REVISION OF THE PROGRAM OF WORK (2020–24) FOR THE IOTC SCIENCE PROCESS

PREPARED BY: IOTC SECRETARIAT, SC CHAIR AND WP CHAIRS, 07 NOVEMBER 2019

PURPOSE

To provide the Scientific Committee (SC) with a proposed Program of Work for each of its Working Parties (WP), including preliminary prioritisation of the elements requested by each WP. The aim is to develop an overall Program of Work Plan for 2020–24 which will deliver the information the Commission has requested to meet the objectives of the IOTC.

BACKGROUND

Scientific Committee

At the 21st Session of the SC:

(Para. 219) The SC noted IOTC–2018–SC21–09 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. 220) 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 35a-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. 222) 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.

(Para. 223) The SC noted that the consolidated table of priorities does not replace the full programme of work of each Working Party (Appendix 35a-g) and that adequate attention and focus should still be allocated to those activities where possible. The SC further noted that Table 5 has been developed by the SC and WP Chairs to provide more specific direction to the IOTC Secretariat and the SC Chair as to the priorities of the SC so that, if and when external funding becomes available intersessionally, it is possible to clearly prioritise across all WPs based on the objectives of the SC (as agreed in IOTC–2014–SC17–R, para. 179)

(Para. 224) The SC noted that the WPM has selected five species for MSE (albacore, yellowfin, bigeye, skipjack and swordfish). While these species are equally prioritised in terms of science, albacore has been labelled as the first priority.

DISCUSSION

The SC is requested to consider the priorities set by the Commission, via Conservation and Management Measures, and consider and revise as necessary, its Program of Work to match those priorities.

The draft schedule of stock assessments for IOTC species and species of interest from 2020–2024, and for other working party priorities is provided in Appendix I. The highest three (3) priority projects by each Working Party are presented in Appendix II and all the priority projects agreed to by each WP meeting in 2019 are referenced in Appendix III.

RECOMMENDATION

That the Scientific Committee:

1) **NOTE** paper IOTC–2019–SC22–09, which encouraged the SC to further develop and refine its Program of Work for 2020–24, which is based on those of its Working Parties, to ensure it is aligned with the requests and directives from the Commission.
2) **ADOPT** a revised Program of Work for 2020–24.

APPENDIX I
DRAFT: SCHEDULE OF STOCK ASSESSMENTS FOR IOTC SPECIES AND SPECIES OF INTEREST FROM 2020–2024, AND FOR OTHER WORKING PARTY PRIORITIES

Working Party on Neritic Tunas					
Species	**2020***	**2021****	**2022*****	**2023***	**2024**
Bullet tuna	**Assessment**	Data preparation	Data preparation	**Assessment**	Data preparation
Frigate tuna	**Assessment**	Data preparation	Data preparation	**Assessment**	Data preparation
Indo-Pacific king mackerel	**Assessment**	Data preparation	Data preparation	**Assessment**	Data preparation
Kawakawa	**Assessment**	Data preparation	Data preparation	**Assessment**	Data preparation
Longtail tuna	**Assessment**	Data preparation	Data preparation	**Assessment**	Data preparation
Narrow-barred Spanish mackerel	**Assessment**	Data preparation	Data preparation	**Assessment**	Data preparation

* Including data-limited stock assessment methods;
** Including species-specific catches, CPUE, biological information and size distribution;
*** Identification of data gaps and discussion of improvements to the assessments (stock structure);
Note: the assessment schedule may be changed dependent on the annual review of fishery indicators, or SC and Commission

Working Party on Billfish					
Species	**2020**	**2021**	**2022**	**2023**	**2024**
Black marlin		**Full assessment**			**Full assessment**
Blue marlin			**Full assessment**		
Striped marlin		**Full assessment**			**Full assessment**
Swordfish	**Full assessment**		**Indicators****	**Full assessment**	
Indo-Pacific sailfish			**Full assessment***		

