

## UPDATE ON THE IMPLEMENTATION OF THE IOTC REGIONAL OBSERVER SCHEME

PREPARED BY: IOTC SECRETARIAT<sup>1</sup>, 16 NOVEMBER 2018

### 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 in Resolution 11/04 *on a Regional Observer Scheme*.

### BACKGROUND

Fisheries observer data is important for fisheries management, providing detailed, high quality information on fishing activities and catches that is independent of vessel logbooks. In 2009, the Commission adopted Resolution 09/04 *on a Regional Observer Scheme*, which was superseded in 2010 by Resolution 10/04, and again in 2011 by Resolution 11/04.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 as defined in this Resolution 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'*.

Resolution 11/04 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"*.

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.

A number of national 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 part of the mandate of the ROS and are summarised in this paper.

### UPDATE ON THE CURRENT STATUS OF IMPLEMENTATION AND REPORTING

#### *Implementation of the observer scheme*

As of 16<sup>th</sup> November 2018, fifteen CPCs (Australia, China (including Taiwan,China), Comoros, EU (France<sup>2</sup>, Portugal, Spain and the 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. A total of 375 observers are currently registered as active.

As of 16<sup>th</sup> November 2018, a total of 1377 trips have been reported to the IOTC Secretariat by Australia, China (including Taiwan,China), EU(France, Italy, Portugal, Spain and the UK), France OT, Indonesia, Japan, Kenya, Rep. of Korea, Madagascar, the Maldives, Mauritius, Mozambique, Seychelles, South Africa, Sri Lanka 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 2011 and 2017 for industrial longline and purse seine vessels (data updated as of 16<sup>th</sup> November 2018). Reported scientific observer coverage for the artisanal fleets is currently zero.

<sup>1</sup> [sarah.martin@fao.org](mailto:sarah.martin@fao.org); [fabio.fiorellato@fao.org](mailto:fabio.fiorellato@fao.org); [lucia.pierre@fao.org](mailto:lucia.pierre@fao.org); [james.geehan@fao.org](mailto:james.geehan@fao.org)

<sup>2</sup> Including Mayotte due to its status as a French outermost region since January 2014

### **Reporting in electronic format**

At the SC20 in 2017, there was a recommendation for all observer data to be submitted in electronic format:

(para. 115) *Resolution 11/04 On a Regional Observer Scheme requests the submission of a report after each trip but the SC **RECOMMENDED** that on the next revision of the Resolution, this should be amended to request the submission of data in an electronic format suitable for automated data extraction (including historic data) with a given deadline so that information from multiple trips can be provided*”.

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

### **Outcomes of SC20 relevant to the ROS**

*The SC noted paper IOTC-2017-SC20-07 that provides an update on the status of implementation and reporting to the IOTC Secretariat set out by Resolution 11/04 on a Regional Observer Scheme (ROS), and Resolution 16/04 On the implementation of a pilot project in view of promoting the Regional Observer Scheme of IOTC (provided in [Appendix XXXIII](#)).*

*The SC acknowledged the financial support of the EU for the implementation of Resolution 16/04 On the implementation of a Pilot project in view of promoting the Regional observer scheme of IOTC, which is expected to deliver long-lasting improvements in the data collection and reporting of scientific observer data to the IOTC Secretariat.*

*The SC noted that there are no specific data collection standards for electronic monitoring systems, in terms of minimum coverage levels and recalled that the Commission has specifically requested the development of minimum standards for EMS through Resolution 16/04 and the need for this to be part of the Pilot Project.*

*The SC therefore **RECOMMENDED** that the EMS standards presented for purse seine fisheries (IOTC-2016-SC19-15) are adopted and **REQUESTED** that draft standards are similarly proposed for the longline fleets by CPCs currently trialling and implementing EMS on these vessels and that draft standards are also developed for gillnet fleets through the ROS Pilot Project.*

*Noting the development of a Steering Committee for the ROS Pilot Project and the few nominations received to-date (one CPC and one NGO), the SC encouraged interested parties submit their nominations to the Secretariat as soon as possible.*

*The SC **RECOMMENDED** that a data exchange be implemented between existing software formats used for the collection of observer data by CPCs (e.g., ObServe), and the IOTC Regional Observer Database, to facilitate the transfer of historical observer data to the IOTC database for future dissemination and analysis.*

*The SC noted that EMS are intended to complement human observer programs and also collect other useful information, and encouraged that different – but mutually compatible EMS systems – conform to harmonized standards in terms of installation, data collection and reporting, and **REQUESTED** that purse seine fleets or CPCs wishing to voluntarily implement EMS in purse seiners follow the guidelines described in document IOTC-2017-WPDCS13-26 and IOTC-2016-SC19-15.*

*The SC noted that the feasibility and range of data collected by Electronic Monitoring Systems varies according to type of fishing gear, and **REQUESTED** that the IOTC Secretariat, in collaboration with CPCs, develop standards for data collection and reporting applicable to different gear types.*

*Resolution 11/04 On a Regional Observer Scheme requests the submission of a report after each trip but the SC **RECOMMENDED** that on the next revision of the Resolution, this should be amended to request the submission of data in an electronic format suitable for automated data extraction (including historic data) with a given deadline so that information from multiple trips can be provided.*

