Food and Agriculture Organization of the United Nations

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

RESOLUTION 25/07
ON A MANAGEMENT PROCEDURE FOR SWORDFISH IN THE IOTC AREA OF COMPETENCE.

Keywords: *Swordfish, Management Procedure, Harvest Strategy, Target reference point, MSY.*

The Indian Ocean Tuna Commission (IOTC),

HAVING responsibility for the conservation and optimum utilization of tuna and tuna-like species in the Indian Ocean;

RECOGNISING the need for action to ensure the achievement of IOTC objectives to conserve and manage tuna resources in the IOTC area of competence;

RECOGNISING the adopted management objectives of the Commission set out in Resolution 15/10 are to: 1) maintain the biomass at or above levels required to produce MSY or its proxy, 2) maintain the fishing mortality rate at or below F_{MSY} or its proxy, and 3) avoid the biomass being below B_{LIM} and the fishing mortality rate being above F_{LIM};

MINDFUL of Article XVI of the IOTC Agreement regarding the rights of Coastal States and of Articles 87 and 116 of the UN Convention on the Law of the Sea regarding the right to fish on the high seas;

RECOGNISING the special requirements of developing States, particularly Small Island developing States, in Article 24 of the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA);

RECOGNISING *Resolution 12/01 On the implementation of the precautionary approach* calls on the Indian Ocean Tuna Commission to implement and apply the precautionary approach, in accordance with Article 6 of UNFSA;

RECALLING *Resolution 15/10 On Target and Limit Reference Points and a Decision Framework*, which identifies objectives of the Commission to maintain stocks in perpetuity and with high probability, at levels not less than those capable of producing their maximum sustainable yield as qualified by relevant environmental and economic factors including the special requirements of developing States in the IOTC area of competence; and identifies reference points for IOTC stocks including swordfish;

RECOGNIZING the intent of the Commission to adopt management procedures aimed at achieving the objectives of the IOTC Agreement (Resolution 15/10) aided by advice of the Technical Committee on Management Procedures, as established in *Resolution 16/09* [superseded by Resolution 25/10] and as further expounded in the *Schedule of work for the development of management procedures for key species in the IOTC Area*;

ACKNOWLEDGING the Scientific Committee advice that the most recent stock assessment in 2023 determined swordfish is not overfished or subject to overfishing;

FURTHER CONSIDERING the advice from the 26th Session of the Scientific Committee that the key technical work (management strategy evaluation) required to test the performance of candidate management procedures for swordfish may be completed in time for the Commission to consider adopting a management procedure in 2024;

FURTHER CONSIDERING the advice and recommendations of the 7th and 8th Session of the Technical Committee on Management Procedures regarding a management procedure for swordfish which included a shortlist of candidate management procedures that achieve the management objectives of maintaining the stock in the green quadrant of the kobe plot with more than 60%.

ADOPTS in accordance with paragraph 1 of Article IX of the IOTC Agreement:

1. A management procedure for the swordfish stock managed by the IOTC with a view of maintaining the stock biomass in the green zone of the Kobe plot (not overfished and not subject to overfishing) while promoting a balance of stability and maximizing the average catch between management periods.

Management procedure

2. The adopted management procedure for swordfish known as MP1 is described in Annex I (MP).

3. Consistent with the adopted management objectives of the Commission, the management procedure is designed to achieve:

    a) a 60% probability that the swordfish spawning stock biomass achieves the target reference point of SB_{MSY}[1] by 2034-2038;

    b) the swordfish spawning stock biomass avoids breaching the interim limit reference point specified in Resolution 15/10 with a high probability;

    and operates with the following constraint:

    c) the maximum change in the TAC shall be a 15% increase and 10% decrease relative to the previous TAC.

Total Allowable Catch setting

4. The Scientific Committee shall run the MP and advise the Commission of the outcome, including a recommended TAC and any advice on exceptional circumstances in accordance with the Commission endorsed Guidelines for the Provisions of Exceptional Circumstances for IOTC MPs as documented in Appendix 6a of IOTC-2021-SC24-R.

5. The Commission shall adopt the TAC based on the outcome of the MP, unless the Scientific Committee (SC) identifies exceptional circumstances that require consideration of alternate management actions to be taken by the Commission.

6. Evidence of exceptional circumstances will be reviewed annually at the Working Party on Billfish and the Scientific Committee. If exceptional circumstances are triggered, then the pre-existing TAC shall remain in place until a new TAC is agreed.

7. The first TAC derived from the MP shall apply in [2026-2028]. The TAC shall apply in each of the subsequent three years following the year it is set by the Commission[2].

8. The schedule for setting and applying the TAC, beginning the calendar year immediately following adoption of this Resolution, is shown in Annex II.

TAC allocation

9. Allocation of the TAC among CPCs will take place according to a process agreed external to this measure no later than the end of its 29th session in 2025.

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[1] The spawning stock biomass associated with achieving maximum sustainable yield.

