Running the IOTC SKIP Tuna Management Procedure for 2025

IOTC SECRETARIAT

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1. INTRODUCTION

The Indian Ocean Tuna Commission (IOTC) adopted a Management Procedure (MP) for skipjack tuna in 2024 to recommend the total allowable catch (TAC) for consideration by the Commission (Resolution 24/07). Resolution 24/07 requires the MP to be implemented for the first time in 2025 to estimate the TAC for the period 2027–2029. The IOTC Scientific Committee, through the Working Party on Methods and the Working Party on Tropical Tunas, was tasked with running the MP and deriving a recommended TAC. The skipjack MP replaces the previously adopted harvest control rule (HCR) for skipjack tuna (Resolutions 16/02 and 21/03, now superseded by 24/07).

The Skipjack HCR was first applied in 2017, resulting in a recommended catch limit of 470,029 t for 2018–2020. It was run again in 2020 to provide a catch limit of 513,572 t for 2021–2023, and in 2023 to recommend a catch limit of 628,606 t for 2024–2026. In 2025, the Commission also adopted Resolution 25/03, which allocates the current TAC to major skipjack harvesting countries according to specified rules and provides provisions for the administration of catch limits by the IOTC Secretariat

2. DATA INPUT

The only data inputs required for the MP are two sets of standardized CPUE indices as measures of stock abundance: the EU Purse Seine CPUE and the Maldives Pole and Line CPUE (see Figure 1).

2.1 EU Purse Seine CPUE

The abundance index for skipjack tuna from EU purse seine catch and effort data was updated by Kaplan et al. (2025a, 2025b). The indices of skipjack abundance, based on catches by European purse seiners (Spain and France) operating under floating objects (primarily drifting fish aggregating devices), were standardised using the method described in Kaplan et al. (2023), as required by the MP (see Table 1). The standardization applied a generalized additive mixed model (GAMM), which considered a comprehensive list of candidate covariates, including non-conventional ones, and covered the period from 1990 to 2024.

2.2 Maldives Pole and line CPUE

The abundance index for skipjack tuna from Maldives pole and line catch and effort data was updated by Medley et al. (2025), using the method described in Medley et al. (2023), as required by the MP. The index was derived from multiple datasets with varying levels of detail over the period 1995–2024, using a Bayesian approach (see Table 1).

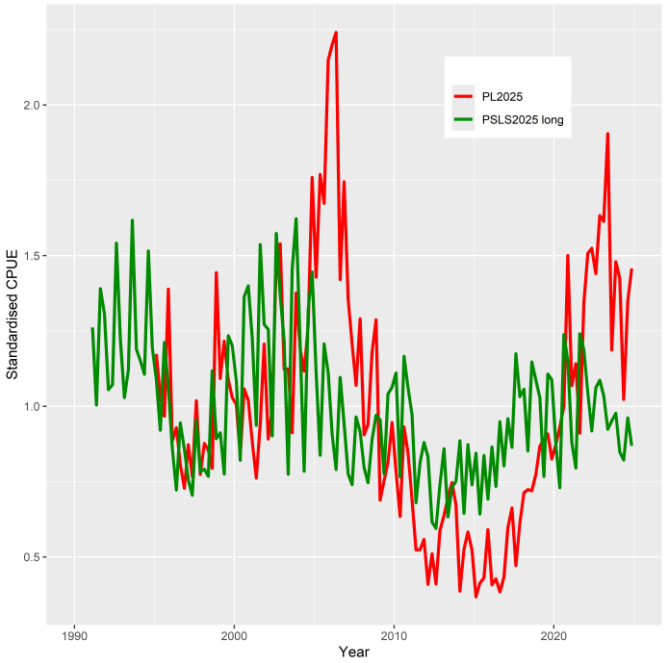

Figure 1: Data inputs to the skipjack MP: EU purse seine index 1990 – 2023 (Kaplan et al. 2025) and Maldives Pole and Line index 1995 – 2024 (Medley et al. 2025).

3. STRUCTURE OF THE MP

The IOTC skipjack tuna MP is a data-driven procedure that uses only CPUE as input data. The MP calculates a stock indicator based on the current index (averaged over the two CPUE series and over quarters) and compares it to the index from the reference period (1995–2021). The MP then determines the TAC based on the relationship of the stock indicator to the reference levels (U_{safe} and $U_{threshhold}$), using pre-specified algorithms (see Table 1 and the descriptions in (i) and (ii) below)

Table 1. Terms used for the description of the MP.

