UPDATE ON THE IMPLEMENTATION OF THE IOTC REGIONAL OBSERVER SCHEME

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PURPOSE

To inform the WPEB15 of the status of implementation and reporting to the IOTC Secretariat of the Regional Observer Scheme (ROS) set out by Resolution 11/04 *on a Regional Observer* Scheme at the 15th Session of the Commission in 2011.

BACKGROUND

Fisheries observer data is 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Session of the Commission (S13), the Commission adopted Resolution 09/04 *on a Regional Observer Scheme*, which was superseded in 2010 by Resolution 10/04, and again in 2011 by Resolution 11/04.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".*

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 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 CURRENT STATUS OF IMPLEMENTATION AND REPORTING

Implementation of the observer scheme

As of 19th August 2019, fifteen CPCs (Australia, China (including Taiwan,China), Comoros, EU (France[2], 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. A total of 396 observers are currently registered as active.

At the same day, data for a total of 1410 trips have been reported to the IOTC Secretariat (in different formats) 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 between 2010 and 2018 by all IOTC CPCs. Appendix B and Appendix C provide an estimation of the level of effort covered by observers between 2012 and 2018 for industrial longline and purse seine vessels (data updated as of 19th August 2019).

Reported scientific observer coverage for the artisanal fleets is currently zero.

Reporting in electronic format

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

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, Mauritius and Sri Lanka (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. 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.

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 WPEB, WPDCS[3] and SC[4] in 2016, circulated to all Members for comment in March 2017 and was approved by the Commission in May 2017[5].

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.

Outcomes of SC21 relevant to the ROS

The SC **RECOMMENDED** the development of minimum EMS standards for the IOTC (including, for example, cameras), NOTED that the WCPFC are currently drafting standards on EM and ACKNOWLEDGED that it would be pertinent for the IOTC to follow this process and utilise the outcomes where relevant.

The SC **RECOMMENDED** that the ROS *Minimum Standard Data Fields* in Appendix 6a of its report are adopted by the Commission.

The SC NOTED the lack of data for small-scale fisheries that are currently unable to deploy human observers and REQUESTED the WPDCS to continue evaluating the validity of data collection protocols alternative to onboard human observers, such as the use of crew-as-observers (i.e. self-sampling), electronic monitoring (e.g. cameras) and port sampling, as well as a combinations of these, as potential alternatives to onboard human observer coverage for the collection of the minimum standard data fields for small-scale fisheries.

The SC ACKNOWLEDGED that the results of the ROS should inform this evaluation.

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

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

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

For the purpose of improving the voluntary collection of information on the post release mortality of discarded species of special interest, the SC CONSIDERED and **ENDORSED** the list of species considered of special interest as proposed by the expert workshop and reported in Appendix VIII of the WPDCS14 report, NOTING that the SC agreed to simplify the list according to Appendix 6b

Also, NOTING concerns with the overlap between scientific, compliance and legal issues in relation to the *draft programme standards*, the SC **RECOMMENDED** that the Commission form an ad hoc technical committee representing the breadth of mandates to specifically address this issue to ensure the relevant expertise is available to discuss scientific and operational aspects of the *draft programme standards* to be presented to the SC and CC before it is provided to the Commission for endorsement.

The SC NOTED the draft Programme Standards and Guidelines developed by the ROS Expert Workshop and that there was insufficient time during the meeting as well as a lack of appropriate expertise to fully review these standards.

Therefore, the SC REQUESTED that the IOTC Secretariat work with CPCs and the Compliance Committee to consolidate feedback on scientific and operational aspects of the draft programme standards.

Outcomes of S23 relevant to the ROS

IOTC–2019–S23–PropJ On a regional observer scheme. There was no consensus regarding key elements of this proposal such as the level of observer coverage. However, there was support for other aspects of the proposal, particularly electronic monitoring, and the proponents were encouraged to continue discussing and revising the text for future presentation to the Commission.

Consideration of the IOTC Regional Observer Scheme Draft Standards

(Para 118) The Commission **NOTED** document IOTC-2019-S23-10_Rev1 containing draft standards for an IOTC Regional Observer Scheme.

(Para 119) The Commission **NOTED** that several CPCs had provided the Secretariat with comments which were used to develop a revised document, although some CPCs expressed their concern that not all their comments had been taken into consideration.