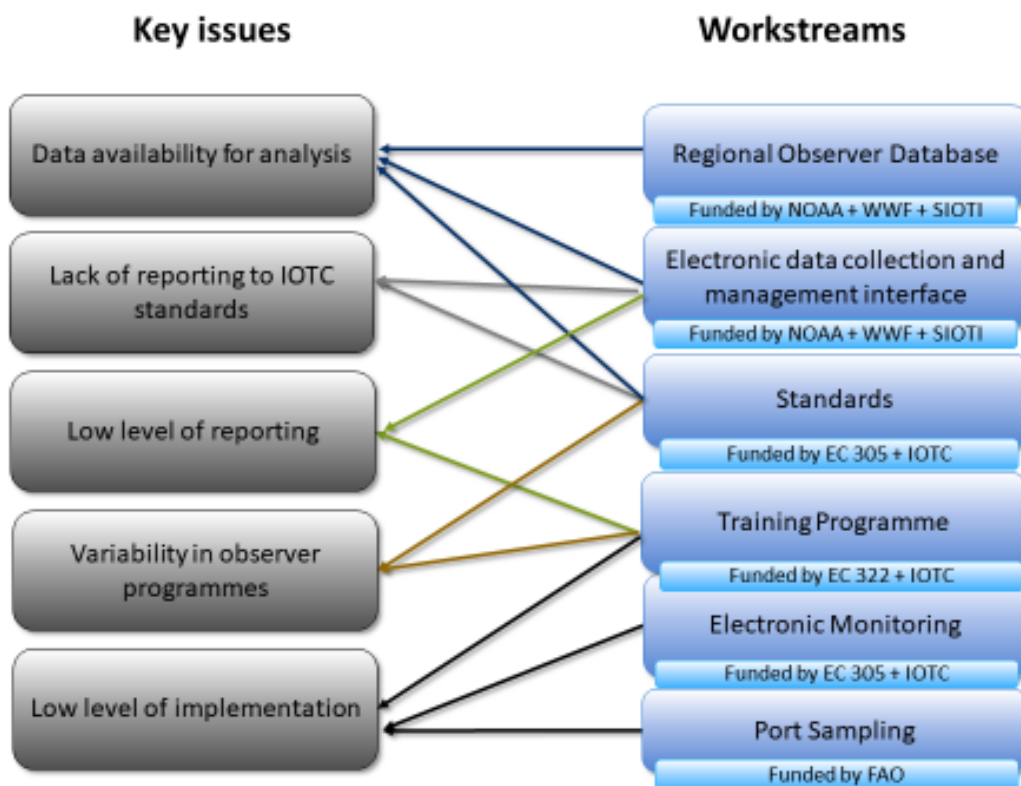
### ***Outcomes of S22 relevant to the ROS***

*The Commission AGREED to defer IOTC-2018-S22-PropD and PropJ On a Regional Observer Scheme. The proponents of these proposals attempted to merge the two proposals; however, they agreed more work needed to be done to reach a consensus and indicated that a revised proposal will be submitted to the next session of the Commission.*

## **A PILOT PROJECT FOR THE ROS**

### ***Background***

Since its origination in 2009, national implementation of the IOTC Regional Observer Scheme remains low among IOTC CPCs. 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. 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*<sup>3</sup> and following this a pilot project has been developed<sup>4</sup>. The key issues identified and workstreams that have been developed to address these are provided below in Figure 1.



**Figure 1.** Key issues and workstreams developed to address these under the Pilot Project

## **STANDARDS**

### ***Background and current status***

<sup>3</sup> <http://www.iotc.org/cmm/resolution-1604-implementation-pilot-project-view-promoting-regional-observer-scheme-iotc>

<sup>4</sup> IOTC-2017-S21-10: <http://www.iotc.org/documents/pilot-project-iotc-regional-observer-scheme-1>

A vast array of observer initiatives, with different training curricula, data collection methods and procedures have been developed across the Indian Ocean by a range of organisations implementing CPC national programmes, both prior to and since the implementation of Resolution 11/04 *On a regional observer scheme*. As a result, an assortment of data of varying quality is being collected and reported to the IOTC Secretariat, with many inconsistencies and gaps, and an overall lack of standardisation in the procedures employed by national observer schemes and of conformity with IOTC mandatory data requirements.

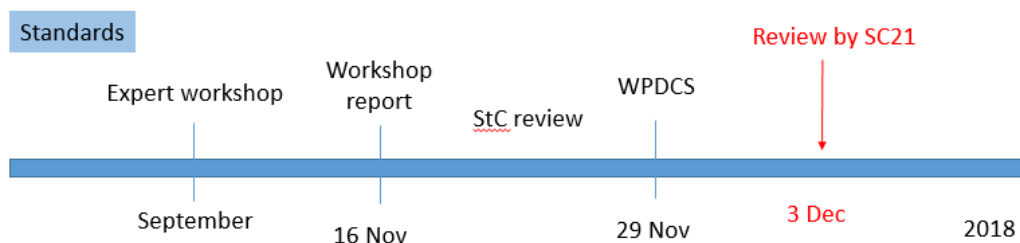
The issues associated with this variety of standards, programmes and lack of coordination have already been identified in some areas such as the southwest Indian Ocean region and resulted in increasing number of requests being addressed to the IOTC Secretariat for clarification of standards and for formal accreditation or recognition that national or sub-regional programmes are adhering to IOTC standards. However, no formal mechanism was in place through which to do this or a concrete and auditable set of standards against which programmes could be assessed.

