN	0.0	C							
SOUTH AFRICA	0.0	G							
UK-TERRITORIES	0.0	K							

Sps Longtail tuna (L), frigate tuna and/or bullet tuna (F), kawakawa (K), narrow-barred Spanish mackerel (C), Indo-Pacific king mackerel (G)
 Gear Industrial purse seine (PS), industrial longline (LL) or other gears (pole-and-line; small purse seines, large and small gillnets, and small lines)
 1 Freezing longliners whose catches are not reported by the flag states concerned
 2 Fresh-tuna longliners whose catches are not reported by the flag states concerned





v – Sharks seabirds and sea turtles

Gear	Fleet	Species					Comments
		Sharks			Sea Birds	Sea Turtles	
		NC	CE	SF			
P S	EUROPEAN UNION				n/a		NC presumed to be low
	SEYCHELLES				n/a		NC presumed to be low
	THAILAND				n/a		NC presumed to be low
	IRAN I R				n/a		NC presumed to be low
	AUSTRALIA				n/a		NIL bycatch
	FRANCE-TERRITORIES				n/a		NC presumed to be low
	JAPAN				n/a		NC presumed to be low
	MALAYSIA				n/a		NC presumed to be low
	INDIA				n/a		NC presumed to be low
	INDONESIA				n/a		NC presumed to be low
L L	CHINA						NC/CE refer to retained catches and is not by species
	TAIWAN,CHINA						NC/CE refer to retained catches and is not by species
	JAPAN						NC refers to retained catches
	INDONESIA						NC refers to retained catches and is not by species
	EUROPEAN UNION						No data available for France; No CE data available for Spain
	SEYCHELLES						NC/CE refer to retained catches and is not by species
	KOREA REP						NC/CE refer to retained catches and is not by species
	OMAN						NC/CE refer to retained catches and is not by species
	PHILIPPINES						
	MALAYSIA						NC/CE refer to retained catches and is not by species
	BELIZE						NC/CE refer to retained catches and is not by species
	MAURITIUS						NC/CE refer to retained catches and is not by species
	GUINEA						
	THAILAND						
	SOUTH AFRICA						
	AUSTRALIA						
	KENYA						
	SENEGAL						
	INDIA						
	MADAGASCAR						
NEI-FROZEN ¹							
NEI-FRESH ²							
A r t i s a n a l	IRAN I R				n/a		NC presumed to be high for driftnets
	MALDIVES				n/a		NC presumed to be low
	INDONESIA				n/a		NC presumed to be high
	INDIA				n/a		NC presumed to be high
	SRI LANKA						CE and SF not by standard grid
	OMAN				n/a		NC Not by species
	YEMEN AR RP				n/a		NC presumed to be high
	PAKISTAN				n/a		NC presumed to be high for driftnets
	MALAYSIA				n/a		NC/CE Not by species
	THAILAND				n/a		NC presumed to be low
	MADAGASCAR				n/a		Catch levels unknown
	COMOROS				n/a		Catch levels unknown
	UN ARAB EMIRATES				n/a		NC presumed to be low
	SAUDI ARABIA				n/a		Catch levels unknown
	QATAR				n/a		NC presumed to be low
	TANZANIA				n/a		NC presumed to be low
	KENYA				n/a		NC presumed to be low
	EGYPT				n/a		NC presumed to be low
	FRANCE-TERRITORIES				n/a		Catch levels unknown
	SEYCHELLES				n/a		NC/CE Not by species
	EUROPEAN UNION				n/a		NC Not by species
	MAURITIUS				n/a		NC presumed to be low
	AUSTRALIA				n/a		
	KUWAIT				n/a		NC presumed to be low
	ERITREA				n/a		NC presumed to be low
	JORDAN				n/a		NC presumed to be low
	BANGLADESH				n/a		NC presumed to be low
	BAHRAIN				n/a		NC presumed to be low
	DJIBOUTI				n/a		NC presumed to be low
	SUDAN				n/a		NC presumed to be low
UK-TERRITORIES				n/a		NC/CE Not by species	
SOUTH AFRICA				n/a			
EAST TIMOR				n/a		NC presumed to be low	

Catches of seabirds are not likely to occur (n/a) or may occur (?)

