Report and documentation of the

Regional Workshop to Support Compliance with IOTC Requirements for the Collection and Reporting of Fisheries Data to the IOTC

Flic en Flac (Mauritius), 18-20 March 2014

PREPARATION OF THIS DOCUMENT

In recent years, the Indian Ocean Tuna Commission (IOTC) has adopted new measures that extend the requirements for fisheries statistics, both for IOTC species and other species that are bycatch of fisheries directed at IOTC species, in particular large pelagic sharks, marine turtles, seabirds, and marine mammals. These include measures to mitigate as much as possible the impact of fisheries for IOTC species on bycatch species, as identified above, and set minimum data reporting requirements for those species; measures that extend data requirements for fisheries that use fish aggregating devices; and measures that set minimum data requirements for the collection of operational catch and effort data by IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPC). In order to accommodate the new requirements, in January 2014 the IOTC Secretariat amended the IOTC Data Reporting Forms and Guidelines for the reporting of Fisheries Statistics to the IOTC. The Workshop to Support Compliance with IOTC Requirements for the Collection and Reporting of Fisheries Data to the IOTC is the first workshop of this nature organized by the IOTC and involved the participation of staff from many coastal countries in the Indian Ocean region.

This document contains the report of the workshop and the background information presented at the meeting. The report, and in particular the recommendations addressed by the workshop, will serve as basis for further work on strengthening the data collection and reporting systems in coastal countries of the Indian Ocean.

The co-conveners of the workshop were Mr Miguel Herrera and Mr Dominique Grevobal. Mr Miguel Herrera, Mr James Geehan, and Ms Lucia Pierre (IOTC Secretariat), prepared this meeting report that provides a record of activities at the meeting and outcomes of the meeting as agreed to by the participants.

Distribution:
Participants in the workshop
IOTC CPCs
Chairperson IOTC Compliance Committee
Chairperson IOTC Scientific Committee
Chairperson IOTC Working Party on Data Collection and Statistics
IOC-SmartFish Project
BOBLME Project

IOTC Secretariat

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IOTC-2014-CODAWS01-R. 40 pp.

EXECUTIVE SUMMARY

The Regional Workshop to Support Compliance with IOTC Requirements for the Collection and Reporting of Fisheries Data to the IOTC was held in Flic en Flac, Mauritius, from 18 to 20 March 2014. The workshop was held in response to a request from the IOTC Scientific Committee for the IOTC Secretariat to organize a Workshop to assist IOTC CPCs to understand the IOTC data requirements. The main objective of the workshop was to assess the performance of IOTC CPC's to comply with IOTC Mandatory Statistical Requirements and, where required, identify areas in which IOTC could assist its Members to ensure full compliance with IOTC Requirements for Statistics in the future. During the workshop, invited experts discussed IOTC data reporting requirements and levels of compliance that IOTC coastal countries have concerning those requirements. Their discussions were informed and stimulated by two documents and six presentations that covered a wide range of topics. These were designed to cover a range of topics on the collection of fisheries data, IOTC Requirements, and compliance by IOTC coastal countries with those requirements. In addition, the IOTC Secretariat presented an overview of the procedures used at the Secretariat to process the information reported by the flag states and preparation of datasets for the assessments of stocks of IOTC and other species, as required by the Commission.

The Workshop concentrated its efforts in reviewing the IOTC Data Requirements and levels of Compliance of IOTC CPCs with those requirements, with a view to improve CPCs' levels of reporting of fisheries statistics in the future.

The Workshop identified various issues (page 6) concerning the status of reporting of fisheries data to the IOTC, in particular: poor levels of reporting of fisheries data for the majority of coastal and industrial fisheries in developing coastal states in the IOTC Area, especially catch-and-effort, size frequency, and discard levels; poor implementation of provisions under the IOTC Regional Observer Scheme, concerning in particular the minimum levels of coverage set by the Commission for coastal and industrial fisheries; and insufficient understanding of the IOTC data requirements and procedures required to prepare the IOTC datasets by most coastal countries.

The Workshop noted that the above issues reduce the quality of estimates of catch, effort, and size data available in the IOTC database, and compromise the ability of the IOTC Scientific Committee to assess the status of stocks of some IOTC species, such as some species of neritic tunas and billfish, and sharks; also reducing its ability to advise the Commission on the status of those stocks.

The Workshop identified of a range of actions (page 7) that could be implemented to address the issues identified, and recommended that the countries concerned address those recommendations as a matter of priority. The Workshop noted that some developing coastal countries may require assistance in the implementation of some of the recommendations, and encouraged the continuation of advice and support from the IOTC Secretariat, the BOBLME Project, and the IOC-SmartFish Project, in the strengthening of levels of reporting for developing coastal states in the Indian Ocean.

ACRONYMS USED

BOBLME	Bay of Bengal Large Marine Ecosystem Project
CMFRI	Central Marine Fisheries Research Institute
CPC's	Contracting Parties and Cooperating Non-Contracting Parties
EEZ	Exclusive Economic Zone
ERS	Electronic Reporting System
FAO	Food and Agriculture Organization of the United Nations
GPS	Global Positioning System
IOC	Indian Ocean Commission
IOTC	Indian Ocean Tuna Commission
IRD	Institut de recherche pour le développement
MOFA	Ministry of fisheries and Agriculture Maldives
NARA	National Aquatic Resources Research and Development Agency
OFCF	Overseas Fishery Cooperation Foundation of Japan
RFMO	Regional Fisheries Management Organization
SC	Scientific Committee
SFA	Seychelles Fishing Authority
WPDCS	Working Party on Data Collection and Statistics
WPNT	Working Party on Neritic Tunas
WWF	World Wide Fund for Nature

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PART 1. Report of the Regional Workshop to Support Compliance with IOTC Requirements for the Collection and Reporting of Fisheries Data to the IOTC: Review of issues and considerations

1. BACKGROUND

The "Workshop to Support Compliance with IOTC Requirements for the Collection and Reporting of Fisheries Data to the IOTC" was held in Flic en Flac from 20 to 22 March 2014.

The Workshop built on a Request from the IOTC Scientific Committee, at its Sixteenth Session[1], as follows:

> **Para 103**. *The SC **NOTED** the difficulties that some countries have to report data to the IOTC as per the required standards, and that this lack of reporting originates in some cases from an insufficient understanding of the IOTC Requirements. In this regard the IOTC Secretariat will receive financial support from the EU-funded IOC-SmartFish Project for the organisation of a regional workshop to understand the IOTC Data Requirements and **REQUESTED** that the IOTC Secretariat considers funding scientists and statistical officers/managers from non IOC countries to the Workshop, in particular from Iran, Indonesia and Sri Lanka.*

In recent years, the Indian Ocean Tuna Commission (IOTC) has adopted new measures that extend the requirements for fisheries statistics, both for IOTC species and other species that are bycatch of fisheries directed at IOTC species, in particular large pelagic sharks, marine turtles, seabirds, and marine mammals. These include measures to mitigate as much as possible the impact of fisheries for IOTC species on bycatch species, as identified above, and set minimum data reporting requirements for those species; measures that extend data requirements for fisheries that use fish aggregating devices; and measures that set minimum data requirements for the collection of operational catch and effort data by IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPC). In order to accommodate the new requirements, in January 2014 the IOTC Secretariat amended the IOTC Data Reporting Forms and Guidelines for the reporting of Fisheries Statistics to the IOTC[2].

The Workshop brought together managers and statistical and research officers from marine agencies in coastal countries of the IOTC region, with a view to review levels of compliance with IOTC Data Requirements and consider the type of actions that the countries concerned will need to implement in the future to address issues with its fisheries data collection, processing, or reporting systems, as identified by the Workshop.

The Regional Workshop was organized by the IOTC Secretariat and co-financed by the Indian Ocean Commission –SmartFish Project, the Bay of Bengal Large Marine Ecosystems Programme (BOBLME), and the IOTC.

2. OPENING SESSION

The Workshop was attended by 29 experts, from 13 countries, from a variety of disciplines and backgrounds. The Workshop regretted the absence of experts from Bangladesh, Djibouti, India, Indonesia, Isl. Rep. Iran, and Yemen, noting that Indonesia, India, and Iran alone have reported over 40% of the catches of IOTC species in recent years, for all fisheries and species combined. The Workshop requested the IOTC Secretariat to forward the report of the Workshop also to those countries and approach them individually to assess if they need further assistance from the IOTC Secretariat to improve their compliance with IOTC Data Requirements.