Preliminary standards were adopted for the ROS on its establishment in 2011 where “*minimum data requirements were adopted as well as an observer report template...*” on the premise that these would be “*...reviewed and revised as necessary*”<sup>5</sup>. The data fields were reviewed and revised in 2015 by the WPEB, WPDCS and approved by the SC as interim reporting standards<sup>6</sup>. These interim data collection and reporting requirements have now been in place for trial and review for a number of years and so, as part of the Regional Observer Scheme Pilot Project, the Commission has agreed to a workstream to finalise the standards.

Funds were obtained from EC grant GCP/INT/305/EC<sup>7</sup> and a project contract developed for a consultant to comprehensively review the ‘interim’ data collection and reporting requirements. An expert workshop to review the standards was organised and held in Seychelles from 24-28 September 2018. A range of expertise were sought to support the workshop, ranging from observer programme practitioners with experience in the logistical aspects of running observer programmes, observers with substantial onboard experience, data managers familiar with handling fine scale observer data and IOTC scientists. The workshop functioned predominantly as four separate break-out groups for each major gear type (gillnet, pole and line, longline and purse seine). A fifth group was also established to review standards for the overall observer scheme by which national programmes could attain an IOTC accreditation or recognition. Outcomes of the workshop are provided in detail in papers IOTC-2018-WPDCS14-35 (proposed overall standards for the ROS and suggested revisions to reporting requirements) and IOTC-2018-WPDCS14-INF03 (proposed revisions to data collection fields). All proposed amendments have been documented with accompanying justification and rationale as reference.

### Plans and schedule

The final report from the expert review workshop will be presented to the WPDCS in November 2018 for review, and recommendations from the working party will be put forward for consideration by the SC21.



<sup>5</sup> IOTC-2011-S15-R

<sup>6</sup> “**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” IOTC-2014-SC17-R

<sup>7</sup> This grant from the EC is also funding a number of other activities to support the work of the IOTC Scientific Committee

## ELECTRONIC DATA COLLECTION AND MANAGEMENT INTERFACE

### *Background and current status*

To facilitate data reporting to IOTC and management of the data at the national level, an *electronic data collection and management interface* has been developed in conjunction with a *Regional Database* for the collation of data collected by national observer programmes. The suite of tools has been developed through funding from NOAA in collaboration with WWF-USA and is fully described in document IOTC-2017-WPDCS13-25 Rev\_1<sup>8</sup>.

The electronic data collection interface is a multi-platform offline tool providing a user-friendly, graphical interface to support observers in recording the various gear-dependent data fields (mandatory and recommended) as specified by the ROS Observer Manual, on a trip by trip basis. Once finalised, scientific data collected for a trip (or for a set of trips) can be exported and shared with the national focal point(s) based within the national fisheries institution(s) for each vessel flag country. As part of the suite of ROS tools, a fully functional Observer National Database has also been specifically developed for CPCs to collate and manage the scientific observer data and eventually submit the information marked as “mandatory for reporting” to the IOTC-hosted Regional Observer Database.

The tools have been developed based on the requirements detailed in the current version of the IOTC Regional Observer Scheme manual<sup>9</sup> and cover the main fisheries referred to in the manual (Longline, Gillnet, Pole-and-Line and Purse Seine that are  $\geq 24\text{m}$  and/or operate on the High Seas) in terms of both data collection and data reporting requirements.

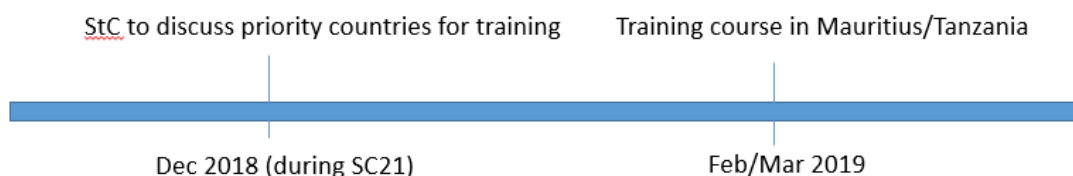
The *electronic data collection and management interface* has been successfully finalised and tested and the latest version is now publicly available<sup>10</sup>. It includes direct communication mechanisms to retrieve vessel information from the IOTC RAV (“*Record of Authorised Vessels*”), as well as from the IOTC list of accredited observers and is also directly connected to the main IOTC database to guarantee proper synchronisation of all required reference data.

Testing and training workshops have been delivered in Sri Lanka and Indonesia, who have both agreed to begin piloting the software and to submit future reports using the new e-reporting tools.

### *Plans and schedule*

Following the outcomes of the 2018 Scientific Committee in terms of the finalisation of the data fields in the standards project, the tools will be updated to reflect the final agreed data collection and reporting requirements. Further training sessions in additional countries (e.g., Mauritius and Tanzania) are also planned. Both countries have recently initiated observer programmes but do not have well-developed data collection, management and reporting tools in place. Training workshops will be scheduled for early 2019 once the ROS data fields have been finalised and the *electronic data collection and management interface* has been updated.

#### E-data collection and management interface



<sup>8</sup> <http://www.iotc.org/documents/data-collection-and-management-tools-support-regional-observer-scheme-pilot-project>

<sup>9</sup> [www.iotc.org/sites/default/files/documents/science/IOTC-2015-ROS\\_11\\_04\\_Observer\\_Manual\\_v1.2.pdf](http://www.iotc.org/sites/default/files/documents/science/IOTC-2015-ROS_11_04_Observer_Manual_v1.2.pdf).