[2] E.g. the Scientific Committee runs the MP in 2024, the TAC is set by the Commission in 2025, the TAC applies in 2026 - 2028. The Scientific Committee runs the MP in 2027, the TAC is set by the Commission in 2028, the TAC applies from 2029-2031.

10. The Commission will develop a mechanism to constrain catch to the MP derived TAC for swordfish no later than 2025, if an allocation scheme has not yet been agreed and implemented by the Commission.

Review

11. A review of performance of the MP by the Commission and its subcommittees is to occur in 2031. The aim of the review is to ensure the MP is performing as expected and whether there are any conditions that warrant reconditioning the operating models, retuning the existing MP, or consideration of alternate candidate MPs and a new full management strategy evaluation.

12. The SC is also requested to investigate approaches to incorporate a multi-species framework into future candidate management procedures and if possible, wider impacts in the ecosystem such as the mortality on associated and dependent species affected by tuna fishing operations, i.e. marine turtles, marine mammals, seabirds, sharks and fish species caught incidentally (bycatch).

ANNEX I – MP

DESCRIPTION AND FORMULAE FOR CALCULATING TACS FOR MP

MP1 adjusts the TAC based on recent CPUE. The TAC change using the slope of the of the CPUE and the distance to a target CPUE (Figure 1).

- If the recent CPUE is above the target CPUE and the CPUE trend is increasing, then the TAC is increased.
- If the current CPUE is below the target CPUE and the CPUE trend is decreasing, then the TAC is decreased.
- If the current CPUE relative to the target and the CPUE slope are in opposite directions, the TAC change could be in either direction, depending on the magnitude of these indicators, and the associated control parameters.

Formally, the future TAC is calculated as a proportion, TAC_{mult}, of the current TAC, which is defined as:

$$TAC_{mult} = 1 + k_a Sl + k_b D$$

Where Sl is the slope of the log CPUE over the last 5 years, D is the difference between recent CPUE value (average over the last 3 years) and the target CPUE value (i.e. recent CPUE – target CPUE), and k_a and k_b are responsiveness parameters, where

$k_a = 2.1$

$k_b = 1.2$

$\text{Target CPUE} = 0.75$

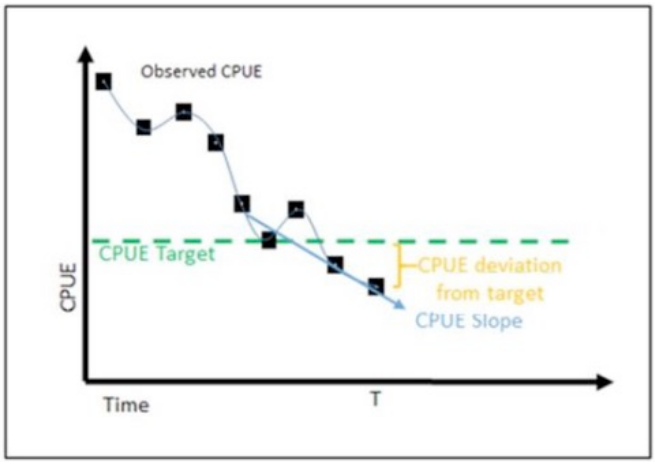

Figure 1: MP1 is based on the recent slope in the CPUE and the distance to the target CPUE.

DATA SPECIFICATION

The input data for MP1 are:

Standardised longline catch per unit effort (CPUE) for the Japanese longline fishery from 1994 to the most recent year of data available. These are derived from the standardisation analysis approach described in Matsumoto et al. (2023)[3] for the NW region only of the Indian Ocean.

[3] Matsumoto, T., Taki, K., Ijima, H., Kai, M. 2023. CPUE standardization for swordfish (*Xiphias gladius*) by Japanese longline fishery in the Indian Ocean using zero-inflated Bayesian hierarchical spatial model. IOTC–2023–WPB21–14_Rev1.

<https://iotc.org/documents/WPB/21/14>

ANNEX II – SCHEDULE FOR MP IMPLEMENTATION

IOTC COMMITTEE	2024	2025	2026	2027	2028	2029	2030	2031
Commission (May/June)	**Select and adopt SWF MP**			Annual Review of SC advice →				
		Set TAC (2026-2028)			**Set TAC** (2029-2031)			**Set TAC** (2032-2034)
WPB and WPM (Oct)	Collate data used in MP			Collate data used in MP			Collate data used in MP	
	Annual Consideration of exceptional circumstances (EC), advise SC	Consider EC	Consider EC	Consider EC	Consider EC	Consider EC	Consider EC	Consider EC
SC (Dec)	**Run MP**			**Run MP**			**Run MP**	
		Assess stock status			Assess stock status			Assess stock status
			Annual Review of Exceptional Circumstances →					
	Provide TAC advice to the Commission			Provide TAC advice			Provide TAC advice	

- The assessment of stock status has a distinct role and purpose from the management procedure and is not used for TAC advice. It is included in this schedule to identify best practice in the timing of running of the assessment, i.e. in the year after MP TAC decisions have been made.