The participant list is given in Appendix B.

Mr. Miguel Herrera, IOTC Data Coordinator, called the Workshop to order. He welcomed the participants and warmly thanked the COI-SmartFish Project for arranging and funding for the venue, administrative

[1] IOTC–SC16 2013. Report of the Sixteenth Session of the IOTC Scientific Committee. Busan, Rep. of Korea, 2–6 December 2013. IOTC–2013–SC16–R[E]: 312 pp.
http://www.iotc.org/sites/default/files/documents/2014/01/IOTC-2013-SC16-RE.pdf

[2] IOTC Secretariat (2014). Guidelines for the reporting of Fisheries Statistics to the IOTC. IOTC Secretariat, Mahé, Seychelles, January 2014. 70pp
http://www.iotc.org/data/reporting-data-iotc

arrangements, and interpretation services for the meeting in Mauritius. He further thanked the IOC-SmartFish and BOBLME projects for providing funds for the participation of 17 experts from 9 countries to the Workshop.

Mr. Dominique Grevobal, Manager of the IOC-SmartFish Project, addressed the Workshop, providing background information about the activities implemented by the IOC-SmartFish Project, in particular those activities implemented in cooperation with the IOTC. He noted that the IOC-SmartFish Project has provided the IOTC Secretariat with funds for the implementation of activities in countries participating in activities under the Project, with a view to improve compliance by those countries with IOTC measures. In particular, he noted that the COI-SmartFish Project has provided funds to strengthen the data collection systems for IOTC species and sharks in Madagascar and Comoros, with the assistance of the IOTC Secretariat, consultants, and national agencies in both countries.

Mr. Miguel Herrera, IOTC Data Coordinator, informed that, in January 2014, the IOTC Secretariat amended the IOTC Data Reporting Forms and Guidelines for the reporting of Fisheries Statistics to the IOTC[3] to incorporate new data requirements, as adopted by the Commission since the last version of the Guidelines was put together.

He noted that, initially, the Workshop will set the focus on assessing the performance of IOTC CPC's to comply with IOTC Mandatory Statistical Requirements and, where required, identify areas in which IOTC could assist its Members to ensure full compliance with IOTC Requirements for Statistics in the future. In addition, Mr. Herrera presented the rationale, objectives, and plan of work for the Workshop to the Participants (Presentation 0[4]), and informed that Mr. James Geehan, Ms. Lucia Pierre, and himself, from the Data and Statistics Section of the IOTC Secretariat, will present materials to participants and prepare the report of the Workshop.

The preliminary Workshop Agenda was introduced and approved by Workshop participants. It is given in Appendix A.

3. REVIEW OF BACKGROUND INFORMATION

Two documents and six background presentations were prepared for the Workshop. In addition, the Workshop reviewed other information, in particular the new forms for the reporting of data to the IOTC, that the IOTC Secretariat had updated recently to facilitate reporting of data by IOTC CPCs and other parties having fisheries in the Indian Ocean. The presentations and other materials used at the Workshop can be downloaded from the IOTC Web Site[5].

The documents and presentations were designed to cover a range of topics on the collection of fisheries data, IOTC Requirements, and compliance by IOTC coastal countries with those requirements. In addition, the IOTC Secretariat presented an overview of the procedures used at the Secretariat to process the information reported by the flag states and preparation of datasets for the assessments of stocks of IOTC and other species, as required by the Commission. The document and presentations are summarized briefly in the paragraphs that follow.

3.1 The IOTC Process

Mr. Miguel Herrera provided an introduction to the Indian Ocean Tuna Commission (Presentation 1[6]). He noted that the IOTC is one of the five Tuna-Regional Management Fisheries Organizations, with a mandate to promote the conservation and optimum utilization of tuna stocks in the IOTC Area of Competence (Figure 1). At present, the IOTC is made of 31 Members and 2 Cooperating Non-Contracting Parties (CPCs), of which many are developing coastal states in the Indian Ocean (Figure 2). Mr. Herrera noted that while the IOTC Agreement covers 16 highly migratory species of tunas and tuna-like fish, the Commission has also identified other species that make an important bycatch of fisheries directed at IOTC species, including species of sharks, marine turtles, marine mammals, and seabirds, and requested that information is also collected on these species.

[3] IOTC Secretariat (2014). Guidelines for the reporting of Fisheries Statistics to the IOTC. IOTC Secretariat, Mahé, Seychelles, January 2014. 70pp
http://www.iotc.org/data/reporting-data-iotc
[4] Workshop Objectives
[5] http://www.iotc.org/meetings/regional-workshop-support-compliance-iotc-requirements-collection-and-reporting-fisheries
[6] The Indian Ocean Tuna Commission: Understanding the IOTC Process

In addition, Mr. Herrera presented the status of the main stocks of IOTC species and species of sharks, noting that the poor quality of the datasets available at the IOTC for some of the stocks compromises the ability of the IOTC Scientific Committee to provide the Commission with management advice required for such stocks, in particular stocks of neritic tunas and sharks (Figure 3).

Figure 1: IOTC Area of Competence

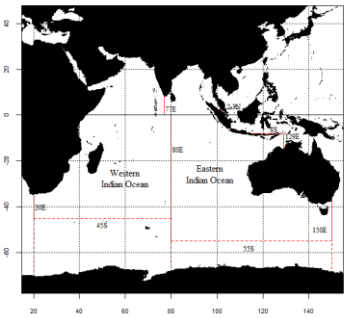
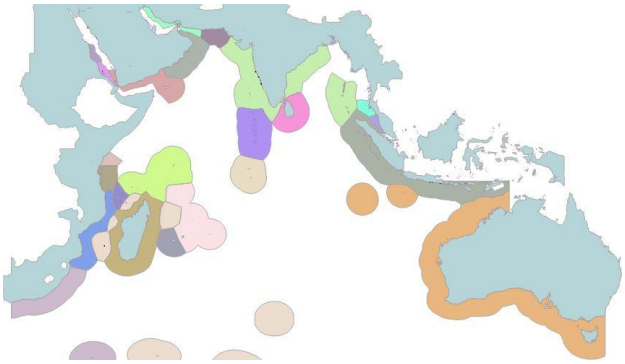


Figure 2: Economic Exclusive Zones of Indian Ocean coastal states, and overseas territories of states, that are IOTC CPCs

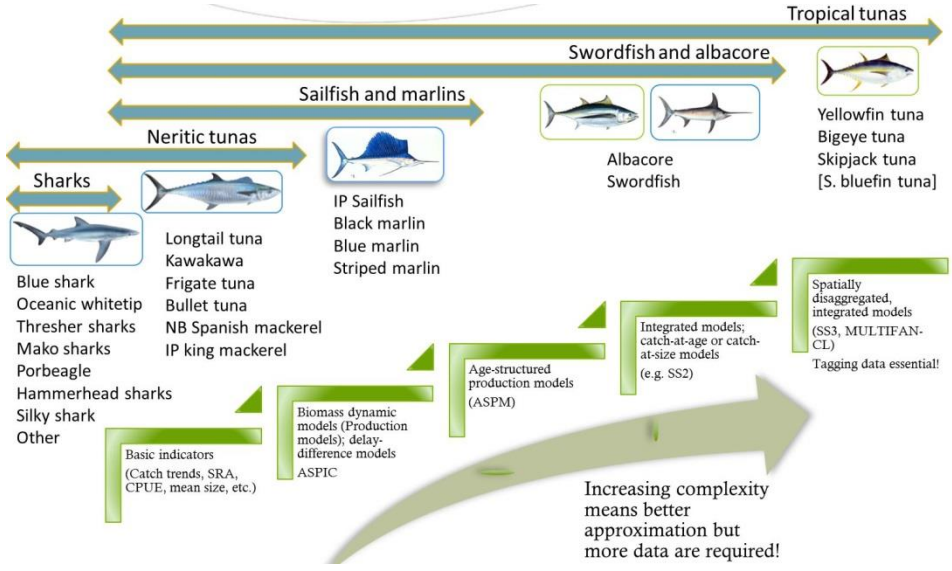


SOURCE EEZ shape file: http://www.marineregions.org/downloads.php#eez

EEZs (Figure 2) include Australia, **Comoros**, Eritrea, European Union (Reunion), France Overseas Territories, *India*, *Indonesia*, *Isl. Rep. of Iran*, **Kenya**, **Madagascar**, **Malaysia**, **Maldives**, **Mauritius**, **Mozambique**, **Oman**, **Pakistan**, **Seychelles**, South Africa, **Sri Lanka**, Sudan, **Tanzania**, **Thailand**, UK Overseas Territories, and *Yemen* (Bold: attending the Workshop; Italics: Invited at the Workshop but not attending, plus Djibouti and Bangladesh)

Figure 3: Type of models used for stock assessment, in order of complexity (left to right), and range of models that can be used for each species or species group, according to the data available at the IOTC Secretariat.