<sup>10</sup> Windows installer: <https://tinyurl.com/yqlaqhzi> - Mac OS X installer (previous version): <https://tinyurl.com/y82w2zo5>



## REGIONAL OBSERVER DATABASE

### *Background and current status*

The *electronic data collection and management interface* (see above) mainly serves as a tool to support data collection in the field: all captured information is expected to be submitted to a national focal point that will incorporate observer data within a *National Observer Database* (also supplied as a standalone and multi-platform application). The main goal of the *National Observer Database* – besides establishing a central repository for national observer data – is also to submit information to the *Regional Observer Database*, hosted by the IOTC Secretariat, and which is expected to contain only data currently identified as mandatory for reporting.

The *National Observer Database* tool has been finalised and tested, whereas the *Regional Observer Database* – while already finalised and operational – is undergoing further enhancements to increase its integration with the other IOTC statistical database systems. Additionally, the *Regional Database* is currently in the process of being populated with historical information submitted to the IOTC Secretariat which has been provided in hard-copy or non-standard electronic formats.

The IOTC *Regional Observer Database* currently includes observer data from a range of fleets and years, covering a total of 13,573 sets for 909 trips recorded between 2005 and 2017. The processed information consists of trip reports provided in the ICCAT ST09 format (for both European longliners and purse seiners), Japanese trip reports in a custom electronic format, and various purse seiners trip reports originally provided as .doc/.pdf documents which have been input into the *Regional Observer Database* with the support of a consultant funded by SIOTI<sup>11</sup>. A breakdown of observer data that has been entered into the *Regional Observer Database* so far is provided in Table 1.

While 67% of trips submitted have now been included in the *Regional Observer Database*, the remaining information has been provided in formats for which data extraction is more difficult (e.g., custom text reports not in an official IOTC language, handwritten or letter formats) and contains less information and so capturing these data will take increasingly more resources while yielding a lower return in terms of the quantity and quality of information obtained.

**Table 1.** Contents of the IOTC *Regional Database* (November 2018) and other data submissions

Flag	Gear	Total trips reported	Total trips in IOTC Regional Database	Total sets in IOTC Regional database	Format of remaining submissions
AUS	LL	51			IOTC preliminary format (.pdf & .doc) and non-standard excel format (including EMS data)
CHN	LL	14			IOTC preliminary format (.doc) & non-standard excel format
TWN,CHN	LL	102			IOTC preliminary format (.pdf)
EU,PRT	LL	7			IOTC preliminary format (.pdf) & IOTC ad interim interim format (excel)
EU,ESP	PS	42	16	545	IOTC preliminary format (.pdf, handwritten)
EU,ESP	LL	5			IOTC preliminary format (.doc) non standard report format (.doc), ST09
EU,ITA	PS	10			non standard report format (.pdf)

<sup>11</sup> The Sustainable Indian Ocean Tuna Initiative (SIOTI) has been jointly established by key governments in the region, major tuna processors, producer organisations and their fishing vessels, with the support of WWF. This Fisheries Improvement Project is a multi-stakeholder effort, and its goal is to support improvement in the management of tuna fisheries in the Indian Ocean so that in the future, consumers can be assured that the purse-seine tuna they purchase has been harvested sustainably.

EU,FRA	LL	492	492	2838	N/A
EU,FRA	PS	275	266	5732	N/A
EU,GBR	LL	2			IOTC ad interim format (excel)
FRAT	PS	23	9	203	IOTC preliminary format (.pdf)
IDN	LL	11			IOTC ad interim format (excel)
IDN	PS	1			IOTC ad interim format (excel)
JPN	LL	70	51	2681	Non-standard (excel)
KEN	LL	1			Non-standard (excel)
KOR	LL	13			IOTC preliminary format (.doc)
KOR	PS	16	6	169	IOTC preliminary format (.doc)
MDG	LL	32			SWIOFP handwritten forms and IOTC preliminary format (.doc)
MDG	PS	6			Letters (.pdf)
MDV	PL	1			IOTC ad interim format (excel)
MUS	PS	17	17	184	IOTC preliminary format (.doc) & non-standard excel
MOZ	LL	11			Non-standard excel
SYC	PS	103	52	1221	IOTC preliminary format (.pdf)
ZAF	LL	66			IOTC preliminary format (.doc & .pdf)
LKA	LL	9			IOTC ad interim format (excel)
LKA	PS	1			IOTC forms
TZA	LL	1			IOTC preliminary format (.doc)
	<b>TOTAL</b>	<b>1374</b>	<b>909</b>	<b>13573</b>	

### ***Plans and schedule***

Following the successful adoption of the electronic data collection and management tools, we expect the *Regional Observer Database* to be populated in close to real time, with observer data collected with the support of the newly developed electronic interface and managed – at national level – through dedicated *National Observer Database* instances that in turn will enable the automated transfer of the required information<sup>12</sup> to the Regional Observer Database, thus increasing both the level of compliance and the technical capacity for participating flag states.

Furthermore, with the goal of incorporating as much historical information as possible and accounting for comprehensive and seamless data exchange between CPCs and the *Regional Observer Database*, the ROS tools are being extended with facilities to allow the import of observer data collected through well-established data collection platforms such as *ObServe* and the SWIOFP database: these tasks are currently taking place with the support of an external consultant and are scheduled for completion by February 2019.

