

Indian Ocean purse seine tuna FIP (Dongwon) review of yellowfin tuna stocks in the IOTC

Prepared by

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Introduction

The Indian Ocean purse seine tuna Fishery Improvement Project (FIP) (Dongwon) was established in 2021 with the intention of becoming certified by the Marine Stewardship Council (MSC) by 2026. The FIP operates within the coastal waters of the Seychelles and Mauritius exclusive economic zone (EEZ) and the high seas of the Indian Ocean. The fishery is comprised of two purse seine vessels that target bigeye tuna (*Thunnus obesus*), yellowfin tuna (*T. albacares*), and skipjack tuna (*Katsuwonus pelamis*). The fishery is regionally managed by the Indian Ocean Tuna Commission (IOTC).

The target species of the fishery must be appropriately managed and consistently reassessed to determine if any updates to the management are required. Consideration of the species' stock health in the Indian Ocean is imperative for the FIP's progression towards certification by the MSC. Over the years, yellowfin tuna stocks in the Indian Ocean have been declining, largely due to the impacts of overexploitation by commercial fisheries and poor effective management by the IOTC. In order to pass the requirements of the MSC Fisheries Standard (v2.01), fisheries need to demonstrate that the stocks of all target species are healthy and have adequate management measures in place to ensure that this is maintained. Management measures need to consist of harvest strategies and harvest control rules (HCRs) that can be species-specific.

The aim of this report is to review the situation of yellowfin tuna stocks in the Indian Ocean and to update the scores for the Principle 1 performance indicators (PI).

Assessment of the current stock status in the IOTC

Yellowfin tuna

In 2021, the IOTC renewed an interim rebuilding plan for yellowfin tuna in the Indian Ocean (IOTC, 2021). The requirements of this plan applies to all Contracting Parties and Cooperating Non-Contracting Parties (CPCs) to the IOTC and include a series of catch limits per CPC. Catch limits are dependent on the total catch rate from previous years. Furthermore, requirements were implemented for CPCs that exceed their annual catch limit and included deductions from the allowable limit for the years following the over catch. Finally, all CPCs are required to also conform with Resolution 15/01 to record catch and effort data to provide as much data as possible to the IOTC Compliance Committee.

The most recent stock assessment for Indian Ocean yellowfin tuna stocks was conducted in 2024 and incorporates a wide range of uncertainty, which makes it seem more robust than the previous assessment of 2021. The results of the assessment demonstrated that the stock no longer in an overfished state nor experiencing overfishing (IOTC, 2024; ISSF, 2025). The stock assessment also reported that catches have declined by 26% from a record high of 540,000 tonnes in 2004; but annual catches have stayed above 400,000 tonnes since 2012 and another peak of over 450,000 tonnes was reached in 2018. Both fishing mortality and spawning stock biomass (SSB) are within a health range as defined by the target and limit reference points (TRP and LRP, respectively) Figure 1.

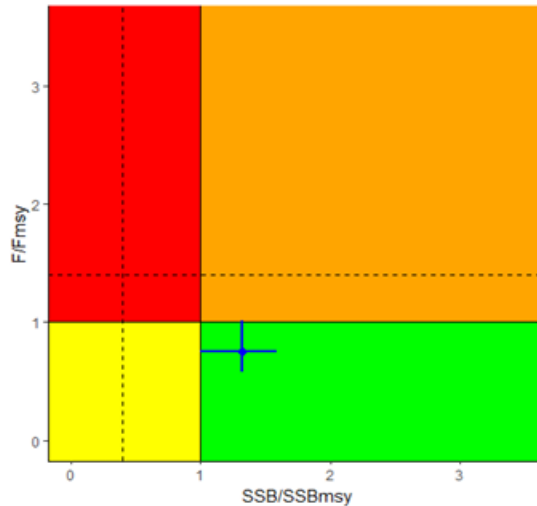


Figure 1: Kobe plot for Indian Ocean yellowfin tuna stocks. (ISSF, 2025)

The two reference points are applied to stock assessments and management to identify the ideal catch rate that would maintain the stock fluctuating around Maximum Sustainable Yield (MSY) (TRP), and the lowest point before the point of recruitment impairment (PRI) (LRP).

The report from ISSF also describes how catches of yellowfin tuna in 2023 were around 401,400 MT, which represents an 8% decrease from the 2022 catch levels. The interim rebuilding plan of 2021 set an interim LRP and TRP, however, there are no harvest strategies nor HCRs in place for this species in the Indian Ocean.

Principle 1 performance indicator score update

Performance Indicator	Draft scoring range	Data deficient?
1.1.1 – Stock status	≥80	No
Rationale or key points		
<p>The most recent stock assessment for Indian Ocean yellowfin tuna stocks was conducted in 2024 and incorporates a wide range of uncertainty, which makes it seem more robust than the previous assessment of 2021. The results of the assessment demonstrated that the stock no longer in an overfished state nor experiencing overfishing (IOTC, 2024; ISSF, 2025). The stock assessment also reported that catches have declined by 26% from a record high of 540,000 tonnes in 2004; but annual catches have stayed above 400,000 tonnes since 2012 and another peak of over 450,000 tonnes was reached in 2018. Both fishing mortality and spawning stock biomass (SSB) are within a health range as defined by the target and limit reference points (TRP and LRP, respectively) Figure 1.</p> <ol style="list-style-type: none"> 1. The ratio of $F_{current}/F_{MSY}$ in 2023 is estimated at 0.75 (80% CI: 0.58-1.01), indicating that overfishing is not occurring. 2. The stock is not considered to be overfished as spawning biomass in 2023 is estimated to be above the SSB_{MSY} level. $SSB_{current}/SSB_{MSY} = 1.32$ (80% CI: 1.00-1.59). 		