Note that the more data available the more precise the results of the assessment would be and the more adequate the management advice that the Scientific Committee will provide the Commission with for consideration



Original figure from Rishi Sharma; modified by M. Herrera

3.2 IOTC Data Requirements and levels of compliance

Mr. Herrera presented the IOTC Requirements for Fisheries Data and summaries of the levels of compliance of IOTC CPC's with those requirements during 2012 (Presentation 2[7]). He noted that several IOTC Measures include provisions for IOTC CPC's to collect and/or report data to the IOTC, in particular:

[7] The Legal Framework: IOTC Requirements for Fisheries Data and levels of Compliance

- IOTC Resolution 10/02 *Mandatory statistical requirements for IOTC Members and Cooperating Non-Contracting Parties (CPC's)*, which includes Minima requirements for the reporting of statistics to the IOTC
- IOTC Resolution 13/08 *Procedures on a fish aggregating devices (FADs) management plan*, which includes minima requirements for the collection and reporting of data on FADs, drifting or anchored, used by Purse seine and pole-and-line fisheries
- IOTC Resolution 13/03 *On the recording of catch and effort data by fishing vessels in the IOTC Area of Competence*, which includes minima data requirements for the collection of operational catch-and-effort data
- IOTC Resolution 11/04 *On a Regional Observer Scheme*, which includes minima requirements for the sampling of catches by observers or enumerators in land and at-sea

In addition, Mr Herrera noted that other IOTC Measures include provisions for IOTC CPC's to report data on the levels of catch of other species, usually bycatch of IOTC fisheries, including sharks, marine turtles, marine mammals, and seabirds.

Figure 4: Flow charts showing the type of information that IOTC CPC's could collect to produce the datasets requested by the Commission, for the three different types of fisheries identified:

- Top: Coastal fisheries: refer to fisheries operated within the EEZ of the flag state and by vessels having length overall less than 24 meters.
- Bottom left: Longline fisheries: refer to longline fisheries operated outside the EEZ of the flag estate or by fishing vessels having length overall greater than 24 meters.
- Bottom right: Surface fisheries: refer to fisheries other than longline operated outside the EEZ of the flag estate or by fishing vessels having length overall greater than 24 meters.

More details about the types of data to be reported are provided in the IOTC Guidelines[8].

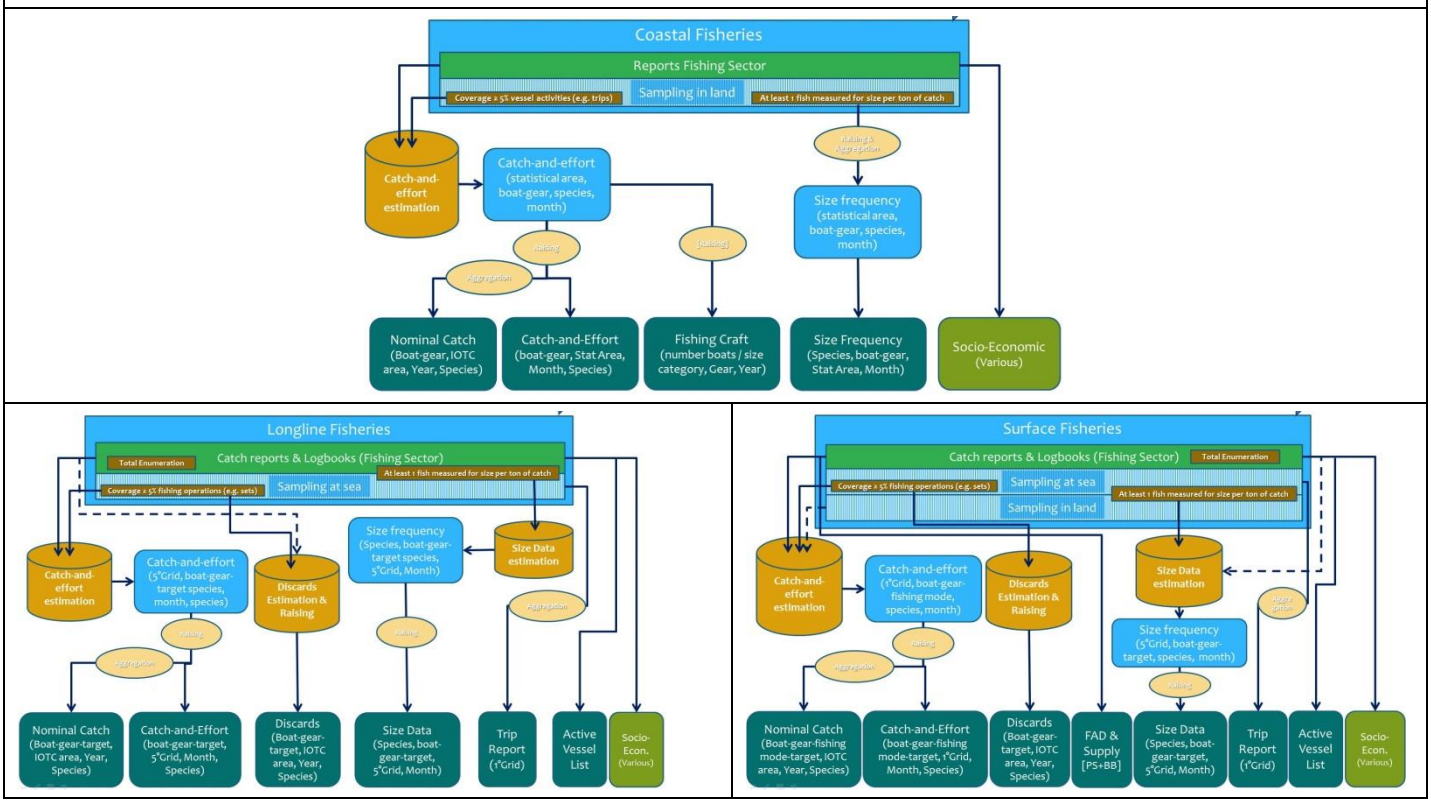


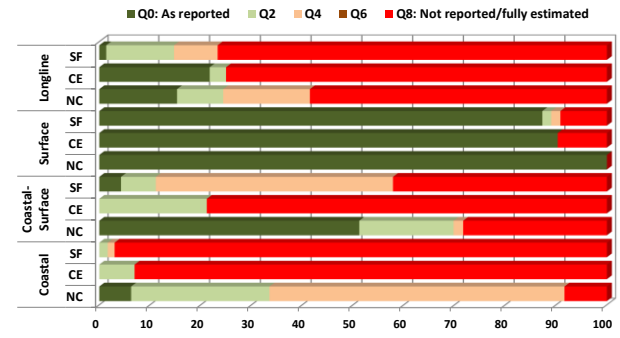
Figure 4 summarizes the type of information that IOTC CPC's could collect to ensure compliance with the IOTC requirements, and how the different datasets requested by the Commission can be generated. Mr. Herrera noted that the Commission has established different requirements for coastal (Figure 4a), surface (Figure 4b), and longline (Figure 4c) fisheries and referred the participants to the IOTC Guidelines[9] for more information. In

[8] *Ibid*. 3
[9] IOTC Secretariat (2014). Guidelines for the reporting of Fisheries Statistics to the IOTC.

addition, Mr. Herrera presented the status of compliance of the main IOTC coastal countries. Appendix C includes summaries of compliance for each IOTC coastal country and remarks provided prior (questionnaires) or during the Workshop concerning the status of reporting and future plans to strengthen the statistical systems and reporting of data to the IOTC in each case. Overall, Mr. Herrera noted that levels of compliance are poor (around 30% of the nominal catches, and less than 10% of the catch-and-effort and size data reported by the IOTC standards, for all fisheries and species combined), in particular as refers to the reporting of catch, effort and size data for the coastal and industrial longline fisheries (Figure 5a) and neritic tunas (Figure 5b), as defined by the Commission (refer to text in Figure 4 for details).