<sup>12</sup> i.e. all the data fields marked as *mandatory for reporting* (see ROS manual)

### Regional Observer Database

Manual data entry & development of data importers completed



## ELECTRONIC MONITORING

### *Background and current status*

This activity aims to improve the quality of data collection and coverage of fisheries where there are practical difficulties placing observers on-board vessels (e.g., due to safety issues, lack of space, logistics, etc.), particularly in the case of the smaller-scale fisheries under 24m LOA which operate on the high seas and are therefore required to have observer coverage under Resolution 11/04.

During 2017 the IOTC Secretariat conducted field visits to Pakistan, Sri Lanka, and I.R. Iran to assess the logistical practicalities of implementing electronic monitoring systems (EMS) on-board small-scale longline and gillnet vessels. Sri Lanka was eventually selected for the feasibility study and a proposal was developed, in collaboration with the Sri Lanka Department of Fisheries and Aquatic Resources (DFAR) to trial EMS on-board 6 coastal longline and gillnet vessels (between 15m – 24 m LOA). Funds have been confirmed, and the IOTC Secretariat has now finalised procurement of the EMS equipment through an EC grant (GCP/INT/305/EC). Formal commencement of the feasibility study will start in early-2019, and the results of the data captured by EMS will be analysed by Sri Lanka with the support of the IOTC Secretariat. In addition, an independent evaluation (i.e., by the EMS provider selected for the study) will also be conducted for quality assurance purposes.

Other counties targeted by the ROS pilot project are also being indirectly supported by the IOTC Secretariat in terms of electronic monitoring – notably Pakistan which is collaborating with the FAO ABNJ<sup>13</sup> Project in developing a similar EMS project for gillnetters, with advice and guidance from the IOTC. In the case of I.R. Iran, constraints regarding the feasibility of importing equipment and the preference of the IFO means that improvements in ROS coverage need to be investigated through alternative means (i.e. human on-board coverage and port sampling).

### *Plans and schedule*

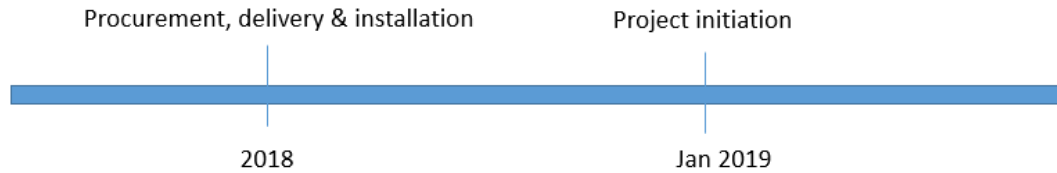
Delivery and installation of the EMS equipment are planned for the last quarter of 2018. Next steps of the work stream involve:

- i. Formal piloting of the EMS from early-2019 onwards, including monitoring and processing the results of the EMS data capture, and generating EMS based observer reports for submission to the IOTC Secretariat.
- ii. The development of common standards for installation of EMS equipment on-board small-scale vessels (e.g., minimum number of cameras, camera positioning, on-board sensors, wheel-house equipment set-up, etc.);
- iii. Development of minimum data fields to be collected by EMS (reviewed for longline fleets in paper (IOTC-2018-WPDCS14-20));
- iv. Development of a standardised reporting format for EMS data to be submitted to the IOTC Secretariat.

<sup>13</sup> Areas Beyond National Jurisdiction (<http://www.fao.org/in-action/commonoceans/en/>).



### Electronic Monitoring



## TRAINING PROGRAMME

### *Background and current status*

This project component aims to develop and implement a comprehensive and effective training programme to support the implementation of the IOTC Regional Observer Scheme. This will be achieved by addressing the major issues associated with the variability of observer programmes by providing the information, sets of tools and materials required to support CPCs establishing their national schemes.

The specific objective is to improve the capacity (knowledge, understanding, tools, skills, systems and good practices) of individual observers and national bodies to implement the Regional Observer Scheme and collect information as required by the IOTC. These national bodies may comprise fisheries ministries, research institutes or any other entity designated to run the national scientific observer programme, noting that the objectives are not to monitor compliance. This will be achieved by the development of an observer training programme and the implementation of this training and support in six selected IOTC CPCs. These have been provisionally identified as (Sri Lanka, Tanzania, I.R. Iran, Indonesia, Mauritius and Pakistan). These countries were identified based on the following criteria, including:

- Contribution to the total catches of the IOTC species and bycatch (e.g. sharks). Collectively the six countries account for over 40% of the total catches of the 16 main IOTC species.
- Importance of gillnet fisheries in each of the target countries.
- The current status of the implementation of the IOTC Regional Observer Scheme (i.e. whether the country has been assessed as either non-compliant or partially compliant in terms IOTC Resolution 11/04 On a Regional Observer Scheme).
- The level of engagement with the IOTC and Secretariat. CPCs that are in the preliminary stages of implementing observer schemes or that have requested support from the IOTC Secretariat and have shown willingness to support the project with in-kind contributions have been prioritised in order to maximise project impacts.

The project will provide intensive and sustained support to these countries to establish their national scientific observer programmes by training observer managers and trainers; establishing a dedicated observer database; strengthening data management, quality control and reporting procedures; and directly supporting observer training. Follow-up support will also be provided to trouble-shoot issues and overcome any problems identified. The project will endeavour to ensure that the programmes will continue beyond the project lifetime. The IOTC Executive Secretary is currently in the process of securing high level commitment for the support of this project in each country.

### *Plans and schedule*

A new grant from the EC has just been secured (GCP/INT/322/EC) and a tender document has been drafted and is currently under review by the Steering Committee and FAO. This will be advertised as a call for tenders in early 2019.

