

REVISION OF THE WPTT PROGRAM OF WORK

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PURPOSE

To ensure that the participants at the 18th Working Party on Tropical Tunas (WPTT18) revise the Program of Work for the WPTT by taking into consideration the specific requests of the Commission and Scientific Committee.

BACKGROUND

Scientific Committee

At the 18th Session of the SC:

(Para. 152) The SC **NOTED** paper IOTC–2015–SC18–09 which provided 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 of is to develop an overall Program of Work Plan for 2016–20 which will deliver the information the Commission has requested to meet the objectives of the IOTC.

(Para. 153) 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 XXXIV. 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. 154) The SC **REQUESTED** that during all future Working Party meetings, each group not only develop a Draft Program of Work for the next five years containing low, medium and high priority projects, but that all High Priority projects are ranked. The intention is that the SC would then be able to review the rankings and develop a consolidated list of the highest priority projects to meet the needs of the Commission. Where possible, budget estimates should be determined, as well as the identification of potential funding sources.

Commission

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

Resolution 15/10 On target and limit reference points and a decision framework

Interim Target and Limit Reference Points (TRPs and LRPs)

(para. 1) When assessing stock status and providing recommendations to the Commission, the IOTC Scientific Committee should, where possible, apply MSY-based target and limit reference points for tuna and tuna-like species and in particular the interim reference points agreed by the Commission in 2013 for albacore, swordfish and the three (3) tropical tunas (Bigeye tuna, Skipjack tuna, Yellowfin tuna) (per Resolution 13/10 *On interim target and limit reference points and a decision framework*) [**superseded by Resolution 15/10**]), as listed in **Table 1**. B_{MSY} refers to the biomass level for the stock that would produce the Maximum Sustainable Yield; F_{MSY} refers to the level of fishing mortality that produces the Maximum Sustainable Yield.

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Table 1. Interim target and limit reference points.

Stock	Target Reference Point	Limit Reference Point
Albacore Yellowfin tuna Swordfish	$B_{TARGET} = B_{MSY}$; $F_{TARGET} = F_{MSY}$	$B_{LIM} = 0.40 B_{MSY}$ $F_{LIM} = 1.40 F_{MSY}$
Bigeye tuna	$B_{TARGET} = B_{MSY}$ $F_{TARGET} = F_{MSY}$	$B_{LIM} = 0.50 B_{MSY}$ $F_{LIM} = 1.30 F_{MSY}$
Skipjack tuna	$B_{TARGET} = B_{MSY}$ $F_{TARGET} = F_{MSY}$	$B_{LIM} = 0.40 B_{MSY}$ $F_{LIM} = 1.50 F_{MSY}$

Alternate interim Target and Limit Reference Points

(para. 2) Where the IOTC Scientific Committee considers that MSY-based reference points cannot be robustly estimated, biomass limit reference points will be set at a rate of B_0 . Unless the IOTC Scientific Committee advises the Commission of more suitable limit reference point for a particular species, by default, the interim B_{LIM} will be set at $0.2 B_0$ and fishing mortality rate limit reference point at $F_{0.2 B_0}$ (the value corresponding to this biomass limit reference point). These interim limit reference points will be reviewed no later than 2018.

(para. 3) Where the IOTC Scientific Committee considers that MSY-based reference points cannot be robustly estimated, target reference points based on the depletion proportion (i.e. reference points with respect to the ratio of current biomass to B_0 , B_0 being the virgin biomass estimate) should be used as a basis for B_{TARGET} and F_{TARGET} , as follows:

- a) the interim biomass target reference point B_{TARGET} could be set at a ratio of B_0 , the virgin biomass;
- b) the interim fishing mortality rate target reference point F_{TARGET} could be set at a level consistent with the target biomass reference point, the fishing mortality rate corresponding then to the adopted ratio of B_0 , the virgin biomass).

(para.4) These target and limit reference points, referred to in paragraphs 1, 2 and 3, shall be further reviewed by the IOTC Scientific Committee according to the program of work at **Annex 1** and in accordance with paragraph 6. The results shall be presented to the Commission for adoption of species-specific reference points.