Figure 5a (top left): Overall status of reporting of IOTC coastal countries having participants invited at the Workshop (2008-2012), by type of fishery (refer to Figure 4 for definitions of fisheries; the term Coastal-Surface refers to fisheries that report statistics combined for coastal and industrial vessels, in particular some gillnet and pole-and-line fisheries).

Figure 5b (right): Overall status of reporting of IOTC coastal countries having participants invited at the Workshop (2008-2012), by species



Key to IOTC Scoring system

Nominal Catch	By species	By gear
Fully available	0	0
Partially available (part of the catch not reported by species/gear)*	2	2
Fully estimated (by the IOTC Secretariat)	4	4

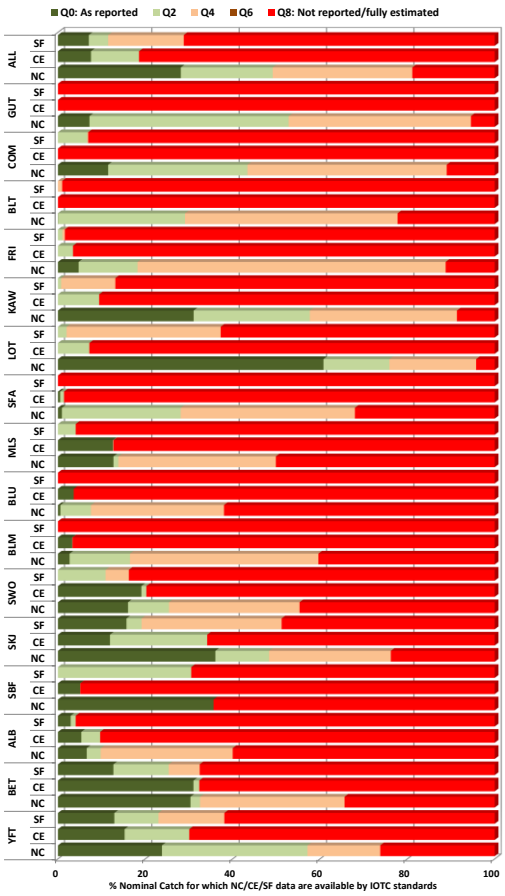
*Catch assigned by species/gear by the IOTC Secretariat; or 15% or more of the catches remain under aggregates of species

Catch-and-Effort	Time-period	Area
Available according to standards	0	0
Not available according to standards	2	2
Low coverage (less than 30% of total catch covered through logbooks)	2	
Not available at all	8	

Size frequency data	Time-period	Area
Available according to standards	0	0
Not available according to standards	2	2
Low coverage (less than 1 fish measured by metric ton of catch)	2	
Not available at all	8	

Key to colour coding

- Total score is 0 (or average score is 0-1)
- Total score is 2 (or average score is 1-3)
- Total score is 4 (or average score is 3-5)
- Total score is 6 (or average score is 5-7)
- Total score is 8 (or average score is 7-8)



3.3 IOTC Guidelines and Forms for the reporting of data to the IOTC

Mr. James Geehan presented an overview of the reporting guidelines related to datasets specified in Resolution 10/02 'Mandatory Statistical Requirements for IOTC Members and Cooperating Non-Contracting Parties'; specifically the reporting standards for nominal catch data, catch-and-effort, and size data (Presentation 3[10]). The presentation included a summary of the main data fields to be captured for each dataset, resolution of the data to be reported (e.g., spatial and temporal disaggregation), and common methods of data collection associated with each data type.

Secretariat, Mahé, Seychelles, January 2014. 70pp
http://www.iotc.org/sites/default/files/documents/data/Guidelines%20Data%20Reporting%20IOTC.pdf

[10] Data collection and reporting

Ms. Lucia Pierre then provided demonstrations of the data structure and recommended reporting format for each dataset, using the example of the IOTC data forms available on the IOTC website. The discussion also included an overview of the IOTC form layout and main functionality.

Several sessions in the workshop were dedicated to practical exercises to allow participants to gain experience entering data in the IOTC forms, customize outputs to accommodate fisheries in each country (e.g., bespoke aggregated species or multi-gear combinations), as well as reinforce the standards for reporting data to the IOTC Secretariat, including:

- basic data entry of nominal catch series;
- adding new species, aggregate species groups, or multi-gear combinations within IOTC forms;
- conversion of longitude and latitude for size or catch-and-effort into IOTC grid formats;
- overview of the processing steps of converting daily catch-and-effort data from electronic log-book form, to aggregated catch-and-effort by month-gear-grid;
- opening and saving IOTC forms to enable and preserve macro-driven functionality.

The session was concluded by a short presentation (Presentation 4[11]) on the suggested checklist when submitting data (using IOTC forms), including main issues and common errors by countries submitting data to the IOTC Secretariat, including incomplete information, missing species names, or loss of VBA functionality.

3.4 Data processing at the IOTC Secretariat

Data Revisions

Mr. James Geehan presented an overview of the role of the IOTC Data Section in relation to estimation of missing data or revision of data submitted by countries to the IOTC Secretariat (Presentation 5[12]). The presentation discussed the rationale for revising countries' data, a description of the main methods used for adjusting the data, and list of data validation and quality checks when reviewing data submitted by countries.

Preparation of data for the assessments of IOTC stocks

Mr. Miguel Herrera presented the procedures used by the IOTC Secretariat to prepare the data for the assessments of IOTC species and species of pelagic sharks identified by the Commission (Presentation 6[13]). He noted that lack of reporting and reporting of poor quality data by some countries compromises the ability of the IOTC Secretariat to assess the quality of the data used for the assessments and also limits the range of models that can be used to assess the status of some stocks (Figure 3). This affects in particular stocks of neritic tunas (Figure 5b), for which the majority of the catches come from coastal countries in the Indian Ocean, and sharks.

4. GENERAL ISSUES AND CONSIDERATIONS

Based on the background information presented at the Workshop, the participants identified a range of issues that need further consideration, including:

- The Workshop noted that levels of Compliance are generally low across all types of fisheries and data types, and agreed that they need to be improved substantially. In particular, the Workshop identified the following priorities concerning the coastal countries in the Indian Ocean:
    - **Coastal fisheries:**
        - Improve data collection through the implementation (or strengthening) of sampling programmes in most developing coastal countries of the Indian Ocean to achieve the coverage levels recommended by the Commission for coastal fisheries – 5% of the vessel activities to be covered by enumerators at the landing place; and use the data collected to:
            - Prepare separate reports for coastal and industrial fleets, according to the data resolution agreed by the Commission for each type of fishery.

[11] IOTC Data processing and reporting - guidance on completing forms
[12] IOTC Data revisions
[13] Preparation of files for the assessments of IOTC stocks and use of data for the assessments of IOTC species

        - Obtain the necessary catch-and-effort and size data (at least 1 fish per metric ton of catch by gear and species) from the fisheries
        - Validate the information reported by the fishing sector, where available.
    - Improve data management through a better understanding of the IOTC data requirements and arrangements in each country to achieve better levels of reporting, including more timely reports of data to the IOTC.
- **Industrial fisheries**:
    - Move towards full implementation of logbook systems to achieve 100% logbook coverage, as recommended by the Commission
    - Full implementation of the regional observer scheme (sampling at-sea) to achieve the coverage levels recommended by the Commission – 5% of the fishing operations to be covered by observers on board fishing vessels; and use the data collected to :
        - Complete/Validate the length frequency data for the fishery, to achieve the levels of coverage recommended by the Commission – 1 fish per metric ton of catch per species and type of fishery.
        - Validate the catch-and-effort data reported in logbooks
        - Obtain information on discards of IOTC species and sharks and incidental catches of other species

Section 5 contains further details about the considerations from the Workshop regarding compliance and the recommendations issuing from those discussions.

- While the training sessions using IOTC forms were well received – with participants able to successfully complete most of the practical exercises – the general impression was that many countries were unfamiliar with the current IOTC forms, data and reporting format required of IOTC members.

  In terms of the IOTC forms themselves, there was some confusion over the definition of terms used (e.g., target species compared to actual catch-by-species), as well as difficulties completing information on the data source and processing of the data. In the latter case, a common issue is that individuals compiling and submitting data to the IOTC Secretariat often are not directly involved in the collection and processing of the data. Most participants were also unaware of the guidance notes available online to assist countries in completing the IOTC forms.

  One of the reasons for lack of awareness of the IOTC forms is that less than half of the countries attending the workshop submit data using the IOTC forms. It was emphasized that submission of data using IOTC forms is voluntary, although the workshop organizers stressed the importance of familiarity with IOTC forms given they have been designed to include the main reporting elements to ensure compliance with Resolution 10/02.

