



Consideration of Exceptional Circumstances for the Bigeye Tuna MP 2026 – for WPM

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October 2026

IOTC WPM 2026

IOTC-2026-WPM17-15

Citation

Preece AL, Williams A. (2026) Consideration of Exceptional Circumstances for the Bigeye Tuna MP 2026. IOTC-2026-WPM17-xx. CSIRO, Australia.

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Acknowledgments

This work is funded by the Australian Department of Agriculture, Fisheries and Forestry (DAFF) and the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

Genevieve Phillips for providing data from the 2025 bigeye tuna stock assessment ensemble of models.

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Abstract

The IOTC's adopted management procedure (MP) for bigeye tuna is used to recommend the Total Allowable Catch (TAC) in the Indian Ocean. As part of the implementation schedule, the Commission adopted an annual review of evidence for exceptional circumstances that could make the application of the TAC advice risky to the stock or fishery. The Exceptional Circumstances Guidelines (IOTC–2021–SC24 Appendix 6A) specify a three-stage process: (i) examining evidence for exceptional circumstances, (ii) determining severity and impact, and (iii) recommending any management or research action that should be taken. This scientific process for developing appropriate management responses to exceptional circumstances provides transparency in TAC decision making by the Commission. The consideration of exceptional circumstances in 2026 applies to the adopted TAC for 2026–2028 from running the MP in early 2025 (slightly delayed from the scheduled MP run in 2024).

The following items are identified as exceptional circumstances.

- Catch landed in 2024 and 2025 exceeded the agreed TAC specified in resolution 23/04. This is an exceptional circumstance with potential negative impacts on stock status. Resolution 23/04 specifies, for this situation, that catches in future years will need to be reduced to account for catches over the TAC. The proposed recommendation is that the Commission and compliance committee enact the catch deduction mechanisms adopted in Resolution 23/04 to adjust catch limits for 2026–2028.
- Changes to the natural mortality parameters used in the 2025 stock assessment have changed SSB depletion estimates and population dynamics, and these do not fully align with the range of estimates in the operating models. This is potentially an exceptional circumstance. We suggest that there is low risk to the stock and fishery from adhering to the MP TAC advice. The proposed recommendation is that there are no changes made to the TAC, and we await new stock assessment advice scheduled for the WPTT in 2028.
- Several small differences between the CPUE standardisation in 2025 and the specified CPUE standardisation for the MP remain an exceptional circumstance. Severity and impact are considered low because the series predominantly falls within the range of the operating model projections and the new CPUE had a positive recent trend, indicating low additional risks to the stock and fisheries. The SC recommended in 2024 that fixed code should be established for use in CPUE standardisation for the MP.
- Catch in 2023 was updated (reduced) after running the MP in early 2025. Review of the updated data in 2025 indicated that it would not change the advice on TAC and therefore no action was recommended.

1 Introduction

The IOTC adopted a management procedure (MP) for bigeye tuna which is used to recommend the Total Allowable Catch (TAC) in the Indian Ocean. As part of the MP schedule, the Commission adopted an annual review of evidence of exceptional circumstances that could make implementing the MP TAC advice risky. Exceptional circumstances are conditions or data that fall outside the range of uncertainties that the MP was tested against, i.e., the reference set of operating models used for Management Strategy Evaluation (MSE), and the robustness tests. The Exceptional Circumstances Guidelines (IOTC, 2021: IOTC–2021–SC24 Appendix 6A) provide a scientific process for examining evidence for exceptional circumstances, evaluating potential impacts, and developing appropriate management responses if necessary. This process of examining evidence for exceptional circumstances provides a safety-net around the MP TAC advice and transparency in TAC decision making by the Commission.

The exceptional circumstances process has three stages:

- 1) determine whether any exceptional circumstances exist,
- 2) determine the severity and impact of the exceptional circumstances on achieving the objectives of the MP, and
- 3) if necessary, identify the research or management actions that could be taken by the IOTC.