(para. 5) The IOTC Scientific Committee shall continue to provide advice on the status of stocks and on recommendations for management measures in relation to the reference points referred to in paragraphs 1, 2 and 3, where available, until the Commission adopts other reference points that achieve the IOTC's conservation and management objectives and are consistent with paragraph 6.

(para. 6) The IOTC Scientific Committee shall recommend to the Commission for its consideration options for harvest control rules for IOTC species in relation to agreed reference points and, in doing so, shall take into account:

- c) the provisions set forth in the UNFSA and in Article V of the IOTC Agreement;
- d) the following objectives and any other objective identified through the Science and Management Dialogue process designed in Resolution 14/03 [superseded by [Resolution 16/09](#)] (or any revision thereof) and agreed thereafter by the Commission:
 - i. Maintain the biomass at or above levels required to produce MSY or its proxy and maintain the fishing mortality rate at or below F_{MSY} or its proxy;
 - ii. Avoid the biomass being below B_{LIM} and the fishing mortality rate being above F_{LIM} ;
- e) the following guidelines:

- i. For a stock where the assessed status places it within the lower right (green) quadrant of the Kobe Plot, aim to maintain the stock with a high probability within this quadrant;
- ii. For a stock where the assessed status places it within the upper right (orange) quadrant of the Kobe Plot, aim to end overfishing with a high probability in as short a period as possible;
- iii. For a stock where the assessed status places it within the lower left (yellow) quadrant of the Kobe plot, aim to rebuild these stocks in as short a period as possible;
- iv. For a stock where the assessed status places it within the upper left quadrant (red), aim to end overfishing with a high probability and to rebuild the biomass of the stock in as short a period as possible.

Final Clauses

(para 7.) Bearing in mind Article 64 of UNCLOS and Article 8 of UNFSA, the entirety of this Resolution is subject to Article XVI (Coastal States' Rights) of the IOTC Agreement for the Establishment of the Indian Ocean Tuna Commission, and Articles 87 and 116 of the UN Convention of the Law of the Sea regarding the right to fish on the high seas;

(para. 8) The IOTC Scientific Committee is requested to evaluate the performance of any harvest control rules with respect to the species specific target and limit reference points adopted for IOTC species, but not later than 10 years following their adoption, and the Commission will consider, as appropriate and consistent with the scientific advice, these harvest control rules.

(para 9.) As soon as advice from the IOTC Scientific Committee regarding the appropriateness of TRPs and LRPs, as required under **Annex 1**, is available to the Commission, and where possible no later than at the IOTC Commission meeting in 2020, this Resolution will be reviewed with the view to adopting revised TRPs and LRPs.

Resolution 16/01 *On interim plan for rebuilding the Indian Ocean Yellowfin tuna stock in the IOTC area of competence*

(para. 10) The Scientific Committee via its Working Party on Tropical Tunas shall in 2018 undertake an evaluation of the effectiveness of the measures detailed in this Resolution, taking into account all sources of fishing mortality and possible alternatives aiming at returning and maintaining biomass levels at the Commission's target level. After consideration of the results of this evaluation, the Commission shall take corrective measures accordingly.

(para. 11) The Commission shall, based on the improved artisanal fishery data and the assessment of the state and impact of the artisanal fishery on the yellowfin stocks, take appropriate measures on the management of the artisanal yellowfin tuna fishery, at its Commission meeting in 2018.

(para. 12) The measures contained within this Resolution shall come into force from 1st January 2017; it shall be considered as interim measure and will be reviewed by the Commission no later than at its annual Session in 2019.

Resolution 16/02 *On harvest control rules for skipjack tuna in the IOTC Area of Competence*

(para. 15) The IOTC Scientific Committee shall:

- a) Include the LRP and TRP as part of any analysis when undertaking all future assessments of the status of the IOTC skipjack tuna stock.
- b) Undertake and report to the Commission a model-based skipjack tuna stock assessment every three (3) years, commencing with the next stock assessment in 2017.

