ISSF Technical Report 2024-07

STATUS OF THE WORLD FISHERIES FOR TUNA: November 2024

Photo: Jeff Muir

ISSF / **November 2024**

Suggested citation:
ISSF. 2024. Status of the world fisheries for tuna. Nov. 2024. ISSF Technical Report 2024-07. International Seafood Sustainability Foundation, Pittsburgh, PA, USA

Topic Categories: Tuna stock status

Table of Contents

Executive Summary

Across the seven species of major commercial oceanic tuna, 23 stocks are recognized for stock assessment and management (6 albacore, 4 bigeye, 4 bluefin, 5 skipjack and 4 yellowfin stocks). This document summarizes the stock status resultant from the most recent scientific assessments of these stocks, as well as the current management measures adopted by the RFMOs. In addition, this report describes the status and management of the 23 stocks using a consistent methodology in terms of two factors: Abundance and Exploitation Rate (fishing mortality).

Until 2023, this report also included relative ratings for bycatch impacts by the different fishing methods. The information on stock status and management comes from the five tuna Regional Fishery Management Organizations (RFMOs) that assess and regulate tuna fisheries internationally. However, the information on bycatch impacts was from multiple sources and was not stock- or fishery-specific. Because of this, the ISSF Scientific Advisory Committee recommended that the Stock Status Report be limited to stock status and management, and that a separate ISSF report be created to summarize bycatch and other ecosystem impacts for major types of tuna fisheries. That separate report was first published in March 2024 and is available here.

In 2022, the catch of major commercial tunas was 5.2 million tonnes. Fifty-seven percent of it was skipjack tuna, followed by yellowfin (30%), bigeye (7%) and albacore (5%). Bluefin tunas accounted for 1% of the global catch.

Globally, 65% of the stocks are at a healthy level of abundance, 13% are overfished and 22% are at an intermediate level. In terms of exploitation, 87% of the stocks are not experiencing overfishing, 9% are experiencing overfishing and 4% are at an intermediate level (**Figure 1**).

In relation to catch (**Figure 2**), 88% of the total catch comes from healthy stocks in terms of abundance. This is due to the fact that skipjack stocks contribute more than one half of the global catch of tunas, and most are in a healthy situation (**Table 1**). In contrast, one bluefin stock, one yellowfin stock and one bigeye stock are overfished; resulting that 10% of the total catch comes from overfished stocks. Regarding exploitation, 90% of the total catches comes from stocks that are not experiencing overfishing (**Figure 2**).

Catch by rating (abundance and exploitation) and RFMO/region are shown in **Figure 3**.

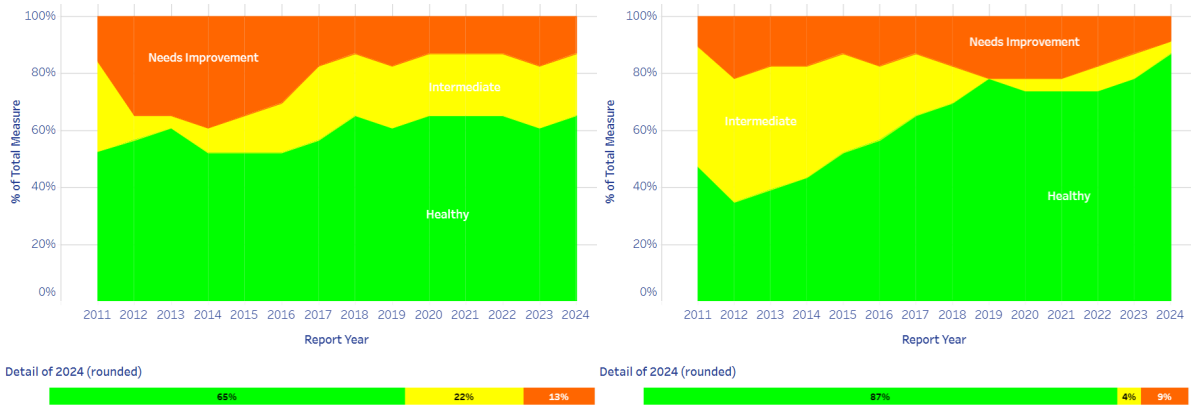


Figure 1. Trends in number of stocks (%) of major commercial tunas according to abundance ratings (left) and fishing mortality ratings (right). The percentages correspond to the number of stocks with a given ranking.

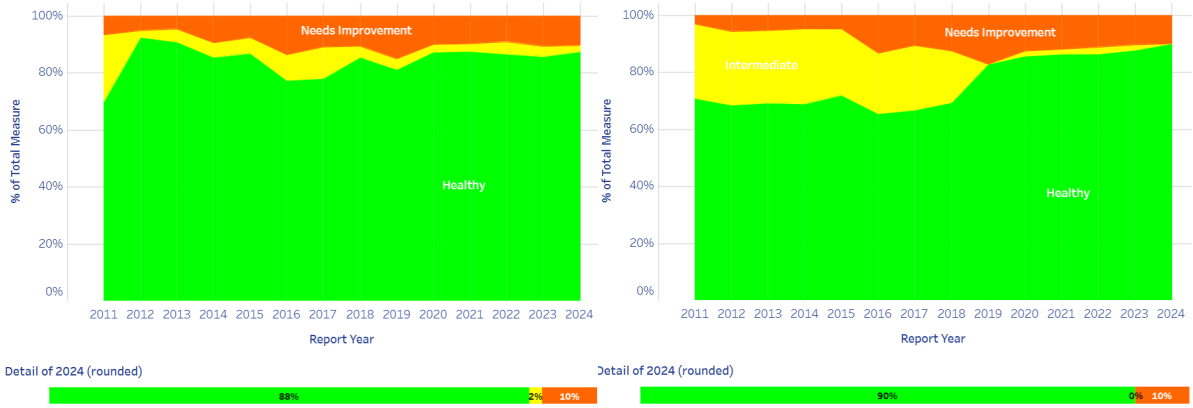


Figure 2. Trends in catch (%) of major commercial tunas according to abundance ratings (left) and fishing mortality ratings (right). The percentages correspond to the total catch of all stocks with a given ranking.

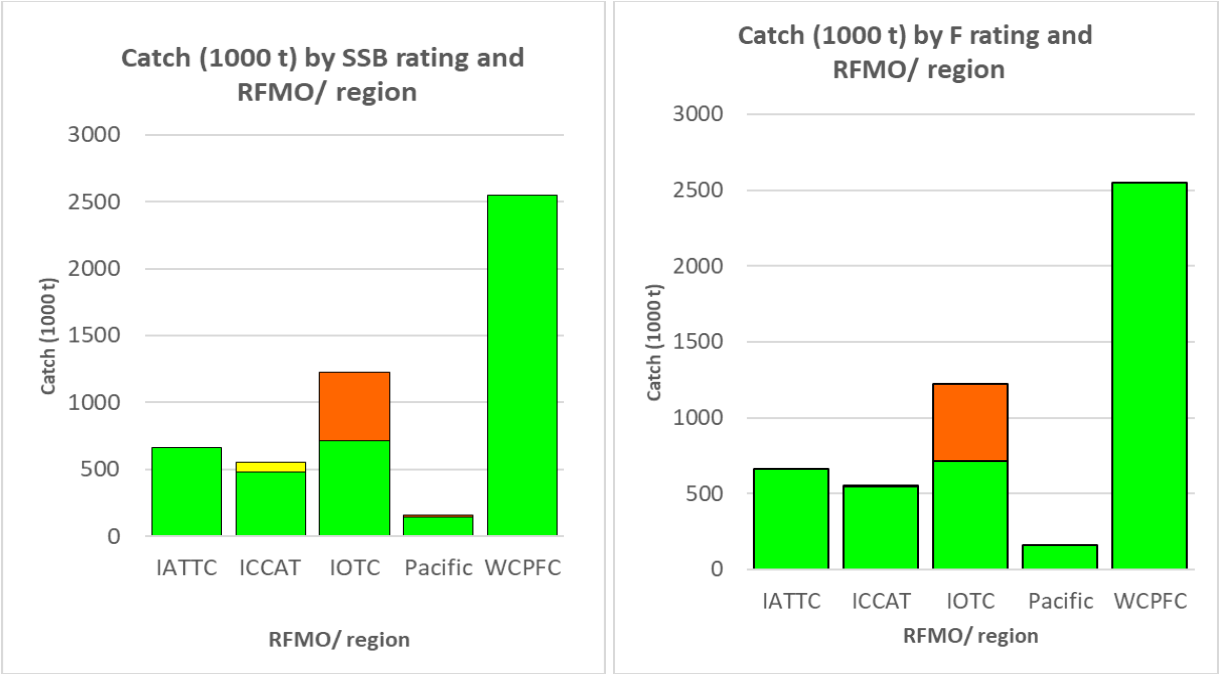


Figure 3. Catch (1000 t) by rating and RFMO or region in 2022. Left: SSB abundance ratings (Green = not overfished, Yellow = intermediate level of abundance, Orange = overfished). Right: F exploitation ratings (Green = not experiencing overfishing, Yellow = intermediate levels, Orange = experiencing overfishing).