- 1 Freezing longliners whose catches are not reported by the flag states concerned
- 2 Fresh-tuna longliners whose catches are not reported by the flag states concerned

vi – Fishing craft statistics and list of active vessels

Gear	Industrial purse seine (PS), industrial longline (LL) and artisanal gears (ART)	Availability		Fully available
Catch	Recent catches amounting to (thousands of tonnes)			Partially available
Craft	Number of craft operated (2006) (blank if unknown)	SO		Statistics fully available from flag country
FC	Fishing craft			Statistics partially available from flag country
AV	List of active vessels		Statistics available from sources other than flag country	

Gear	Fleet	Availability				SO	Comments
		Catch	Craft	FC	AV		
P S	EUROPEAN UNION	176.1	36				
	SEYCHELLES	68.3	9				
	FRANCE-TERRITORIES	12.6	2				
	THAILAND	11.1	4				
	JAPAN	5.6	2				
	AUSTRALIA	5.2	10				
	IRAN I R	3.8	8				
	MALAYSIA	0.3	1				
	INDIA		5				
	INDONESIA		4				
	SUPPLY VESSELS-NEI		12				Vessels support PS from EC, Seychelles and Thailand; number uncertain
L L	CHINA	3.9	32				
	TAIWAN, CHINA	70.0	537				
	INDONESIA	32.9	1,043				
	JAPAN	21.4	126				
	INDIA	16.4	126				Conflicting numbers of LL reported by two government agencies
	EUROPEAN UNION	7.7	79				
	OMAN	7.3	17				
	SEYCHELLES	6.5	35				
	MALAYSIA	2.7	35				
	KOREA REP	2.6	2				
	PHILIPPINES	0.9	7				
	GUINEA	0.6	3				
	TANZANIA	0.6	3				
	SENEGAL	0.6	3				
	SOUTH AFRICA	0.5	25				
	AUSTRALIA	0.4	4				
	MAURITIUS	0.4	8				
	KENYA	0.3	2				
	THAILAND	0.3	3				
	BELIZE	0.3	5				
MADAGASCAR	0.1	3					
NEI-FRESH	8.0	23					
NEI-FROZEN	3.1	10					
O t h e r O f f s h o r e & C o a s t a l	INDONESIA	171.6			n/a		
	IRAN I R	154.4	6,611				
	INDIA	138.2			n/a		
	SRI LANKA	136.5	41,454				
	MALDIVES	95.0	1,016				
	PAKISTAN	29.5	2,401				
	MADAGASCAR	27.6			n/a		
	YEMEN AR RP	25.3			n/a		
	OMAN	23.2	14,942		n/a		
	THAILAND	21.8	755				
	MALAYSIA	18.6			n/a		
	COMOROS	14.3	4,327		n/a		
	SAUDI ARABIA	7.8			n/a		
	UN ARAB EMIRATES	4.1			n/a		
	QATAR	2.6			n/a		
	BANGLADESH	1.6			n/a		
	KENYA	1.5			n/a		
	TANZANIA	1.4			n/a		
	FRANCE-TERRITORIES	0.8			n/a		
	ERITREA	0.5			n/a		
	MAURITIUS	0.4			n/a		
	EGYPT	0.3			n/a		
	AUSTRALIA	0.3	35		n/a		
	EUROPEAN UNION	0.4	190		n/a		
	BAHRAIN	0.2			n/a		
	SEYCHELLES	0.1			n/a		
	KUWAIT	0.1			n/a		
JORDAN	0.1			n/a			
DJIBOUTI	0.1			n/a			
SUDAN	0.0			n/a			
SOUTH AFRICA	0.0	29		n/a			
UK-TERRITORIES	0.0	47		n/a			
EAST TIMOR	0.0			n/a			

