

REVISION OF THE WPTmT PROGRAM OF WORK (2020–2024)

PREPARED BY: IOTC SECRETARIAT, 17 DECEMBER 2018

PURPOSE

To ensure that participants at the 7th Working Party on Temperate Tunas (WPTmT07(DP)) revise the Program of Work for the WPTmT by taking into consideration the specific requests of the Commission and Scientific Committee.

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. 240) Acknowledging that holding data preparatory meetings prior to stock assessments is considered to be best practice as identified by the YFT Stock Assessment external reviewer and the WPTT, the SC **AGREED** to explore the possibility of having data preparatory meetings in addition to stock assessment meetings for the main assessed IOTC species. The SC also **SUGGESTED** exploring other methods such as electronic correspondence amongst WP participants ahead of assessments to agree on items such as data inclusion for base case model runs, reviews of provisional model assumptions and structure and to propose sensitivity runs to address alternative model assumptions, thereby further increasing the transparency of the process.

Commission

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

Resolution 13/09 On the conservation of albacore caught in the IOTC area of competence

- (para. 2) Through its IOTC Working Party on Temperate Tunas (WPTmT), to examine in relevant 2014 sessions the state of albacore stock, by considering even common working sessions with the ICCAT scientific community to improve the knowledge on the interrelation between the Indian Ocean and Atlantic albacore populations; and
- (para. 3) To advise the Commission, by end of 2014 at the latest:
- On Target Reference Points (TRPs) and Limit Reference Points (LRPs) used when assessing the albacore stock status and when establishing the Kobe plot and Kobe matrices;
 - On potential management measures having been examined through the Management Strategy Evaluation (MSE) process. 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 and no later than 2020, (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.

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

- (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.

DISCUSSION

Participants at the WPTmT07(DP) 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–2019–WPTmT07(DP)–03) to match those priorities.

RECOMMENDATION/S

That the WPTmT:

- 1) **NOTE** paper IOTC–2019–WPTmT07(DP)–08, which encouraged the WPTmT to further develop and refine its Program of Work for 2020–2024 to align with the requests and directives from the Commission and Scientific Committee.
- 2) **RECOMMEND** a revised Program of Work for 2020–2024 to the Scientific Committee for its consideration and potential endorsement.

WORKING PARTY ON TEMPERATE TUNAS PROGRAM OF WORK (2020-2024)

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 albacore in the Indian Ocean;
- **Table 2:** Stock assessment schedule.

Table 1. Priority topics for obtaining the information necessary to develop stock status indicators for albacore in the Indian Ocean (2020-2024)

Topic	Sub-topic and project	Priority	Est. budget and/or potential source	Timing				
				2020	2021	2022	2023	2024
1. Stock structure (connectivity and diversity)	1.1 Genetic research to determine the connectivity of albacore throughout its distribution and the effective population size.	High (3)	1.3 m Euro: European Union					
	1.1.1 Determine albacore stock structure, migratory range and movement rates in the Indian Ocean.		TBD					
	1.1.2 Determine the degree of shared stocks for albacore in the Indian Ocean with the southern Atlantic Ocean.		Ifremer					
	1.1.3 Population genetic analyses to decipher inter- and intraspecific evolutionary relationships, levels of gene flow (genetic exchange rate), genetic divergence, and effective population sizes.		TBD					
2. Biological information (parameters for stock assessment)	2.1 Age and growth research (collaborative research to estimate ages across research facilities; stratification of sampling across fishery and stock)	High (1)	TBD					
	2.1.1 China and other CPCs to provide further research reports on albacore biology, including through the use of fish otolith studies, either from data collected through observer programs or other research programs, at the next WPTmT meeting.		CPCs directly					
	2.1.2 Growth curve analysis: Uncertainty about the growth curve is a		TBD					

	<p>primary source of uncertainty in the stock assessment. Depending on the shape of the growth curve, it is likely that only limited information about total mortality can be obtained from catch-at-size data. As an additional information source, data on the age structure of the catch may be very informative about total mortality and may considerably reduce uncertainty in the assessment. Research needs to be undertaken to investigate the potential and the best approaches to be used. MSE process will look at improvement in precision of estimates given different amounts of age structure data, depending on fishery, growth curve, and effective sample sizes.</p>					
	2.2 Age-at-Maturity	High (4)				
	2.2.1 Quantitative biological studies are necessary for albacore throughout its range to determine key biological parameters including age-at-maturity and fecundity-at-age/length relationships, age-length keys, age and growth, which will be fed into future stock assessments.		CPCs directly			
3	Ecological information	3.1 Spawning time and locations	Medium (5)			
		3.1.1 Collect gonad samples from albacore to confirm the spawning time and location of the spawning area that are presently hypothesized for albacore.		CPCs directly		
4	CPUE standardisation	4.1 Develop standardized CPUE series for each albacore fishery for the Indian Ocean, with the aim of developing a single CPUE series for stock assessment purposes (either a combined or single fleet series approved by the WPTmT).	High (2)	CPUE Workshop (TBD)		
		4.1.1 Changes in species targeting is the most important issue to address in CPUE standardizations.		CPCs directly		
		4.1.2 Appropriate spatial structure needs to be considered carefully as fish density (and targeting practices) can be highly variable on a fine spatial scale, and it can be misleading to assume that large areas are homogenous when there are large shifts in the spatial distribution of effort.		CPCs directly		
		4.1.3 If there are many observations with positive effort and zero catch, it is worth considering models which explicitly model the processes that lead to the zero observations (e.g. negative binomial, zero-inflated or delta-lognormal models). Adding a small constant to the lognormal model may be fine if there are few		CPCs directly		

		zero’s, but may not be appropriate for areas with many zero catches (e.g. north of 10oS). Sensitivity to the choice of constant should be tested.					
		4.1.4 The appropriate inclusion of environmental variables in CPUE standardization is an ongoing research topic. Often these variables do not have as much explanatory power as, or may be confounded with, fixed spatial effects. This may indicate that model-derived environmental fields are not accurate enough at this time, or there may need to be careful consideration of the mechanisms of interaction to include the variable in the most informative way.		CPCs directly			
		4.1.5 It is difficult to prescribe analyses in advance, and model building should be undertaken as an iterative process to investigate the processes in the fishery that affect the relationship between CPUE and abundance.		CPCs directly			
5	Target and Limit reference points	5.1 To advise the Commission, by end of 2016 at the latest on Target Reference Points (TRPs) and Limit Reference Points (LRPs). 5.1.1 Assessment of the interim reference points as well as alternatives: Used when assessing the albacore stock status and when establishing the Kobe plot and Kobe matrices. Agreed to pass this task temporarily to WPM.	High (WPM)				
6	Management measure options	6.1 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. Agreed to pass this task temporarily to WPM.	High (WPM)				

Table 2. Assessment schedule for the IOTC Working Party on Temperate tuna 2017-2021.

<i>Working Party on Temperate Tunas</i>					
Species	2017	2018	2019	2020	2021
Albacore	–		Data preparatory meeting and Stock assessment	–	Data preparatory meeting