Table 1. Spawning biomass (SSB) and Fishing Mortality (F) ratings for 23 tuna stocks. The table is sorted by species. Catch, in thousands of tonnes, is for 2023 (for 2022 in the case of Indian ocean stocks). For an explanation of the methodology for assigning ratings see section below.

STOCK	CATCH	SSB	F
Albacore tuna			
PO-ALB-N	34		
PO-ALB-S	68		
AO-ALB-N	28		
AO-ALB-S	22		
AO-ALB-M	2		
IO-ALB	47		
Bigeye tuna			
EPO-BET	67		
WPO-BET	134		
AO-BET	61		
IO-BET	103		
Bluefin tuna			
PO-PBF	18		
AO-BFT-E	39		
AO-BFT-W	3		
SH-SBT	17		
Skipjack tuna			
EPO-SKJ	389		
WPO-SKJ	1619		
AO-SKJ-E	220		
AO-SKJ-W	30		
IO-SKJ	666		
Yellowin tuna			
EPO-YFT	306		
WPO-YFT	737		
AO-YFT	140		
IO-YFT	410		

Table 2. Spawning biomass (SSB) and Fishing Mortality (F) ratings for 23 tuna stocks. The table is sorted by ocean or ocean region. Catch, in thousands of tonnes, is for 2023 (for 2022 in the case of Indian ocean stocks). For an explanation of the methodology for assigning ratings see section below.

STOCK	CATCH	SSB	F
Eastern Pacific			
EPO-BET	67		
EPO-YFT	306		
EPO-SKJ	389		
Western Pacific			
WPO-BET	134		
WPO-YFT	737		
WPO-SKJ	1619		
Pacific Ocean			
PO-ALB-N	34		
PO-ALB-S	68		
PO-PBF	18		
Atlantic Ocean			
AO-BET	61		
AO-YFT	140		
AO-SKJ-E	220		
AO-SKJ-W	30		
AO-ALB-N	28		
AO-ALB-S	22		
AO-ALB-M	2		
AO-BFT-E	39		
AO-BFT-W	3		
Indian Ocean			
IO-BET	103		
IO-YFT	410		
IO-SKJ	666		
IO-ALB	47		
Southern Hemisphere			
SH-SBT	17		

Introduction

Purpose

The 23 stocks of the 7 major commercial oceanic tuna species are assessed and managed by five Tuna Regional Fishery Management Organizations (RFMOs). The purpose of this document is to summarize the status of the stocks according to the most recent scientific assessments, as well as the current management measures adopted by tuna RFMOs. The report is reviewed by the ISSF Scientific Advisory Committee, which provides advice on its content. The report does not advocate any seafood purchase decisions.

Note that stock status can change between consecutive assessments because the stocks and fisheries are dynamic. In addition, the scientific bodies of the RFMOs sometimes improve the assessment procedures in the light of new methods and more information, and these changes can also impact the interpretation of stock status, particularly in relation to MSY-based reference points.

When available, the stock summaries in this report include the probability statements about stock status that are provided by RFMO scientific committees.

While this report does not replace the more detailed information available directly from the RFMOs, it does serve as a single source in which uniform information is presented.

In terms of management, it is worth noting that the use of Management Procedures (MP) (also known as Harvest Strategies (HS)) differs between RFMOs. For instance, while some RFMOs adopted some elements of the MPs (e.g., the Harvest Control Rule), others adopted full MPs including the monitoring strategy and the stock assessment as elements of the MP/HS.

The report is organized by Ocean or by Ocean Region to match as closely as possible the mandates of the different RFMOs.

There are five tuna RFMOs, which are responsible of assessing and managing the 23 stocks of the 7 major commercial oceanic tuna species:

- IATTC: Inter-American Tropical Tuna Commission (La Jolla, USA – 1949)
- ICCAT: International Commission for the Conservation of Atlantic Tunas (Madrid, Spain – 1969)
- CCSBT: Commission for the Conservation of Southern Bluefin Tuna (Canberra, Australia – 1994)
- IOTC: Indian Ocean Tuna Commission (Mahé, Seychelles – 1996)
- WCPFC: Western and Central Pacific Fisheries Commission (Kolonia, Micronesia – 2004)

The stock assessments and the scientific management advice for those stocks are provided annually by the Scientific Committees of those RFMOs, usually following this meeting calendar:

- IATTC Scientific Committee meets annually in May each year[1],
- ICCAT Scientific Committee meets annually in September,
- CCSBT Scientific Committee meets annually in September,
- IOTC Scientific Committee meets annually in December,
- WCPFC Scientific Committee meets annually in August.

Table 3 shows the latest stock assessment conducted and the next planned stock assessment for each of the 23 stocks.

Catch data in this report is presented by the following main gear type categories: Purse seine, Longline, Pole and Line, Gillnet and Other. Purse Seine catches are split by set type (FAD, free-school, dolphin) when possible, throughout the report. The term “FAD” is used broadly as a synonym of “associated” sets, whether they are natural logs, anchored FADs, dFADs or other set types that RFMOs classify as associated. While FADs are not used exclusively by purse seine vessels, accurate data on FAD catches by other vessel types is not always available, therefore, this set type subdivision is only applied to Purse Seine catches in this report.

[1] EPO stocks are assessed by the IATTC staff, who makes recommendations to the IATTC. The SAC can also make recommendations to the IATTC.

Table 3. Calendar of planned stock assessments agreed by the RFMOs. Depending on RFMO priorities some assessment years could be changed.

STOCK	RFMO	LAST ASSESSMENT	NEXT ASSESSMENT
EPO-BET	IATTC	2024	TBD
EPO-YFT	IATTC	2020	2025
EPO-SKJ	IATTC	2024	TBD
WCPO-BET	WCPFC	2023	2026
WCPO-YFT	WCPFC	2023	2026
WCPO-SKJ	WCPFC	2022	2025
PO-ALB-N	IATTC / WCPFC	2023	2026
PO-ALB-S	IATTC / WCPFC	2024	2027?
PO-PBF	IATTC / WCPFC	2024	2026?
AO-BET	ICCAT	2021	2025
AO-YFT	ICCAT	2024	TBD
AO-SKJ-E	ICCAT	2022	2026
AO-SKJ-W	ICCAT	2022	2026
AO-ALB-N	ICCAT	2023	2026
AO-ALB-S	ICCAT	2020	2026
AO-ALB-M	ICCAT	2021	2024
AO-BFT-E	ICCAT	2022	TBD
AO-BFT-W	ICCAT	2021	2025
IO-BET	IOTC	2022	2025
IO-YFT	IOTC	2021	2024
IO-SKJ	IOTC	2023	2026
IO-ALB	IOTC	2022	2025
SH-SBT	CCSBT	2023	2026