- Freezing longliners whose catches are not reported by the flag states concerned
- Fresh-tuna longliners whose catches are not reported by the flag states concerned

Appendix VI

Minimum requirements for operational catch-and-effort data from gillnet fisheries CONCERNING THE RECORDING OF CATCH BY GILLNET VESSELS IN THE IOTC AREA

All logbook information must be recorded on a fishing event (set) by fishing event and daily basis and details for the last day of the trip must be recorded before the vessel docks at the end of each trip.

ANNEX I

Record once in one cruise

1-1 INFORMATION OF REPORT

- 1) Date of the submission of logbook.
- 2) Name of reporting person

1-2 VESSEL INFORMATION

- 1) Vessel name and registration number
- 2) IOTC number, where available
- 3) Call sign, where available
- 4) Vessel size: Gross tonnage (in MT) and/or overall length (in m)

1-3 CRUISE INFORMATION

- 1) Departure date and port
- 2) Arrival date and port

1-4 GEAR CONFIGURATION

1) Minimum and Maximum Depth

Record the maximum and minimum of the depth range fished in meters.

2) Mesh Size

Record the type(s) of mesh size in millimeters used during the trip.

3) Net Height

Record the height in meters of the net.

4) Net material

e.g. Nylon braided, Nylon monofilament, etc.

5) Total length of net lost

Record the total length in meters of net lost during the trip.

ANNEX II

Record one record for each set or day at sea

2-1 OPERATION

1) Date of set (YYYY/MM/DD).

Record the date for each set or day at sea (for days without sets).

2) Total Net Length

Record the length in meters of net used for each set.

3) Target Species

Nominate the species you are targeting for each set by writing in the name of the single most likely species that you expect to catch in the Target Species line (do this before setting the gear).

4) Start Fishing Time

Record the UCT time (24 hr) when starting each set.

5) Start and End Position in latitude and longitude

Record a start and an end latitude and longitude that represents the area that your gear is set between.

Record the latitude and longitude at noon for days with no sets.

6) Start Haul Time

Record the UCT time (24 hr) when hauling starts.

7) End Fishing Time

Record the UCT time (24 hr) when hauling ends.

2-2 CATCH

Catch in weight (kg) by species

1) Catch Weight

For each species shown in section 2-3 caught and retained, record the number and estimated weight (kg), per set and form of processing.

2) Discard Weight

For each species shown in section 2-3 caught and not retained record the estimated weight (kg) discarded, per set.

2-3 SPECIES (species or groups in bold shall be recorded separately in the logbook; catches of other species shall be recorded separately where, on average, they represent a significant proportion of the total catches ($\geq 10\%$))

Common name	Scientific name
Albacore tuna	<i>Thunnus alalunga</i>
Bigeye tuna	<i>Thunnus obesus</i>
Longtail tuna	<i>Thunnus tonggol</i>
Yellowfin tuna	<i>Thunnus albacares</i>
Skipjack tuna	<i>Katsuwonus pelamis</i>
Frigate tuna	<i>Auxis thazard</i>
Kawakawa	<i>Euthynnus affinis</i>
Narrow-barred Spanish mackerel	<i>Scomberomorus commerson</i>
Indo-Pacific king mackerel	<i>Scomberomorus guttatus</i>
Striped marlin & Blue marlin	<i>Tetrapturus audax & Makaira indica</i>
Black marlin	<i>Makaira mazara</i>
Indo-Pacific Sailfish	<i>Istiophorus platypterus</i>
Shortbilled spearfish	<i>Tetrapturus angustirostris</i>
Swordfish	<i>Xiphius gladius</i>
Blue shark	<i>Prionace glauca</i>
Crocodile shark	<i>Pseudocarcharias kamoharai</i>
Mako sharks	<i>Isurus spp.</i>
Hammerhead Sharks	<i>Sphyrna spp.</i>
Oceanic whitetip shark	<i>Carcharhinus longimanus</i>
Other Requiem sharks	<i>Carcharhinus spp.</i>
Porbeagle	<i>Lamna nasus</i>
Thresher sharks¹	<i>Alopias spp.</i>
Tiger shark	<i>Galeocerdo cuvier</i>
Other sharks	
Pelagic stingray	<i>Pteroplatytrygon violacea</i>
Other fishes	

