
REVISION OF THE WPEB PROGRAM OF WORK (2018–2022)

PREPARED BY: IOTC SECRETARIAT & CHAIR, 21 AUGUST 2017

PURPOSE

To ensure that participants at the 13th Working Party on Ecosystems and Bycatch (WPEB13) revise the Program of Work for the WPEB by taking into consideration the specific requests of the Commission and Scientific Committee.

BACKGROUND

Scientific Committee

At the 19th Session of the SC:

- (Para. 169) The SC **NOTED** paper IOTC–2016–SC19–09 which provided the Scientific Committee (SC) with a proposed Program of Work for each of its Working Parties (WP), including prioritisation of the elements requested by each WP.
- (Para. 170) The SC **NOTED** the proposed Program of Work and priorities for the Scientific Committee and each of the Working Parties and **AGREED** to a consolidated Program of Work as outlined in [Appendix XXXIVa-g](#). The Chairpersons and Vice-Chairpersons of each working party shall ensure that the efforts of their working party are focused on the core areas contained within the appendix, taking into account any new research priorities identified by the Commission at its next Session.
- (Para. 172) The SC **AGREED** on the consolidated table of priorities across all Working Parties, as developed by each WP Chair, and **REQUESTED** that the IOTC Secretariat, in consultation with the Chair and vice-Chair of the SC and relevant Working Parties, develop ToRs for the specific projects to be carried out ([Table 4](#)).
- (Para. 175) The SC **NOTED** information paper IOTC-2016-SC19-INF04 that outlines a proposed schedule of work for the development of management procedures in the IOTC which will be presented to the Technical Committee on Management Procedures (TCMP) and Commission meeting (S21).

Commission

At Sessions of the Commission, Conservation and Management Measures adopted contained elements that call on the Scientific Committee, via the WPEB, to undertake specific tasks. These requests will need to be incorporated into a revised Program of Work for the WPEB:

Resolution 12/12 To prohibit the use of large-scale driftnets on the high seas in the IOTC area

(para. 1) The use of large-scale driftnets¹ on the high seas within the IOTC area of competence shall be prohibited.

(para. 6) The IOTC shall periodically assess whether additional measures should be adopted and implemented to ensure that large-scale driftnets are not used on the high seas in the IOTC area of competence. The first such assessment shall take place in 2013.

Resolution 11/04 On a regional observer scheme

(para. 2) In order to improve the collection of scientific data, 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 Exclusive Economic Zone (EEZ) 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.

¹ “Large-scale driftnets” are defined as gillnets or other nets or a combination of nets that are more than 2.5 kilometres in length whose purpose is to enmesh, entrap, or entangle fish by drifting on the surface of, or in, the water column.

(para. 4) 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).

(para. 15) The elements of the Observer Scheme, notably those regarding its coverage, are subject to review and revision, as appropriate, for application in 2012 and subsequent years. Basing on the experience of other Tuna RFMOs, the IOTC Scientific Committee will elaborate an observer working manual, a template to be used for reporting (including minimum data fields) and a training program.

A pilot project for the IOTC Regional Observer Scheme

(para. 48) 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 for a Regional Observer Scheme Pilot project, as part of a long-term, holistic strategy for supporting the implementation of the Regional Observer Scheme.

(para. 49 – 50) 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.

(para. 51) 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.

On the Working Party of Ecosystems and Bycatch and the status of sharks

(para. 30) The Commission noted that although a number of CPCs are currently incorporating a ban on the retention of oceanic whitetip sharks into national legislation in accordance with Resolution 13/06, it is currently too early for the Scientific Committee to be able to evaluate impacts of the retention ban and provide this advice to the Commission.

DISCUSSION

Participants at the WPEB13 are requested to consider the priorities set by the Commission via its Conservation and Management Measures, and the Scientific Committee, and revise its Program of Work (previously outlined in paper IOTC–2017–WPEB13–03) to match those priorities.

RECOMMENDATION/S

That the WPEB:

- 1) **NOTE** paper IOTC–2017–WPEB13–10, which encouraged the WPEB to further develop and refine its Program of Work for 2017–2021 to align with the requests and directives from the Commission and Scientific Committee.
- 2) **RECOMMEND** a revised Program of Work for 2018–2022 to the Scientific Committee for its consideration and potential endorsement.

WORKING PARTY ON ECOSYSTEMS AND BYCATCH PROGRAM OF WORK (2018–2022)

The Program of Work consists of the following, noting that a timeline for implementation would be developed by the SC once it has agreed to the priority projects across all of its Working Parties:

- **Table 1:** Priority topics for obtaining the information necessary to develop stock status indicators for bycatch in the Indian Ocean; and
- **Table 2:** Stock assessment schedule.

