UPDATE ON THE IMPLEMENTATION OF THE IOTC REGIONAL OBSERVER SCHEME

PREPARED BY: IOTC SECRETARIAT, 29 NOVEMBER 2017

PURPOSE

To inform the Scientific Committee (SC) of the status of implementation and reporting to the IOTC of the Regional Observer Scheme (ROS) set out by Resolution 11/04 *on a Regional Observer* Scheme at the 15th Session of the Commission (S15) in 2011.

BACKGROUND

Fisheries observer data is vitally important for fisheries management, providing an independent source of detailed, high quality information on fishing activities and catches at a sufficient level of resolution to be used for analyses such as the standardisation of catch rates and analysis of bycatch mitigation measures. At the 13th Session of the Commission (S13), the Commission adopted Resolution 09/04 *on a Regional Observer Scheme*, which was superseded in 2010 by Resolution 10/04, and again in 2011 by Resolution 11/04. The main objective of the IOTC Regional Observer Scheme is to *'collect verified catch data and other scientific data related to the fisheries for tuna and tuna-like species in the IOTC area of competence' [Res 11/04, para. 1].*

Resolution 11/04 *On a Regional Observer Scheme* makes provision for the development and implementation of national observer schemes among the IOTC CPCs starting in July 2010 and covering *"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 competence of 24 meters overall length and over, and under 24 meters if they fish outside their EEZs shall be covered by this observer scheme. For vessels under 24 meters if they fish outside their EEZ, the above mentioned coverage should be achieved progressively by January 2013".*

At its 13th Session the IOTC Scientific Committee (SC13) reviewed the report of the technical workshop organised in May 2010, and endorsed the documents produced by the Secretariat; an Observer Manual[1], including a set of guidelines, standards and supporting information for observer data collection, reporting and training, an Observer Trip Report template[2] containing the minimum reporting requirements and data forms containing minimum data collection requirements. These were formally adopted at the 15th session of the Commission where it was noted[3] "*Minimum data requirements were adopted as well as an observer report template that will be reviewed and revised as necessary".*

At the 17th session of the Scientific Committee, *"the SC **NOTED** the revisions to the observer reporting templates proposed by the WPEB10 and the WPDCS10 to improve the quality of the data submissions for scientific purposes such as stock assessments and other such scientific work as requested by the IOTC Scientific Committee".* Further "***NOTING** that improving the quality of data submissions is a process that evolves and develops over time, the SC **ADOPTED** the revised observer templates as interim reporting templates for immediate use by CPCs where ready and for preliminary use by CPCs where further time is required for review. The SC **AGREED** that the IOTC Secretariat will make these templates available in 2015 and update the guidance in the manual accordingly. Following implementation in interim format, the SC **AGREED** that these will be reviewed and modified further as appropriate in 2015".* The revised reporting templates, updated version of the manual and data collection forms are available on the IOTC website[4].

[1] IOTC-2010-SC11

[2] IOTC-2010-SC12

[3] IOTC-2011-S15-R[E]

[4] www.iotc.org/science/regional-observer-scheme-science

The Resolution also states that *"the number of the artisanal fishing vessels landings shall also be monitored at the landing place by field samplers" and that "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)".* There are currently no established guidelines for the collection of data from artisanal vessels fishing within their national EEZ so this remains an area for further development.

A large number of observer programmes have now been established for industrial fleets across the Indian Ocean and these are used to collect scientific fisheries data by onboard observers, according to specific research requirements specified by each of the coordinating organisations. Data are collected and reported at the regional level to the IOTC Secretariat as summarised in this paper.

UPDATE ON THE CURRENT STATUS OF IMPLEMENTATION AND REPORTING

Implementation of the observer scheme

As of 15th November 2017, fifteen CPCs (Australia, China (including Taiwan,China), Comoros, EU (France[5], Spain, Portugal and UK), Indonesia, Japan, Kenya, Rep. of Korea, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, South Africa and Thailand) have submitted a list of observers and have been allocated an IOTC observer registration number. This makes a total of 360 currently registered observers.

As of 15th November 2017, information from 975 observer trip reports has been submitted to the IOTC Secretariat by Australia, China (including Taiwan,China), EU(France, Italy, Portugal and Spain), France OT (until 2013), Indonesia, Japan, Kenya, Rep. of Korea, Madagascar, Mauritius, Mozambique, Seychelles, Sri Lanka, South Africa and Tanzania.