¹ As per IOTC Resolution 2010/12, catch of Thresher sharks have to be reported but not kept (*i.e.* released if alive of discarded if dead)

2-4 REMARKS

1) Discard of tuna, tuna-like fish, sharks, and incidental catch of marine turtles and marine mammals should be recorded in the remarks, to species level where possible.

2) Other information is also written in the remarks.

Note: The list of species in 2-3 are regarded as minimum requirement. Optionally other shark and/or fish species should be added. Other shark and fish species caught frequently may differ by area and fishery.

Appendix VII

Minimum requirements for operational catch-and-effort data from pole-and-line fisheries CONCERNING THE RECORDING OF CATCH BY BAITBOAT VESSELS IN THE IOTC AREA

All logbook information shall be recorded by day; where more than one fishing event is recorded for the same day, it is advisable to record each fishing event (set) separately;

ANNEX I

Record once in one cruise

1-1 INFORMATION OF REPORT

- 1) Date of the submission of logbook.
- 2) Name of reporting person

1-2 VESSEL INFORMATION

- 1) Vessel name and registration number
- 2) IOTC number, where available
- 2) Fishing License number
- 3) Vessel size: Gross tonnage (in MT) and/or overall length (in m)

1-3 CRUISE INFORMATION

- 1) Departure date and port
- 2) Arrival date and port

ANNEX II

2-1 OPERATION

1) Date of fishing

Record the date of fishing. Each fishing day should be recorded separately.

2) Number of fishermen

Record the number of fishermen on the boat by fishing day (fishing event)

3) Number of Fishing Gear:

Record the number of fishing gear used during the day (fishing event). If the exact number is not available a range may be used i) less than 5 poles, ii) 6-10 poles; iii) more than 11 poles.

3) Start Fishing Time

Record the UCT time (24 hr) immediately after bait fishing is complete and heads to ocean for fishing. On multiple days the time at which searching starts should be recorded.

4) End Fishing Time

Record the UCT time (24 hr) immediately after fishing is complete from the last school. This is the time in which the captain decides to head home. On multiple days this is the time fishing stopped from the last school.

5) Number of fishing events

A fishing event is considered as the time from which fishing starts on a tuna school up to the time in which fishing on that same school ends. A different fishing event shall be recorded for each change of school. One shall be recorded here when fishing events are recorded separately

6) Position of the catch

Record the latitude and longitude at the start of each fishing event; record the latitude and longitude at noon for non-fishing days.

Where information is recorded by day, record the 1° x 1° area(s) where fishing took place.

7) Type of School

Record the type(s) of school fished: FAD associated and/or free school.

2-2 CATCH

Catch in number and weight (kg) by species

1) Catch number and Weight

For each species shown in section 2-3 caught and retained, record the number and estimated weight (kg), per fishing day (fishing event).

2) Discard number and Weight

For each species shown in section 2-3 caught and not retained record the number and estimated weight (kg) discarded, per fishing day (fishing event).

2-3 SPECIES

Common name	Scientific name
Albacore tuna	<i>Thunnus alalunga</i>
Bigeye tuna	<i>Thunnus obesus</i>
Longtail tuna	<i>Thunnus tonggol</i>
Yellowfin tuna	<i>Thunnus albacares</i>
Skipjack tuna	<i>Katsuwonus pelamis</i>
Frigate tuna	<i>Auxis thazard</i>
Kawakawa	<i>Euthynnus affinis</i>
Narrow-barred Spanish mackerel	<i>Scomberomorus commerson</i>
Other fishes	

2-4 REMARKS

1) Discard of tuna, tuna-like fish should be recorded in the remarks, to species level where possible.