* Including data poor stock assessment methods; Note: the assessment schedule may be changed depending on the annual review of fishery indicators, or SC and Commission requests.
** Including biological parameters, standardized CPUE, and other fishery trends

Working Party on Tropical Tunas					
Species	**2020**	**2021**	**2022**	**2023**	**2024**
Bigeye tuna	Indicators	Indicators	**Full assessment**	Indicators	Indicators
Skipjack tuna	**Full assessment**	Indicators	Indicators	**Full assessment**	Indicators
Yellowfin tuna	Indicators	**Full assessment**	Indicators	Indicators	**Full Assessment**

Working Party on Ecosystems and Bycatch					
Species	**2020**	**2021**	**2022**	**2023**	**2024**
Blue shark	Data preparation	Full assessment	-	–	–
Oceanic whitetip shark	Indicator analysis	–	-	–	Data preparation
Scalloped hammerhead shark	–	–	Assessment*	–	–
Shortfin mako shark	Full assessment	–	–	Data preparation	Full assessment
Silky shark	-	Assessment*;	-	–	Assessment*;
Bigeye thresher shark	–	–	–	Assessment*	–
Pelagic thresher shark	–	–	–	Assessment*	–
Porbeagle shark	–	–	–	Assessment*	–
Mobulid Rays	Interactions/Indicators				Interactions/Indicators
Marine turtles	Review of mitigation measures in Res. 12/04	–	–	Indicators	–
Seabirds	–	–	Review of mitigation measures in Res. 12/06	–	–
Marine Mammals	–	ERA	–	–	–
Ecosystem Based Fisheries Management (EBFM) approaches	ongoing	ongoing	ongoing	ongoing	ongoing

*Method to be determined; Note: the assessment schedule may be changed dependent on the annual review of fishery indicators, or SC and Commission requests.

NOTE: (i) the "indicator analysis" is a simple analysis to provide guidance on the stock status based on fishery data such as CPUE, catch, and size frequency data ;(ii) the "full stock assessment" is an assessment to provide the stock status and fishing pressure based on a stock assessment model such as stock synthesis or production model; (iii) the "data preparatory" is a the submission and review by the WP of the fishery data as well as biological parameters for the upcoming stock assessment.

Working Party on Temperate Tunas					
Species	**2020**	**2021**	**2022**	**2023**	**2024**
Albacore	–		Data preparatory Meeting (4 days) (April/May/June) Stock assessment meeting (5 days) (August/September)	–	–

APPENDIX II

TOP THREE PRIORITY PROJECTS FOR EACH IOTC WORKING PARTY

Priority	1	2	3
WPTT	**5.4.** Stock assessment priorities – detailed review of the existing data sources, including: i. Size frequency data: Evaluation of the reliability of length composition from the longline fisheries (including recent and historical data), and the need for a thorough review of the size frequency data held by IOTC, in collaboration with the fleets involved, to improve the utilization of these data in tropical tuna stock assessments. ii. Tagging data: Further analysis of the tag release/recovery data set. iii. Identify approaches for defining appropriate levels of M for inclusion in stock assessments.	**4.1.1.** Further development and validation of the collaborative longline CPUE indices using the data from multiple fleets and to provide joint CPUE series for longline fleets where possible	**6.1.** v. Scoping study to investigate genetics-based tagging techniques using recaptured individuals or identification of close-related pairs. Use of Close Kin Mark Recapture (CKMR) methods to study fishery independent methods of generating spawner abundance estimates based on genotyping individuals to a level that can identify close relatives (e.g. parent-offspring or half-siblings). The method avoids many of the problems of conventional tagging, e.g. live handling is not required (only catch needs to be sampled), tag shedding, tag-induced mortality and recovery reporting rates are irrelevant. It has been cost-effective in a successful application to southern bluefin tuna, but it remains unknown how the cost scales with population size. It would be valuable to conduct a scoping exercise to evaluate the applicability to the tropical tuna species
WPEB	**2.** Post-release mortality (electronic tagging), to assess the efficiency of management resolutions on no retention species ranked as the most vulnerable species to longline fisheries, and blue shark as the most frequent in catches, and for marine turtles and rays (especially for gillnet and PS fisheries)	**1.** Connectivity, movements, and habitat use, including identification of hotspots and investigate associated environmental conditions (For rays and sharks (including whale shark) distribution (conventional and electronic tagging (PSAT))	**10.1.2** Workshop for CPCs on continuing efforts to the development of an EAF including delineation of candidate eco regions within IOTC**.**
WPNT	**2.** Develop standardised CPUE series for the main fisheries for longtail, kawakawa, Indo-Pacific King mackerel and Spanish mackerel in the Indian Ocean, with the aim of developing CPUE series for stock assessment purposes.	**3.** Explore alternative assessment approaches and develop improvements where necessary based on the data available to determine stock status for longtail tuna, kawakawa and Spanish mackerel.	**1.** Collate and characterize operational level data for the main neritic tuna fisheries in the Indian Ocean to investigate their suitability to be used for developing standardised CPUE indices. The following data should be collated and made available for collaborative analysis: 1) catch and effort by species and gear by landing site; 2) operational data: stratify this by vessel, month, and year for the development as an indicator of CPUE over time; and 3) operational data: collate other information on fishing techniques (i.e. area fished, gear specifics, depth, environmental condition (near shore, open ocean, etc.) and vessel size (length/horsepower)). (Data support missions to priority countries: India, Oman, Pakistan)