Appendix A provides a summary of the status of implementation of the ROS by all IOTC CPCs. Appendix B and Appendix C provide an estimation of the level of effort covered by observers between 2010 and 2016 for industrial longline and purse seine vessels (data updated as of 15th November 2017). Reported scientific observer coverage for the artisanal fleets is currently zero.

Reporting in electronic format

At the SC19 in 2016, there was a recommendation for all observer data to be submitted in electronic format:

"The SC **RECOMMENDED** all CPCs to submit observer data in an electronic format that can be automatically exported and processed into a standard spreadsheet-like format (e.g. csv, xml, txt, xls, dbase, mdb etc.), avoiding formats whose processing could be time consuming and unnecessarily complex (e.g. pdf, Microsoft Word documents etc.), at the same time ensuring that all of the agreed minimum data reporting requirements are fulfilled".

An increasing number of CPCs are now submitting data electronically, including Australia, EU,France, EU,Spain, China (partial), Indonesia, Japan, Kenya, Mozambique and Mauritius (partial) (Appendix A).

A PILOT PROJECT FOR THE ROS

Since its origination in 2009, national implementation of the Regional Observer Scheme remains very low among IOTC CPCs. Artisanal fisheries are hugely important in the Indian Ocean and yet the implementation of observers in these fisheries remains particularly low. Where observer programmes have been established, these are wide ranging and highly variable in the type and quality of information collected and the reporting of data to IOTC standards remains poor and so the data that are submitted and stored regionally are currently of little value.

[5] Including Mayotte due to its status as a French outermost region since January 2014

In recognition of these issues and in a positive step towards addressing the problems and seeking solutions, the IOTC adopted Resolution 16/04 *On the implementation of a pilot project in view of promoting the Regional Observer Scheme of IOTC* and following this a pilot project has been developed. This was discussed and further developed at the WPEB12, WPDCS12[6] and SC19[7] in 2016, circulated to all Members for comment in March 2017 and finally submitted to the Commission for approval in May 2017[8].

The project outlines a comprehensive plan as part of a long-term, holistic strategy for supporting the implementation of the Regional Observer Scheme in the IOTC Area of Competence. It aims to tackle each of the key issues that currently prevent the collection and analysis of high quality data to contribute to stock assessment and management advice through the development of new technologies, tools, standards and processes. The overall strategic framework is centred around five key components:

1. Observer training programme and minimum standards
2. Electronic reporting
3. Observer database development and historic data collation
4. Electronic monitoring system
5. Observation in-port

A critical component in each of the workstreams is the piloting phase and Resolution 16/04 provides a framework for trialling these innovations by drawing together the outputs from the various work streams and operationalising them in selected voluntary CPCs.

1. Observer training programme and minimum standards

The first component addresses the problem of establishing new observer programmes where there are few resources, expertise and experiences to draw on through the development of a full observer training programme package. A set of working protocols, tools and materials will be developed for observer managers to assist them in setting up new observer programmes and providing a training package to be used for the training of observers. Alongside this the development of a set of standards for observer programmes and observers are required in order to assist the harmonisation of schemes that are currently in place and under development to ensure that data have been collected in a standardised way and are of sufficiently good quality to be used for analysis. This will include a sub-component that involves the development of a 'regional pool' of trained scientific observers that are recognised regionally, and may be employed by a flag state for use on any of its vessels, particularly where vessels may be entering multiple coastal EEZs.

2. Electronic reporting

The second project component aims to tackle the issues with poor data reporting such as the data that are currently being submitted in hard copy, hand-written format, in flowing prose in non-IOTC languages or other non-standard methods meaning that the extraction of pertinent data may be complex, time-consuming and costly. This is to be addressed through the development of an electronic reporting tool which will facilitate the submission of data at both the national and at the regional level, improving the quality of data through error-checking procedures and creating time-saving efficiencies for CPCs and the IOTC Secretariat.

3. Observer database development and historic data collation

A closely linked third project component is the development of a regional database to host observer data and the population of this database with historic data that has been submitted in non-standard formats or has not yet been submitted at all for various reasons.