2 Examining evidence for the existence of exceptional circumstances in 2026

The guidelines specify the information that should be checked for evidence of exceptional circumstances. The range of uncertainties and conditions that the MP was tested against are the MSE operating models used for the final tuning of the MP (Hillary et al., 2022; Kolody & Jumppanen, 2021), and a set of robustness tests. The data input specification (e.g., standardisation of the CPUE) are specified in Williams et al. (2022) and Kitikado et al. (2022). Total catch is available from the data preparation report and dataset (e.g. IOTC, 2026a,b). The MP was first run in 2022 to provide TAC advice for 2024 & 2025. The MP was run in 2025 to provide the TAC advice for 2026-2028 that was adopted by the Commission (Williams and Preece, 2025). The MP is next scheduled to be run in 2027 to provide TAC advice for 2029-2031.

The following items, specified in the Exceptional Circumstances Guidelines, have been examined:

- New knowledge about the stock, population dynamics or biology,
- Changes in fisheries or fishing operations,
- Changes to input data to the MP, or missing data, or

- Inconsistent implementation of the MP advice (e.g., total catch is greater or less than the Total Allowable Catch (TAC)).

2.1 New knowledge - Stock, population dynamics or biology

2.1.1 Stock status

The 2025 stock assessment provides the most recent estimates of stock status for bigeye tuna (Phillips et al., 2025). On review of the combined marginal probabilities in the Kobe plot, the SC determined that the stock was overfished and approaching a non-overfished state, and was not subject to overfishing (IOTC, 2026c). This was a positive improvement from the 2022 assessment of stock status. The 2025 assessment includes 3 years of updated data, and the key uncertainties considered in the 36 models forming the final reference set are steepness, growth, natural mortality, and selectivity.

There is no evidence of exceptional circumstances in 2026 in relation to new information on the status of the stock. Any new information that could affect stock status presented at WPTT should also be considered in the review of exceptional circumstances for TAC advice for 2026-2028.

2.1.2 Population dynamics

New information on growth (Farley et al, 2021; Eveson et al, 2025) and natural mortality parameters were included in the 2025, and 2022, assessment models (Phillips et al., 2025; Fu et al., 2022). These new data were not included in conditioning the MSE operating models. Differences between the MSE operating models (as specified in MP adoption resolution) and parameterisation of stock assessments are expected as new stock assessments explore different models and methods. The comparison of the SSB depletion between the operating models and the 2025 stock assessment (Figure 1) shows that the assessment estimates overlap, or are below, the lower end of the operating model range for most of the time series, indicating greater depletion in some assessment models than in the operating models. In the final years of the conditioning period and through the projection period (from 2019), the assessment estimates lie within the operating model range. This is substantially different from the 2022 assessment results which lay within the bounds of the operating models (Preece and Williams, 2024). The natural mortality parameters had the most impact on the 2025 assessment.

This difference in population dynamics is potentially an exceptional circumstance and, therefore, we have considered the severity and impact, and actions, as outlined in the exceptional circumstances guidelines. Considering that (i) the SSB depletion population dynamics are close to the lower end of the range of the MSE operating models for most of the time series, and within that range for the projections period, (ii) assessment models will continue to evolve and change, and (iii) the stock status indicates that the stock is approaching a non-overfished state and is not subject to overfishing, we suggest that there is low risk to the stock and fishery from adhering to the MP TAC advice. Therefore, we recommend no changes to the TAC based on these population dynamics differences and await new stock assessment advice scheduled for the WPTT in 2028.