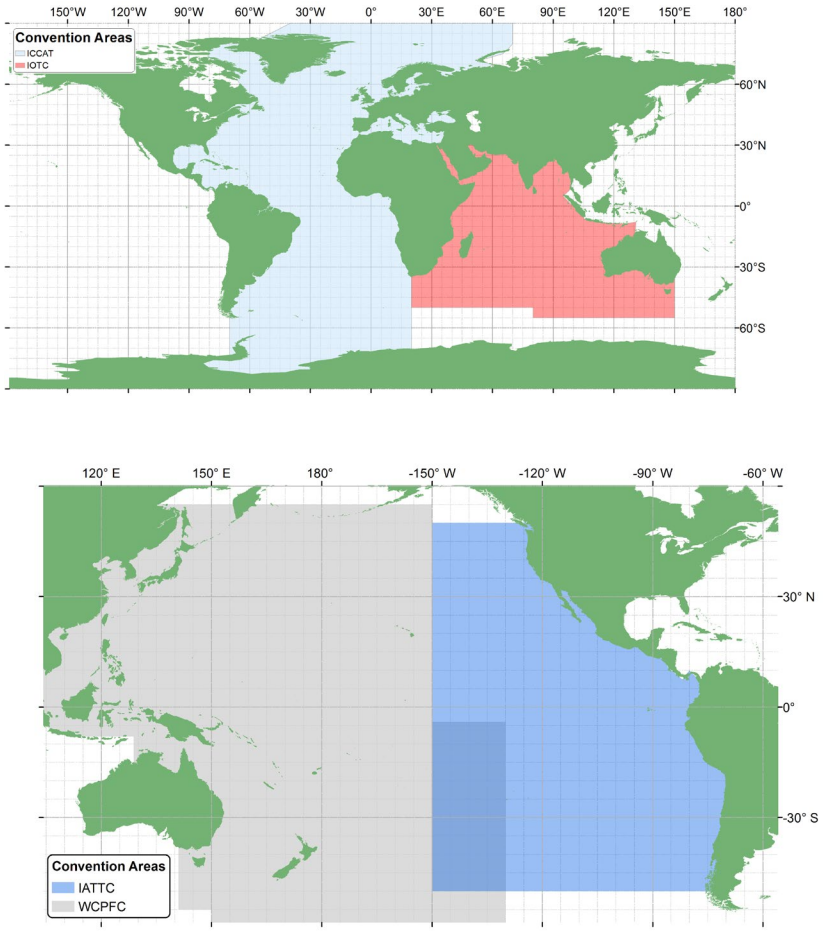


Figure 4. Tuna RMFO Convention Areas. Top: International Commission for the Conservation of Atlantic Tunas (ICCAT) and Indian Ocean Tuna Commission (IOTC). Bottom: Inter-American Tropical Tuna Commission (IATTC) and Western and Central Pacific Fisheries Commission (WCPFC).

In addition, this report describes the status and management of the 23 stocks using a consistent methodology (explained below) in terms of two factors: Abundance and Exploitation Rate.

This report answers three key questions about each tuna stock:

Is the stock overfished? The report documents the abundance of fish that can reproduce each year, called the spawning stock biomass (SSB), and compares it to an estimate of the spawning biomass that would produce maximum sustainable yield (SSB_{MSY}), which is the biomass that results in the highest average catches in the long-term (this is commonly considered a target of fisheries management). When SSB is below SSB_{MSY} the stock is considered in an “overfished” state.

An overfished stock doesn’t necessarily mean that the stock is in immediate danger of extinction or collapse but that currently the fish aren’t being allowed to grow and reproduce at their most productive level. If a stock is overfished, the report will note any corrective measures being taken by the relevant fisheries management organization.

In each stock summary table, the spawning stock biomass is also compared with the initial or spawning stock biomass without fishing (SSB_0) to ascertain the stock depletion level from initial (unfished) population biomass.

Is it in danger of becoming overfished? The report measures the fishing mortality rate (F), a measure of fishing intensity, and compares it to the fishing mortality that produces maximum sustainable yield (F_{MSY}). When F is above F_{MSY}, the stock is in danger of becoming overfished in the future. This is called "overfishing**"**. If overfishing is taking place, the report will note any corrective measures being taken by the relevant fisheries management organization.

This report is updated several times each year, usually after an RFMO assesses the stocks it is responsible for or adopts management recommendations. Appendix 1 provides a log of the updates.

Note that the IATTC and WCPFC Convention Areas have a region of overlap (**Figure 4**, bottom). In this report, catches of tropical tunas that occur in the overlap region are provided in the EPO summary. Similarly, the CCSBT Convention Area overlaps with those of ICCAT, IOTC and WCPFC. In this report, catches of southern bluefin tuna are provided in the Southern Hemisphere summary.

Ratings methodology

For each stock, ISSF applies color ratings (Green, Yellow, Orange) to each of two factors: stock abundance and fishing mortality.

Each stock is rated separately on these three main criteria and color-coded, to indicate not only the severity of the problem, but also the likelihood that the problem will continue in the future. An orange rating in any of these categories means that there are sustainability concerns (i.e. that the tuna stocks are experiencing overfishing or are currently overfished) and there are no adequate corrective measures in place. A yellow rating means that there are sustainability concerns, but adequate corrective measures are in place, or that a recent assessment is not available. Green rating means that there are no sustainability concerns.

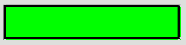
The protocol used is as follows:

1. ISSF Scientific staff drafts the text based on reports from the RFMOs and assigns ratings according to the decision table below.

2. Members of the Scientific Advisory Committee review the draft and may revise the ratings based on their knowledge of the RFMO scientific committees.

3. The Scientific Advisory Committee approves the final report with changes as in step 2, above.

COLOR RATINGS DECISION TABLE

STOCK ABUNDANCE		Spawning Biomass (SSB)* is at or above SSB_{MSY}.
		Spawning Biomass is somewhat** below SSB_{MSY} but it has been stable, increasing, or fluctuating around SSB_{MSY} because the stock is being managed at F_{MSY}**. Yellow is also used in the absence of a recent*** stock assessment.
		Spawning Biomass is below SSB_{MSY} and it has not been stable, increasing or fluctuating around SSB_{MSY}**.
FISHING MORTALITY		F is below F_{MSY}.
		F is above F_{MSY} but there are management measures expected to end overfishing. Yellow is also used in the absence of a recent*** stock assessment.
		F is above F_{MSY} and there are no management measures expected to end overfishing, or the measures in place are insufficient.

** In cases where spawning biomass (SSB) is not available from a stock assessment, total biomass (B) or another measure of abundance is used.*

*** As determined by the ISSF Scientific Advisory Committee based on the results of the stock assessment. Generally, a stable or increasing trend has to be observed for more than two years.*

**** "Recent" is measured by less than or equal to one generation length (GL), which varies for each species and sometimes between different stocks of the same species. GL is the average age of the parents of the current cohort (i.e., the newborn individuals in a population). GL values used in this report can be found in the* species descriptions *on ISSF's website, which are taken from Juan-Jorda et al. (2022).*

MANAGEMENT STATUS

The management section for each stock in this report includes a table with scores for Harvest Strategies Performance Indicators (PI) from the Marine Stewardship Council (MSC) Fisheries Certification Standard[2], which provides a snapshot of the stock management framework for each stock. The scores presented in those tables are based on information in the independent report "An evaluation of the sustainability of Global Tuna Stocks Relative to Marine Stewardship Council Criteria".

[2] MSC Fisheries Standard and Guidance v2.01 – effective from 28th February 2019; http://www.msc.org/

SCORE	EVALUATION
PI < 60	Fail
60 ≤ PI < 80	Condition Needed
PI ≥ 80	Passing Score

Major commercial tunas

Seven species of oceanic tunas are of major commercial importance on a global scale: Three species of bluefin tuna, and one each of albacore, bigeye, yellowfin and skipjack tuna. Due to differences in their distributions and the different fisheries that exploit them, the species are classified as "temperate" or "tropical." The temperate tunas are the bluefins and albacore; they are found in waters as cold as 10°C but can also be found in tropical waters. Skipjack and yellowfin are classified as tropical and are found in waters with temperatures greater than 18° C (although they can dive in colder waters). Bigeye could be classified as intermediate but is often treated as a tropical species in fishery statistics. Ages/sizes at maturity relate to those at which 50% of females are expected to be mature.

For a more detailed description of each of the major tuna species, including some biological characteristics and distribution maps, please visit:
https://www.iss-foundation.org/tuna-stocks-and-management/tuna-fishing/tuna-species/

Global summary of catches

The global catch of albacore, bigeye, bluefin, skipjack and yellowfin in 2022 was 5.2 million tonnes, a 2% increase from 2021. Catches increased steadily until the early 2000s and although they appeared to have stabilized in the first decade of the 2000s annual catches resumed an increasing trend in recent years (**Figure Global-1**). **Figure Global-2** shows trends in catches by species and gear. Ranked by species (using the 2018-2022 average = 5,201,565 tonnes), the majority of the catch corresponds to skipjack (58%), followed by yellowfin (30%), bigeye (7%), albacore (4%) and bluefin (1%). In terms of fishing gear, 66% of the catch is made by purse seining (approximately 38% associated + 25% unassociated + 3% dolphin sets), followed by longline (9%), pole-and-line (8%), gillnets (3%) and miscellaneous gears (14%).