4. Electronic monitoring system

The fourth project component is the development of Electronic Monitoring Systems (EMS) for small-scale fisheries, specifically gillnet fleets, in the Indian Ocean. The aim is to improve the quality of data collection and coverage of

[6] IOTC-2016-WPDCS12-22: http://www.iotc.org/documents/pilot-project-iotc-regional-observer-scheme

[7] IOTC-2016-SC19-14: http://iotc.org/documents/pilot-project-iotc-regional-observer-scheme-0

[8] IOTC-2017-S21-10: http://www.iotc.org/documents/pilot-project-iotc-regional-observer-scheme-1

fisheries where there are practical difficulties placing observers on-board vessels (e.g., for large fleets of small vessels where there are safety issues, lack of space for observer working, logistical deployment difficulties, etc.) which is particularly in the case of the artisanal gillnet fleets. Given the successes of EMS that have been evidenced in other oceans and fisheries, it is important that this is trialled for gillnet fleets in the Indian Ocean, particularly where no observer coverage has yet been implemented. The proposal is to develop an electronic monitoring system (EMS) suitable for small-scale vessels (e.g., from 15m up to 24 m LOA) to test the feasibility of collecting good quality scientific information.

5. Observation in-port

In conjunction with this, the fifth project component will involve the development of data collection protocols for field samplers[9] to collect data at port, complementary to information provided by EMS and onboard observers. This will include the development of a set of indicators to be used to assess the quality of data collection and management systems for artisanal fisheries.

Outcomes of SC19 relevant to the ROS pilot project

*The SC **NOTED** paper IOTC-2016-SC19-14 that presented a first draft of a proposal for a pilot project for the ROS under Resolution 16/04.*

*The SC **NOTED** that the work elements described in the project proposal are critical to the future success of the ROS and **AGREED** to use the strategic framework described in the paper. The SC further **REQUESTED** the Secretariat, in collaboration with the SC Chair and WPEB Chair, develop a more detailed and specific pilot program covering the actions mentioned in Res 16/04. This will include a detailed budget and will be circulated among CPCs for comment as detailed in Res 16/04. The SC **AGREED** to present the final version of the pilot project to the Commission as required by Res 16/04.*

*The SC **NOTED** that the EMS workstream will be focussed on the gillnet fleets, but that there are still lessons to be learned from experiences elsewhere in the Indian Ocean. The SC **WELCOMED** the offer of support from Australia and the EU in terms of sharing experiences and lessons learned from the implementation of EMS in the longline and purse seine fleets respectively.*

*The SC **AGREED** that ensuring long term viability and sustainability is critical to the success of any pilot project and so the piloting phase will involve exploring resource efficient methods and evaluating initiatives in terms of costs and benefits as well as.*

*The SC **NOTED** the substantial resourcing that the proposed framework will require and **RECOMMENDED** that the Commission provide adequate resources to enable implementation of the project.*

*The SC **AGREED** to determine a Project Steering Committee to oversee the work, and **REQUESTED** that clear Terms of Reference are drafted to define specific roles and responsibilities of the Committee. The SC further **AGREED** that the Steering Committees should be kept small and functional while ensuring relevant expertise in all areas of work within the pilot project are covered, and that these may be source from experts beyond as well as within the Indian Ocean.* (IOTC-2016-SC19-R; para. 156-161).

Outcomes of S21 relevant to the ROS pilot project

The final project proposal was outlined in paper IOTC-2017-S21-10 and was presented to the Commission for approval at its 21st Session in May 2017.

The Commission recalled that in 2016 it adopted Resolution 16/04 'On the implementation of a pilot project in view of promoting the Regional Observer Scheme of IOTC' and requested the Secretariat to develop a comprehensive plan

[9] Field sampler: a person who 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. (definition provided in IOTC Resolution 11/04)

for a Regional Observer Scheme Pilot project, as part of a long-term, holistic strategy for supporting the implementation of the Regional Observer Scheme.

*The Commission noted the presentation on the pilot project given by the Chair of the Scientific Committee and **ENDORSED** the framework as outlined in IOTC-2017-S21-10.*

Furthermore the Commission accepted that the Project Steering Committee will be required to advise the Secretariat on a range of critical matters relating to the implementation of the project.

*The Commission encouraged CPCs, especially those that are likely to be participating in and benefitting directly from the project, to support the initiative further with co-funding. The Commission also **AGREED** that project activities would begin with the current funding available and that a budget for subsequent phases be prepared for the S22.*

*The Commission **REQUESTED** nominations from members that want to participate in the Pilot Project Steering Committee to be sent to the Secretariat*" (IOTC-2017-S21-R; para. 48-52).

Progress update

1. *Observer training programme and minimum standards*

Funds have now been obtained for this workstream and it has been developed into a 'Request for Proposals' consultancy contract which is currently going through the necessary FAO approval and administrative processes to be advertised at the start of 2018, i.e. once the funds become available. A regional workshop for observer programme coordinators and interested parties will take place in the first half of 2018 to review and revise the materials developed before they are finalised and submitted to the SC20 for approval.