  Following the positive response to the practical exercises presented at the workshop, several participants encouraged the IOTC Secretariat to post worked examples on the IOTC website on how to complete the IOTC forms, or submit data according the reporting guidelines.
- The participants noted the presentation and overview of the data revisions process by the IOTC Secretariat. Participants asked follow-up questions on the frequency of revisions to individual countries' data, as well as further details on the common estimation methods used; otherwise no major issues for consideration were noted.

5. MAIN RECOMMENDATIONS FROM THE WORKSHOP AND FOLLOW-UP ACTIONS PROPOSED

The main recommendations from the Workshop are summarized below:

IOTC Data Requirements:

1. The Workshop noted that, while the IOTC has set different requirements for the collection of data from coastal and surface and longline fisheries in IOTC Resolution 10/02, to date the IOTC has not defined the type of vessels that are covered under each fishery. It was further noted that, at its last meeting, the IOTC

Scientific Committee recommended several changes to IOTC Resolution 10/02, including definitions for coastal, surface and longline fisheries. The Workshop agreed on the need for the Commission to amend IOTC Resolution 10/02 to incorporate such definitions.

2. The Workshop noted that, based on the existing IOTC data requirements, it is not clear if the same requirements should be applied to fisheries directed at IOTC species and those that target other species and may catch IOTC species as a bycatch, which include many of the artisanal fisheries operated in coastal countries in the Indian Ocean. The Workshop agreed that, while the catches of IOTC species shall be collected from all fisheries, it may not be necessary to request catch-and-effort and, to a lesser extent, size frequency data, from fisheries that catch IOTC species as a bycatch, especially if these fisheries do not catch significant amounts of IOTC species. In this regard, the Workshop noted that if the IOTC Data Requirements are modified to accommodate this request, the Commission will need to adopt definitions for fisheries directed at IOTC species and for other fisheries that catch those species as bycatch. The Workshop agreed to defer consideration of this matter to the IOTC Working Party on Data Collection and Statistics.

3. The Workshop noted that, while the IOTC requires that data on catch, effort, and size frequency are reported by gear, some countries have difficulties to report this information for some of their artisanal fisheries which, due to its opportunistic nature, may use multiple gears during the same trip. It was noted that, while the Commission has set standards to collect data from artisanal fisheries through sampling of catches at the landing place, such sampling is not sufficient to obtain the information requested by the Commission, as, in most cases, sampling at the landing place would not allow to break catches by gear for trips in which more than one gear was used. While stressing the need for coastal countries to make every possible effort to collect and report catches by gear for all of their fisheries, the Workshop agreed that this may not be possible for some artisanal fisheries that use multiple gears and recommended that the Commission considers amending the data requirements to allow coastal countries to report catches for their coastal multi-gear fisheries aggregated by gear.

4. The Workshop noted that, according to the IOTC Data Requirements, the standards for the reporting of size frequency data are the same for all fisheries, while the standards for the reporting of catch-and-effort data are different for coastal and surface and longline fisheries. The Workshop noted that, for the sake of consistency, it would be better that coastal fisheries use the same time and area strata for the reporting of catch-and-effort and size frequency data, agreeing that the time and area strata used for catch-and-effort data may be enough and could be also used for size data. The Workshop recommended that the Commission considers amending the requirements for size data to accommodate its request.

Levels of Compliance with IOTC Data Requirements:

5. The Workshop noted that, in general, levels of compliance for IOTC coastal countries are very low, and this affects the provision of catch, effort and size data for coastal fisheries, as defined by the Commission. The Workshop noted that the poor levels of reporting come from the fact that the majority of coastal countries have not implemented sampling schemes as requested by the Commission, agreeing on the need for coastal countries to strengthen their data collection systems to at least achieve the minima levels of sampling coverage recommended by the Commission[14]. The Workshop noted that some of the coastal countries in the IOTC region lack the resources to implement sampling schemes as requested by the Commission, including Comoros, Kenya, Madagascar, Maldives, Mozambique, Pakistan, Sri Lanka, and Tanzania. The Workshop stressed the need for all coastal countries to implement the provisions of the IOTC Regional Observer Scheme as soon as possible and recommended that those countries having difficulties to implement such provisions bring this matter to the attention of the Commission for further consideration and guidance. In this regard the Workshop noted that the provision of estimates of total catch and length frequency distributions for IOTC species, by gear and species, is more important for coastal fisheries and recommended that countries make this a priority.

6. The Workshop noted that levels of compliance for catch-and-effort and size data from industrial fisheries are also low for surface and longline fisheries and stressed the need for countries that have industrial fisheries to strengthen their logbook and observer programmes, as requested by the Commission. In this regard, the Workshop noted that, while the Commission has set separate provisions for the reporting of statistics for coastal and industrial fisheries, some countries are reporting their statistics aggregated for all types of fisheries, in particular Iran and Pakistan (drifting gillnet), Maldives (pole-and-line) and Sri Lanka (gillnet and longline). The Workshop noted that, although these countries have implemented logbook

[14] Sampling schemes should cover at least 5% of the vessel activities

programmes they have failed to report catch-and-effort data to the IOTC, urging them to make the necessary arrangements to report this information in the future. Regarding size data the Workshop recommended that countries that have not implemented observer schemes make every possible effort to collect length frequency data through a port sampling scheme, or extend their logbook programmes for this information to be collected on logbooks, by the fishing sector.

7. The Workshop noted that, while considerable progress was made at the Workshop concerning the IOTC requirements, some of the coastal countries in the Indian Ocean still have difficulties to understand the IOTC Requirements in full and may require further assistance. In this regard, the Workshop recommended that countries that still have difficulties to understand the requirements contact the IOTC Secretariat for further guidance. The Workshop further recommended that the Commission considers increasing the budget that is allocated to capacity building activities to facilitate that the IOTC Secretariat provides on-site assistance in the countries that require it, in the form of support missions to assist countries to improve compliance with IOTC data requirements.

IOTC Forms and Guidelines:

8. The Workshop noted that the majority of the participants at the Workshop are not familiar with the type of data requested by the Commission and the way in which this information shall be reported to the IOTC. In this regard the Workshop noted that the IOTC Secretariat has prepared Guidelines for the Reporting of Data and sets of forms to facilitate understanding of the data that shall be reported for each fishery, and recommended that all staff responsible to prepare the statistics for the IOTC use this reference material and contact the IOTC Secretariat where it requires additional guidance to fulfil the requirements.

9. The Workshop noted that some coastal countries have difficulties to complete some of the information requested in the IOTC Forms, in particular details on the data source, data processing, estimation procedures, and coverage levels. It was noted that the lack of understanding may come from the fact that the staff that prepares the data for the IOTC in some countries is not familiar with the type of data collection and processing systems in place in their countries. In this regard, the Workshop recommended that coastal countries strengthen their institutional arrangements to facilitate the provision of this information and, where necessary, contact the IOTC Secretariat for further guidance.

10. The Workshop noted that in some countries the staff responsible for the preparation of the datasets to be reported to the IOTC may not be proficient in English or French and therefore have difficulties to understand the IOTC Requirements when using the IOTC Forms or Data Reporting Guidelines. For this reason, the Workshop recommended that the IOTC Secretariat considers making arrangements for the translation of the Guidelines into other languages, in particular, but not limited to, Indonesian, Farsi, Arabic, and Sinhala.

Follow-up:

11. The Workshop agreed on the need to organize a follow-up Data Reporting Workshop in the future, to assess progress in the implementation of recommendations by the Workshop and whether the Workshop was successful in improving the levels of reporting in IOTC coastal countries, through a better understanding of the IOTC Requirements. The Workshop recommended that a new Workshop is held in 2016 to assess progress.

12. The Workshop noted that the Working Party of Data Collection and Statistics reviews each year the status of the data in the IOTC Databases and the levels of reporting from IOTC CPCs with regards to the IOTC Data Requirements recommending that participants at the Workshop make every possible effort to attend future meetings of the WPDCS. In addition, the Workshop noted that the majority of the catches of neritic tunas, for which levels of reporting are very poor, come from coastal countries in the IOTC Area and recommended that participants at the Workshop also consider attending future meetings of the WPNT. The Workshop agreed that holding a follow-up Data Reporting Workshop in 2016 may not be necessary if participants from the countries at the Workshop attend future meetings of the WPDCS and WPNT.

6. OTHER BUSINESS

None.

