

---

## OUTCOMES OF THE 24<sup>th</sup> SESSION OF THE SCIENTIFIC COMMITTEE

PREPARED BY: IOTC SECRETARIAT, 17 MARCH 2022

---

### PURPOSE

To inform participants at the 5<sup>th</sup> Technical Committee on Management Procedure (TCMP05) of the recommendations arising from the 24<sup>th</sup> Session of the Scientific Committee (SC24) held in 6<sup>th</sup> to 10<sup>th</sup> December 2021, specifically relating to the work of the TCMP.

### BACKGROUND

At the 24<sup>th</sup> Session of the SC, the SC noted and considered the recommendations made by the TCMP04 in 2021 and WPM12 in 2021 that included updates on the MSE process for various IOTC species. Based on these recommendations, the SC24 made a set of requests (see extracts from the SC24 Report below). In addition, the SC24 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 SC24 Report (IOTC–2021–SC24–R) are provided here for the consideration and action of the TCMP05:

#### **Report of the 12th Session of the Working Party on Methods (WPM12)**

(Para 112): The SC **NOTED** that the WPM has reviewed and discussed a wide range of issues including MSE progress for IOTC species, general MSE issues, joint CPUE standardisations, science-based FAD management, and stock status determination guidance.

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

(Para 113): 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 2021.

(Para 114): The SC **NOTED** the guidelines included as Appendix 6a to this report to deal with exceptional circumstances in the MSE process. The SC further **NOTED** that these guidelines are a living document and revisions may still be required in the future. The SC **RECOMMENDED** that the Commission consider and endorse the guidelines.

(Para 115): The SC **NOTED** the revised schedule of MSE work included as Appendix 6b to this report to provide the timeframe for the development of management procedures for key IOTC species. The SC **NOTED** that the revised MSE schedule is still ambitious but that the technical work could, in principle, be completed within the proposed timeframes with minor adjustments. The SC **RECOMMENDED** that the Commission consider and endorse the revised timetable.

#### **Albacore MSE**

(Para 116): The SC **NOTED** that the ALB operating model (OM) has been constructed from the 2019 assessment model, using a partial factorial design approach. Two different MPs – one based on a surplus production model, and one based on an HCR employed by CCSBT for Southern bluefin tuna, have been tested. The SC also **NOTED** the proposal to test alternative methods in order to have an OM that is not dependent on the stock assessment.

#### **Skipjack tuna MSE**

(Para 117): The SC **NOTED** an MSE expert has been contracted in 2020 to undertake review of the skipjack tuna harvest control rule with a view to review and provide advice on potential revisions to the HCR as required by Res 16/02. The work continued in 2021 including to (1) develop an OM based on Stock Synthesis III; (2) develop a simple stock assessment model that can be fitted to simulated data from the skipjack stock assessment grid, and (3)

simulation test model-based Management Procedures (MPs) with input from stakeholders.

(Para 118): The SC **NOTED** that the WPM considered that presenting results on the performance of MPs against different reference points (i.e., MSY and depletion-based) is likely to make communication of the results more difficult but that information on MSY-based reference points could be included in the full table of performance statistics.

#### **Yellowfin tuna MSE**

(Para 119): The SC **NOTED** that there has been no further progress on the yellowfin MSE due to issues with the stock assessment model that have been encountered in recent years and which have not been resolved in time for the MSE work. The SC **NOTED** that these issues are also shared by the current OM which is based on the assessment model.

(Para 120) The SC **NOTED** that the WPM had suggested that if the 2021 stock assessment is endorsed by the Scientific Committee, and there are no obvious issues in the projections that appear likely to manifest in the OMs, then the OMs will be reconditioned, and the testing of candidate MPs will resume.

(Para 121) However, although the SC considers the yellowfin tuna assessment to have been significantly improved, there are still some important and highlighted issues in the assessment and projection that may make it not feasible to further utilize the current OM. Therefore, alternative approaches for the redevelopment and reconditioning of the YFT-OM will be explored as part of the ongoing YFT-MSE work should be considered as an option. The SC **NOTED** that the proposed alternatives for OM development would be less dependent on historical data but would make heavy use of the current assessment model. The SC **AGREED** that a more detailed discussion of this approach should take place (at the MSE Working Group meeting earlier next year) before the best course of action was determined.