A second project phase has also been developed to start in the second half of 2018. This will immediately follow the development of the training package and standards and will involve the intensive piloting of the programme in three voluntary CPCs with important IOTC fisheries as identified by the Commission (I.R.Iran, Sri Lanka and Tanzania). This project will involve the implementation of the tools and materials developed, including the e-reporting tool, and will encompass sustained efforts in these pilot countries to fully establish observer programmes and provide the necessary follow-up support as needed. Funding has been identified for these activities and a full project proposal has been submitted to the donors (the EC) for approval.

2. *Electronic reporting*

The electronic reporting interface has been successfully finalized and tested: it is provided as a standalone, multi-platform application that does not require Internet connectivity to work, although it now includes direct communication mechanisms to retrieve vessel information from the IOTC RAV ("*Record of Authorised Vessels*") as well as the IOTC list of accredited observers. It is also directly linked to the main IOTC Statistics database so it will constantly synchronize all needed reference data in a seamless manner.

The e-reporting interface implements all the requirements detailed by the "IOTC *Regional Observer Scheme user manual*" for all considered fisheries (Longline, Gillnet, Pole-and-Line and Purse Seine) and for both data collection and data reporting requirements (see: www.iotc.org/sites/default/files/documents/science/IOTC-2015-ROS_11_04_Observer_Manual_v1.2.pdf).

The multilingual support for the e-reporting interface is undergoing finalization, and the application will be available in English and French on official release.

3. *Observer database development and historic data collation*

The *e-reporting interface* (see above) mainly serves as a tool to support data collection on the field: all captured information is expected to be submitted to a national focal point that will incorporate observer data within a *National Database* (also supplied as a standalone and multi-platform application). The main goal of the National Database – besides establishing a central repository for national observer data – is also to submit information to the *Regional Database*, hosted by IOTC and expected to contain only data marked as "*mandatory for reporting*". The National Database tool has been finalised and tested, whereas the Regional Database – although already finalized – is undergoing further enhancements to increase its integration with the other IOTC statistical systems.

The Regional Database is in the process of being populated with legacy information provided in the past at different level of detail and through different electronic / non-electronic means by member countries. Currently, it includes Japanese observer data for 25 longline trips departed from October 2013 to September 2015, covering a total of 1355 sets and is in the process of being extended with the (possible) inclusion of historical observer data from European Union and assimilated purse-seine fleets. In the medium-to-long term, the Regional Database will be populated with *live* observer data collected through the e-reporting interface and managed – at national level – through dedicated National Database focal points (thus increasing both the level of compliance and the technical capacity for participating flag states).

4. Electronic monitoring system

Funding has been identified for the development of EMS and a number of priority CPCs have been identified as potential candidates for the pilot, including I.R. Iran, Pakistan, and Sri Lanka. During 2017 the IOTC Secretariat conducted initial field visits to Pakistan, I.R.Iran and Sri Lanka to assess the logistical practicalities of implementing EMS on coastal gillnet (and gillnet-longline) vessels.

5. Observation in-port

This project component is currently at the earliest stage of development. Having now been approved by the Commission, Terms of Reference are currently being drafted, with the work scheduled to commence in early 2018.

IOTC Species ID guides

Table 1. Summary of priority languages and species groups for translation and printing as identified by the SC16, SC17 and WPEB13.

	1. Tuna & like	2. Billfish	3. Turtles	4. Sharks and rays	5. Seabirds	6. Cetaceans
Persian	2	1	1	1	1	3
Arabic	2	2	2	2	2	7
Urdu	4					4
Bahasa Indonesian	1	3	5	5	5	6
Swahili		4				8
Spanish		5	3	3	3	2
Portuguese		6	4	4	4	
Thai		7				
Sinhala	3	8				5
Tamil		8				5
Bahasa Malaysia	1					
Hindi	3					
French						1

Key: Green = completed; yellow= in progress.

Progress to date:

- Work to develop a set of cetacean ID guides for the Indian Ocean has begun. The species list has been drafted and the first draft is currently under development. Printing and translations have already been arranged for the priority languages and will take place as soon as the cards have been finalised (IOTC and MMC).
- Translation and printing of IOTC species ID guides into Persian has already been completed for tuna, sharks, billfish and turtles and these are now available on the IOTC website[10] (IOTC, IFO and WWF-Pakistan)
- Translation and printing of IOTC species ID guides into Arabic has been completed for tuna and tuna-like species and translation of the others is currently underway (IOTC and WWF-Pakistan)
- Translation and printing of tuna, billfish, turtles and shark ID guides into Urdu is complete (WWF-Pakistan)