Table 1. Priority topics for obtaining the information necessary to develop stock status indicators for bycatch species in the Indian Ocean

Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2018	2019	2020	2021	2022
SHARKS									
1. Stock structure (connectivity and diversity)	1.1 Genetic research to determine the connectivity of select shark species throughout their distribution (including in adjacent Pacific and Atlantic waters as appropriate) and the effective population size.	High (13)	CSIRO/AZTI /IRD/RITF	1.3 m Euro: (European Union; 20% additional co-financing)					
	1.1.1 Next Generation Sequencing (NGS) to determine the degree of shared stocks for select shark species (highest priority species: blue shark, scalloped hammerhead shark, oceanic whitetip shark and shortfin mako shark) in the Indian Ocean with the southern Atlantic Ocean and Pacific Ocean, as appropriate. Population genetic analyses to decipher inter- and intraspecific evolutionary relationships, levels of gene flow (genetic exchange rate), genetic divergence, and effective population sizes.								
	1.1.2 Nuclear markers (i.e. microsatellite) to determine the degree of shared stocks for select shark species (highest priority species: blue shark, scalloped hammerhead shark and oceanic whitetip shark) in the Indian Ocean								

Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2018	2019	2020	2021	2022
	with the southern Atlantic Ocean and Pacific Ocean, as appropriate.								
	1.2 Connectivity, movements and habitat use								
	1.2.1 Connectivity, movements, and habitat use, including identification of hotspots and investigate associated environmental conditions affecting the sharks distribution, making use of conventional and electronic tagging (PSAT).	High (1)	AZTI, IRD, Others	US\$80K each species (TBD)	SMA OCS				
	1.2.2 Whale sharks (RHN): Connectivity, movements, and habitat use, including identification of hotspots and investigate associated environmental conditions affecting distribution, making use of conventional and electronic tagging (P-SAT).	High (24)	IRD	US\$50,000 (available from IRD)					
2. Fisheries data collection	2.1 Historical data mining for the key species and IOTC fleets (e.g. as artisanal gillnet and longline coastal fisheries) and implementation of Regional Observer Schemes, including:								
	2.1.1 Capacity building of fisheries observers (including the provision of ID guides, training, etc.)	High (20)	WWF-Pakistan/ACAP (seabirds)	US\$?? (TBD)					
	2.1.2 Define observer scheme (including minimum requirements) for fleets which are believed to have large catches on pelagic sharks (i.e. various longline and gillnet coastal fisheries) and where those statistics are mostly absent	High (21)		US\$?? (TBD)					
	2.1.3 Historical data mining for the key species, including the collection of information about catch, effort and spatial distribution of those species and fleets catching them	High (5)	TBD	US\$80K (CITES)					
	2.1.4 Integration of data mining with observer programs to reconstruct species composition and catches of sharks	Medium (26)		US\$15k (EU)					

Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2018	2019	2020	2021	2022
	2.1.5 Electronic monitoring (NOTING the recommendation from the Scientific Committee (SC17.43) that the Commission considers assigning the IOTC Secretariat, in consultation with interested IOTC scientists, to develop a project on electronic monitoring in the IOTC area of competence, the Commission NOTED that a concept note/proposal should be developed to allow an evaluation of the efficacy of electronic monitoring in the collection of information on catch, discards and fishing effort as a means to supplement scientific observer coverage for large-scale gillnet vessels. The concept note should include a detailed budget and be communicated to a range of potential funding organisations. (para. 41 of the S19 report))	High (12)		US\$?? (TBD)					
	2.1.6 Resolution 16/04 On the development of a pilot project for the Regional Observer Scheme. Development of a proposal for review by the SC19	High (X)							
3. Biological and ecological information (incl. parameters for stock assessment)	3.1 Age and growth research (Priority species: blue shark (BSH), shortfin mako shark (SMA) and oceanic whitetip shark (OCS); Silky shark (FAL))			US\$?? (TBD)					
	3.1.1 CPCs to provide further research reports on shark biology, namely age and growth studies including through the use of vertebrae or other means, either from data collected through observer programs or other research programs.	High (4)	CPCs directly	US\$?? (TBD)	OCS				
	3.2 Post-release mortality								
	3.2.1 Post-release mortality (electronic tagging), to assess the efficiency of management resolutions on no retention species (i.e. oceanic whitetip shark (OCS) and thresher sharks), shortfin mako shark SMA) ranked as the most	High (2)	IRD/ NRIFSF	US\$170K per species (EU)	BSH, SMK				

Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2018	2019	2020	2021	2022
						vulnerable species to longline fisheries, and blue shark as the most frequent in catches.			
	3.2.2 Post-release mortality (electronic tagging), to assess the efficiency of management resolutions on no retention species (i.e. oceanic whitetip shark (OCS) for purse seine fisheries	High (3)	IRD/AZTI	US\$80K (TBD)					
	3.2.3 Post-release survivorship (electronic tagging) on whale shark to assess the effect of unintended interaction and efficiency of management resolution of non-intentioned encirclement on purse seine	High (23)	IRD/AZTI	US\$50,000 IRD (commenced)					
	3.3 Reproduction research Priority species: blue shark (BSH), shortfin mako shark (SMA) and oceanic whitetip shark (OCS), and silky shark (FAL))	High (11)	CPCs directly	US\$?? (TBD)	OCS				
	3.4 Ecological Risk Assessment	High (X)			Full				
4. Shark bycatch mitigation measures	4.1 Develop studies on shark mitigation measures (operational, technological aspects and best practices)								
	4.1.1 Longline selectivity, to assess the effects of hooks styles, bait types and trace materials on shark catch rates, hooking-mortality, bite-offs and fishing yield (socio-economics)	High (14)		US\$?? (TBD)					
	4.1.2 Gillnet selectivity, to assess the effect of mesh size, hanging ratio and net twine on sharks catches composition (i.e. species and size), and fishing yield (socio-economics)	High (15)	WWF-Pakistan	US\$?? (WWF)					
	4.1.3 Develop guidelines and protocols for safe handling and release of sharks caught on longlines and gillnets fisheries	Med (25)							

Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2018	2019	2020	2021	2022
5. CPUE standardisation / Stock Assessment / Other indicators	5.1 Develop standardised CPUE series for each key shark species and fishery in the Indian Ocean			US\$?? (TBD)					
	5.1.1 Blue shark: Priority fleets: TWN,CHN LL, EU,Spain LL, Japan LL; Indonesia LL; EU,Portugal LL	High (17)	CPCs directly	US\$?? (TBD)					
	5.1.2 Shortfin mako shark: Priority fleets: Longline and Gillnet fleets	High (19)	CPCs directly	US\$?? (TBD)					
	5.1.3 Oceanic whitetip shark: Priority fleets: Longline fleets; purse seine fleets	High (18)	CPCs directly	US\$?? (TBD)					
	5.1.4 Silky shark: Priority fleets: Purse seine fleets	Med (27)	CPCs directly	US\$?? (TBD)					
	5.2 Stock assessment and other indicators								
	5.2.1 Develop and compare multiple assessment approaches to determining stock status for key shark species (see Table 2)	High (22)	TBD	Part of: 600K Euro (European Union)					

Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing					
					2018	2019	2020	2021	2022	
					MARINE TURTLES					
6. Marine turtle bycatch mitigation measures	6.1 Review of bycatch mitigation measures									
	6.1.1 Res. 12/04 (para. 11) Part I. The IOTC Scientific Committee shall request the IOTC Working Party on Ecosystems and Bycatch to:	High (9)	CPCs directly	US\$?? (TBD)						
	a) Develop recommendations on appropriate mitigation measures for gillnet, longline and purse seine fisheries in the IOTC area; [mostly completed for LL and PS]									
	b) Develop regional standards covering data collection, data exchange and training;									
	c) Develop improved FAD designs to reduce the incidence of entanglement of marine turtles, including the use of biodegradable materials. [partially completed for non-entangling FADS; ongoing or biodegradable FADs]									
	6.1.2 Res. 12/04 (para. 11) Part II. The recommendations of the IOTC Working Party on Ecosystems and Bycatch shall be provided to the IOTC Scientific Committee for consideration at its annual session in 2012. In developing its recommendations, the IOTC Working Party on Ecosystems and Bycatch shall examine and take into account the information provided by CPCs in accordance with paragraph 10 of this measure, other research available on the effectiveness of various mitigation methods in the IOTC area, mitigation measures and guidelines adopted by other relevant organizations and, in particular, those of the Western and Central Pacific Fisheries Commission. The IOTC Working Party on Ecosystems and Bycatch will	Low (28)	CPCs directly	US\$?? (TBD)						

Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2018	2019	2020	2021	2022
	specifically consider the effects of circle hooks on target species catch rates, marine turtle mortalities and other bycatch species.								
	6.1.3 Res. 12/04 (para. 17) The IOTC Scientific Committee shall annually review the information reported by CPCs pursuant to this measure and, as necessary, provide recommendations to the Commission on ways to strengthen efforts to reduce marine turtle interactions with IOTC fisheries.	High (10)	CPCs directly	Nil					
	SEABIRDS								
7. Seabird bycatch mitigation measures	7.1 Review of bycatch mitigation measures								
	7.1.1 Res. 12/06 (para. 8) The IOTC Scientific Committee, based notably on the work of the WPEB and information from CPCs, will analyse the impact of this Resolution on seabird bycatch no later than for the 2016 meeting of the Commission. It shall advise the Commission on any modifications that are required, based on experience to date of the operation of the Resolution and/or further international studies, research or advice on best practice on the issue, in order to make the Resolution more effective.	High (6)	Rep. of Korea, Japan, Birdlife International	US\$?? (TBD)					
	DISCARDS								
8. Bycatch mitigation measures	8.1 Review proposal on retention of non-targeted species								
	8.1.1 The Commission requested that the Scientific Committee review proposal IOTC–2014– S18–PropL Rev_1, and to	High (8)	Consultant	US\$?? (TBD)					

Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2018	2019	2020	2021	2022
	<p>make recommendations on the benefits of retaining non-targeted species catches, other than those prohibited via IOTC Resolutions, for consideration at the 19th Session of the Commission. (S18 Report, para. 143).</p> <p>Noting the lack of expertise and resources at the WPEB and the short timeframe to fulfil this task, the SC RECOMMENDED that a consultant be hired to conduct this work and present the results at the next WPEB meeting. The following tasks, necessary to address this issue, should be considered for the terms of reference, taking into account all species that are usually discarded on all major gears (i.e., purse-seines, longlines and gillnets), and fisheries that take place on the high seas and in coastal countries EEZs:</p> <ul style="list-style-type: none"> i) Estimate species-specific quantities of discards to assess the importance and potential of this new product supply, integrating data available at the Secretariat from the regional observer programs, ii) Assess the species-specific percentage of discards that is captured dead versus alive, as well as the post-release mortality of species that are discarded alive, in order to estimate what will be the added fishing mortality to the populations, based on the best current information,iii) Assess the feasibility of full retention, taking into account the specificities of the fleets that operate with different gears and their fishing practices (e.g., transshipment, onboard storage capacity). iv) Assess the capacity of the landing port facilities to handle and process this catch. v) Assess the socio-economic impacts of retaining non-target species, including the feasibility to market those species that are usually not retained by those gears, 								

Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2018	2019	2020	2021	2022
9. Ecosystems	vi) Assess the benefits in terms of improving the catch statistics through port-sampling programmes, vii) Evaluate the impacts of full retention on the conditions of work and data quality collected by onboard scientific observers, making sure that there is a strict distinction between scientific observer tasks and compliance issues.								
	9.1 Develop a plan for Ecosystem Based Fisheries Management (EBFM) approaches in the IOTC	High (16)	WPEB	US\$?? (TBD)					
	9.2 Create an ecosystem model (SEAPODYM) for the main shark species (BSH)	High (7)	Consultant (CLS)	43,000€					
	9.3 Assessment of trophic relationships in pelagic bycatch using chemical tracers		SFA	50,000€					

Table 2. Draft: Assessment schedule for the IOTC Working Party on Ecosystems and Bycatch 2018–2022 (adapted from IOTC–2016–SC19–R).

Species	2018	2019	2020	2021	2022
Blue shark	Indicators; Revisit ERA	Indicators	Indicators	Full assessment*	Indicators
Oceanic whitetip shark	Revisit ERA	Indicators	Full assessment*	Revisit ERA	Indicators
Scalloped hammerhead shark	Revisit ERA	Indicators	–	Revisit ERA	Indicators
Shortfin mako shark	Revisit ERA	–	–	Revisit ERA	–
Silky shark	Indicators; Revisit ERA	Full assessment*	–	Indicators; Revisit ERA	Full assessment*
Bigeye thresher shark	Revisit ERA	–	–	Revisit ERA	–
Pelagic thresher shark	Revisit ERA	–	–	Revisit ERA	–
Porbeagle shark	–	–	–	–	–
Marine turtles	Revisit ERA	–	Review of mitigation measures in Res. 12/04	Revisit ERA	–
Seabirds	–	Review of mitigation measures in Res. 12/06	–	–	Review of mitigation measures in Res. 12/06
Marine Mammals	–	–	–	–	–
Ecosystem Based Fisheries Management (EBFM) approaches	–	–	–	–	–

*Including data poor stock assessment methods; Note: the assessment schedule may be changed dependent on the annual review of fishery indicators, or SC and Commission requests.