7. CLOSING OF THE WORKSHOP

The participants at the Workshop thanked the staff from the IOTC Secretariat for its guidance and valuable contributions and the interpreters and administrative staff of the IOC-SmartFish Project for their excellent work and assistance throughout the Workshop. The IOTC were thanked for organizing and implementing the workshop, and the IOC-SmartFish and BOBLME Projects and the IOTC for its financial sponsorship.

Mr. Herrera, IOTC Data Coordinator, thanked participants for their contributions and closed the Workshop at approximately16:30 hours on 20 March 2014.

APPENDIX A: Workshop agenda

1. Opening
2. Plan for the Workshop
3. Review of country specific issues based on compliance with IOTC Fisheries Data Requirements
4. The IOTC Process
5. The Legal Framework: IOTC Requirements for Fisheries Data and levels of Compliance
6. Data Processing and Reporting I: Introduction to IOTC Guidelines and Forms for the Reporting of fisheries data
7. Hands on sessions on preparation of NC, CE, and SF data. Open discussions
8. IOTC Data Revisions
9. Preparation of files for the assessments of IOTC stocks and use of data for the assessments of IOTC species
10. Review of general issues based on compliance with IOTC Fisheries Data Requirements
11. Draft statement from Workshop: Lessons Learned and Recommendations from the Workshop
12. Other Business
13. Final remarks and close of Workshop

APPENDIX B: List of participants

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APPENDIX C: Summary of completed country questionnaire and comments received during the workshop.

Indonesia (22%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

INDONESIA	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Indonesia reported 1254 industrial tuna longliners, 19 industrial purse seiners and 2 gillnetters fishing for IOTC species in 2012
- Indonesia has reported conflicting catch figures for its coastal fisheries over the time series (due to lack of sampling)
- Data for coastal and industrial fisheries are not reported separately
- Sampling in port of industrial longliners does not cover all catch components
- Indonesia has implemented logbook and observer programmes but no data has been reported to date; size data has not been reported since 2010

Additional workshop comments noted for Indonesia

1. Indonesia was not present at the workshop, but did return the pre-workshop questionnaire.
2. Data for nominal catch and size-frequency are collected from 4 fishing ports (for the industrial fleet); no catch-and-effort is currently being collected or reported.
3. Sampling at each port generally follow IOTC protocols – with the sampling design based on the IOTC Sampling Manual, 2002-2006, i.e.:
   - Nominal catch: sampling of at least 30% of unloadings by industrial vessels;
   - Size-frequency: sampling of 1 out of every 20 fish for lengths.
4. In terms of compliance of IOTC data requirements, Indonesia requested assistance in a number of areas, including: develop expertise of staff in preparing current datasets into IOTC reporting formats, training in species identification, and development of new user-friendly software for data entry and processing of fisheries datasets.

Iran, Islamic Republic (11%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

IRAN, ISL. REP.	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Iran reported 1229 industrial tuna gillnetters and 4 industrial purse seiners fishing for IOTC species in 2012
- Data for coastal and industrial fisheries are not reported separately
- Iran has implemented a logbook programme for its industrial fisheries but no data have been reported to the IOTC to date
- Purse seiners do not use FADs at present (?)
- Size data are not reported by type of fishery or IOTC grid (port sampling)

Additional workshop comments noted for Iran

1. Iran was not present at the workshop, but did return the pre-workshop questionnaire.2
2. In 2011, Iran conducted a pilot logbook program for 50 gillnetters. Based on the results of the pilot, a new logbook template was provided to the IOTC Secretariat in 2013 in relation to recording the fishing activity of distant-water gillnetters targeting tuna and tuna-like species.
3. In addition, training courses were also convened for fishermen and fisheries experts on how to complete the logbook template and compile data according to IOTC reporting standards.
4. The main issues for Iran in terms of compliance with IOTC data requirements include: data collection and reporting of fisheries operating multi-gear and multi-species in the region; misidentification of species such as frigate, kawakawa, and bullet tuna; estimation of illegal catches; and staff shortages and funding for data collection.

India (10%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

INDIA	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- India reported 20 industrial tuna longliners fishing for IOTC species in 2012
- India has reported conflicting catch figures for its coastal fisheries over the time series, in particular as regards to species and gear breakdown
- Catches and Catch-and-effort for commercial industrial longliners are as reported by the fishing sector (in logbooks, likely to be incomplete)
- India reports survey data for FSI longliners

Additional workshop comments noted for India

1. India was not present at the workshop, and so was unable to directly respond to the IOTC Secretariat's assessment of the levels of compliance.
2. Data for nominal catch and catch-and-effort are collected through a scientific sampling procedure based on stratified multistage random sampling design.
3. For size-frequency, information on biology and length frequency are collected periodically for commercially important species under different state appraisal institute research projects taken up by different resources divisions of CMFRI.
4. Coverage for nominal and catch-and-effort are around 8% at landings, stratified over time and space.

Sri Lanka (9%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

SRI LANKA	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Sri Lanka reported 2,482 [semi-]industrial multi-purpose vessels fishing in 2012
- Sri Lanka has strengthened its sampling programme for the coastal and offshore fisheries
- Data for coastal and industrial fisheries are not reported separately
- Statistics are not recorded by gear type (aggregated by gear)
- No observer programme in place

Additional workshop comments noted for Sri Lanka

1. Nominal catch, catch-and-effort and size-frequency sampling are conducted at landing places for coastal and offshore fisheries. Coverage varies according to landing site, from 30%-100%.
2. Observer programme: multiday boats are not equipped to cater for observers, however a pilot project will be initiated to deploy observers onboard purse seine vessels greater than 24m that which have recently been introduced to Sri Lanka.
3. Some of the main issues limiting the collection and reporting of data to the IOTC Secretariat:
   i. separating catches-by-gear for multi-gear boats (particularly gillnet-longline vessels). As the data collection is made through port sampling, it is difficult to separate catches or species by specific gear or obtain length measurement samples by gear;
   ii. completion of logbooks: literacy rates among fishermen are very low, hence logbooks are not fully completed or are not completed at all. A new logbook has been also been designed to facilitate entries by fishermen of multigear – improvements in the data are expected for 2014.
   iii. information on fishery activity by area is currently very poor due to the lack of good logbook data or observer data;
   iv. size-frequency data: billfish species are beheaded or processed onboard, making it difficult to identify and record the measurement of the species;
   v. bycatch: interaction of turtles and sea birds are not recorded as the logbook system from NARA do not take into account these activities.

3. Sri Lanka also identified a number of areas where additional support was needed to help improve future levels of compliance:
   1. improvements in the validation and processing of data to improve the quality and accuracy of data reported by Sri Lanka to the IOTC Secretariat;
   2. development of staff expertise in data collection and database management;
   3. extension of sampling programme to cover the main landing sites across the country, and increase in sampling intensity at current landing sites sampled.

Maldives (7%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

MALDIVES	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Maldives reported 249 baitboats (multi-gear) fishing for IOTC species in 2012
- Maldives has not implemented sampling for its coastal fisheries as yet
- Data for coastal and industrial fisheries are not reported separately
- Catch-and-effort, and size data for industrial fisheries not reported by IOTC Grid (a logbook programme is in place though); incomplete species breakdown (bigeye tuna); discards not available (probably minor discards)
- No observer programme in place

Additional workshop comments noted for Maldives

1. Nominal catch and catch-and-effort data are collected through logbook and landing statistics, while size frequency are collected via sampling at landing places (according to the IOTC standards of 1 fish per metric ton).
2. A new logbook system was introduced in 2012 and all licensed fishing vessels are legally bound under the Licensing regulation to provide regular reports to the Ministry of Fisheries and Agriculture. Logbook coverage has been increasing since 2012, and the aim is to deliver comprehensive coverage of logbook reported data for the year 2014.
3. Sampling has been carried out through major landing points and by a limited number of samplers working on-board vessels. Maldives is aiming to improve the sampling program in order to improve effectiveness and increase the number of samples taken, in order to achieve the IOTC recommended levels of coverage.
4. Skipjack (using pole-and-line) and Yellowfin (using longline) are the two major fisheries in Maldives, and nominal catch and catch-and-effort statistics have been reported on a regular basis for both fisheries for a number of years.
5. The fisheries operated by Maldives are highly selective, so that there is virtually no bycatch.
6. Longline fishing was introduced around 2012 and in 2013 Maldives began reporting dats for the fishery. The new logbook system will also enable the MOFA to collect longline data as per the IOTC requirement from 2014 onwards.
7. Due to the budgetary constraints Maldives has not been able to start a scientific observer programme; however, the aim is to implement a programme later this year covering the industrial longline fishery.