### Training programme



## PORT SAMPLING

### *Background and current status*

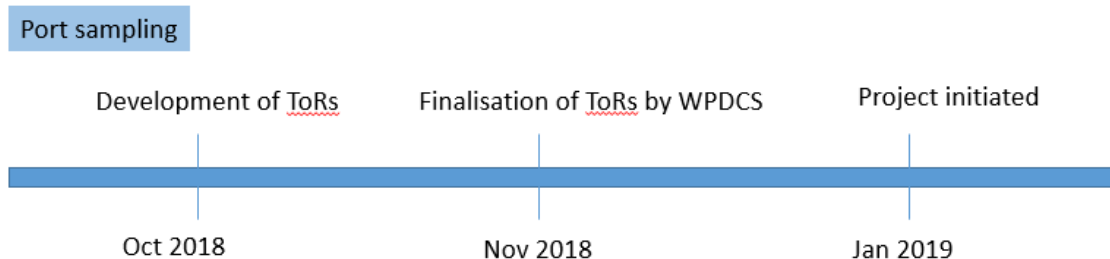
While provision has been made for artisanal fisheries in Resolution 11/04,

*“The number of the artisanal fishing vessels landings shall also be monitored at the landing place by field samplers. 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 has currently been no guidance on this aspect of the ROS to-date. Support for data collection from artisanal fisheries was ranked as a high priority activity in the Programme of Work developed by the WPDCS in 2017, specifically for assistance in the implementation of sampling activities with priority countries identified.

### *Plans and schedule*

Funds have recently been identified from FAO for a scoping study to take place to review the current situation of port sampling of the coastal artisanal fisheries of the Indian Ocean. Terms of reference for the study have been drafted for discussion and further development by WPDCS14.



## ROS STEERING COMMITTEE

Following calls by the Scientific Committee and Commission for nominations for the ROS Pilot Project Steering Committee, a group of global experts and IOTC representatives has been established<sup>14</sup>. This Committee provides higher level oversight and direction to enable efficient progress and continuation of project activities during the intersessional periods. It is involved in the development of core project activities, particularly at the initiation stage, by providing guidance on project workstreams as they are developed (e.g. new consultancies, workshop agendas and major areas of work). It reviews progress reports prepared by the Secretariat and provides guidance on all areas of activity, including any modifications/additions that may be required to progress an area of work further to improve the overall project success. To save resources and maximise efficiency, the Committee is currently taking the format of a predominantly remote-based board who meet electronically with the occasional ad hoc meeting in the margins of the major IOTC meetings.

### 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](#)

<sup>14</sup> Hilario Murua, Scientific Committee Chairperson; Kotaro Yokawa, National Research Institute of Far Seas Fisheries, Japan; Reza Shahifar, Iranian Fisheries Organisation; Franco Biagi, European Commission, Directorate General for Maritime Affairs and Fisheries (DG-MARE); Mauree Daroomalingum, SWIOFC/IO; Claire Van Der Geest, Common Oceans ABNJ Project; Paul DeBruyn, IOTC Science Manager

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

CPCs	Vessels on active list (2017)				List of registered observers submitted	Number of observer trips reported (E=electronic format, O = other format)							
	LL	PS	GN	BB		2010	2011	2012	2013	2014	2015	2016	2017
<b>MEMBERS</b>													
Australia	3	7		1	YES: 21	2(O)	1(O)	3(O)	No	2(O) + 4(E)	10(EMS) + 1(E)	28(EMS)	No
Bangladesh					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
China	81				YES: 8	1(O)	No	1(O)	1(O)	2(O)	1(O)	4(O)	4(O)
–Taiwan,China	314				YES: 54	No	No	1(O)	19(O)	18(O)	26(O)	18(O)	31(O)
Comoros					YES: 7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Eritrea	No information received				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
European Union	17	12			YES: EU,France: 64	FRA 6(E)	FRA 54(E)	FRA 92 (E)	FRA 92 (E)	FRA 116(E)	FRA 140(E)	FRA 110(E)	FRA 117(E)
		1			No: EU, Italy	N/A	N/A	N/A	N/A	N/A	ITA 6(O)	ITA 4(O)	No
	5				YES: EU,Portugal: 5	No	PRT 1(O)	PRT 1(O)	PRT 1(O)	PRT 1(O)	PRT 1(O)	PRT 1(O)	PRT 1(E)
	13 2	14			YES: EU,Spain : 9 YES: EU,UK 1	No No	No No	No No	ESP 1(O) No	ESP 2(O) No	ESP 23(E) No	ESP 15(E) No	ESP 19(O) GBR 2(E)
France (OT)				N/A	No	9(O)	7(O)	7(O)	NA	NA	NA	NA	
Guinea					N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA	NA
India					No	No	No	No	No	No	No	No	No
Indonesia	216	30			YES:9	No	No	No	No	5(E)	No	7(E)	No
Iran, Isl. Rep. of		3	1232		No	No	No	No	No	No	No	No	No