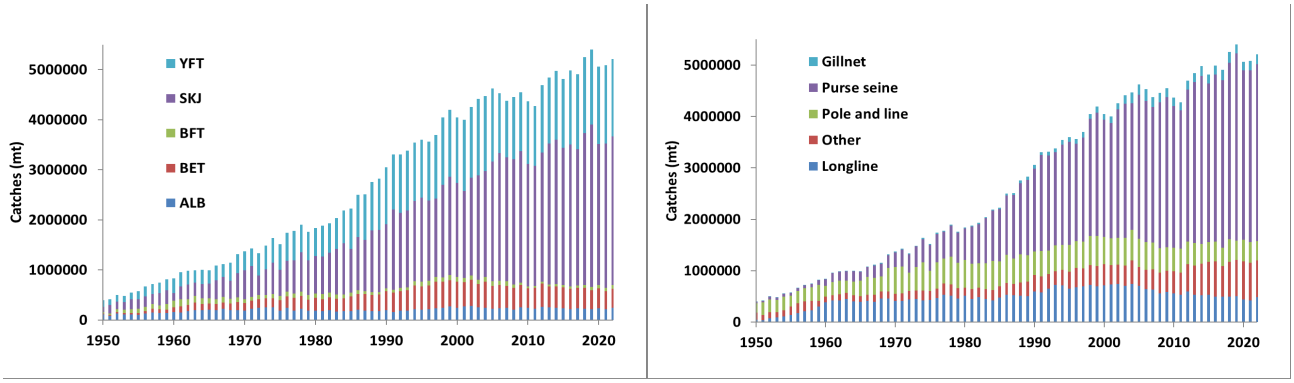


Figure Global-1. Global trends in catch (tonnes) of major commercial tunas, by species (left) and gear (right), 1950-2022.

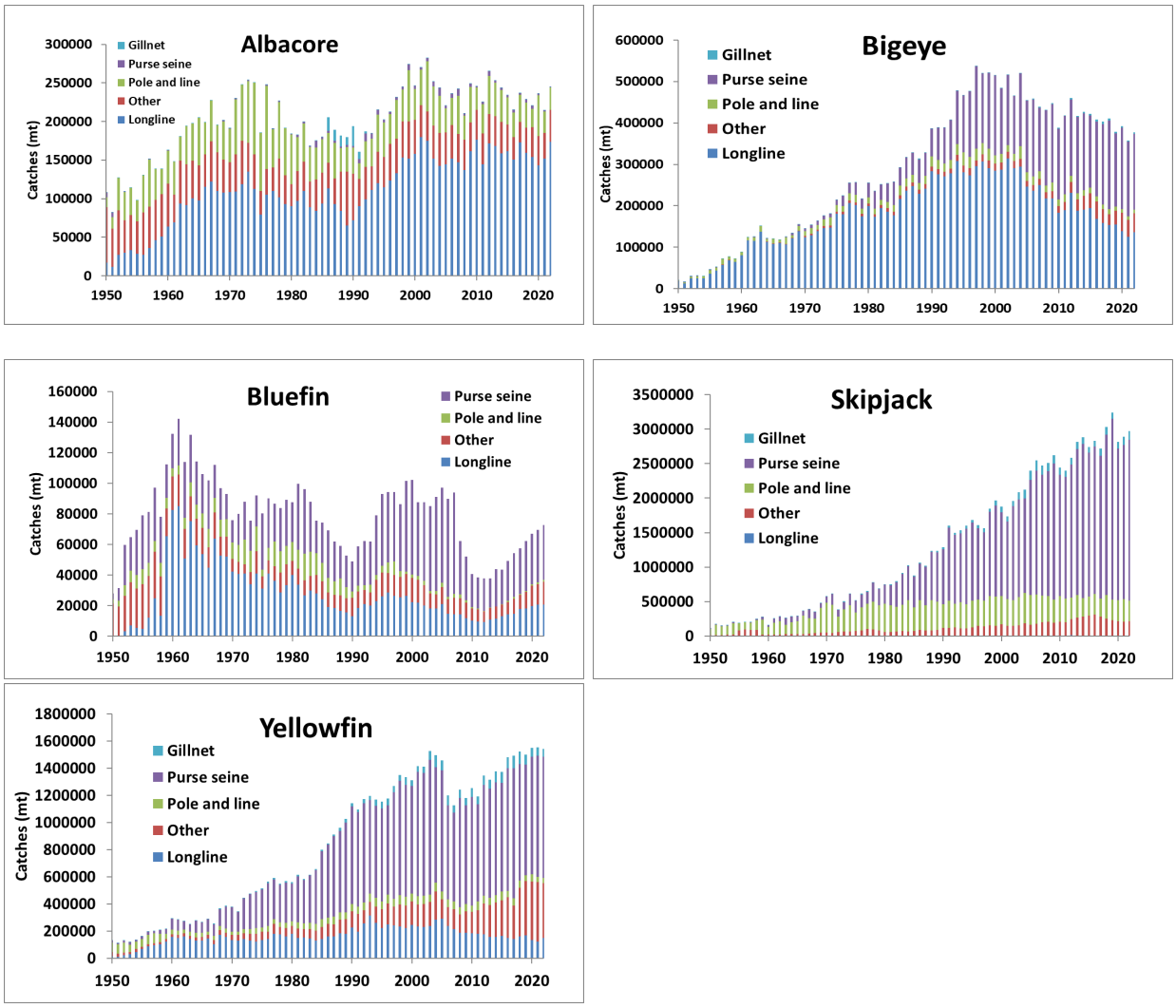


Figure Global-2. Global trends in catch (tonnes) of major commercial tunas, 1950-2022.

Additional resources

ISSF produces other reports that are complementary to this one and are published as part of the ISSF Technical Reports series.

- "Stock Assessment 101: Current practice for tuna stocks" gives a simple introduction to concepts and terms such as F, F_{MSY}, SSB_{MSY}, Recruitment, etc., which are encountered numerous times in this report. Many terms are also defined in the ISSF Glossary.

- "Tuna Fisheries' Impacts on Non-Tuna Species and Other Environmental Aspects: 2024 Summary" reviews some of the main environmental impacts, particularly bycatch, caused by different types of tuna fishing methods.

Other resources:

- The Regional Fisheries Management Organizations (RFMOs) page in ISSF's website provides additional information about the RFMOs: How they are structured, who are their members, how they obtain their scientific advice, how are decisions made, and what ISSF's main advocacy asks are for each one.

- The MSC tuna fisheries list in ISSF's website shows tuna fisheries worldwide that either have been certified by the Marine Stewardship Council (MSC) or are currently undergoing a full assessment to become certified. The list is updated quarterly.

- The tuna FIPs list shows publicly listed tuna fishery improvement projects (FIPs) that are third-party verified. The list is updated quarterly.

STOCKS IN THE EASTERN PACIFIC OCEAN

RFMO: Inter-American Tropical Tuna Commission (IATTC). EPO stocks are assessed by the IATTC staff, who makes recommendations to the IATTC. The SAC can also make recommendations to the IATTC.
Last Scientific Committee (IATTC SAC) meeting: June, 2024.
Last Commission meeting: September, 2024.
Tuna stocks managed by IATTC: EPO Yellowfin, EPO Bigeye, EPO Skipjack. Also, North Pacific Albacore, South Pacific Albacore and Pacific Bluefin (also managed by WCPFC; see Stocks in the Pacific Ocean)
Data sources: The main source of information for this section is IATTC (2024a), IATTC (2024b), Xu et al. (2024), Minte-Vera et al. (2020), Minte-Vera et al. (2024), Aires-da-Silva et al. (2020) and Bi et al. (2024)
Conservation and Management Measures: IATTC Resolutions.
Last update: November, 2024.