[10] www.iotc.org/science/species-identification-cards

- Translation and printing of tuna and billfish ID guides into Bahasa Indonesian is complete (OFCF)
- Translation of turtle, shark and seabird ID guides into Bahasa Indonesian is complete and cards are being type set for printing (DGCF and IOTC)
- Translation of turtle ID guides into Spanish is complete and cards are being printed (IOSEA and IOTC)
- Translation of tuna and tuna-like species ID guides into Hindi is complete and cards have been type set for printing (CMFRI and IOTC)
- Translation of tuna and tuna-like species ID guides into Malaysian is complete and typesetting is underway (IOTC)
- Translation of tuna and tuna-like species ID guides into Sinhala and Tamil has been completed. Cards are being printed by FAO (NARA, DFAR and FAO)
- Translation and printing of all IOTC species ID guides into Portuguese has been completed, pending receipt of e-copies for website (WWF-Mozambique)
- Translation and printing of all IOTC species ID guides into Maldivian is underway (Ministry of Fisheries and Agriculture, Maldives)

RECOMMENDATIONS

That the Scientific Committee:

1) **RECOMMEND** that sufficient resources are allocated to support the activities of the ROS Pilot Project from the Commission's regular budgetary funds to ensure the continuation of activities throughout and beyond the project lifetime.
2) **AGREE** on the final list of members of the ROS Pilot Project Steering Committee.

APPENDICES

Appendix A: Update on the implementation of the IOTC regional observer scheme

Appendix B: Estimated observer coverage for longline vessels

Appendix C: Estimated observer coverage for purse seine vessels

APPENDIX A
UPDATE ON THE IMPLEMENTATION OF THE IOTC REGIONAL OBSERVER SCHEME

CPCs	Active Vessels LOA≥24m or High Seas vessels[11]				Progress	List of accredited observers submitted	Number of observer reports provided[12]						
	LL	PS	GN	BB			2010	2011	2012	2013	2014	2015	2016
MEMBERS													
Australia	2	6		1	Australia has implemented an observer programme for the longline fleet	**YES: 21**	2(O)	1(O)	3(O)	No	2(O) + 4(E)	11(E)	No
China –Taiwan,China	67 344				China has implemented an observer programme	**YES: 3** **YES: 54**	1(O) No	No No	1(O) 1(O)	1(O) 19(O)	2(O) 17(O)	1(O) 13(O)	4(0) 14(O)
Comoros					Comoros does not have vessels ≥ 24m. Two observers have been trained under the IOC Regional Monitoring Project, and 5 by SWIOFP.	**YES: 7**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Eritrea	No information received				No information received by the Secretariat.	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
European Union	17 0 7 19 1	12 1 0 18 0			EU has an observer programme on-board its purse seine and longline fleets. To date, no information has been received from EU,UK.	Partial: **EU,France: 64** **EU,Italy : No** **EU,Portugal: 4** **EU,Spain : 9** **EU,UK : 1**	FRA 6(E) N/A No No No	FRA 45(E) N/A PRT 1(O) No No	FRA 93 (E) N/A PRT 1(O) No No	FRA 89(E) N/A PRT 1(O) ESP 1(O) No	FRA 94(E) N/A PRT 1(O) ESP 2(O) No	FRA 109 (E) ITA 6(O) PRT 1(O) ESP 10(E) No	FRA 106 (E) ITA 4(O) PRT 1(O) ESP 15(E) No
France (OT)					N/A	**N/A**	No	9(O)	7(O)	7(O)	N/A	N/A	N/A
Guinea					Guinea has had no vessels operating in the Indian Ocean since 2006	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
India					India has not yet developed an observer programme.	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Indonesia	246	11	13		Indonesia has 13 registered IOTC observers and a number of initiatives in place and has recently begun reporting to IOTC.	**YES:9**	**No**	**No**	**No**	**No**	**5(E)**	**No**	**No**
Iran, Isl. Rep. of	5	8	1192		IOTC observer training took place in 2015. 30 observers have now been selected and are due to be deployed in 2016.	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Japan	43	2			Japan started its observer programme on the 1st of July 2010.	**YES: 19**	8(E)	11(E)	10(E)	9(E)	15(E)	9(E)	**No**
Kenya					Kenya has had no vessels listed in the active vessel registry since 2010, however, Kenya is developing an observer programme and 5 observers have been trained by SWIOFP.	**YES: 5**	**No**	N/A	N/A	N/A	N/A	N/A	1(E)

[11] The number of active vessels is given for 2016
[12] Year in which the observed trip has started (E: Electronic; O: Other)