(Para 120) The Commission **RECOGNISED** the need to have standards for the IOTC observer scheme, but that the standards for similar schemes being implemented by other tuna RFMOs should also be acceptable to IOTC. The Commission **AGREED** that the standards required for vessels operating under the Western Central Pacific Fisheries Commission (WCPFC) Regional Observer Programme meet IOTC standards, and therefore those CPCs whose observer programs have been already accredited by WCPFC are exempted from the application of the IOTC standards.

(Para 121) The Commission **ENDORSED** the IOTC Regional Observer Scheme (ROS) standards in principle in order for the Secretariat to implement the ROS, on the understanding that further comments can be made, and that the standards will be reviewed based on these comments and other feedback made during the implementation phase.

ROS Pilot Project: progress update

1. Observer training programme and minimum standards

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

Minimum standards for the ROS

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 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.

During 2018, funds were obtained and a consultancy was developed for an expert to comprehensively review the *ad-interim* data collection and reporting requirements and set out the minimum standard for the scheme in a clear and concise format. A full project report was developed that includes a revised set of data fields and programme standard, and an expert consultation workshop – involving a working group of selected experts from each of the main fleets (longline, purse seine, pole and line, gillnet and handline) from the eastern and western Indian Ocean as well as from other oceans – took place in Seychelles from 24-28 September 2018.

The workshop specific objectives focused on the revision of proposed ROS standards, data collection fields and reporting requirements, with participants that were invited to review the relevance and practical applicability of existing and proposed standards, data collection fields and reporting requirements.

The final set of standards recommended by this expert group was then presented to the WPDCS14 for review and to the SC21 for approval, and eventually triggered a number of significant updates on the already developed ROS e-tools, that are in the process of being finalized.

ROS training package

A project to develop a complete training package for the IOTC ROS has been awarded to CapMarine. This is based on the finalised standards and include training materials for observer coordinators as well as observers. The newly developed tools and materials will be implemented in six counties (Sri Lanka, Tanzania, Kenya, Indonesia, Malaysia and another country to be finalised). The IOTC Executive Secretary has secured high level commitment for the support of this project in each country.

2. Electronic data collection and reporting

The ROS e-collection interface has been updated (May – July 2019) to reflect the changes in data collection and reporting requirements emerging from the *ROS expert consultation workshop* held in Victoria, Seychelles at the end of September 2018 and endorsed by the SC21.

The revised interface is currently being tested and fixed: it still is provided as a standalone, multi-platform application that does not require Internet connectivity to work, although it supports direct communication mechanisms to retrieve vessel information from the IOTC RAV ("*Record of Authorised Vessels*") and is linked to the main IOTC Statistics database to constantly and seamlessly synchronize all reference data.

The last version of the e-collection interface now mandatorily expects end-users to authenticate against the list of currently accredited IOTC observers: for this reason, CPCs shall ensure that an updated list of their accredited observers is timely submitted to the IOTC Secretariat.

Training workshops specifically targeting the previous data collection and reporting requirements, including the usage of the ROS e-tools, were successfully delivered to Sri Lanka and Indonesia during late 2017 and 2018: both countries have started trialling the software and agreed about submitting ROS data using the e-tools in the future: as of today, Sri Lanka successfully provided two LL trip reports compiled through the ROS e-collection interface (first version) and more reports are expected to come during 2019 as soon as the new ROS e-collection interface is released.

Additional training, this time targeting the current (final) data collection and reporting requirements, was delivered to Mauritius (April 2019) and is in the process of being delivered again to Sri Lanka in late September 2019.

Following the delivery of the ROS training package to the six selected CPCs, further training for the adoption of the ROS e-tools is expected to be provided during late 2019 and 2020.

3. Observer database development and historic data collation

The ROS *e-collection tool* (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 / optional for reporting*" (according to the revised definitions following the ROS expert consultation workshop).

The ROS National Database and Regional Database have been finalised and tested: the Regional Database is now integrated with the IOTC statistical systems and contains a collation of all ROS data submitted so far in a convenient (from a data extraction perspective) electronic format – including (but not limited to) the information entered through the various version of the ROS e-collection interface.