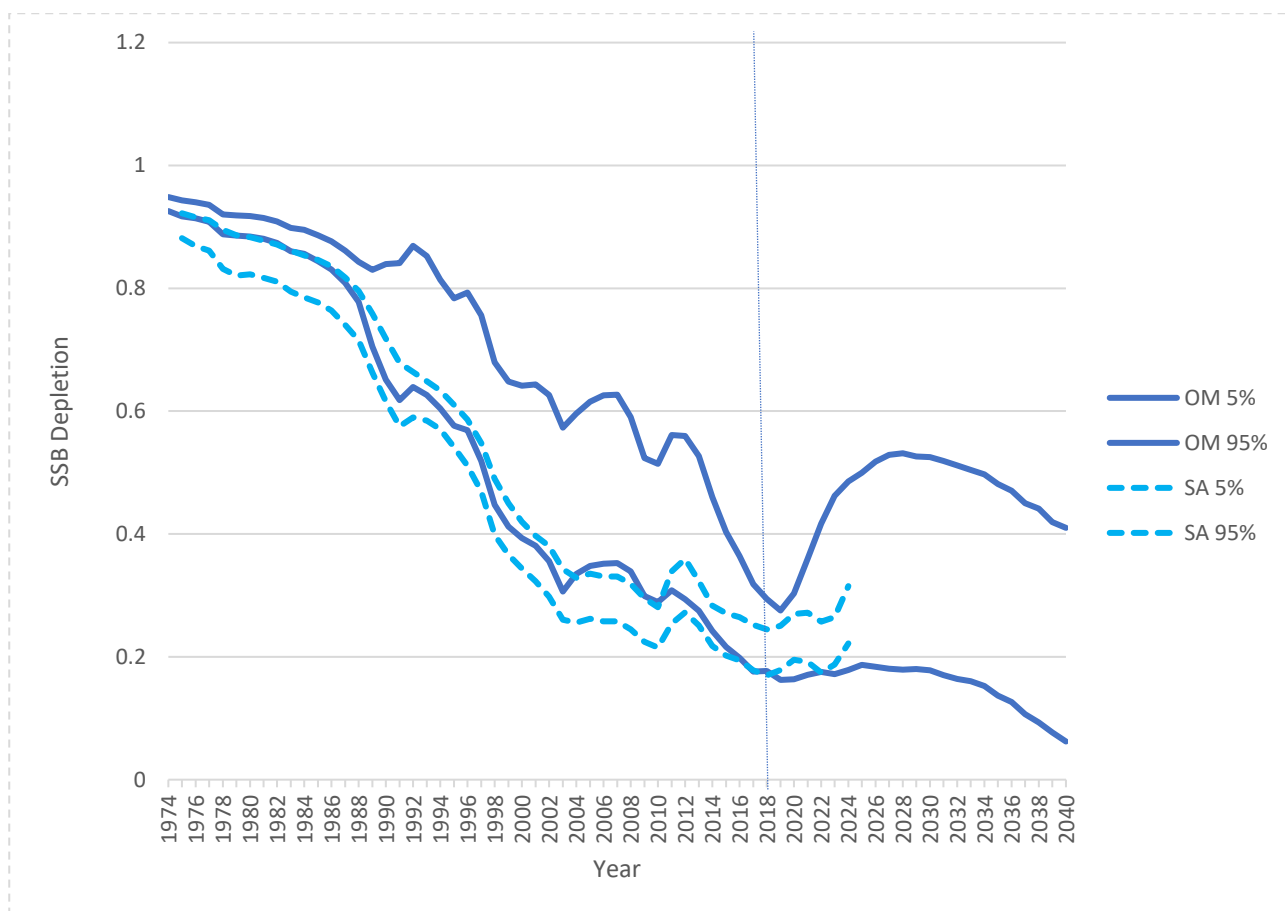


Figure 1 Comparison of the 90% probability interval for SSB depletion from the bigeye tuna MSE operating models (OM) (Hillary et al., 2022) and the 2025 stock assessment (SA) (Phillips et al., 2025). The vertical line at year 2018 indicates the end of the historical years of the operating model and start of projections.

