Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien
iotc ctoi

REVISION OF THE WPTmT PROGRAM OF WORK (2017–2021)

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PURPOSE

To ensure that participants at the 6th Working Party on Temperate Tunas (WPTmT06) 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 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 is to develop an overall Program of Work Plan for 2015–19 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 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:

a) 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;

b) 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.

DISCUSSION

Participants at the WPTmT06 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–WPTmT06–03) to match those priorities.

RECOMMENDATION/S

That the WPTmT:

1) **NOTE** paper IOTC–2016–WPTmT06–08, which encouraged the WPTmT 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 2017–2021 to the Scientific Committee for its consideration and potential endorsement.

WORKING PARTY ON TEMPERATE TUNAS PROGRAM OF WORK (2017–2021)

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 (2017-2021) (2016 included for information).

Topic	Sub-topic and project	Priority	Est. budget and/or potential source	Timing					
				2016	2017	2018	2019	2020	2021
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 (5)	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 (3)	CPCs directly						
	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 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 to look at improvement in precision of estimates given different amounts of age structure data, depending on fishery, growth curve, and effective sample sizes.		CPCs directly						
		2.2 Natural mortality (M)	High (3)							
		2.2.1 Examine the impacts of a range of M values on stock assessments, from constant rates of 0.2, 0.3. and 0.4 over time, to M values which change with age, from 0.4 to 0.2.		CPCs directly						
		2.2.2 Review evidence of currently available estimates are realistic, and whether more recent data is available on this key parameter.		CPCs directly						
		2.3 Age-at-Maturity	High (3)							
		2.3.1 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	High (4)							
		3.1.1 Collect gonad samples from albacore to confirm the spawning time and location of the spawning area that are presently hypothesised for albacore.		CPCs directly						
4.	CPUE standardisation	4.1 Develop standardised 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 (1)	CPUE Workshop (TBD)						
		4.1.1 Changes in species targeting is the most important issue to address in CPUE standardisations.		CPCs directly						
		4.1.2 Appropriate spatial structure needs to be considered carefully as		CPCs						

		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.		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 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.		CPCs directly							
		4.1.4 The appropriate inclusion of environmental variables in CPUE standardisation 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.	Stock assessment / Stock indicators	5.1 Develop and compare multiple assessment approaches to determining stock status for albacore (SS3, ASPIC etc).	High (2)								
		5.1.1 A consultant be hired to assist in building capacity among the WPTmT participants by supplementing the skill set available within IOTC CPCs to further develop the SS3 model. An indicative budget is provided below:		US$26,000 in 2016 and 2018 IOTC Regular Budget	*		*				

Estimated budget (US$) required to hire a consultant to further develop the SS3 stock assessment model on albacore tuna in 2016 and 2018.

Description	Unit price	Units required	2016 Total (US$)	2018 Total (US$)

		SS3 Stock assessment for albacore (fees)	550	40	22,000	22,000							
		SS3 Stock assessment for albacore (travel)	4,000	1	4,000	4,000							
				Total estimate	**26,000**	**26,000**							
6.	Target and Limit reference points	6.1 To advise the Commission, by end of 2014 at the latest on Target Reference Points (TRPs) and Limit Reference Points (LRPs).					High (WPM)						
		6.1.1 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.											
7.	Management measure options	7.1 To advise the Commission, by end of 2014 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.											

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

Working Party on Temperate Tunas					
Species	**2017**	**2018**	**2019**	**2020**	**2021**
Albacore	**-**	**Full assessment**	**-**	**Full assessment**	**-**