Currently, the Regional Database includes observer data reported by a number of fleets during different time periods, covering a total of 15828 sets for 1053 trips recorded between 2005 and 2018. The processed information consists of trip reports provided in the ICCAT ST09 format (for both European longliners / purse seiners and Seychellois purse seiners), Japanese trip reports in a custom electronic format, ROS trip reports entered through the ROS e-tools and various purse seiners trip reports (for Rep. of Korea, Mauritius and Seychelles) originally provided as Word / PDF documents and digitized with the support of a consultant funded by SIOTI[6].

A breakdown of all currently available observer data in the Regional Database is as follows (data as of 19th August 2019):

Fleet	Gear	Num. trips
EU,ESP	PS	16
EU,FRA	LL	537
EU,FRA	PS	318
JPN	LL	51
KOR*	PS	6
LKA	LL	2
MUS*	PS	17
SYC*	PS	106
Total		1053

Number of available observer trips by fleet and gear
(fleets marked with * include data entered in the ROS Regional Database with support from SIOTI)

[6] 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 FIP 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.

Year	Number of trips	
	PS	LL
2018	60	48
2017	121	61
2016	117	59
2015	59	98
2014	49	87
2013	11	90
2012	7	95
2011	3	42
2010	0	6
2009	3	4
2008	13	0
2007	11	0
2006	8	0
2005	1	0
Total	463	590
	1053	

Number of available observer trips by year and gear

Year	Number of sets	
	PS	LL
2018	1238	329
2017	2663	377
2016	2953	896
2015	1099	907
2014	992	993
2013	206	896
2012	156	895
2011	95	127
2009	137	0
2008	307	0
2007	370	0
2006	168	0
2005	24	0
Total	10408	5420
	15828	

