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## OUTCOMES OF THE 25<sup>th</sup> SESSION OF THE SCIENTIFIC COMMITTEE

PREPARED BY: IOTC SECRETARIAT, 8 MARCH 2023

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### PURPOSE

To inform participants at the 6<sup>th</sup> Technical Committee on Management Procedure (TCMP06) of the recommendations arising from the 25<sup>th</sup> Session of the Scientific Committee (SC25) held in 5<sup>th</sup> to 9<sup>th</sup> December 2022, specifically relating to the work of the TCMP.

### BACKGROUND

At the 25<sup>th</sup> Session of the SC, the SC noted and considered the recommendations made by the TCMP05 in 2022 and WPM13 in 2022 that included updates on the MSE process for various IOTC species. Based on these recommendations, the SC25 made a set of requests (see extracts from the SC25 Report below). In addition, the SC25 reviewed and endorsed a Program of Work for the WPM, as detailed in [Appendix A](#) as well as a revised Program of work for the development of MPs for key IOTC species ([Appendix B](#)).

### DISCUSSION

The following extracts from the SC25 Report (IOTC–2022–SC25–R) are provided here for the consideration and action of the TCMP06:

#### **Report of the 13th Session of the Working Party on Methods (WPM13)**

(Para 109): The SC **NOTED** that the WPM has reviewed and discussed a wide range of issues including MSE progress for IOTC species, multi-species MSE, exceptional circumstances considerations for bigeye tuna MSE, joint CPUE standardisations, and close kin mark recapture design study for yellowfin tuna.

##### **Management Strategy Evaluation Progress**

(Para 110): The SC **NOTED** the good progress made in Management Strategy Evaluations exercises for IOTC species in 2021, and the useful discussions of MSE work at the MSE Task Force meeting (a technical expert group of the WPM) and the TCMP meeting in 2022.

##### **Albacore MSE**

(Para 111): The SC **NOTED** that the ALB operating model (OM) has been updated from the 2021 assessment models, which are now based on 2 model runs, each with a different CPUE index. The OM consists of a total of 432 models runs which are configured along similar sources of uncertainty levels as the previous one.

(Para 112): The SC **NOTED** that alternate methods for conditioning OMs, such as Approximate Bayesian Computation (ABC), might provide a wide range of options to the many issues that can arise during conditioning. The SC agreed that it should first be tested, and albacore could serve as a useful case study for the use of ABC for OM conditioning. The SC further **NOTED** that if such a strategy is to be used in the future, prior distributions for parameters need to be established.

##### **Skipjack tuna MSE**

(Para 113): The SC **NOTED** the recent SKJ MSE focused on addressing the TCMP05's request to incorporate implementation errors in the MSE framework and has evaluated MPs that are resilient to implementation errors. The MSE tested implementation errors ranging from 10% to 40% (the actual catches in 2018 and 2019 were 29% and 16% greater than the current TAC). As such, the magnitude of implementation errors adequately compensates for the discrepancy between the TAC and the actual catch.

##### **Yellowfin tuna MSE**

(Para 114): The SC **NOTED** there has been no further progress on the OM development of yellowfin tuna, pending the results of the external review of the yellowfin stock assessment model which is scheduled to take place February

in 2023.

### **Bigeye tuna MSE**

(Para 117): The SC **NOTED** that the running the BET MP and the calculation of the TAC has been presented to both the WPM13 and WPTT24 (see Section 7.4.3).

(Para 118): The SC **NOTED** that the 1-year time gap between the running of an MP by the SC and its actual implementation is less than ideal. The SC **NOTED**, however, that such a delay in the implementation has been MSE tested for the adopted BET MP and thus its effect on the performances has been already taken into account. The SC **RECOMMENDED** that the Commission identify and adopt a decision-making process to shorten the delay in the implementation of the MP output).

### **Swordfish MSE**

(Para 119): The SC **NOTED** that the newly proposed simplified OM grid provides a comparable perspective on uncertainty to the existing OM. It was noted that there is a wide spread of uncertainty related to stock status in the swordfish OM.

(Para 120): The SC **NOTED** that the value of 0.2 for  $\sigma_R$  that came from the assessment is quite low and may not be appropriate for an oceanic species like swordfish. The SC agreed that higher values are explored as a robustness test of the OM.

### **Update on TCMP05**

(Para 122): The SC **QUERIED** whether it would be necessary to hold a virtual TCMP meeting early in the year if no MPs are considered ready for presentation to the TCMP that particular year. The SC **RECOMMENDED** that there is no need to organize a virtual TCMP as no candidate MPs will be ready for consideration for adoption in 2023.

(Para 123): The SC however **CONSIDERED** that it is advisable to have focused dialogue with managers on those MSE which are more advanced such as that for SKJ. The SC **RECOMMENDED** that a virtual TCMP is tentatively convened early in 2024 with a special focus on MSE for SKJ.

## **RECOMMENDATION**

That the TCMP:

- 1) **NOTE** paper IOTC–2023–TCMP06–05 which outlined the main outcomes of the 25<sup>th</sup> Session of the Scientific Committee, specifically related to the work of the TCMP.
- 2) **CONSIDER** how best to progress these issues at the present meeting.

## **APPENDICES**

**Appendix A:** Program of Work (2023–2027) for the IOTC Working Party on Methods (WPM).

**Appendix B:** Schedule of Work for the Development of Management Procedures for Key Species in the IOTC Area

**APPENDIX A**  
**WORKING PARTY ON METHODS PROGRAM OF WORK (2023–2027)**

**Table 1.** Priority topics for obtaining the information necessary to deliver the necessary advice to the Commission. Resolution 15/10 elements have been incorporated as required by the Commission.