CPCs	Active Vessels LOA≥24m or High Seas vessels[11]				Progress	List of accredited observers submitted	Number of observer reports provided[12]						
	LL	PS	GN	BB			2010	2011	2012	2013	2014	2015	2016
Korea, Rep. of	13	5			Korea has had an observer programme since 2002 and has 28 observers registered in the Indian Ocean.	**YES: 40**	**2(O)**	**No**	**2(O)**	**3(O)**	**3(O)**	4(O)	**No**
Madagascar	7				Madagascar has developed an observer programme. Five and three observers have been trained through SWIOFP and IOC respectively. However, observer data reported are not to IOTC standards.	**YES: 7**	**No**	**No**	**18(O)** [13]	**8(O)**	**7(O)**	**No**	**No**
Malaysia	10				Malaysia is developing plans for the implementation of an observer programme.	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Maldives	47			325	Maldivian vessel landings are monitored by field samplers at landing sites. Maldives is currently developing an at-sea observer programme.	**YES: 4**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Mauritius	5	2			Mauritius has developed an observer scheme and started submitting data for 2015.	**YES: 8**	**No**	**No**	**No**	**No**	**No**	**5(O)**	**5(O+E)**
Mozambique	11				Mozambique has an observer programme and has submitted one trip report, but did not have any active vessels ≥24m in 2013.	**YES: 11**	**No**	**No**	**1(O)**	N/A	**No**	**7(E)**	**No**
Oman	1				IOTC observer training took take place in 2015, however no observer reports have been submitted as yet.	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Pakistan					IOTC observer training took take place in 2015 and Pakistan is committed to establishing an observer scheme. A crew-based observer scheme has already been initiated by WWF-Pakistan, however no data has yet been submitted to the IOTC Secretariat.	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Philippines					No information received by the Secretariat.	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Seychelles	47	13			Seychelles initiated an observer programme in 2014 and has started to report observer data	**YES: 78**	**No**	**No**	**No**	**No**	**6(O)**	**46(O)**	**No**
Sierra Leone	No information received				No information received by the Secretariat.	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Somalia	No information received				No information received by the Secretariat.	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
South Africa	13				South Africa operates an observer programme for foreign vessels operating within the EEZ as well as for national vessels (since 2014).	**YES: 16**	**No**	**12(O)**	**10(O)**	**13(O)**	**10(O)** [14]	**16(O)**	**No**
Sri Lanka	1		1455		Sri Lanka has begun an observer initiative and submitted observer data from pilot trips in 2014 and 2015.	**No**	**No**	**No**	**No**	**No**	**2(O)**	**2(O)**	**No**
Sudan	No information received				No information received by the Secretariat.	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[13] Reports from Madagascar include observers onboard foreign vessels

[14] Reports submitted for foreign vessels operating in the EEZ of South Africa between 2011 and 2013, and foreign + national flagged vessels for 2014 and 2015.

CPCs	Active Vessels LOA≥24m or High Seas vessels[11]				Progress	List of accredited observers submitted	Number of observer reports provided[12]						
	LL	PS	GN	BB			2010	2011	2012	2013	2014	2015	2016
Tanzania, United Rep.of	3				Tanzania does not currently have an observer programme in place.	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**1(O)**
Thailand		1			Thailand conducted observer training in 2015 but had no active LL vessels in 2016	**YES: 8**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
United Kingdom (OT)					The UK(OT) does not have any active vessels in the Indian Ocean.	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Yemen	No information received				No information received by the Secretariat.	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
COOPERATING NON-CONTRACTING PARTIES													
Bangladesh					No information received by the Secretariat.	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Liberia					No information received by the Secretariat.	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Senegal					Senegal has not had any active vessels in the Indian Ocean since 2007.	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A