About 13 percent of the world production of tuna is from the eastern Pacific Ocean (EPO). Catches of skipjack, yellowfin and bigeye in 2023 were about 761,800 tonnes, a 15% increase from 2022. There was a general decline in the total catch since 2003, which recorded the peak catch of 800,000 tonnes of these three species. However, from 2007 onwards catches are steadily increasing (**Figure EPO-1**).

Catches of albacore and Pacific bluefin also occur in the EPO. These stocks are also distributed in the western Pacific and are covered in a different section of this report, under Pacific Ocean.

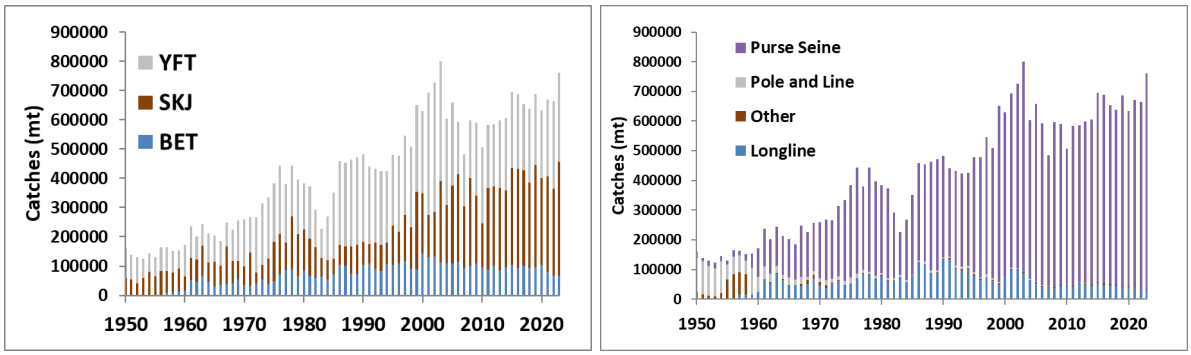


Figure EPO-1. Trends in catch (mt) of bigeye, skipjack and yellowfin in the EPO region, by species (left) and gear (right), 1950-2023.

Average tropical tuna catches for the five-year period 2019-2023 (683,100 tonnes) provide an indication of the recent performance of the fisheries (**Figure EPO-2**): Skipjack accounts for 49% of the catches in weight, followed by yellowfin (39%) and bigeye (12%). Purse-seine vessels take 95% of the total catch, followed by longline (5%).

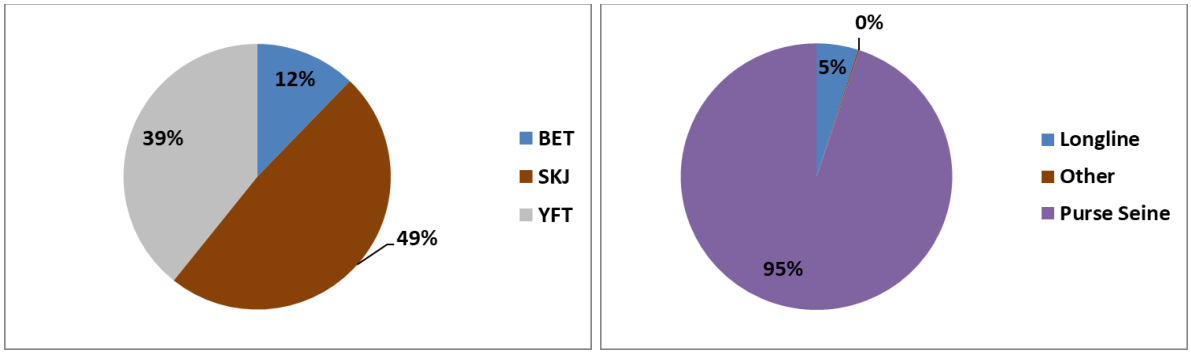


Figure EPO-2. Average 2019-2023 catches of skipjack, yellowfin and bigeye tuna in the EPO. The panel on the left shows the percentages by species, and the panel on the right shows the percentages by gear type.

EPO Bigeye Tuna

Bigeye catches in 2023 were about 67,000 tonnes, a 2% decrease from 2022. Longline fishing dominated the catches in weight until the mid-1990s. However, in recent years purse seine fishing accounts for most catches (71%), while longlining accounts for 29% (**Figure EPO-3**). Bigeye catches in the EPO by other gears are very minor. The bigeye stock in the EPO is considered to be fluctuating around the MSY-based reference points.

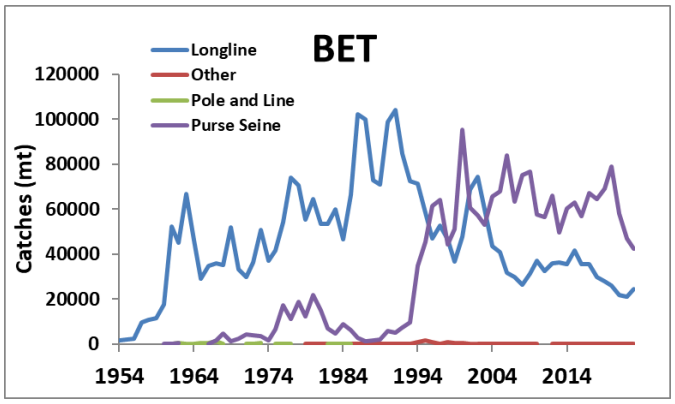


Figure EPO-3. Catches of bigeye tuna in the EPO from 1954 to 2023, by gear type.

STOCK ASSESSMENT

In 2024, to evaluate stock status, the IATTC conducted a benchmark assessment that continues to use a risk analysis approach. The risk analysis encompasses three hypotheses structured hierarchically to address the main uncertainties, resulting in a total of 33 different models. Changes made to the assessment have resolved the regime shift in recruitment, so, as a result, the regime shift hypothesis is no longer included as the overarching hypothesis in this benchmark assessment. The results of the assessment and risk analysis indicate the following (EPO-4):

1. While for the 33 models the ratio $SSB_{current}/SSB_{MSY}$ varies considerably (range: 0.45-2.92), the combined value of the ratio for all the models is 1.05. The overall probability that $SSB_{current}$ is below

SSB_{MSY} across all the models is 46.6%. This indicates that the stock is likely fluctuating around the target level of SSB_{MSY}.

2. The ratio of $F_{current}/F_{MSY}$ for the 33 models also varies considerably (range: 0.42-1.36). The combined value of the ratio across the 33 models is estimated at 0.79 and the combined probability that $F_{current}$ exceeds F_{MSY} is 24.7%. This indicates that the stock is likely being exploited below the target level of F_{MSY}. However, the number of purse seine sets on floating objects have continuously increased in recent years, except for 2020, which is a concern.

3. The model-weighted average of MSY across all models is estimated to be 105,000 tonnes (range: 91,000-111,000), which is higher than the current catch level of 67,000 tonnes in 2023. MSY has been reduced to about half its level in 1993, when the expansion of the floating-object fishery began, as the overall selectivity from all fleets combined shifted towards smaller individuals. Since bigeye tuna can grow close to 200 cm, catching them when they are small results in a loss of potential yield, i.e. the catches that could be taken by other gears that target larger individuals, such as longlining. This is known as "growth overfishing".

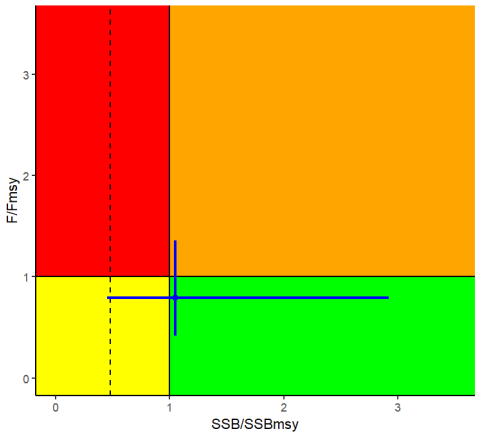


Figure EPO-4. Latest estimate of combined SSB/SSB_{MSY} and combined F/F_{MSY} (in blue, including range) across all models for EPO bigeye. Solid black lines represent interim target reference points and dashed black lines represent interim limit reference points.