Seychelles (4%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

SEYCHELLES	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Seychelles reported 8 industrial purse seiners, 3 supply vessels, and 28 longliners fishing for IOTC species in 2012
- Seychelles has implemented a sampling programme for its coastal fisheries but the current system needs to be strengthened
- Numbers of FADs and activities of supply vessels for purse seine fisheries not reported; No observer programme in place (to be initiated soon)
- No EEZ data reported for foreign licensed vessels in Seychelles in 2012

Additional workshop comments noted for Seychelles

1. Nominal catch data are taken from logbook and transshipment and landing; catch-and-effort data are also obtained from logbooks, while size-frequency data are collected from port sampling.
2. Coverage for semi industrial longline and purse-seine fleets are 100%, whereas for the industrial longline coverage is 80-90% and for the small-scale artisanal fleet around 20-30%.
3. In addition, Seychelles Fishing Authority (SFA) is receiving logbooks for supply vessels – however there is currently no database available for data entry. SFA has discussed the issue with IRD and additional field have been added to the database for purse seine logbook data entry so as to incorporate supply vessel in the same database in the future.
4. In 2012, Seychelles initiated a Scientific Observer scheme onboard purse seine vessels; data is expected to be reported to the IOTC Secretariat in the near future.
5. The main issues for Seychelles in terms of compliance in data reporting to the IOTC Secretariat are lack of understanding or guidance on what should be submitted for particular resolutions – although Seychelles are currently using the IOTC data forms as guidance when compiling data for the Secretariat. A request was also made for the IOTC Secretariat to provide more support or interaction to improve greater compliance in the future.

Pakistan (4%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

PAKISTAN	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch (?)		
	Discards	Discards (?)		
Active Crafts (FC)	Fishing Craft	Active Vessel List (?)		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries (?)	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency (?)		
Scientific observer data	Sampling Coverage	Trip Reports (?)		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets (?)		

- Compliance refers to the year 2012
- Pakistan did not report any industrial vessels fishing for IOTC species in 2012; however, 10 gillnet vessels were reported in 2011
- Pakistan implemented a sampling programme for its coastal fisheries with the assistance of WWF; however, no data were reported for 2012
- At present, it is not clear if Pakistan has any industrial vessels operating on the high seas; or foreign licensed vessels operating in its EEZ

Additional workshop comments noted for Pakistan

1. Nominal catch, catch-and-effort and size-frequency data are collected from landing statistics (fishing authorities in port) and sampling at landing places; however the sampling coverage is relatively low at less than 5%.
2. Recent sampling has been funded by WWF (up to 2012); information is in the process of being compiled and will be sent to the IOTC Secretariat in due course. A vessel census has also recently been carried out to improve the estimate of actual numbers of vessels in operation (industrial fleet only). Data regarding departure and arrival of each and every vessel is being collected by customs and port authorities.
3. The general assumption is that there is no fishing operation of the domestic fleet outside of the EEZ of Pakistan; however there is no electronic GPS communication onboard fishing vessels to collect information on fishing activity inside (or even outside) of the EEZ.
4. A comprehensive computerized data collection and validation system is also being developed, based on project funding an expertise from a number of international partners.
5. One of the major challenges is the data collection or estimation of fishing capacity of small scale artisanal fisheries, which are compounded by bad communication between fishermen and fishing authorities.
6. Other barriers to compliance are related to a lack of guidance on reporting, and resources to collect and process data requested by the IOTC Secretariat. Project-based funding for sampling has now finished, and there is currently no additional project funds earmarked for sampling at the time of writing.

Yemen (3%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

YEMEN	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- At present Yemen does not have an industrial fleet for IOTC species
- Yemen has no sampling programme in place
- To date, Yemen has not reported data to the IOTC for its coastal fisheries
- Yemen does not license foreign tuna vessels to operate within its EEZ (?)

Additional workshop comments noted for Yemen

Yemen did not attend the workshop or return the pre-workshop questionnaire.

Oman (2%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

OMAN	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Oman reported 8 industrial longliners fishing for IOTC species in 2012
- Oman has implemented a sampling programme for its coastal fisheries but catches are not reported fully by gear or species
- Catch and catch-and-effort for the industrial fleet not reported for all active vessels and not fully by species
- No observer programme in place

Additional workshop comments noted for Oman

1. The main difficulties for Oman in terms of the reporting requirements of the IOTC Secretariat are a lack of staff, particularly enumerators in the field able to liaise and collect data from fishermen.
2. Oman also has a number of older vessels in the coastal fisheries sector which are multi-gear – creating problems when reporting catches-by-gear.

Malaysia (1%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

MALAYSIA	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Malaysia reported 5 industrial tuna longliners fishing for IOTC species in 2012
- Although nominal catches and catch-and-effort are reported for coastal fisheries, the species breakdown needs to be reviewed
- Catches and Catch-and-effort for industrial longliners are as reported by the fishing sector (in logbooks, likely to be incomplete), and refer only to IOTC Area F51
- Malaysia has not an observer programme in place

Additional workshop comments noted for Malaysia

1. Until recently nominal catches and catch-and-effort have been aggregated for the main neritic tuna species (i.e., catches of kawakawa were added to and reported as longtail), however since 2006 catches have been reported separately by species. Following an IOTC-OFCF data mining mission in January 2014, the historical nominal catch-series and catch-and-effort are currently being re-estimated by the IOTC Data Section.
2. There are currently no funds to collect size-frequency data for neritic tunas – however size data were collected for kawakawa specimens for around four months in 2013.
3. Malaysia have recently started an observer programme (since 2012). Currently 5 Malaysian flag longliners are operating outside Malaysia EEZ, however size-frequency data collected on longliners is difficult to report as vessels generally do not land in Malaysia.

Thailand (1%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

THAILAND	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Thailand reported 2 industrial longliners fishing for IOTC species in 2012
- Thailand has a sampling programme for its coastal fisheries but coverage is insufficient
- Catches for the longline fishery not fully by species
- No observer programme in place

Additional workshop comments noted for Thailand

1. Data for nominal catch and catch-and-effort are collected using a stratified random sampling design, based on the proportion of fishing vessels in each province. Coverage is between 10-15 percent for each fishery (gear type).
2. The fisheries in Thailand are characterized by three type of fishing gears, namely: purse seine, gill net and trawler. Purse seine and gill net mainly target neritic tunas, while trawlers target tuna-like species. Almost all of the fishing activity is located from within the Thai EEZ.
3. Andaman Fisheries Research and Development Center, and the Marine Fisheries Research Department are responsible for collection of size-frequency data. In the past there have been problems collecting reliable and consistent size-frequency data over time; although size data for neritic tunas have been reported to the Scientific Committee on an ad-hoc basis.
4. Thailand reported that they submit nominal catch data to the IOTC Secretary using IOTC's format – largely the format of the forms is very similar to those used by Thailand.
5. Issues limiting Thailand reporting data to the IOTC Secretariat include: the mobility of staff from the office to make field survey visits; poor communication between fishermen and statisticians / fisheries experts operating in the field, which affects the quality of data collected.

Madagascar (<1%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

MADAGASCAR	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Madagascar reported 8 [semi-]industrial tuna longliners fishing for IOTC species in 2012
- To date, Madagascar has not reported catches for its coastal fisheries; sampling in some provinces was implemented in 2013 (IOC-SmartFish & IOTC support)
- Madagascar did not report data other than Nominal catches and some discards and trip reports for its longline fleet in 2012 (data reported for 2010-11 though)
- No EEZ data reported for foreign licensed vessels in Madagascar in 2012

Additional workshop comments noted for Madagascar

1. Nominal catch data are collected through logbooks (for industrial fishing), while catch-and-effort data are collected from landing statistics, and size-frequency samples are taken at landing places for both industrial fishing and traditional fishing.
2. Logbook coverage is around 76%; for catch-and-effort for traditional, industrial and foreign vessels the level of coverage is unknown.
3. An observer programme is now in place, which allows for the collection of nominal catch, catch-and-effort and size-frequency data.
4. While a data collection system is in place for domestic industrial fleet, there have been difficulties collecting reliable data for the artisanal fisheries, in addition to the collection of data from foreign fleets.
5. A new project, funded by Smartfish in collaboration with WWF, is currently under way to improve collection of fisheries data – in particular catch estimates and fishing capacity of artisanal fisheries sector. Information for 2012 is currently being compiled and will be reported to the IOTC Secretariat in due course.