2.1.3 Biology

New information on growth and alternative natural mortality scenarios used in the assessment in 2022 and 2025 do not affect any inputs or parameters for running the MP, and the stock assessment results are not used in the MP to set the TAC. The biomass estimates from the model component of the MP may deviate from the assessment biomass estimates (Kolody & Jumppanen, 2016), but this is expected as different stock assessment methods, data and model structures are explored in future. The MSE testing of the MP demonstrated that even for a wide range of potential real states of the population, the performance objectives of the Commission would be met by using the MP to calculate the TAC. As the new growth information and alternative natural mortality scenarios available in 2025 do not affect any inputs or parameters in the MP, this is not an exceptional circumstance.

2.2 Fishery or fishing operations

There were no major changes in fisheries or fishing operations identified in the data reported to IOTC in recent years and no substantial changes in data reporting or quality (IOTC 2026a). There are no exceptional circumstances in relation to changes to fishery or fishing operations.

2.3 MP input data

The MP was run in early 2025, after a delay in 2024, to provide TAC advice for 2026-2028 and is next scheduled to be run in 2027. We reviewed the MP inputs in 2024 and 2025 to detect any anomalies that might require further investigation, and these have not been further updated in 2026.

2.3.1 Catch data – used in 2025

The MP uses catch data collated by the IOTC (e.g. IOTC, 2025b). As noted in 2025, catch data for 2023 was updated at WPTT27. A higher catch estimate (105,369 t) was used when running the MP in early 2025. This is an exceptional circumstance, but impact on the TAC calculation is considered low because the TAC change constraint strongly limited the increase in the recommended TAC for 2026-2028. There do not appear to be any new issues in relation to the quality of catch data.

2.3.2 CPUE data – used in 2025

The CPUE series specified for the MP is created from the spatially stratified CPUE series, as specified in Kitikado et al. (2022), recombined using area weighting from Hoyle et al (2019) to create a single CPUE series used in the MP (Williams et al., 2022). The CPUE standardisation combines operational data from Japan, Korea and Taiwan, China longline fleets. In early February 2025, the joint CPUE Working Group produced a bigeye tuna CPUE index (1979-2023) for use in the bigeye tuna MP. The following details of the models and input data were confirmed (Kitikado and Hoyle, pers. comm., 2025):

- Operational catch and effort data
- Log normal models for all four regions
- R1N, R1S, R2, used Hooks Between Floats (HBFs), and R3 used clusters (based on species mix) – note this is a correction to Williams et al (2022)
- Some data from 2021-2023 excluded.

It was noted that there remained a few small differences from the agreed standardisation specified for the MP:

- Lognormal instead of Delta Lognormal models were used because of time constraints. Hoyle (pers.comm.) noted that lognormal should give similar results to the delta lognormal.
- Some differences in subsampling of data, and in excluded data in 2021-2023 from the China, Taiwan fishery.

The standardised CPUE and exceptional circumstances in relation to running the MP were reviewed by WPM16(MSE) and a special session of the SC in early 2025. The differences between the specified standardisation and the actual standardisation are exceptional circumstances but the WPM16(MSE) agreed that the recent CPUE trend was positive, and the impact on risks for the stock and fisheries was likely to be small, and therefore no further action was needed (Figure 2).

The recommended TAC (2026-2028) from the MP was adopted by the TCMP and Commission (Res 25/04).

The WPTT_DP in 2025 noted a minor error in the CPUE standardisation used in the MP: “a small constant adjustment, to avoid taking the logarithm of zero, was not applied in the final computation of standardized CPUEs” (IOTC–2025-WPTT27(DP)-09). Kitakado et al. (2025) noted the effect on the MP would be minimal. A comparison of the new CPUE described in paper IOTC–2025-WPTT27(DP)-09 with the CPUE index used in the MP showed that the two series were similar. The new CPUE has also been updated with new data through to 2024, uses the delta-lognormal models (as specified for the MP) and includes a change to fleet-specific HBF effects, all of which may be contributing to the small differences detected between the two CPUE series. The minor error does not change the outcome determined by the WPM16(MSE) in early 2025 that the exceptional circumstances had low impact and required no further action.