In 2024, IATTC updated the stock status indicators that serve as supplemental information to monitor the stock. Most floating-object fishery indicators suggest that the stocks for all three tropical tuna species have potentially been subject to increased fishing mortality, mainly due to the increase in the number of sets in the floating-object fishery. The number of sets on floating objects in 2022 reached the highest value since 2000. For bigeye, both catch in weight and catch-per-set on floating-object sets are at the lowest level since 2000, which may partly be a result of the introduction of the catch threshold scheme per vessel for bigeye tuna under Resolution C-21-04 adopted in 2021. An evaluation of the impact of this scheme confirmed that it likely had a positive effect on reducing bigeye catches in 2022 and 2023 (Ovando, D. et al. 2024).

MANAGEMENT

Harvest Strategy: No, but the following components have been agreed:

Management objectives: Not agreed.

Limit reference point: In 2014, on an interim basis, IATTC agreed to the staff's recommendation of the equilibrium spawning biomass/fishing mortality corresponding to that which produces an expected 50% reduction in recruitment from the unfished level. This corresponds to a spawning biomass that is about 8% of the un-fished level. This calculation is based on the assumption that the steepness of the stock-recruitment relationship is h=0.75, which is more conservative than the past IATTC assessment assumption that h=1.0. In the most recent assessment, there is a close to zero probability that the biomass and F limit reference points have been exceeded.

Target reference point: In 2014, on an interim basis, IATTC adopted F_{MSY} and SSB_{MSY} as target reference points. There is a 47% probability that $SSB_{current} < SSB_{MSY}$, and a 25% probability that $F_{current} > F_{MSY}$.

Harvest control rule: In 2016, IATTC adopted an HCR for the tropical tuna purse-seine fishery based on the interim target and limit reference points adopted in 2014 (Resolution C-16-02, amended by C-23-06). The HCR aims to prevent fishing mortality from exceeding the MSY level for the tropical tuna stock (bigeye, yellowfin or skipjack) that requires the strictest management. If fishing mortality or spawning biomass are approaching or exceeding the corresponding limit reference point as measured by an estimated probability of 10% or greater of exceeding the limit, the HCR also triggers the establishment of additional management measures to reduce fishing mortality and rebuild the stock.

Management Strategy Evaluation: There is an ongoing MSE process for tropical tunas at the IATTC adopted by Resolution C-19-07, which has included introductory workshops for the fishing industry, managers and other stakeholders as well as technical development of the MSE technical framework and improvement of models for the simulation work.

Management measures:

The main conservation measure established by the IATTC for bigeye is Resolution C-24-01 that establishes a multi-annual management measure for tropical tunas in the eastern Pacific Ocean during 2025-2026. This measure calls for:

1. A 72-day closure for purse seiners greater than 182 tonnes capacity through January 2027.
2. Additional 13 to 22 days of closure for vessels exceeding a particular annual bigeye catch limit in a previous year.
3. Strengthen the monitoring and control system for tropical tuna species (particularly bigeye) catches through on-board observers, logbooks, port sampling and information from tuna processing facilities to control individual vessel bigeye catches.
4. A seasonal closure of the purse seine fishery in an area known as “El Corralito”, west of the Galapagos Islands, where catch rates of small bigeye are high.
5. A full retention requirement for all purse seine vessels regarding bigeye, skipjack and yellowfin tunas.
6. Bigeye catch limits for the main longline fishing nations.
7. Limits on the number of active FADs that each purse seiner can have at any time, ranging from 50 FADs/vessel for the smallest ones to 340 FADs/vessel for Class 6 vessels (1,200 m^3 capacity) in 2025-2026.
8. All purse seiners are also required to not deploy FADs 15 days before the selected closure

period and Class 6 vessels to recover within 15 days prior to the start of the closure period a number of FADs equal to the number of FADs set upon during that same period.

9. And in order to support the scientific analysis of FAD fisheries, the measure requires that CPCs or vessels report daily information on all active FADs (position and echosounder biomass data) as well as Vessel Monitoring System (VMS) data to the Secretariat.

Resolutions C-23-04 and C-24-06 encourage CPCs to initiate dFAD recovery programs and establish deadlines for a stepwise transition to using fully non-entangling (required from 2025 onwards) and biodegradable FADs (gradually, until 2029), respectively.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score[3]	Evaluation
1.2.1	Harvest Strategy	75	Condition Needed*
	*For evidence that the current harvest strategy is achieving its objectives (i.e., B_{MSY})		
1.2.2	Harvest control rules and tools	80	Passing Score
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	90	Passing Score

[3] These scores have not been updated to reflect latest (2024) changes in stock assessment or management.

SUMMARY

EPO BET	ESTIMATE	YEARS	NOTES
RECENT CATCH	67	2023	
5-YEAR CATCH	83	2019-23	
MSY	105		Model-weighted average
F/F_{MSY}	0.79	2021-23	range: 0.42-1.36
SSB/SSB_{MSY}	1.05	Start of 2024	range: 0.45-2.92
SSB/SSB_0	0.18	Start of 2024	Model-weighted average
TAC	N/A		

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB ~ SSB_{MSY}. Spawning biomass has been likely fluctuating around the MSY level.
FISHING MORTALITY		$F < F_{MSY}$.

Last date of a change in Color Ratings: November, 2024.
Changes from the previous (November 2020) Color Ratings: Abundance rating changed from Yellow to Green and Fishing mortality rating changed Yellow to Green.

EPO Yellowfin Tuna

Yellowfin catches in the EPO in 2023 were about 306,000 tonnes, 2% higher than 2022 catch levels. The main fishing gear is purse seine (96% of the catch), and recent catches by this gear are about 70% of the record high caught in 2002 (**Figure EPO-5**). Catches from longline vessels, although smaller in magnitude, have also declined substantially in recent years. The yellowfin stock in the EPO is not currently overfished and overfishing is not taking place.

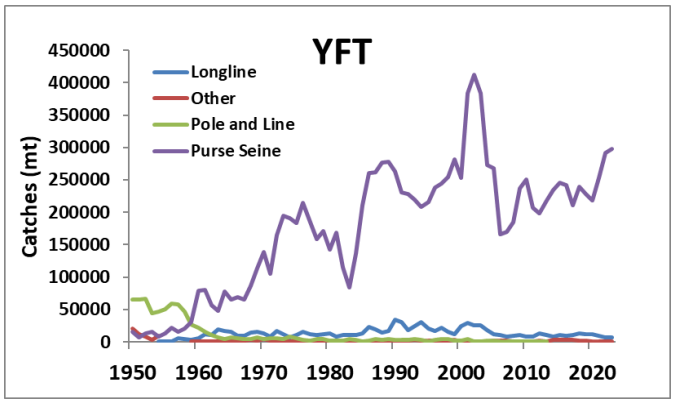


Figure EPO-5. Catches of yellowfin tuna in the EPO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

In 2024, the IATTC attempted to conduct a stock assessment, but the Staff deemed that the model results were not sufficiently reliable to provide management advice. This summary is based on the previous (2020) assessment. In that year, the IATTC conducted a benchmark assessment that was the basis of a risk analysis. This approach differs fundamentally from the previous IATTC practice of using a single model as the "best assessment." A total of 48 different models were used in the analyses, reflecting a wide range of plausible hypotheses about biology as well as different data sets and assumptions. The results of the assessment and risk analysis differ considerably from the previous assessment due to the different modeling approach, use of different CPUE abundance indices input data (i.e. only using purse seine CPUE index), and use of a broader set of plausible hypotheses, and indicate the following (**Figure EPO-6**):

1. While for the 48 models the $SSB_{current}/SSB_{MSY}$ ratio varies considerably (95% CI: 0.76-2.80), the model-weighted average of the ratio for all the models is 1.57. The overall probability that $SSB_{current}$ is below SSB_{MSY} across all the models is 12%. This indicates that the stock is likely not overfished.
2. The ratio of $F_{current}/F_{MSY}$ for the 48 models also varies considerably (95% CI: 0.28-1.20). The model-weighted average of the ratio across the 48 models is estimated at 0.67 and the combined probability that $F_{current}$ exceeds F_{MSY} is 9%. This indicates that the stock is likely not suffering from overfishing.
3. The model-weighted average of MSY across all models is estimated to be 288,000 tonnes. Increasing the average weight of the yellowfin caught could increase the MSY. Current catches (306,000 tonnes in 2023) are above the estimated MSY.