2) Other information is also written in the remarks.

Note: These species included in the logbook are regarded as minimum requirement. Optionally other species should be added as species may differ depending on the area fished and type of fishery.

Appendix VIII

Status of reporting of IOTC Questionnaires on statistical systems

Fleets	Year Report	Fishery	Summary recent catch	Recent Historical Review		Type data collection		Data management					Production of fisheries statistics				Dissemination			
				type	period	Landing place	At sea	Type data Store	Database system	Data input	Data security	Data verification	Estimation procedure	Dataset used	Output estimation	other	Reports	Data Products	Published	IOTC standard
Australia	2008	ELL	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Australia	2008	PS	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
China	2008	LL	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X
Japan	2008	LL	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Japan	2008	PS	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X
France_EU	2008	Art	X			X		X	X	X	X	X	X	X	X	X	X	X	X	X
France_EU	2008	LL	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
South Africa	2008	LL ; Sport ;	X	X	X	X														
Kenya	2008	Artisanal	X			X		X	X	X	X	X	X	X	X					
Kenya	2008	ELL	X			X	X	X	X	X	X	X	X	X	X					
Oman	2008	Artisanal	X			X		X	X	X	X	X	X	X	X			X	X	X
Oman	2008	LL	X			X	X	X	X	X	X	X								
Taiwan, China	2006	FLL, LL	X			X	X	X	X	X	X	X	X	X	X			X	X	X
Thailand	2007	Artisanal/ LL/PS	X			X	X	X	X	X	X	X	X	X	X			X	X	X
UK-OT	2008	Sport	X				X	X	X	X	X	X	X	X	X			X	X	X
Sierra Leone	NO ACTIVITY																			

Appendix IX**New reports on statistical systems****Comoros**

Comoros discontinued data collection from its coastal fisheries in 1995. Comoros will receive the assistance of the IOTC-OFCF Project for the implementation of a frame survey for its fisheries and further assistance from the IOTC to implement a sampling scheme in 2011. Comoros is committed to report estimates of catches since 2011 and maintain data collection activities after assistance from the IOTC and the OFCF has been discontinued.

EU-France

EU-France is concerned with three fisheries impacting large pelagic resources. The industrial purse seine fisheries is monitored through logbooks (100 % coverage), Vessel Monitoring System (100% coverage) and port sampling for species composition and length frequency (~95% of trips). In 2011, extension of port sampling are already planned in Antsiranana (Madagascar) in collaboration with USTA (Unité Statistique Thonière d'Antsiranana) and in Port Louis (Mauritius) in collaboration with Albion Fisheries Centre. The observer program has been stopped mid 2009 for security reason first (piracy) and then for the absence of room availability once army forces were embarked. Perspectives of solutions are investigated through: - boarding of observers on new boats starting their activities with potentially more room on board, - auto sampling; - video monitoring and - use of data collected through controller program in TAAF territories. The longline fishery based in la Réunion is monitored through logbooks system and port sampling. No catch and effort data are available for 2009 due to a reorganization of French statistical system that has delayed seriously introduction and verification of 2009 logbook data. This problem is expected to be solved beginning of 2011. An observer program is ongoing since April 2007 with a 3 % coverage in 2009. The small scale fishery of la Réunion is monitored through a statistical sampling scheme based on - phone enquiries for effort statistics and - stratified catch assessment surveys.

Iran

Fisheries Statistical data collection system and data processing in Iran

Port sampling carried out for small-scale fisheries. 10% of the fishing vessels are covered, and the data, by vessel category, gear type, species, landing places and month will be raised to all active fishing vessels. The raising procedure will be done with the Iranian fish statistic software, AMAR.