A recommendation from the WPM and SC in 2024 was that a fixed set of code for CPUE standardisation is developed to ensure that the CPUE index is constructed as specified for the MP. The CPUE working group should still be encouraged to explore other standardisation methods, for exploration of uncertainty and for use as alternative series in the stock assessment, but not for use in the MP. We note that the MP specified CPUE series will be required in 2027 to run the MP.

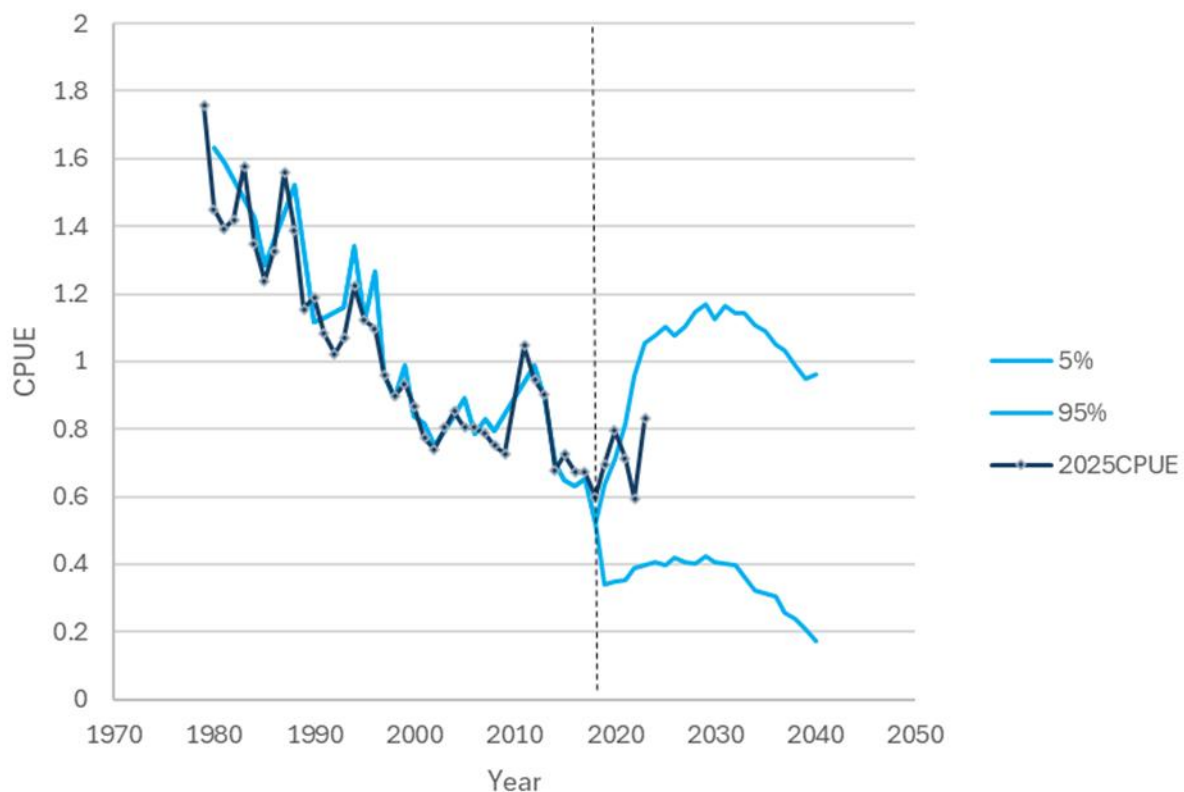


Figure 2 Comparison of the 90% probability interval for the CPUE from the bigeye tuna MSE operating models (pale blue lines) (Hillary et al, 2022) and from the 2025 CPUE series used in the MP (dark blue line). The vertical dashed line at year 2018 indicates the end of the historical years of the operating model and projections start in 2019.