Number of available observed sets by year and gear

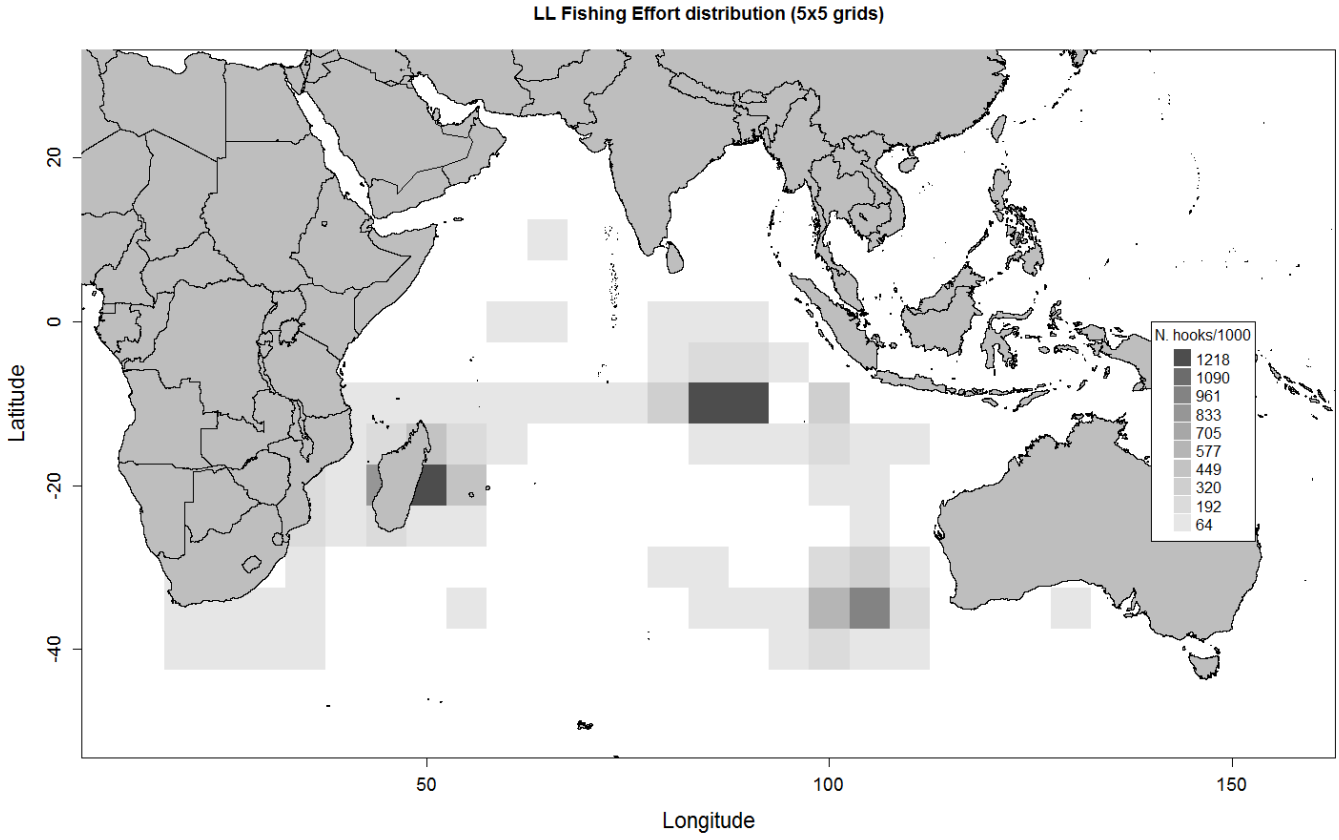

Figure 1. Distribution (5 x 5 degrees girds) of observed fishing effort reported for longline fleets (total number of hooks observed between 2009 and 2018).

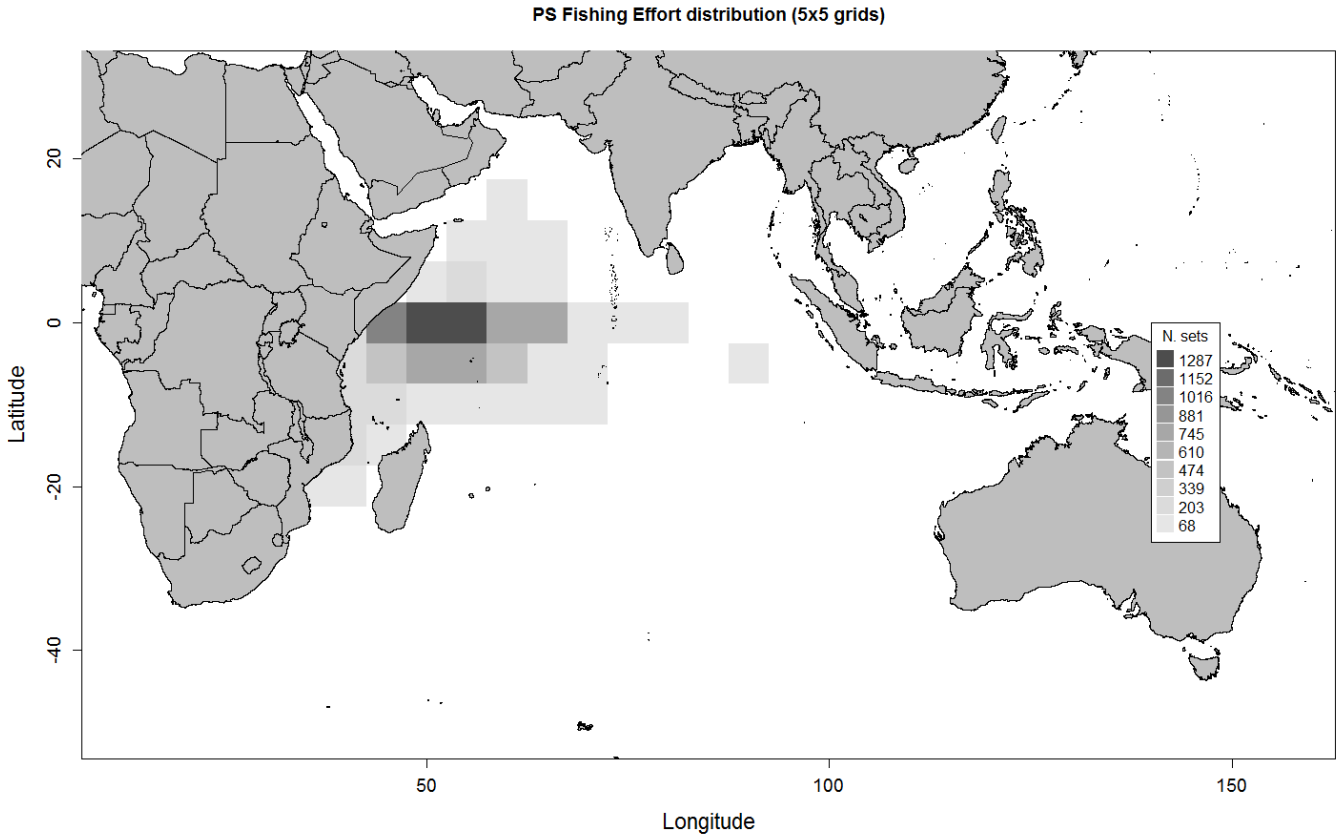

Figure 2. Distribution (5 x 5 degrees girds) of observed fishing effort reported for purse seine fleets (total number of sets observed between 2005 and 2018).