Topic	Sub-topic and project	Timing				
		2023	2024	2025	2026	2027
1.	Continuation of Management Strategy Evaluation for Albacore, Skipjack, Yellowfin, Bigeye tunas as well as Swordfish					
	Peer review of BET MSE as per the ToRs endorsed by the SC					
<b>Future Research Requirements (not in order of priority)</b>						
	1.1 Albacore					
Management Strategy Evaluation	1.1.1 Revision of Operating Models based on WPM and SC feedback, including possible robustness tests					
	1.1.2 Implementation of simulation runs and presentation of results at the TCMP					
	1.1.3 Revision and evaluation of new set of Management Procedures after presentation of MP runs to TCMP and Commission (as needed)					

<p>1.1.5 External peer review</p>					
<p>1.2 Skipjack tuna</p>					
<p>1.2.1 Implementation of simulation runs and presentation of results at the TCMP</p>					
<p>1.2.2 Revision and evaluation of new set of Management Procedures after presentation of MP runs to TCMP and Commission (as needed)</p>					
<p>1.3 Bigeye tuna</p>					
<p>1.3.1 Presentation of MP application and exceptional circumstances and resulting TAC to the TCMP and Commission meeting</p>					
<p>1.3.2 External peer review</p>					
<p>1.3.3. Run MP, consider exceptional circumstances and provide the TAC advice</p>					
<p>1.3.4 Stock assessment to provide information on stock status</p>					
<p>1.4 Yellowfin tuna</p>					
<p>1.4.1 Update OM &amp; present preliminary MP results to TCMP, WPTT/WPM review of new OM</p>					
<p>1.4.2 Present revised MP results to TCMP; iteratively update development if required)</p>					
<p>1.4.3 additional iterations if required</p>					
<p>1.5 Swordfish</p>					
<p>1.5.1 Revision of Operating Models based on WPM and SC feedback, including possible robustness tests</p>					

<p>1.5.2 Implementation of simulation runs and presentation of results at the TCMP</p> <p>1.5.3 Revision and evaluation of new set of Management Procedures after presentation of MP runs to TCMP and Commission (as needed)</p>					
<p>Multiple stock status derived from different model structures</p>	<p>3.1 Develop specific guidance for the most appropriate models to be used or how to synthesize the results when multiple stock assessment models are presented. (<i>see IOTC-2016-WPTT18-R, para.91</i>)</p>				
<p>Presentation of stock status advice for data limited stocks</p>	<p>2.1 Explore potential methods of presenting stock status advice to managers from a range of data limited scenarios, e.g. through the development of a 'Tier' approach for providing stock status advice, based on the type of indicators used to determine stock status (e.g. CPUE series, stock assessment model)</p>				
<p>Peer Review</p>	<p>External peer review based on Terms of Reference agreed to by the WPM and following the schedule recommended in Appendix V of the WPM12 report.</p>				
<p>Capacity Building</p>	<p>Ongoing development of tools, materials and courses to continue Capacity Building for increasing participation in the MSE process</p>				

## APPENDIX B

## SCHEDULE OF WORK FOR THE DEVELOPMENT OF MANAGEMENT PROCEDURES FOR KEY SPECIES IN THE IOTC AREA

Year	Albacore	Skipjack	Yellowfin	Bigeye	Swordfish
2021	<b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.	<b>TCMP:</b> Provide advice to the Commission on outcomes from the application of the HCR.  Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.	<b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.	<b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.	<b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.
	<b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need for further MSE of candidate or alternative MPs.	<b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need to undertake further MSE of candidate or alternative MPs	<b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need to undertake further MSE of candidate or alternative MPs.	<b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need to undertake further MSE of candidate or alternative MPs.	<b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need to undertake further MSE of candidate or alternative MPs.
	<b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate MPs.	<b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate MPs.	<b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate MPs.	<b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate MPs.	<b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate MPs.
2022	<b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for	<b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for	<b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for	<b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for	<b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for

	<p>an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need for further MSE of candidate or alternative MPs.</p>	<p>an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need to undertake further MSE of candidate or alternative MPs.</p>	<p>an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need to undertake further MSE of candidate or alternative MPs.</p>	<p>an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies. Decision and adoption of an MP.</p>	<p>an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need to undertake further MSE of candidate or alternative MPs.</p>
<p>2023</p>	<p><b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need to undertake further MSE of</p>	<p><b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies. Decision and adoption of an MP.</p>	<p><b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need to undertake further MSE of</p>	<p><b>TCMP:</b></p> <p><b>Commission:</b></p>	<p><b>TCMP:</b> Provide advice to the Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies and provide direction to the WPs/SC on the need to undertake further MSE of</p>

	<p>candidate or alternative MPs.</p> <p><b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate MPs.</p>	<p>candidate or alternative MPs.</p> <p><b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate MPs.</p>	<p>candidate or alternative MPs.</p> <p><b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate MPs.</p>		<p>candidate or alternative MPs.</p> <p><b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate MPs,</p>
2024	<p><b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies. Decision and adoption of an MP.</p>	<p><b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies. Decision and adoption of an MP.</p>	<p><b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies. Decision and adoption of an MP.</p>		<p><b>TCMP:</b> Provide advice to Commission on elements of candidate MPs, and any proposed Resolutions for an MP, that require a decision by the Commission, including the performance of candidate MPs against Commission objectives.</p> <p><b>Commission:</b> Consider work and advice from subsidiary bodies. Decision and adoption of an MP.</p>