Japan	39	2			YES: 19	pending	pending	pending	pending	pending	pending	pending	pending
Kenya	1				YES: 5	No	N/A	N/A	N/A	N/A	N/A	1(E)	No
Korea, Rep. of	15	3			YES: 40	2(O)	No	2(O)	3(O)	3(O)	4(O)	11(O)	4(O)
Madagascar	7				YES: 7	No	No	18(O)	7+1(O)	2+5(O)	No	No	No
Malaysia	19				No	No	No	No	No	No	No	No	No
Maldives	44			356	YES: 4	No	No	No	No	No	No	No	1(E) <sup>15</sup>
Mauritius	5	2			YES: 8	No	No	No	No	No	5(O)	8(O+E)	4(O)
Mozambique	2				YES: 11	No	No	1(O)	N/A	No	7(E)	3(E)	2(E)
Oman	1				No	No	No	No	No	No	No	No	No
Pakistan					No	No	No	No	No	No	No	No	No
Philippines	2				No	No	No	No	No	No	N/A	N/A	No
Seychelles	58	13			YES: 78	No	No	No	No	6(O)	46(O)	48(O)	3(O)
Sierra Leone	No information received				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Somalia	No information received				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

<sup>15</sup> The IOTC Secretariat is working with the Maldives to resolve issues regarding the data submission before this can be added to the Regional Database and coverage rates calculated

South Africa	14			3	YES: 25	pending	pending	pending	pending	pending	pending	pending	pending
Sri Lanka	2		1372		No	No	No	No	No	2(O)	2(O)	No	2(O)
Sudan	No information received				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tanzania, United Rep.of					No	No	No	No	No	No	No	1(O)	No
Thailand		1			YES: 18	No	No	No	No	No	No	No	No
United Kingdom (OT)					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Yemen	No information received				No	No	No	No	No	No	No	No	No
<b>COOPERATING NON-CONTRACTING PARTIES</b>													
Liberia					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Senegal					N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



## APPENDIX B

### ESTIMATED OBSERVER COVERAGE FOR LONGLINE VESSELS

MEMBERS	Total effort (no.hooks)							Observed effort (no. hooks)							Coverage rate							
	2011	2012	2013	2014	2015	2016	2017	2011	2012	2013	2014	2015	2016	2017	2011	2012	2013	2014	2015	2016	2017	
Australia****	359,832	672,398	609,995	449,387	430,015	429,288	532,396	6232	89490	0	41581	28729	49875	0	1.73%	13.31%	0.00%	9.25%	6.68%	11.62%	0.00%	
China	4,136,710	11,295,050	23,439,470	19,212,540	26,616,190	24,107,147	33,070,839	0	185742	216640	178413	105201	1206739	1584934	0.00%	1.64%	0.92%	0.93%	0.40%	5.01%	4.79%	
–Taiwan,China	182,770,834	170,633,711	195,560,569	185,485,353	167,958,929	205,030,919	206,426,248	0	121675	4344678	4004870	3650886	3461035	6412309	0.00%	0.07%	2.22%	2.16%	2.17%	1.69%	3.11%	
Comoros																						
Eritrea																						
EU - France	3,769,250	3,367,941	4,042,077	3,573,448	3,533,544	3,710,089	3,067,200	257830	630313	619619	516645	527459	566024	534686	6.84%	18.72%	15.33%	14.46%	14.93%	15.26%	17.43%	
EU - Portugal***	903,600	685,206	1,558,000	1,496,715	1,398,400	1,673,150	1,624,100	140317	73685	127580	90894	156536	152385	128201	15.53%	10.75%	8.19%	6.07%	11.19%	9.11%	7.89%	
EU - Spain	3,758,516	4,673,785	6,262,822	6,262,823	6,262,824	6,262,825	6,262,826	0	0	0	224900	0	0	401116	0.00%	0.00%	0.00%	3.59%	0.00%	0.00%	6.40%	
EU - UK	92,300	71,400	55,000	84,700	388,300	271,700	500,300							38688	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	7.73%	
France(OT)	93,718	120,000	120,000												0.00%	0.00%	0.00%					
Guinea																						
India	85,406,677	63,791,723	66,716,403	60,553,908	17,558,762	24,363,545	17,772,131								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Indonesia	143,316,878	205,786,515	197,588,017	201,070,860	201,468,158	273,516,396	270,531,213	0	0	0	195,780	0	808,600	0	0.00%	0.00%	0.00%	0.10%	0.00%	0.30%	0.00%	
Iran, Isl. Rep. of																						
Japan*	28,854,054	31,460,928	29,125,098	31,780,765	28,954,672	27,002,829	31,703,028															
Kenya	0	0	0	0	0	0	0	0	0	0	0	0	67240	0								
Korea, Rep. of	5,862,681	4,350,708	5,337,464	6,740,247	6,739,605	5,044,105	6,540,506	0	282656	546927	213225	313662	377864	0	0.00%	6.50%	10.25%	3.16%	4.65%	7.49%	0.00%	
Madagascar**	374,307	348,653	326,494	355,138	357,897	330,541	178,890	0	21582	62400	0	0	0	0	0.00%	6.19%	19.11%	0.00%	0.00%	0.00%	0.00%	
Malaysia	13,175,632	4,008,683	4,220,794	3,588,653	5,017,243	6,232,414	8,774,959								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	1,957,257											0.00%	0.00%	0.00%	0.00%	
Mauritius	252,480	182,300	150,560	105,120	195,850	1,214,910	2,750,380								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Mozambique	383,323	383,323		7,177	267,387	230,296	265,808	0	1100	0		42715	29600	24354	0.00%	0.29%		0.00%	15.97%	12.85%	9.16%	
Oman, Sultanate of	16,042,822	6,366,785	2,608,008	1,465,331	552,649	393,258	341,402								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Pakistan																						
Philippines	16,042,822	6,366,785	2,608,008	1,465,331	552,649	393,258	341,402								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Seychelles	3,080,822	3,400,912	3,876,173	21,366,998	22,778,433	35,608,822	35,466,910								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Sierra Leone																						
Somalia																						
Sri Lanka		112,187,187	140,186,312	145,165,259	50,385,870	35,216,695	23,252,938	0	0	0	550	46430	0	36294	0.00%	0.00%	0.00%	0.00%	0.09%	0.00%	0.16%	
South Africa*	1,219,015	1,176,125	959,285	565,705	661,378	616,518	0															
Sudan																						
Tanzania, United																						
Rep.of	2,893,111	4,313,604	3,468,197	3,681,606	1,648,649	2,112,744	0	0	0	0	0	0	757	0	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%		
Thailand	1,041,600	1,061,363	784,881	1,821,217	1,121,073	0	0								0.00%	0.00%	0.00%	0.00%	0.00%			
United Kingdom																						
Yemen																						
COOPERATING NON CONTRACTING PARTIES																						
Bangladesh																						
Liberia																						
Senegal																						
Other	7,854,251	10,832,417	5,005,660	9,093,754	9,822,626	7,034,619	0											0.00%	0.00%	0.00%	0.00%	
<b>Total</b>	<b>521,685,235</b>	<b>647,537,503</b>	<b>697,663,875</b>	<b>708,432,751</b>	<b>555,349,928</b>	<b>663,050,621</b>	<b>651,360,733</b>	<b>404,379</b>	<b>1,406,243</b>	<b>5,917,844</b>	<b>6,018,311</b>	<b>5,423,071</b>	<b>7,271,572</b>	<b>9,712,035</b>	<b>0.08%</b>	<b>0.22%</b>	<b>0.85%</b>	<b>0.85%</b>	<b>0.98%</b>	<b>1.10%</b>	<b>1.49%</b>	