In the medium-to-long term, the Regional Database is expected to be populated with *live* observer data collected through the ROS e-collection interface and managed – at national level – through dedicated National Database instances (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 account for comprehensive data exchange between CPCs and the ROS Regional Database, the ROS tools are being extended with facilities to allow the import of observer data collected through third-party, well established data collection platforms such as ObServe and the SWIOFP database. This task is currently ongoing, and is expected to be completed – with support from external consultants – by April 2020.

Access to a set of preliminary dissemination interfaces for all data currently within the ROS Regional Database is available at the following URLs:

- http://ros-browser.iotc.org/v2/efforts/
- http://ros-browser.iotc.org/v2/catches/
- http://ros-browser.iotc.org/v2/coverage/

Temporary user credentials for access to the interfaces are `ros` / `finisterre` (username / password). Users are invited to experiment with the dissemination interfaces above while keeping in mind that the information presented is preliminary, incomplete and subject to changes without prior notice.

For this reason, all data extracted from the ROS Regional Database should be used carefully, with prior consent from the IOTC Secretariat before its further dissemination to third parties.

4. Electronic monitoring system

This activity aims at improving the quality of data collection and coverage of fisheries where there are practical difficulties placing scientific observers onboard vessels (e.g., due to safety issues, lack of space, logistics, etc.), particularly in the case of the smaller-scale fisheries under 24 m LOA.

Since 2017, the IOTC Secretariat conducted field visits to I.R. Iran, Pakistan and Sri Lanka, to assess the logistical practicalities of implementing EMS onboard coastal gillnet (and gillnet-longline) vessels.

A proposal was subsequently developed in collaboration with the Sri Lanka Ministry of Fisheries and Aquatic Resources Development (MFARD) to trial EMS on-board around 6 coastal longline/gillnet vessels (between 15m – 24 m LOA): funding for this activity has been confirmed, procurement of the EMS equipment has been completed and a mission to Sri Lanka is expected to be undertaken by the IOTC Secretariat in collaboration with the consortium responsible for the actual installation of the EMS hardware onboard (as well as the training of designated observers) during September 2019.

5. Observation in-port

There is currently no funding available for this project component and as such it has not yet been fully developed.

ROS Steering Committee

Following calls by the Scientific Committee and Commission for nominations for the ROS Pilot Project Steering Committee, a group of experts and representatives of the main fleets has been agreed. This Committee will provide higher level oversight and direction to enable efficient progress and continuation of project activities during the intersessional periods. It will be 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 will review progress reports prepared by the Secretariat and provide 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 will take the format of a predominantly remote-based board who will meet electronically with the occasional ad hoc meeting in the margins of the IOTC meetings.

IOTC Species ID guides

Table 1. Summary of priority languages and species groups for translation and printing as identified by the SC16 and SC17 (1=high). Green = translation and printing complete. Yellow = in progress.

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

Hindi	3

Progress to date:

- 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[7] (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)
- 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 and is complete, typesetting has been finalised and cards are ready to print (DGCF and IOTC)
- Translation of turtle ID guides into Spanish is complete and cards are ready for printing (IOSEA & 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 card are ready for printing (IOTC)
- Translation of tuna and tuna-like species ID guides into Sinhala and Tamil has been completed and cards have been printed (NARA, DFAR and FAO)
- Translation of all IOTC species ID guides into Portuguese has been completed and cards are ready for typesetting (IIP and IPMA)
- Translation and printing of all IOTC species ID guides into Maldivian is underway (Ministry of Fisheries and Agriculture, Maldives)

While a number of guides are now ready for printing and funding has been obtained for these, two administrative hurdles have arisen which have delayed progress. One is the agreement with the illustrators which is taking some time to resolve and the second is the need for all future publications (including language translations) to proceed through the 12-step FAO approval process which has also caused sever delays with some cards taking >8 months to progress through the system. Nevertheless, the Secretariat is seeking solutions to these issues and, once resolved, progress should be rapid.