Comoros (<1%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

COMOROS	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2011
- At present Comoros does not have an industrial fleet for IOTC species
- In 2011 the sampling system was strengthened with the support of the IOTC-OFCF Project; IOC-SmartFish provided further support in 2013
- Comoros licenses foreign vessels to operate within its EEZ; to date, Comoros has not reported catch-and-effort data for foreign licensed vessels

Additional workshop comments noted for Comoros

1. Difficult to set data collection system for reporting of data to IOTC;
2. No foreign longline landing in Comoros. Comoros do not have boats longer than 24m.
3. Comoros has a project with Smartfish for data collection, covering around 5%. Previously they were having project with IOTC/OFCF for sampling.
4. The Smartfish project for data collection is only for 5 years.
5. Comoros reported lack of funding, insufficient skilled manpower and are in need capacity building.

Tanzania (<1%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

TANZANIA	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Tanzania reported 8 industrial longliners fishing for IOTC species in 2012
- Tanzania reported catches for its coastal fisheries aggregated by gear
- To date, Tanzania has not reported data for its industrial fleet, other than information on active vessels
- No EEZ data reported for foreign licensed vessels in Tanzania in 2012

Additional workshop comments noted for Tanzania

1. Artisanal fisheries are multigear in the EEZ.
2. There are two different administration for fishery data collection, one on the mainland and other in Zanzibar
3. Data collection started in 2002, however they have species identification problem. Hence they cannot provide data by species
4. To date there are no observer programme in Tanzania
5. There is no sampling programme also.
6. Information on longliner are available. Also the foreign vessels fishing in Tanzania provide information.
7. The limitation for providing data to IOTC is lack of understanding how to report coordinate and constraints in terms of compliance with IOTC data requirements.

Bangladesh (<1%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

BANGLADESH	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Bangladesh is not an IOTC CPC at present (though has applied for CNCP status)
- Data availability refers to the year 2012
- At present Bangladesh does not have an industrial fleet for IOTC species
- Nominal catches for Bangladesh from the FAO database; catch aggregated by species and no gear information available
- It is not known if Bangladesh licenses foreign vessels to operate within its EEZ

Additional workshop comments noted for Bangladesh

Bangladesh did not attend the workshop or return the pre-workshop questionnaire.

Kenya (<1%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

KENYA	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- At present Kenya does not have an industrial fleet for IOTC species
- Kenya has reported incomplete catch figures for its coastal fisheries, in particular as refers to species and gear breakdown
- Kenya did not sample catches at the landing place in 2012
- A sampling programme was established in 2013 (coverage levels are unknown)
- No EEZ data reported for foreign licensed vessels in Kenya in 2012

Additional workshop comments noted for Kenya

1. Nominal catch and catch-and-effort are based from sampling at landing places and logbooks; while size-frequency data are from sampling at landing sites and observers on-board vessels.
2. Kenya reported that the reason for poor compliance in reporting data to the IOTC Secretariat in previous years are related to the data collection system used by the country – specifically the resolution at which data is collected, with catches often collected as aggregated species groups.
3. Since July 2013, a new sampling system has been place which allows the possibility of reporting catches by individual species, and in a timelier manner. The new sampling system is also expected to improve estimates of catches for the entire (industrial) fleet – although the level of sampling coverage is currently unknown.
4. Reporting of catches by gear remains problematic –many vessels are classified as multi-geared and catches cannot easily be apportioned to particular gears.
5. Following the recommendation of the IOTC Secretariat to report multi-gear catches directly in the IOTC forms, Kenya reported that this will lessen the reporting burden of attempting to apportion catches caught using mixed gears.
6. Kenya reported lack of funding, technical skills and limited staff resource as additional constraints in terms of compliance with IOTC data requirements.

Mauritius (<1%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

MAURITIUS	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Mauritius reported 5 industrial longliners fishing for IOTC species in 2012
- Mauritius has implemented a sampling system for its coastal fisheries but coverage is insufficient
- Size data for industrial longliners refers only to swordfish and not by IOTC grid
- No observer programme in place
- Mauritius reported EEZ data for foreign licensed longline vessels in Mauritius in 2012 (not for purse seiners)

Additional workshop comments noted for Mauritius

1. Mauritius reported issues in collecting accurate data on catches of sharks by species, due to difficulties of identifying sharks species which are landed in bulk or processed onboard (e.g., gilled and gutted, or beheaded) before arrival at the landing site.
2. Mauritius also noted several developments related to the collection and reporting of data to the IOTC Secretariat to improve future levels of compliance:
   i.) Information of catch and effort for the foreign purse seiners is now available, and will be reported to IOTC in the near future; in addition, there are two new purse seiners operating under the flag of Mauritius.
   ii.) A new unit created to take care of sampling system – although it was unclear what implications there will be in terms of future compliance.
   iii.) An observer scheme was started in 2013; size frequency data is expected to be collected for the main target species (BET, YFT, and ALB).

Djibouti (<1%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

DJIBOUTI	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Djibouti is not an IOTC CPC at present (though has applied for CNCP status)
- Data availability refers to the year 2012
- At present Djibouti does not have an industrial fleet for IOTC species
- Nominal catches for Djibouti from the FAO database; catch aggregated by species and no gear information available
- Djibouti does not license foreign tuna vessels to operate within its EEZ (?)

Additional workshop comments noted for Djibouti

1. Although Djibouti did not attend the workshop, they did complete the pre-workshop questionnaire.
2. There are a number of Djibouti vessels operate in the Somaliland water; typically between 10-21m in size and operated by the Society of Red Sea from Djibouti.
3. Data for nominal catch are collected from landings, with coverage at around 80%. To date no data have ever been submitted to IOTC.
4. Main issues limiting the collection and reporting of data to the IOTC Secretariat by Djibouti are limited staff and technical resources, financial constraints and a lack of understanding on how to complete the IOTC forms.

Mozambique (<1%)

Fully compliant
Partially Compliant
Non-compliant
Not applicable

MOZAMBIQUE	Coastal fleets	Industrial surface and longline fleets		
	EEZ vessels less than 24 m LOA	Vessels with LOA ≥ 24 m and all high seas vessels		
Annual catches (NC+DI)	Nominal catch	Nominal catch		
	Discards	Discards		
Active Crafts (FC)	Fishing Craft	Active Vessel List		
Catch-and-Effort (CE)	Catch-and-Effort	CE Surface fisheries	FADs	PS-Supply vessels
		CE Longline fisheries		
Size data (SF)	Size frequency	Size frequency		
Scientific observer data	Sampling Coverage	Trip Reports		
Socio-economic data	No standards have been set as yet			
Foreign fleets EEZ catch	Not applicable	CE EEZ Licensed Foreign Fleets		

- Compliance refers to the year 2012
- Mozambique reported 1 industrial longliner fishing for IOTC species in 2012
- Mozambique has implemented catch monitoring for is coastal fisheries; however, sampling coverage is unknown
- Size data for industrial longliners highly aggregated, not by month and IOTC grid
- No observer programme in place
- No EEZ data reported for foreign licensed vessels in Mozambique in 2012
-

Additional workshop comments noted for Mozambique

1. Nominal catch and catch-and-effort data for the industrial fleet are collected through logbooks for the national fleet based on entry and exit reports, and ERS for foreign fleet vessels, while size-frequency data are collected by sampling at landing places.
2. The coverage of the industrial fleet varies considerably depending on the fishery and type of data. For nominal catch and catch-and-effort, the level of coverage ranges between 5%-100% according to the type of fishery, while coverage of size-frequency data is around 10% of the catch of sampled vessels.
3. There is a limited data collection system in place for the artisanal fishery. The resolution of data collected does not allow information to be reported in detail for species under the IOTC mandate; hence, information currently reported for artisanal sector of the fishery is considered to be incomplete.
4. Mozambique also reported difficulties in collected and reporting by-catch, catches of sharks for the local fleet, and accurate catch estimates for sport fishing. In the case of sport fishing
5. Mozambique faces a number of broader challenges in reporting data to the IOTC Secretariat, including: limitations on the data collection mechanisms currently in place (particularly for the artisanal fleet) and lack of a comprehensive statistical database required to enter and process fisheries data, a lack understanding or guidance in completing IOTC data forms, and limited staff and technical expertise to compile data according to the IOTC requirements.

PART 2: WORKSHOP BACKGROUND INFORMATION

See Annex (Page v)