APPENDIX B

ESTIMATED OBSERVER COVERAGE FOR LONGLINE VESSELS

	Total effort (no.hooks)								Observed effort (no. hooks)							Coverage rate							
MEMBERS	2010 (total)	(>July)	2011	2012	2013	2014	2015	2016	2010	2011	2012	2013	2014	2015	2016	2010	(>July)	2011	2012	2013	2014	2015	2016
Australia	622,461	304,347	359,832	672,398	609,995	449,387	430,015	429,288	15330	6232	89490	0	41581	28729	0	2.46%	5.04%	1.73%	13.31%	0.00%	9.25%	6.68%	0.00%
China	16,993,970	10,859,640	4,136,710	11,295,050	23,439,470	19,212,540	26,616,190	24,107,147	95205	0	185742	216640	178413	105201	1184578	0.56%	0.88%	0.00%	1.64%	0.92%	0.93%	0.40%	4.91%
–Taiwan,China	219,630,038		182,770,834	170,633,711	195,560,569	186,056,725	167,840,253	206,592,777	0	0	121675	4344678	4004870	3650886	3461035	0.00%		0.00%	0.07%	2.22%	2.15%	2.18%	1.68%
Comoros																							
Eritrea																							
EU - France	3,781,554	1,978,611	3,769,250	3,367,941	4,042,077	3,573,448	3,533,544	3,710,089	68094	257830	630313	619619	516645	527459	566024	1.80%	3.44%	6.84%	18.72%	15.33%	14.46%	14.93%	15.26%
EU - Portugal	949,134		903,600	685,206	1,558,000	1,496,715	1,398,400	1,672,150		140317	73685	127580	90894	156536	152385	0.00%		15.53%	10.75%	8.19%	6.07%	11.19%	9.11%
EU - Spain	3,174,705		3,758,516	4,673,785	6,262,822	6,262,823	6,262,824	6,262,825	0	0	0	0	224900	0	0	0.00%		0.00%	0.00%	0.00%	3.59%	0.00%	0.00%
EU - UK	61,400		92,300	71,400	55,000	84,700	388,300	271,700								0.00%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
France(OT)	75,099		93,718	120,000	120,000																		
Guinea	569,943															0.00%							
India	66,990,303		85,418,811	63,809,974	66,874,504	60,449,485	17,169,720	15,347,609								0.00%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Indonesia	120,517,198		143,369,311	205,861,852	197,666,023	202,478,411	184,626,974	170,149,788	0	0	0	0	195,780	0	0	0.00%		0.00%	0.00%	0.00%	0.10%	0.00%	0.00%
Iran, Isl. Rep. of																							
Japan	37,032,932	15,746,978	28,854,054	31,460,928	29,125,098	31,780,765	28,961,098	27,090,505	1197302	2431206	1701400	2208155	2842393	1834348	0	3.23%	7.60%	8.43%	5.41%	7.58%	8.94%	6.33%	0.00%
Kenya	186,774		0	0	0	0	0	0	0	0	0	0	0	0	67240	0.00%							
Korea, Rep. of	6,013,391	1,602,804	5,862,681	4,350,708	5,337,464	6,740,247	6,739,605	5,044,105	389042	0	282656	546927	213225	313662	0	6.47%	24.27%	0.00%	6.50%	10.25%	3.16%	4.65%	0.00%
Madagascar	456,585		374,307	348,653	326,494	355,138	357,897	330,541	0	0	21582	62400	0	0	0	0.00%		0.00%	6.19%	19.11%	0.00%	0.00%	0.00%
Malaysia	17,282,525		13,180,419	4,010,420	4,222,622	3,590,208	5,019,417	6,239,667								0.00%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Maldives					3,054,590	3,040,716	678,824	2,254,552												0.00%	0.00%	0.00%	0.00%
Mauritius	267,063		252,480	182,300	150,560	105,120	195,850	593,813								0.00%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Mozambique	383,323		383,323	383,323		7,177	240,031	134,330	0	0	1100	0		42715	0	0.00%		0.00%	0.29%		0.00%	17.80%	0.00%
Oman, Sultanate of	17,358,307		16,046,375	6,366,934	2,608,159	1,465,331	552,649	549,338								0.00%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Pakistan																							
Philippines	2,784,696															0.00%							
Seychelles	4,375,885		3,080,822	3,400,912	3,876,173	21,366,998	22,778,433	35,608,822								0.00%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sierra Leone																							
Somalia																							
Sri Lanka	118,364,092		112,187,187	140,186,312	145,165,259	50,385,870	35,216,695	23,252,938	0	0	0	0	550	46430	0	0.00%		0.00%	0.00%	0.00%	0.00%	0.13%	0.00%
South Africa*	1,751,043		1,219,015	1,176,125	959,285	565,705	651,592	404,228	0	(640045)	(293685)	(852759)	17895(543543)	70258(603777)	0	0.00%		0.00%	0.00%	0.00%	3.16%	10.78%	0.00%
Sudan																							
Tanzania, United Rep.of	1,505,810		2,893,579	4,314,179	3,468,843	3,682,252	1,648,649	2,112,744	0	0	0	0	0	0	757	0.00%		0.00%	0.00%	0.00%	0.00%	0.00%	0.04%
Thailand	1,489,193		1,041,600	1,061,363	784,881	1,821,217	1,121,073	0								0.00%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
United Kingdom																		0.00%	0.00%	0.00%	0.00%	0.00%	
Yemen																							
COOPERATING NON CONTRACTING PARTIES																							
Bangladesh																							
Liberia																							
Senegal																							
Other	8,904,445	7,368,361	8,043,789	10,212,601	9,222,548	10,907,732	8,642,444	7,368,361								0.00%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	651,521,868		618,092,512	668,646,076	704,490,436	615,878,711	521,070,476	539,527,318	1,764,973	2,835,585	3,107,643	8,125,999	8,860,704	7,257,419	5,983,472	0.27%		0.46%	0.46%	1.15%	1.44%	1.39%	1.11%