Cetacean ID guides

An Indian Ocean cetacean ID guide has now been developed with inputs from an expert group of WPEB scientists. This has been translated into ten languages as requested by the WPEB13 (Arabic, French, Hindi, Indonesian, Persian, Sinhalese, Spanish, Swahili, Tamil and Urdu) which are currently undergoing typesetting. The guides will be published on the IOTC website as soon as they have reached the end of the 12-step FAO publications approval process and the Marine Mammal Commission has provided funding for the printing of these guides.

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

[7] https://www.iotc.org/science/species-identification-cards

APPENDIX A
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CPCs		Vessels on active list (2018)					Accredited observers		Number of observer reports provided																						Totals
		LL	PS	GN	BB	Tot	Number	Last update	2010		2011		2012		2013		2014		2015		2016		2017		2018		
									O	E	O	E	O	E	O	E	O	E	O	E	O	E	O	E	O	E	
MEMBERS																															
Australia		4	6		1	11	21		2		1		3				2	4		11		28					51
China	CHN	85				85	5	2019-07	1				1		1		2		1		4		4		5		19
	TWN, CHN	286				286	54						1		19		18		26		18		20		5		107
Comoros						0	7		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A
Eritrea		No information received																													0
European Union	FRA	18	12			30	64		6		12		17			89		94		109		106		119		110	662
	ITA					0			N/A		N/A		N/A		N/A		N/A		6		4				10		20
	PRT	5				5	5				1		1		1		1		1		1			1		1	8
	ESP	14	14			28	9								1		2			23		15		2	3		46
	GBR	2				2	1																	2			2
France (OT)						0	N/A	N/A			9		7		7		N/A		N/A		N/A		N/A		N/A		23
Guinea						0	N/A	N/A	N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A
India		4				4																					0
Indonesia		258	65			323	9											5				7					12
Iran, Isl. Rep. of			5	1215		1220																					0
Japan		45	2			47	19			8		11		10		6		14		12		9					70
Kenya		3				3	5				N/A		N/A		N/A		N/A		N/A			1					1
Korea, Rep. of		12	2			14	40		2				2		3		3		4		11		4				29
Madagascar		5				5	7						18		7		7		5								37
Malaysia		19				19																					0

CPCs	Vessels on active list (2018)					Accredited observers		Number of observer reports provided																				Totals
	LL	PS	GN	BB	Tot	Number	Last update	2010		2011		2012		2013		2014		2015		2016		2017		2018				
								O	E	O	E	O	E	O	E	O	E	O	E	O	E	O	E	O	E			
Maldives	33			358	391	4																	1		2			3
Mauritius	8	2			10	6	2019-04											5		8		4		9				26
Mozambique	2				2	11						1		N/A					7		3		2					13
Oman					0																			N/A				0
Pakistan					0																							0
Philippines					0													N/A		N/A		N/A		N/A				0
Seychelles	70	13			83	78										6		46		47	39	3	64					205
Sierra Leone	No information received																											0
Somalia	No information received																											0
South Africa	20			4	24	33	2019-08			12		10		13		10		16		5		8						74
Sri Lanka	30		1306		1336											2		2							2			6
Sudan	No information received																											0
Tanzania, United Rep.of					0															1		N/A		N/A				1
Thailand					0	18																		N/A				0
United Kingdom (OT)					0	N/A	N/A	N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A				N/A
Yemen	No information received																											0
COOPERATING NON-CONTRACTING PARTIES																												
Bangladesh					0	N/A	N/A	N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A				N/A
Liberia					0	N/A	N/A	N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A				N/A
Senegal					0	N/A	N/A	N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A				N/A
																												1410

Year = year in which the observed trip began (E: data reported in processable electronic format, O: data reported in non-processable format)
Reports from Madagascar include observers onboard foreign vessels
Reporting status for Japan and South Africa (2018) will be provided once observer data is available and in accordance to provisions from Resolution 18/10 (superseded by Resolution 19/07, yet to enter in force)