#### **Bigeye tuna MSE**

(Para 122): The SC **NOTED** that the bigeye tuna OM, which has been developed over the years, has proven to be relatively stable. The SC also **NOTED** that many candidate MPs have been thoroughly evaluated by MSE so far. Following the WPM' recommendation, the SC has determined that the bigeye OM and MSE has appropriately considered the key causes of uncertainty for this stock and that the conditions for applying the "Butterworth guillotine" (stop OM reconditioning) are met. The SC therefore **AGREED** to endorse the bigeye tuna OM.

(Para 123): The SC **NOTED** two MPs, specifically the Model-based hockey stick (PT-HS) and the Model-based Catch and CPUE projection (PT-PROJ), both tuned against two tuning criteria (60% and 70% probability of being in the Kobe green quadrant over the reference years) are recommended by the WPM, based on their performance indicators. The SC **AGREED** to present the MPs together with their performance indicators to the TCMP/Commission. The SC **NOTED** it will be up to the TCMP/Commission to decide on the final MP.

(Para 124): The SC **THANKED** the developers of bigeye tuna MSE for their hard work in the development of OM and evaluations of candidate MP over the years, and everyone including the WPM participants that contributed to the revision of the bigeye tuna MSE. The SC further **CONGRATULATED** the developers for achieving key milestones towards the successful adoption of a management procedure for the bigeye tuna stock.

(Para 125): The SC **NOTED** document IOTC-2021-SC24-INF05 that provides the terms of reference for the proposed external review of the bigeye MSE, which is planned to take place 2022-2024. The SC discussed the timeframes, workplans and deliverables, and provided further refinement on the TOR. The SC **AGREED** that the process of the external review should not impede the adoption of an interim bigeye MP by the Commission prior to completion of the review. The SC also **AGREED** that the number of reviewers required will be determined at a later stage depending on the availability of funding (see also Para. 102 on the BET MSE review).

#### **Swordfish MSE**

(Para 126): The SC **NOTED** that limited progress had been made on the Swordfish MSE in 2020 but work resumed in early 2021, with good progress made throughout the rest of the year.

### **RECOMMENDATION**

That the TCMP:

- 1) **NOTE** paper IOTC–2022–TCMP05–05 which outlined the main outcomes of the 24<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 (2022–2026) 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 (2022–2026)**

**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				
		2022	2023	2024	2025	2026
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 initial set of simulation runs and results					
	1.1.3 Revision of Management Procedures and Indicators after presentation of initial set to TCMP and Commission					

<p>1.1.4 External peer review (2022 or date TBD)</p> <p>1.1.5 Evaluation of new set of Management Procedures (if required)</p>					
<p>1.2 Skipjack tuna</p> <p>1.2.1 Revision and adaptation of framework for simulation evaluations of MPs. Moving from HCR to fully specified MP.</p> <p>1.2.2 Develop revised production model for inclusion in simulation framework</p> <p>1.2.3 Condition OM on updated assessment model from 2020.</p> <p>1.2.4 Present revised MP results to TCMP with target adoption date of 2023</p> <p>1.2.5 Additional iterations if required</p>					
<p>1.3 Bigeye tuna</p> <p>1.3.1 Update OM &amp; present preliminary MP results to TCMP, WPTT/WPM review of new OM</p> <p>1.3.2 External peer review (2021 or date TBC)</p> <p>1.3.3 Present revised MP results to TCMP with target adoption date of 2022</p> <p>1.3.4 Additional iterations if required</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 with target adoption date of 2024; iteratively update development if required)</p> <p>1.4.3 additional iterations if required</p>					
<p>1.5 Swordfish</p> <p>1.5.1 Initial OM</p> <p>1.5.2 Conditioning and OM set up</p> <p>1.5.3 Generic MP tests</p> <p>1.5.4 Final Model with MPs</p> <p>1.5.5 External peer review</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>					

Peer Review	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.					
Capacity Building	Ongoing development of tools, materials and courses to continue Capacity Building for increasing participation in the MSE process					

## 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><b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate 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><b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate MPs.</p>	<p><b>WPs/SC:</b> Process and application of the adopted MP.</p>	<p><b>WPs/SC:</b> Consider recommendations from the Commission and undertake MSE to provide advice on the performance of candidate MPs.</p>
2023	<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>
<b>2024</b>	<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>