Notation	Value	Description
U_{SB0}	1	Stock status indicator value that corresponds to an unexploited stock.
U_Y	Calculated every 3 years	Stock status indicator for the year *Y*. It is the mean of the log-normalised pole and line and purse seine (log-school) CPUE abundance indices. These indices are standardized from the processed described in Medley et al 2023 (IOTC-2023-WPTT(DP)-13, expert offset excluded, ITSJ_1995_2022) and Kaplan et al. 2023 (IOTC-2023-WPTT25(DP)-08, Table 8, weighted GLMM) applied to catch and effort data from 1995yy respectively to the most recent data available. The index is normalized using values between 1995 and 2021 as a reference.
$U_{threshold} = 32\%\ U_{SB0}$	-0.3	Threshold stock status indicator from which catch is decreased from its maximum value.
$U_{safety} = 8\%\ U_{SB0}$	-1.4	Safety level for stock status indicator. Non-subsistence fisheries will be closed if the stock status indicator falls below this value.
$TAC_{t+1:3}$	Calculated every 3 years	Total Allowable Catch for the period t+1 to t+3.
C_{max}	528,130 tons	Maximum TAC when the stock status indicator is above the threshold level. It is the catch associated with the threshold stock status indicator value ($U_{threshold}$).
C_{min}	66,020 tons	Minimum TAC when the stock status indicator is below the safety level.

(i) The stock status indicator U_Y is estimated from the Maldivian pole and line (PL) and EU purse seine (log-school) catch per unit of effort (CPUE) indices.

(ii) The decision algorithm or HCR estimates the recommended catch limit TAC for the period (t+1:3) using the stock status indicator (Uy) as follows:

a) If $U_y \geq U_{threshold}$ then $TAC_{t+1:3} = C_{max}$;

b) If $U_{safety} \leq U_y \leq U_{threshold}$; then $TAC_{t+1:3} = (C_{max} - C_{min})\ x\ \frac{(U_t - U_{safety})}{(U_{threshold} - U_{safety})} + C_{min}$;

c) If $U_y \leq U_{safety}$; $TAC_{t+1:3} = C_{min}$

d) The value U_y is calculated with the following equations, taken from document IOTC-2024-TCMP08-04-Rev2 (y=year, s=season):

$$A_{y,s} = \log\left(CPUE_{y,s}^{PSLS}\right)$$

$$B_{y,s} = \log\left(CPUE_{y,s}^{PL}\right)$$

$$U^{REFERENCE} = \frac{1}{8.n_y}\left(\sum_{y=1995}^{2021}\sum_{s=1}^{4} A_{y,s} + \sum_{y=1995}^{2021}\sum_{s=1}^{4} B_{y,s}\right)$$

$$U_y = \frac{1}{8}\left(\sum_{s=1}^{4} A_{y,s} + \sum_{s=1}^{4} B_{y,s}\right) - U^{REFERENCE}$$

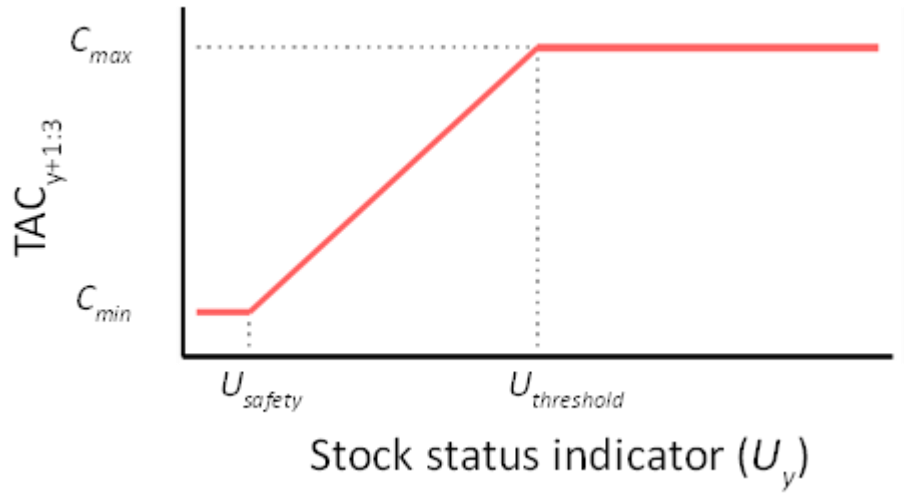

Figure 1. Schematic representation of the empirical Harvest Control Rule.

4. RUNNING THE MP

The calculated stock indicator $U_{y=2024}$ is 0.29. Other control parameters of the MP (U_{safety}, $U_{threshhold}$, C_{min}, and C_{max}) are defined in Table 1.

5. TAC CALCULATION

As the stock indicator is greater than $U_{threshhold}$, the TAC is set to C_{max}, which is 528,130 tons. However, this value is more than 15% lower than the current TAC (628,606 t). According to Resolution 24/07, the maximum allowable decrease in TAC is 10% relative to the previous TAC. Therefore, the recommended TAC is 628,606 t × 90% = 565,745 t.

6. REFERENCES

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