	Not applicable (N/A) or information not received
	Data provided according to standards
	Data only partially provided according to standards
	Data not provided

APPENDIX B: ESTIMATED OBSERVER COVERAGE FOR LONGLINE VESSELS

	Total effort (no.hooks)							Observed effort (no. hooks)							Coverage rate						
MEMBERS	2012	2013	2014	2015	2016	2017	2018	2012	2013	2014	2015	2016	2017	2018	2012	2013	2014	2015	2016	2017	2018
Australia****	672,398	609,995	449,387	430,015	429,288	532,396	411,101	89,490		41,581	28,729	49,875	62,126		13.31%	0.00%	9.25%	6.68%	11.62%	11.67%	0.00%
China	11,295,050	23,439,470	19,212,540	26,616,190	24,107,147	33,070,839	32,987,773	185,742	216,640	178,413	105,201	1,206,739	1,584,934	1,681,983	1.64%	0.92%	0.93%	0.40%	5.01%	4.79%	5.10%
–Taiwan,China	170,633,711	195,560,569	185,485,353	167,958,929	205,030,919	206,346,121	202,839,072	121,675	4,344,678	4,004,870	3,650,886	3,461,035	6,412,309	1,294,779	0.07%	2.22%	2.16%	2.17%	1.69%	3.11%	0.64%
Comoros																					
Eritrea																					
EU - France	3,367,941	4,042,077	3,573,448	3,533,544	3,710,089	3,067,200	3,067,200	630,313	619,619	516,645	519,661	566,024	534,686	369,011	18.72%	15.33%	14.46%	14.71%	15.26%	17.43%	12.03%
EU - Portugal***	685,206	1,558,000	1,496,715	1,398,400	1,673,150	1,624,100	895,800	73,685	127,580	90,894	156,536	152,385	128,201	138,245	10.75%	8.19%	6.07%	11.19%	9.11%	7.89%	15.43%
EU - Spain	4,673,785	6,262,822	6,107,814	4,508,559	4,427,429	3,579,479	2,821,579			224,900			401,116	137,877	0.00%	0.00%	3.68%	0.00%	0.00%	11.21%	4.89%
EU - UK	71,400	55,000	84,700	388,300	271,700	500,300	512,000						38,688		0.00%	0.00%	0.00%	0.00%	0.00%	7.73%	0.00%
France(OT)	120,000	120,000													0.00%	0.00%					
Guinea																					
India	63,791,723	66,716,403	60,553,908	17,558,762	24,363,545	25,744,139	42,043,773								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Indonesia	186,264,730	150,798,219	95,497,053	100,472,150	50,792,198	47,765,407	45,866,549			195,780		808,600	228,970		0.00%	0.00%	0.21%	0.00%	1.59%	0.48%	0.00%
Iran, Isl. Rep. of																					
Japan*	31,460,928	29,125,098	31,780,765	28,954,672	27,038,829	23,344,427	22,158,326	1,487,299	1,387,765	2,773,266	1,528,028	1,548,100			Pending						
Kenya												67,240									
Korea, Rep. of	4,289,655	5,428,935	5,998,722	7,364,599	5,862,099	6,462,887	6,052,850	282,656	546,927	213,225	313,662	377,864	251,355		6.59%	10.07%	3.55%	4.26%	6.45%	3.89%	0.00%
Madagascar**	348,653	326,494	355,138	357,897	330,541	178,890	141,917	21,582	62,400		5,300				6.19%	19.11%	0.00%	1.48%	0.00%	0.00%	0.00%
Malaysia	4,008,683	4,220,794	3,588,653	5,017,243	6,232,414	8,852,314	10,147,579								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	1,106,976	609,598									0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Mauritius	182,300	150,560	105,120	195,850	763,618	1,653,981	1,445,477								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Mozambique	383,323		7,177	267,387	230,296	265,808	202,281	1,100			42,715	29,600	24,354		0.29%		0.00%	15.97%	12.85%	9.16%	0.00%
Oman, Sultanate of	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%	
Pakistan																					
Philippines	7,317,740	3,759,626	2,016,101												0.00%	0.00%	0.00%				
Seychelles	3,400,912	3,876,173	21,366,998	22,778,433	35,608,822	38,476,480	39,867,357								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sierra Leone																					
Somalia																					
Sri Lanka	140,125,605	145,102,396	50,364,051	35,201,444	23,242,869	40,213,911	50,759,577			550	46,430		36,294	84,146	0.00%	0.00%	0.00%	0.13%	0.00%	0.09%	0.17%
South Africa*	1,176,125	959,285	565,705	661,378	616,518	1,284,160	1,325,446			17,895	70,258	5,340	27,554		Pending						
Sudan																					
Tanzania, United Rep.of	4,313,604	3,468,197	3,681,606	1,648,649	2,112,744							757			0.00%	0.00%	0.00%	0.00%	0.04%		
Thailand	1,061,363	784,881	1,821,217	1,121,073											0.00%	0.00%	0.00%	0.00%			
United Kingdom																					
Yemen																					
COOPERATING NON CONTRACTING PARTIES																					
Bangladesh																					
Liberia																					
Senegal																					
Other	10,832,417	5,005,660	9,093,754	9,822,626	7,034,619																
Total	656,844,037	657,033,250	507,711,970	437,487,573	426,526,644	444,411,217	464,155,256	2,893,542	7,305,609	8,809,472	7,018,859	8,825,012	10,282,040	4,257,494	0.44%	1.11%	1.74%	1.60%	2.07%	2.31%	0.92%