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- c) Undertake a programme of work to further refine Management Strategy Evaluation (MSE) for the IOTC skipjack tuna fishery as required in paragraph **Error! Reference source not found.** including, but not limited to,
- i. Refinement of operating model(s)/ used,
 - ii. Alternative management procedures,
 - iii. Refining performance statistics.

DISCUSSION

Participants at the WPTT18 are requested to consider the priorities set by the Commission and the Scientific Committee, via Conservation and Management Measures, and revise its Program of Work (previously outlined in paper IOTC–2016–WPTT18–03) to match those priorities.

RECOMMENDATION/S

That the WPTT:

- 1) **NOTE** paper IOTC–2016–WPTT18–08, which encouraged the WPTT to further develop and refine its Program of Work for 2017–2027 to align with the requests and directives from the Commission and Scientific Committee.
- 2) **RECOMMEND** a revised Program of Work for 2017–2021 to the Scientific Committee for its consideration and potential endorsement.

APPENDICES

[Appendix A](#): DRAFT: Working Party on Tropical Tunas Program of Work (2017–2021)

APPENDIX A

DRAFT: WORKING PARTY ON TROPICAL TUNAS PROGRAM OF WORK (2017–2021)

The following is the Draft WPTT Program of Work (2017–2021) and is based on the specific requests of the Commission and Scientific Committee, and will need to be modified to incorporate topics identified during the WPTT18. 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 tropical tunas in the Indian Ocean;
- **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				
					2017	2018	2019	2020	2021
1. Stock structure (connectivity and diversity)	1.1 Genetic research to determine the connectivity of tropical tuna species throughout their distribution (including in adjacent Pacific Ocean waters as appropriate) and the effective population size.	High	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 tropical tuna species in the Indian Ocean. 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 tropical tuna species in the Indian Ocean with the Pacific Ocean, as appropriate.								



Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2017	2018	2019	2020	2021
	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 tropical tuna species distribution, making use of conventional and electronic tagging (P-SAT).	High		US\$?? (TBD)					
2. Biological and ecological information (incl. parameters for stock assessment)	2.1 Age and growth								
	2.1.1 Design and develop a plan for a biological sampling program to support research on tropical tuna biology. The plan would consider the need for the sampling program to provide representative coverage of the distribution of the different tropical tuna species within the Indian Ocean and make use of samples and data collected through observer programs, port sampling and/or other research programs. The plan would also consider the types of biological samples that could be collected (e.g. otoliths, spines, gonads, stomachs, muscle and liver tissue, fin clips etc), the sample sizes required for estimating biological parameters, and the logistics involved in collecting, transporting and processing biological samples. The specific biological parameters that could be estimated include, but are not limited to, estimates of growth, age at maturity, fecundity, sex ratio, spawning season, spawning fraction and stock structure.	High	CPCs directly	US\$?? (TBD)					
	2.2 Age-at-Maturity								
	2.2.1 CPCs to provide further research reports on tropical tuna biology, namely age and growth studies including using through the use of fish otoliths, either from data collected through observer programs or other research programs.	High	CPCs directly	US\$?? (TBD)					
3. Ecological information	3.1 Spawning time and locations								



Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2017	2018	2019	2020	2021
	3.1.1 Collect gonad samples from tropical tunas to confirm the spawning time and location of the spawning area that are presently hypothesised for each tropical tuna species.	High		US\$?? (TBD)					
4. Historical data review	4.1 Changes in fleet dynamics need to be documented by fleet								
	4.1.1 Provide an evaluation of fleet-specific fishery impacts on the stock of bigeye tuna, skipjack tuna and yellowfin tuna. Project potential impact of realizing fleet development plans on the status of tropical tunas based upon most recent stock assessments.	High	Consultant	US\$30K					
5. CPUE standardisation	5.1 Develop standardised CPUE series for each tropical tuna fleet/fishery for the Indian Ocean								
	5.1.1 There is an urgent need to establish procedures for annually developing longline CPUE indices using the combined data from multiple fleets, and to further develop and validate the methods used in these analyses.	High	Scientific Committee and consultants	US\$40K (IOTC)					
	5.1.2 That standardised CPUE index for juvenile yellowfin tuna and bigeye tuna caught by the EU purse seiner fleets, be estimated and submitted to the WPTT before the next round of stock assessments of tropical tunas.		CPCs directly	US\$?? (TBD)					
	5.1.3 Development of minimum criteria (e.g. 10% using a simple random stratified sample) for logbook coverage to use data in standardisation processes; and 2) identifying vessels through exploratory analysis that were misreporting, and excluding them from the dataset in the standardisation analysis.		CPCs directly	US\$?? (TBD)					
	5.1.4 Vessel identity information for the Japanese fleets for the period prior to 1979 should be obtained either from the original logbooks		Japan	US\$?? (TBD)					



Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2017	2018	2019	2020	2021
	or from some other source, to the greatest extent possible to allow estimation of catchability change during this period and to permit cluster analysis using vessel level data.								
	5.1.5 The standardisation of purse seine CPUE be made where possible using the operational data on the fishery.		CPCs directly	US\$?? (TBD)					
	Bigeye tuna: High priority fleets	High	CPCs directly	US\$?? (TBD)					
	Skipjack tuna: High priority fleets	High	CPCs directly	US\$?? (TBD)					
	Yellowfin tuna: High priority fleets	High	CPCs directly	US\$?? (TBD)					
	5.1.6 That methods be developed for standardising purse seine catch species composition using operational data, so as to provide alternative indices of relative abundance.	High	Consultant and CPCs directly	US\$?? (TBD)					
	5.1.7 Investigate the potential to use the Indian longline survey as a fishery-independent index of abundance for tropical tunas.	High	Consultant And CPCs directly	US\$30K (TBD)					
6. Stock assessment / stock indicators	6.1 Develop and compare multiple assessment approaches to determine stock status for tropical tunas	High	CPCs directly	US\$?? (TBD)					
7. Fishery independent monitoring	7.1 All of the tropical tuna stock assessments are highly dependent on relative abundance estimates derived from commercial fishery catch rates, and these could be substantially biased despite efforts to standardise for operational variability (e.g. spatio-temporal variability in operations, improved efficiency from new technology, changes in	Med	CPCs directly	US\$?? (TBD)					



Topic	Sub-topic and project	Priority ranking	Lead	Est. budget (potential source)	Timing				
					2017	2018	2019	2020	2021
	species targeting). Accordingly, the IOTC should continue to explore fisheries independent monitoring options which may be viable through new technologies. Possibilities include: <ul style="list-style-type: none"> • Aerial surveys, potentially using remotely operated or autonomous drones • Acoustic FAD monitoring • Genetics-based tagging techniques using recaptured individuals or identification of closely-related pairs • Longline-based surveys (expanding on the Indian model) or “sentinel surveys” in which a small number of commercial sets follow a standardised scientific protocol 								
8	Target and Limit reference points								
	8.1 To advise the Commission, by end of 2016 at the latest on Target Reference Points (TRPs) and Limit Reference Points (LRPs).								
	8.1.1 Used when assessing tropical tuna stock status and when establishing the Kobe plot and Kobe matrices	High	CPCs directly	US\$?? (TBD)					
9	Management measure options								
	9.1 To advise the Commission, by end of 2016 at the latest, on potential management measures having been examined through the Management Strategy Evaluation (MSE) process.								
	9.1.1 These management measures will therefore have to ensure the achievement of the conservation and optimal utilisation of stocks as laid down in article V of the Agreement for the establishment of the IOTC and more particularly to ensure that, in as short a period as possible (i) the fishing mortality rate does not exceed the fishing mortality rate allowing the stock to deliver MSY and (ii) the spawning biomass is maintained at or above its MSY level.	High	CPCs directly	US\$?? (TBD)					

Table 2. Assessment schedule for the IOTC Working Party on Tropical Tunas (WPTT)

Species	2017	2018	2019	2020	2021
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