WPTmT	**2.1.** Biological research (collaborative research to improve understanding of spatio-temporal patterns in age and growth and reproductive parameters).	**3.1.** Continue the development of standardized CPUE series for each albacore fishery for the Indian Ocean, with the aim of developing appropriate CPUE series for stock assessment purposes.	**5.1.** Further investigate the size information provided by CPCs in order to better understand the stock dynamics and inputs into the assessment models. This is particularly necessary for the purse seine data
WPB	**1.2** Tagging research (PSAT tags) to determine connectivity, movement rates and mortality estimates of billfish (Priority species: swordfish). Similar projects have been partially funded by EU, with a focus on epipelagic species. More tags are needed for swordfish	**2.2.** Reproductive biology study	**2.1.** Age and growth research
WPDCS	**5.4** Evaluate the combination of alternative data collection systems and protocols for the collection of scientific observer data	**1.1** Assist the implementation of data collection and sampling activities of coastal fisheries in countries/fisheries insufficiently sampled in the past; priority to be given to the following fisheries: • Coastal fisheries of Indonesia • Coastal fisheries of I.R. Iran • Coastal fisheries of Pakistan • Coastal fisheries of Sri Lanka • Coastal fisheries of Kenya	**4.2** Review of the extent of discarding practices in deep-freezing longline fleets
WPM	**1.5**. Swordfish MSE	**1.1.** Albacore MSE	**1.2.** Skipjack tuna MSE

TABLE 1. Priority topics for obtaining the information necessary to develop stock status indicators for all Working Parties. Numbering (in bold) represents numbers of each specific WP workplan where further details can be found in the WP reports for 2019 (except WPDCS report from 2018 to be updated for SC report).

APPENDIX III
REFERENCES TO THE INDIVIDUAL IOTC WORKING PARTY PROGRAMS OF WORK

Report number	Report title	Appendix number
IOTC–2019–WPNT09–R	Report of the 9th Session of the Working Party on Neritic Tunas	Appendix VI
IOTC–2019–WPB17–R	Report of the 17th Session of the Working Party on Billfish	Appendix XI
IOTC–2019–WPEB15–R	Report of the 15th Session of the Working Party on Ecosystems and Bycatch	Appendix XIX
IOTC–2019–WPM10–R	Report of the 10th Session of the Working Party on Methods	Appendix IV
IOTC–2018–WPDCS14–R*	Report of the 14th Session of the Working Party on Data collection and Statistics	Appendix V
IOTC–2019–WPTT21–R	Report of the 21th Session of the Working Party on Tropical Tunas	Appendix IX

*2019 report not available at the time of drafting the document.