The system covers four coastal provinces, representing around 11000 vessels. There 63 basic landing centers, of which 42 were selected based on i) the importance of the landings, ii) the diversity of the vessels, ii) the species composition and iv) the location of the main fishing ground.

Sampling is done in two stages, 1) classification of the landing sites and selection of the site to be sampled, 2) classification of the landing site taking into account the capacity of the different vessels. 51 category of species were identified in the landings of the artisanal vessels, classified as demersal, large pelagics, which includes 9 species of tuna and tuna-like species, small pelagics and shrimps.

For industrial vessels, total enumeration procedure was adopted in order to obtain all relevant information on catch and effort.

Kenya

Kenya has been collecting longline logbooks since 2005. The logbooks have never been validated as Kenya did not have a Vessel Monitoring System. In 2010, the VMS was commissioned and logbook validation is currently being undertaken. The challenge experienced so far has been the capture of a Kenyan longliner by the pirates and lack of foreign vessels in the EEZ due to piracy. As for the artisanal fishing, Kenya had been carrying out full enumeration. The system has been in place since early 1980's. In the year 2010, the data collection system has been changed with the introduction of a sampling of the artisanal catches. Apart from reporting the catches at species level, lengths of several species will also be recorded improving the quality and amount of data collected from the artisanal fishery. The data collectors were trained on the new data collection system and have been undertaking trial sampling since July. The database with web interface will be completed

in December 2010 and is expected to be operational come 2011. This will improve the data reporting that has sometimes been slow.

Madagascar

Madagascar decided in 2010 to reinforce its USTA unit which is a Tuna Statistical Unit based in Antsiranana, north of Madagascar. This unit has been installed during the Tuna Regional Program in the 96! But its activities slowed down during the last 10 years and almost stopped.

In 2009, tuna activities in Antsiranana reached 61 landings (all nationalities) mainly occurring during the first semester. Total volume of laded or transhipped catch are estimated to 36 000 tonnes (USTA, 2009). Part of the production is locally transformed in the local cannery (Pêche et Froid de l'Océan Indien).

The general objective of this action is to reinforce capacities of Madagascar to comply with its statutory obligations within regional organisations like IOTC, SWIOFC and IOC regarding large pelagic fisheries.

The paper n° 9 submitted to the working group presented a logical framework of this project and a calendar of activities for a little more than 2 years.

The USTA unit is based in Antsiranana on the port area very near the place where landings operations occur and near the tuna cannery. USTA is presently composed of 12 persons : a director, a scientist, port samplers (6), a data entry operator, administration staff and technical staff (3). USTA signed in 2010 a scientific agreement with the French IRD/Tuna Observatory organisation enhancing collaborations particularly on European surface fisheries fishing and landing in Madagascar. This agreement bears on:

- Data collection: logbooks recuperation, port sampling for species composition and length, by product landings and biological sampling at the cannery
- Data handling and reporting (use of the different software IRD is using to manage purse seine data)
- Scientific analysis

Maldives

Maldives has a long tradition of tuna fishing dating back to hundreds of year. Fishing is conducted using livebait pole-and-line. Despite the long history data collection does not start until 1959. Time series covering the full range of fisheries starts from 1970. The system of reporting is based on total enumeration of catch. Summaries of catches by fishing trip and by vessel are reported to Ministry of Fisheries and Agriculture. Conversion factors are applied to enumerated catch to arrive an estimate of total catch.

Use of conversion factors has always been an issue because of small samples from which these conversion factors have been derived. The use of fixed conversion factors from one geographic locality for year after year fails to take account of considerable seasonal, regional and inter-annual variations that occur in the tuna sizes. Incorporation of more comprehensive suite of conversion factors to estimation system has been hampered due to lack of trained staff and financial resources.