2.4 Catch relative to TAC

The bigeye tuna TAC and catch limits for the years 2024 and 2025 were adopted by the Commission (based on advice from running the MP in 2022, Resolution 23/04).

The estimated catch that was landed in 2024 was 86,434 t and the estimated catch landed in 2025 was 96,816 t (IOTC, 2026d). In both years the catch has exceeded the agreed TAC of 80,583 t (Res 23/04).

This is an exceptional circumstance, which may have a negative impact on stock status. As specified in resolution 23/04, for this situation, catches in future years will need to be reduced to account for catches over the TAC. New catch limits for the period 2026-2028 are specified in resolution 25/04 and may need to be adjusted to account for the catches over TAC in 2024-2025. The proposed recommendation is that the Commission and compliance committee enact the catch deduction mechanisms in Resolution 23/04 and adjust the 2026-2028 catch limits.

3 Discussion and Conclusion

The Exceptional Circumstances Guidelines make it clear that identifying exceptional circumstances does not necessarily result in changes to the recommended TAC. In fact, changes to the recommended TAC should be avoided except in situations where the TAC advice would pose a risk to the stock or the fishery if implemented. The alternatives are to collect more information, or do research, to inform review of evidence of exceptional circumstances in the next year or years. Another alternative is to proceed with the TAC advice (or precautionary advice) and trigger a review of the MP earlier than planned. Recommending a change to the TAC is appropriate if there is a high risk to the stock. If the TAC is to be adjusted, further evaluation of the scale and severity of the exceptional circumstance provides guidance on how to calculate an adjustment (% change) to the TAC.

A wide range of items are reviewed to examine if there is evidence for exceptional circumstances, i.e., the data inputs to the MP, the range of uncertainties against which the MP was tested, and implementation of MP TAC advice. This review is conducted annually to provide advice to the SC on any risks with the operation of the MP and TAC advice.

The annual review of exceptional circumstances is an important component of providing management advice using an adopted MP. It is the safety net process that evaluates the extent to which the MP is operating as expected (from the MP testing) and identifies any risks associated with implementing the MP TAC advice. It requires consideration of evidence for exceptional circumstances. It provides a scientific process for developing appropriate management responses if any exceptional circumstances are identified and, hence, provides transparency in TAC decision making by the Commission.

In 2026, we are evaluating if there are any exceptional circumstances in relation to the adopted TAC for 2026-2028 from running the MP in (early) 2025 (delayed from 2024).

In summary, two new exceptional circumstances were identified: 1) catch in 2024 and 2025 is greater than the agreed TAC, and 2) possible changes in our understanding of population dynamics.

- The catch landed in 2024 and 2025 was greater than the adopted TAC for these years (Res 23/04). This is an exceptional circumstance, which may have a negative impact on stock status. The proposed recommendation is that the Commission and compliance committee enact the catch deduction mechanisms specified in resolution 23/04 and adjust the 2026-2028 catch limits (in Res 25/04).
- The 2025 stock assessment estimates of SSB depletion overlap, or are below, the lower end of the operating model range for most of the time series, indicating greater depletion. Assessment estimates are within the range of the operating models in the most recent years and in projections. This indicates different population dynamics, which is potentially an exceptional circumstance. We suggest that there is low risk to the stock and fishery from adhering to the MP TAC advice. The proposed recommendation is that there are no changes made to the TAC, and we await new stock assessment advice scheduled for the WPTT in 2028.

Two existing exceptional circumstances identified in 2025 are still relevant:

- The CPUE standardisation used in the MP in early 2025 has some small discrepancies from the original specified standardisation and has not been updated. Severity and impact are considered minor. The SC recommended in 2024 that fixed code should be established for use in CPUE standardisation for the MP.
- Catch estimates used in the MP have changed. Review of the updated data in 2025 indicated that it would not change the advice on TAC and therefore no action was recommended.

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