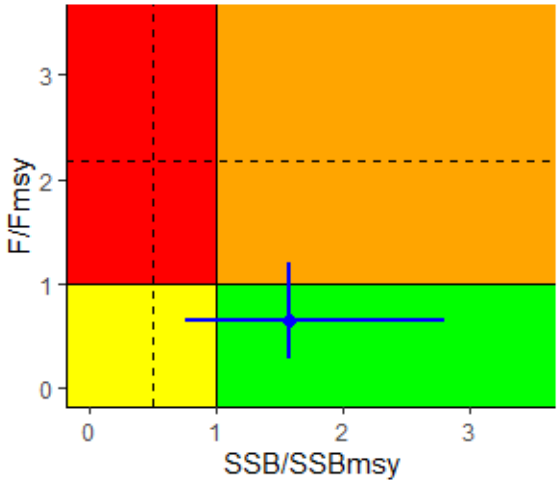


Figure EPO-6. Latest estimate of weighted average SSB/SSB$_{MSY}$ and F/F$_{MSY}$ (in blue, including range) across all models for EPO yellowfin (from the 2020 benchmark assessment). Solid black lines represent interim target reference points and dashed black lines represent interim limit reference points.

In 2024, IATTC conducted an exploratory stock assessment focused on the core area of the dolphin-associated purse seine fishery and generated stock status indicators for other areas or "sub-stocks". The results indicate that the spawning biomass of the yellowfin stock and the possible sub-stocks are likely to be above the level that corresponds to MSY and not likely to have exceeded the limit reference point, but some uncertainties remain.

In 2024, IATTC also updated the stock status indicators that serve as supplemental information to monitor the stock. Most floating-object fishery indicators suggest that the stocks for all three tropical tuna species have potentially been subject to increased fishing mortality, mainly due to the increase in the number of sets in the floating-object fishery. The number of sets on floating objects in 2022 reached the highest value since 2000, as did the catch of yellowfin tuna on floating object sets. The increasing trend did not continue in 2023 but the number of floating-object sets remained above the status quo (defined as the average conditions in 2017-2019).

While the SSB and F ratings for this stock could have been changed to Yellow according to the Ratings methodology – given that the most recent benchmark stock assessment was conducted in 2020 – they have been maintained at Green based on findings from the 2024 exploratory stock assessment and the scheduling of a new benchmark assessment for 2025.

MANAGEMENT

Harvest Strategy: No, but the following components have been agreed:

Management Objectives: Not agreed.

Limit reference point: In 2014, on an interim basis, IATTC agreed to the staff's recommendation of the equilibrium spawning biomass and fishing mortality corresponding to that which produces an expected 50% reduction in recruitment from the unfished level. This corresponds to a spawning biomass that is about 8% of the unfished level. This calculation is based on the assumption that the steepness of the stock-recruitment relationship is h=0.75, which is more conservative than the past IATTC assessment assumption that h=1.0. In the most

recent benchmark assessment carried out in 2020, the probability that the limit reference point was breached was estimated to be zero.

Target reference point: In 2014, on an interim basis, IATTC adopted F_{MSY} and SSB_{MSY} as target reference points. According to the risk analysis carried out in 2020, there is a 12% probability that the stock is overfished ($SSB<SSB_{MSY}$), and a 9% probability that overfishing ($F>F_{MSY}$) is taking place.

Harvest control rule: In 2016, IATTC adopted an HCR for tropical tuna purse-seine fisheries based on the interim target and limit reference points adopted in 2014 (Resolution C-16-02, amended by C-23-06). The HCR aims to prevent fishing mortality from exceeding the MSY level for the tropical tuna stock (bigeye, yellowfin or skipjack) that requires the strictest management. If fishing mortality or spawning biomass are approaching or exceeding the corresponding limit reference point as measured by an estimated probability of 10% or greater of exceeding the limit, the HCR also triggers the establishment of additional management measures to reduce fishing mortality and rebuild the stock.

Management Strategy Evaluation: There is an ongoing MSE process for tropical tunas at the IATTC adopted by Resolution C-19-07, which has included introductory workshops for the fishing industry, managers and other stakeholders as well as technical development of the MSE technical framework and improvement of models for the simulation work.

Management measures:

The main conservation measure established by the IATTC for yellowfin is Resolution C-24-01 that establishes a multi-annual management measure for tropical tunas in the eastern Pacific Ocean during 2025-2026. This measure calls for:

1. A 72-day closure for purse seiners greater than 182 tonnes capacity through January 2027.
2. Additional 13 to 22 days of closure for vessels exceeding a particular bigeye annual catch limit in a previous year.
3. Strengthen the monitoring and control system for tropical tuna species (particularly bigeye) catches through on-board observers, logbooks, port sampling and information from tuna processing facilities to control individual vessel bigeye catches.
4. A seasonal closure of the purse seine fishery in an area known as "El Corralito", west of the Galapagos Islands, where catch rates of small bigeye are high.
5. A full retention requirement for all purse seine vessels regarding bigeye, skipjack and yellowfin tunas.
6. Limits on the number of active FADs that each purse seiner can have at any time, ranging from 50 FADs/vessel for the smallest ones to 340 FADs/vessel for Class 6 vessels (1,200 m^3 capacity) in 2025-2026.
7. All purse seiners are also required to not deploy FADs 15 days before the selected closure period and Class 6 vessels to recover within 15 days prior to the start of the closure period a number of FADs equal to the number of FADs set upon during that same period.
8. And in order to support the scientific analysis of FAD fisheries, the measure requires that CPCs or vessels report daily information on all active FADs (position and echosounder biomass data) as well as Vessel Monitoring System (VMS) data to the Secretariat.

Resolutions C-23-04 and C-24-06 encourage CPCs to initiate dFAD recovery programs and establish deadlines for a stepwise transition to using fully non-entangling (from 2025 onwards) and biodegradable FADs (gradually until 2029), respectively.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score[4]	Evaluation
1.2.1	Harvest Strategy	80	Passing Score
1.2.2	Harvest control rules and tools	80	Passing Score
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	90	Passing Score

SUMMARY

EPO YFT	ESTIMATE	YEARS	NOTES
RECENT CATCH	306	2023	
5-YEAR CATCH	268	2019-23	
MSY	288		weighted average range: 236-357
F/F_{MSY}	0.67	2017-19	range: 0.28-1.20
SSB/SSB_{MSY}	1.57	Start of 2020	range: 0.76-2.80
SSB/SSB_0	0.20	Start of 2020	range: 0.11-0.30
TAC	N/A		

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY} with 88% probability.
FISHING MORTALITY		F < F_{MSY} with 91% probability.

Last date of a change in Color Ratings: November, 2020.
Changes from the previous (August 2019) Color Ratings: Abundance rating changed from Orange to Green and Fishing mortality rating changed from Orange to Green.

[4] These scores have not been updated to reflect latest (2024) changes in stock assessment or management.

EPO Skipjack Tuna

In 2023, skipjack catches were about 388,800 tonnes, a 31% increase from 2022. Skipjack catches in the EPO are notoriously variable (**Figure EPO-7**). Purse seine fishing dominates the catches (about 100% of the total). The skipjack EPO stock is not overfished, and overfishing is not occurring.