Realizing the shortcoming of the enumerated system and traditional system of reporting the Ministry of Fisheries has attempted to introduce logbook system of catch reporting catch and effort data. In 2004/2005 logbooks were introduced followed by series of training sessions to fishermen in the central atolls. However, the efforts at sustaining the follow up activities and continuing the training to the remaning atolls was not conducted. Logbooks were re-introduced from January 2010 following revision of rules fishing vessel registration and licensing including catch reporting. A web-interface has been developed for easy entry of logbook data by the fishery officials/inspectors working from the atolls.

It was noted that Maldives time series require revision and application of more comprehensive conversion factors derived from the size sampling programme. The WPTT 2010 noted that Maldives time series is highly valuable, probably the only time series that may be used for stock assessment work. A preliminary attempt at standardizing the time series was undertaken in WPTT2010 and follow up work is planned for 2011.

Mauritius

Data are collected from local surface longliners and foreign fishing vessels licensed to fish in the Mauritian waters. Presently there are five local small longliners less than 24 meters and one above 24 meters in operation. Fishing licences are issued to about 150 – 200 vessels to fish in the Mauritius Maritime zones.

Fishing logbooks are regularly provided to these vessels. Daily catch statistics are recorded by skippers on these fishing logbooks during fishing campaign.. Submission of fishing logbooks is mandatory. Licensed vessels have to pay a deposit fee which is refunded upon the submission of properly filled logbooks.

Landing statistics and trip data are collected from the owners of vessels or fishing companies representing vessels in Mauritius and the Mauritius Port Authority. These include weighed catch data.

Length frequency samplings are conducted on the catches of licensed foreign longliners during their landings. Length frequency data is also collected on the catches of the local fishing vessels.

All the data are computerized using the software “FINSS”. These data are transmitted to IOTC.

Twenty- four Fish Aggregating Devices are maintained around Mauritius. About 300 fishermen are involved in this fishery. Data are collected from 61 landing sites around the island. During 2009 catch from this sector amounted to 390 tonnes which was mainly composed of tuna.

The sports fishery, an important activity for the tourism industry in Mauritius, supplies the local market with an estimated amount of about 350 tonnes of fish which include marlins, tuna, dolphin fishes and sharks.

Thailand

Both of unloaded tuna from longline and purse seine fisheries are examined in term of effort, catch and value, species composition, landing production categorized by flag countries, size of fish as well as the relevance information and activity of port sampling and sampling size. The objective of this study is to follow up the data on tuna fisheries in the Indian Ocean, thus the available data at first from the beginning of tuna longliners unloading in Phuket until the year of 2009 and the data of tuna purse seiners unloading in Phuket during 2003 to 2009. The trend of total landing in trip and weight from longline was increased from 187 trip and 1,416 mts in 1995 to be 521 trips and 6,821 mts in 2009, the main fleets was Taiwanese and Indonesia flags. The main species composition were yellowfin tuna, bigeye tuna, bill fish (*Makaira* spp., *Tetrapturus* spp, *Istiophorus* spp.) and swordfish (SWO) with the average composition 61 25 6 and 4% of total landing respectively, while miscellaneous species (Sharks, *Lepidocybium* spp., *Coryphaena* spp., *Thunnus alalunga*, *Molar* spp., *Ruvettus pretiosus*, *Sphyraena* spp. and *Taractichtis* spp.) contributed 4% of the total landing during 1995 to 2009. Only Japanese tuna purse seiners landed in Phuket during 2003 to 2009 which were the six vessels. Catch and percentage composition of skipjack, yellowfin tuna and bigeye tuna during 2003 to 2009 were 16,177 (63.8%), 4,164 (16.3%) and 5,147 mts (19.9%). There was a few of bycatch which the most frequented observed species was triggerfish, *Abalistes stellaris*. Longline and purse siene fleets were the main fishing ground in the Eastern Indian Ocean and the peak of unloading occurred during northeast monsoon season (November to March).

Besides the conclusion with the progression on improvement of the port sampling and monitoring currently in place, the encounter problems and recommendation are included.