\* Coverage for Japan and South Africa will be calculated once agreement has been reached regarding historic data submissions for vessels under Joint Venture Agreement. While Resolution 18/10 provides specific advice about allocation of catch, effort and observer coverage from October 2018, the allocation of data submitted prior to this time remains unclear.

\*\*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; \*\*\*\*Coverage for Australia for 2015 & 2016 includes EMS data

**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

MEMBERS	Total effort (no. fishing days)							Observed effort (no. fishing days)							Coverage rate							
	2011	2012	2013	2014	2015	2016	2017	2011	2012	2013	2014	2015	2016	2017	2011	2012	2013	2014	2015	2016	2017	
Australia***	130	148	133	113	148	84	69								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
China																						
–Taiwan,China																						
Comoros																						
Eritrea																						
EU - France	1947	1795	2115	3467	3168	3152	3091	65	112	145	584	703	854	806	3.34%	6.24%	6.86%	16.84%	22.19%	27.09%	26.08%	
EU - Italy					284							210	147									
EU - Portugal																						
EU - Spain*	3555	3684	3899	4238	3838	3933	3242		0	48	86	338	344		0.00%	0.00%	1.23%	2.03%	8.81%	8.75%	pending	
EU - UK																						
France (OT)	1167	1257	1276	0	0	0	0	252	188	171	0	0	0	0	21.59%	14.95%	13.40%					
Guinea																						
India																						
Indonesia																						
Iran, Isl. Rep. of	139	168	172	179	164	137	74								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Japan	95	72	36	35	86	86	47								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Kenya																						
Korea, Rep. of	0	98	369	539	460	760	565	0	0	33	45	35	232	121		0.00%	8.93%	8.34%	7.61%	30.51%	21.42%	
Madagascar**											(14)	(118)										
Malaysia																						
Maldives																						
Mauritius	0	0	27	264	304	332	213				0	111	148	44			0.00%	0.00%	36.53%	44.55%	20.63%	
Mozambique																						
Oman, Sultanate of																						
Pakistan																						
Philippines																						
Seychelles	2166	1969	1670	1947	3012	4087	3269	0	0	0	271	1404	1519	81	0.00%	0.00%	0.00%	13.92%	46.61%	37.16%	2.48%	
Sierra Leone																						
Somalia																						
South Africa																						
Sri Lanka			64								12						0.00%					
Sudan																						
Tanzania, United Rep. of																						
Thailand						6	11														0.00%	0.00%
United Kingdom																						
Yemen																						
<b>COOPERATING NON CONTRACTING PARTIES</b>																						
Bangladesh																						
Liberia																						
Senegal																						
Other																						
<b>Total</b>	<b>9,199</b>	<b>9,192</b>	<b>9,761</b>	<b>10,782</b>	<b>11,463</b>	<b>12,578</b>	<b>10,582</b>	<b>317</b>	<b>300</b>	<b>397</b>	<b>998</b>	<b>2,801</b>	<b>3,244</b>	<b>1,052</b>	<b>3.45%</b>	<b>3.26%</b>	<b>4.07%</b>	<b>9.26%</b>	<b>24.43%</b>	<b>25.79%</b>	<b>9.94%</b>	

\*Number of fishing days observed not available for EU,Spain (2015 & 2017), so observed and total effort are reported in sets for 2015 (as per IOTC-2016-WPDCS12-INF04)

\*\*Brackets indicate observers on foreign vessels (observer data provided by MDG for EU,ESP, EU,FRA and SYC)

\*\*\*The Australian purse seine fleet targets southern bluefin tuna and submits observer data to CCSBT

**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)