3. The value of MSY is estimated to be 421,000 (80% CI: 416,000-430,000 tonnes). Current catches (401,400 t in 2023) are below the estimated MSY.

Therefore, **SG80 is now met** for this species.

1.1.2 – Stock rebuilding

N/A

No

Rationale or key points

As PI 1.1.1 scored at least SG80, this PI does not need to be scored (as FCP SA2.3.1).

1.2.1 – Harvest strategy

>80

No

Rationale or key points

IOTC has three primary objectives: to promote cooperation among members for the conservation and optimal utilization of fish stocks, to monitor stock conditions and trends while promoting research and the distribution of fishery-related information, and to adopt decisions and recommendations necessary to achieve the Agreement’s objectives. In accordance with Article IX, paragraph 1 of the IOTC Agreement, all Contracting Parties and Cooperating Non-Contracting Parties (CPCs) must ensure that their purse seine, longline, gillnet, pole-and-line, handline, and trolling vessels authorized to fish for IOTC managed species adhere to a data recording system. This requirement applies to vessels over 24 meters in length, as well as those under 24 meters if they operate outside their flag State's Exclusive Economic Zone (EEZ) within the IOTC area of competence. Regular stock assessments are conducted to monitor the effectiveness of harvest strategies. Resolution 15/10 (IOTC_RES, 2015c) sets interim target reference points (BMSY and FMSY) and limit reference points (BLIM = 0.40 BMSY, FLIM = 1.40 FMSY) for yellowfin tuna (YFT). Additionally, Resolution 19/01 (IOTC_RES, 2019a) mandates catch reductions based on 2014 levels. Together, these measures constitute an interim harvest strategy designed to maintain stock levels around the target reference points.

The 2023 catch was 5% lower than the MSY estimate for the last 20 years, suggesting a positive trajectory toward sustainable stock management. Since the 2023 stock status aligns with the 2018 recovery targets, the harvest strategy is considered effective in responding to stock conditions. Evidence suggests that monitoring and stock assessments have guided conservation and management decisions, ultimately leading to stock recovery at MSY-based reference points. Therefore, Sla and Sib meets **SG80**.

The stock assessment for yellowfin tuna in the Indian Ocean is conducted every three-four years since 2018. The assessments rely on a combination of key data sources, including catch data reported by various fleets, joint longline CPUE indices and tagging data. Through this monitoring, it is possible to detect trends in stock status and assess whether management measures are achieving sustainability objectives. Sic meets **SG60**.

The process of assessing stock status, evaluating management strategies, and implementing necessary changes is well established through various mechanisms, ensuring that the harvest strategy remains effective and adaptive to evolving scientific knowledge and fisheries conditions. The IOTC conducts comprehensive stock assessments for yellowfin tuna at least every three-four years. Therefore, the harvest strategy is periodically reviewed and improved based on scientific advancements, stock assessments, and management recommendations. The IOTC ensures an adaptive approach by incorporating updated biological and fisheries data, refining stock assessment

models, implementing catch controls, and considering new management strategies. Therefore, SId meets SG100.

As sharks are not the target species, S1e need not be scored.

Finally, as yellowfin tuna is the target species for this fishery, a review of alternative measures need not be conducted and thus S1f is not scored.

1.2.2 – Harvest control rules

60-79

No

Rationale or key points

Resolution 19/01 established an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock, mandating catch reductions for various fishing gears, reporting obligations, and monitoring mechanisms to ensure compliance. It also included provisions for supply vessel reductions, observer coverage, and evaluation of the effectiveness of implemented measures by the IOTC Scientific and Compliance Committees. In addition, Resolution 21/01, which entered into force on 17 December 2021, further refined these measures, increasing required catch reductions for certain CPCs, reinforcing monitoring and compliance requirements, and prioritizing the development of a formal management procedure for the target stock. The resolution also mandates periodic evaluations of stock recovery efforts and ensures that the Scientific Committee assesses the impact of the measures taken. Together, these resolutions provide clear documentation of management actions being implemented and enforced by the IOTC, confirming that HCRs are actively in place within the IOTC Area of Competence. Despite past challenges, the most recent stock assessment indicates that catch levels have been controlled below MSY, suggesting stock recovery. The 2024 assessment results indicate that the HCR is functioning as expected, reducing the exploitation rate as the PRI is approached. However, past overfishing and stock declines necessitate a cautious approach in evaluating its long-term effectiveness. While there are positive signs of stock recovery, uncertainties remain regarding the full operational effectiveness of the HCR and whether it is capable of ensuring exploitation rate is reduced as the PRI is approached, without all IOTC nations signed to the Resolutions. Therefore, **S1a meets SG60 but not SG80.**

The interim HCR established for yellowfin tuna is designed to be robust to the primary sources of uncertainty in stock assessments and fishery management. Several factors contribute to this robustness, as outlined in the 2024 Working Party on Tropical Tunas (IOTC_SC, 2024) report and related IOTC resolutions. **S1b meets SG80.**

Theoretically, the HCR is structured to be effective in regulating exploitation rates. The 2024 stock assessment provides encouraging evidence that the implemented tools are effective in controlling exploitation. Additionally, the 2024 assessment shows an improvement in stock status, with the spawning stock biomass (SB) estimated at approximately 42% of the virgin spawning biomass (SB0) and a fishing mortality ratio (F/FMSY) of 0.75, suggesting that overfishing has been curtailed. Therefore, **S1c meets SG60.**

References

IOTC, 2021. *Resolution 21/01 On an interim plan for rebuilding the Indian Ocean yellowfin tuna stock in the IOTC area of competence*, s.l.: Indian Ocean Tuna Commission.

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