* Coverage for JPN and ZAF will be re-estimated once an agreed decision is reached about chartered vessels for years prior to the entry in force of Res. 18/10 (2012-2018)
** Observed effort for MDG (2012-2014) has been estimated from the number of fishing days. Coverage for EU,ESP (2014) was submitted by MDG
*** 2012 and 2013 total effort are estimates provided by EU,PRT which are to be updated
**** Data collected through EMS

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	2012	2013	2014	2015	2016	2017	2018	2012	2013	2014	2015	2016	2017	2018	2012	2013	2014	2015	2016	2017	2018
Australia***	148	133	113	148	84	69	115								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
China																					
–Taiwan,China																					
Comoros																					
Eritrea																					
EU - France	1795	2115	3467	3168	3152	2943	3725	112	145	584	704	772	806	808	6.24%	6.86%	16.84%	22.23%	24.49%	27.39%	21.69%
EU - Italy *****				284	252	395	395				210	147	42	339				73.94%	58.33%	10.63%	85.82%
EU - Portugal																					
EU - Spain*	3684	3899	4238	3838	3933	3242	4347		48	86	338	344			0.00%	1.23%	2.03%	8.81%	8.75%	0.00%	0.00%
EU - UK																					
France(OT)	1257	1276						188	171						14.95%	13.40%					
Guinea																					
India																					
Indonesia																					
Iran, Isl. Rep. of	168	172	179	164	137	74	97								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Japan	72	36	35	86	86	47	50								0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Kenya																					
Korea, Rep. of	98	369	539	460	760	565	433		33	45	35	232	121		0.00%	8.93%	8.34%	7.61%	30.51%	21.42%	0.00%
Madagascar**									(14)	(118)											
Malaysia																					
Maldives																					
Mauritius	0	27	264	304	332	213	412				111	148	44	67		0.00%	0.00%	36.53%	44.55%	20.63%	16.27%
Mozambique																					
Oman, Sultanate of																					
Pakistan																					
Philippines						3														0.00%	
Seychelles	1969	1670	1947	3012	4087	3269	2787			235	1639	2190	1030		0.00%	0.00%	12.07%	54.42%	53.58%	31.51%	0.00%
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																					
COOPERATING NON CONTRACTING PARTIES																					
Bangladesh																					
Liberia																					
Senegal																					
Other																					
Total	9,192	9,761	10,782	11,463	12,830	10,832	12,361	300	397	962	3,037	3,833	2,043	1,214	3.26%	4.07%	8.92%	26.49%	29.88%	18.86%	9.82%

* Number of observed fishing days not available for EU,ESP (2017). No observer data provided for 2018, and C-E not provided according to standards (total effort estimated using previous' years NC / EF ratios).
** Brackets indicate observers on foreign vessels (observer data provided by MDG for EU,ESP, EU,FRA and SYC)
*** The AUS purse seine fleet targets Southern bluefin tuna and submits observer data to CCSBT
**** No C-E data officially provided by EU,ITA for 2018, although observer data was received. Efforts from 2017 were temporarily used for 2018.

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)