*numbers in brackets indicate hooks observed on foreign flagged vessels

*Coverage for Japan includes 'Joint Venture Agreement' vessels (flagged as JPN) submitted by South Africa

*Observed effort for Madagascar has been estimated from the number of fishing days. Coverage for EU,Spain (2014) was submitted by Madagascar

*2012 and 2013 total effort are estimates provided by Portugal which are to be updated

NB: the ROS came into force mid-way through in July 2010 so annual coverage rates are expected to be lower for 2010 (some countries were able to provide estimates of effort from July-December 2010 so in these cases coverage rates are reported from July onwards).

Key: TOTAL EFFORT (#HOOKS): Total number of hooks set by longliners, by fishing fleet and year, including:

- Total effort available (green font)
- Total effort not available: total effort estimated using the nominal catches available and sampled effort or catch rates from other fleets or year periods (red font)

APPENDIX C

ESTIMATED OBSERVER COVERAGE FOR PURSE SEINE VESSELS

	Total effort (no. fishing days)							Observed effort (no. fishing days)							Coverage rate						
MEMBERS	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Australia	175	130	148	133	113	148	141								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
China																					
–Taiwan,China																					
Comoros																					
Eritrea																					
EU - France	1968	1947	1795	2115	3467	3168	3152		108	237	193	600	683	772	0.00%	5.55%	13.20%	9.13%	17.30%	21.56%	24.49%
EU - Portugal																					
EU - Spain	3531	3555	3684	3899	4238	3584	3933		0	0	62	128	338	344	0.00%	0.00%	0.00%	1.59%	3.02%	9.43%	8.75%
France (OT)	833	1167	1257	1276					252	188	171	0	0	0	0.00%	21.59%	14.95%	13.40%			
EU - UK																					
EU - Italy						284							210	147						73.94%	
Guinea																					
India																					
Indonesia																					
Iran, Isl. Rep. of	128	139	168	172	179	164	137								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Japan	96	95	72	36	35	86	86								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Kenya																					
Korea, Rep. of			94	387	507	451	695				33	45	35	0			0.00%	8.52%	8.88%	7.76%	0.00%
Madagascar											(14)	(118)									
Malaysia	12														0.00%						
Maldives																					
Mauritius				27	264	302	332				0	0	111	116				0.00%	0.00%	36.75%	34.92%
Mozambique																					
Oman, Sultanate of																					
Pakistan																					
Philippines																					
Seychelles	2144	2166	1969	1670	1947	3012	4087	0	0	0	0	271	1404	0	0.00%	0.00%	0.00%	0.00%	13.92%	46.61%	0.00%
Sierra Leone																					
Somalia																					
South Africa																					
Sri Lanka				62								12						0.00%			
Sudan																					
Tanzania, United Rep.of																					
Thailand	137														0.00%						
United Kingdom																					
Yemen																					
COOPERATING NON CONTRACTING PARTIES																					
Bangladesh																					
Liberia																					
Senegal																					
Other																					
Total	**9,025**	**9,199**	**9,188**	**9,777**	**10,749**	**11,199**	**12,563**	**0**	**360**	**425**	**459**	**1,056**	**2,781**	**1,379**	**0.00%**	**3.91%**	**4.63%**	**4.69%**	**9.82%**	**24.83%**	**10.98%**

* Brackets indicate observers on foreign vessels (Observer data provide by Madagascar for EU,ESP,EU,FRA and SYC)

NB: the ROS came into force mid-way through in July 2010 so annual coverage rates are expected to be relatively lower for 2010

Key: TOTAL EFFORT (#FDAYS): Total number of days fished by tuna purse seiners, by fishing fleet and year, including:

- Total effort available (green font)
- Total effort not available: total effort estimated using the nominal catches available and sampled effort or catch rates from other fleets or year periods (red font)