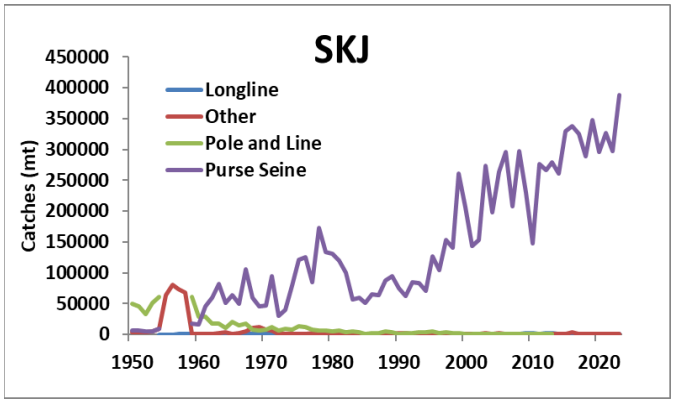


Figure EPO-7. Catches of skipjack tuna in the EPO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

In 2024, the IATTC staff conducted a benchmark stock assessment using an integrated age-structured catch-at-length model. This assessment represents a significant improvement from the initial interim assessment conducted in 2022. It reflects major advancements in the assessment methodologies and incorporates new data sets, including tagging data. The assessment consisted of a reference model based on the most plausible assumptions, plus sensitivity analyses to test for robustness. MSY-based reference points were not calculated. Instead, a proxy depletion level (spawning biomass ratio, SBR, defined as $SSB_{current}/SSB_0$) target reference of 0.3 was used, based on values for bigeye and yellowfin. The results indicate that (**Figure EPO-8**):

1. The reference model estimated that current depletion is above the target reference point (SBR_{2024}/SBR_{target}=1.43; range: 0.73 to 1.67), indicating that the stock is most likely not overfished. Most of the sensitivity runs support this conclusion.
2. The reference model estimated that current fishing mortality is below the value that would result in the target reference depletion level of 0.3 ($F_{2021\text{-}2023}/F_{SBR=0.3}$=0.42; range: 0.30 to 0.55), indicating that overfishing is not occurring. All sensitivity runs support this conclusion.

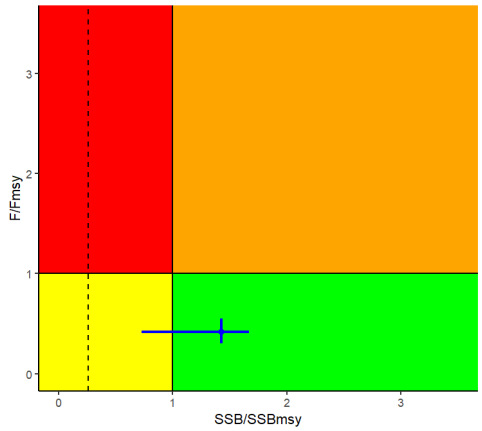


Figure EPO-8. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} proxies (in blue, including range) for skipjack tuna in the eastern Pacific Ocean, based on the reference model results. SBR_{target} = 0.3 and $F_{SBR=0.3}$ are used as a proxy for SSB_{MSY} and F_{MSY}, respectively. Range corresponds to Min-Max values across all models. Solid black lines represent interim target reference points and dashed black vertical line represents the SSB interim limit reference point.

In 2024, IATTC updated the stock status indicators that serve as supplemental information to monitor the stock. Most floating-object fishery indicators suggest that the stocks for all three tropical tuna species have potentially been subject to increased fishing mortality, mainly due to the increase in the number of sets in the floating-object fishery. The number of sets on floating objects in 2022 reached the highest value since 2000. The increasing trend did not continue in 2023 but the number of floating-object sets remained above the *status quo* (defined as the average conditions in 2017-2019).

MANAGEMENT

Harvest Strategy: No, but the following components have been agreed:

Management Objectives: Not agreed.

Limit reference point: In 2014, on an interim basis, IATTC agreed to the staff's recommendation of the equilibrium spawning biomass and fishing mortality corresponding to that which produces an expected 50% reduction in recruitment from the unfished level. This corresponds to a spawning biomass that is about 8% of the unfished level. This calculation is based on the assumption that the steepness of the stock-recruitment relationship is h=0.75, which is more conservative than the past IATTC assessment assumption that h=1.0. The 2024 assessment indicates that the stock is above this limit.

Target reference point: In 2014, on an interim basis, IATTC adopted F_{MSY} and SSB_{MSY} as target reference points. In 2023 (C-23-06), IATTC included the option to use $SSB_{proxy\text{-}MSY}$ and $F_{proxy\text{-}MSY}$ reference points, when SSB_{MSY} and F_{MSY} cannot be reliably estimated (or otherwise specified) from parameters estimated within the assessment model. The latter was the case for skipjack during the 2024 stock assessment and, thus, IATTC considered a depletion of 0.3 as a target reference point for skipjack. The 2024 assessment indicates that it is very likely that the stock is above this target depletion level and F is below the corresponding target reference equilibrium level.

Harvest control rule: In 2016, IATTC adopted an HCR for tropical tuna purse-seine fisheries based on the interim target and limit reference points adopted in 2014 (Resolution C-16-02, amended by C-23-06). The HCR aims to prevent fishing mortality from exceeding the MSY level for the tropical tuna stock (bigeye, yellowfin or skipjack) that requires the strictest management. If fishing mortality or spawning biomass are approaching or exceeding the corresponding limit reference point as measured by an estimated probability of 10% or greater of exceeding the limit, the HCR also triggers the establishment of additional management measures to reduce fishing mortality and rebuild the stock. The 2024 assessment indicates that these additional management measures are not triggered for skipjack.

Management Strategy Evaluation: There is an ongoing MSE process for tropical tunas at the IATTC adopted by Resolution C-19-07, which has included introductory workshops for the fishing industry, managers and other stakeholders as well as technical development of the MSE technical framework and improvement of models for the simulation work.

Management measures:

The main conservation measure established by the IATTC for skipjack is Resolution C-24-01 that establishes a multi-annual management measure for tropical tunas in the eastern Pacific Ocean during 2025-2026. This measure calls for:

1. A 72-day closure for purse seiners greater than 182 tonnes capacity through January 2027.
2. Additional days of closure for vessels exceeding a particular bigeye annual catch limit in a previous year.
3. Strengthen the monitoring and control system for tropical tuna species (particularly bigeye) catches through on-board observers, logbooks, port sampling and information from tuna processing facilities to control individual vessel bigeye catches.
4. A seasonal closure of the purse seine fishery in an area known as "El Corralito", west of the Galapagos Islands, where catch rates of small bigeye are high.
5. A full retention requirement for all purse seine vessels regarding bigeye, skipjack and yellowfin tunas.
6. Limits on the number of active FADs that each purse seiner can have at any time, ranging from 50 FADs/vessel for the smallest ones to 340 FADs/vessel for Class 6 vessels (1,200 m^3 capacity) in 2025-2026.
7. All purse seiners are also required to not deploy FADs 15 days before the selected closure period and Class 6 vessels to recover within 15 days prior to the start of the closure period a number of FADs equal to the number of FADs set upon during that same period.
8. And in order to support the scientific analysis of FAD fisheries, the measure requires that CPCs or vessels report daily information on all active FADs (position and echosounder biomass data) as well as Vessel Monitoring System (VMS) data to the Secretariat.

Resolutions C-23-04 and C-24-06 encourage CPCs to initiate dFAD recovery programs and establish deadlines for a stepwise transition to using fully non-entangling (from 2025 onwards) and biodegradable FADs (gradually, until 2029), respectively.

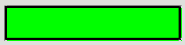
Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score[5]	Evaluation
1.2.1	Harvest Strategy	80	Passing Score
1.2.2	Harvest control rules and tools	80	Passing Score
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	90	Passing Score

SUMMARY

EPO SKJ	ESTIMATE	YEARS	NOTES
RECENT CATCH	389	2023	
5-YEAR CATCH	332	2019-23	
MSY	N/A		
F/F_{MSY}	0.42	2021-2023	Uses a proxy for MSY
SSB/SSB_{MSY}	1.43	2024	Uses a proxy for MSY
SSB/SSB_0	0.43	2024	
TAC	N/A		

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		$SSB>SSB_{MSY}$, based on a proxy value.
FISHING MORTALITY		$F<F_{MSY}$, based on a proxy value.

Last date of a change in Color Ratings: July, 2022.
Changes from the previous (March, 2022) Color Ratings: Abundance rating changed from Yellow to Green and Fishing mortality rating changed from Yellow to Green.

[5] These scores have not been updated to reflect latest (2024) changes in stock assessment or management.

STOCKS IN THE WESTERN & CENTRAL PACIFIC OCEAN

RFMO: Western and Central Pacific Fisheries Commission (WCPFC). WCPO stocks are assessed by the Pacific Community (SPC) and the results are reviewed by the WCPFC scientific committee (SC) which makes recommendations to the WCPFC.
Last Scientific Committee (SC) meeting: August, 2024.
Last Commission meeting: December, 2023.
Tuna stocks managed by WCPFC: WCPO Yellowfin, WCPO Bigeye, WCPO Skipjack. Also, North Pacific Albacore, South Pacific Albacore and Pacific Bluefin (also managed by IATTC; see Stocks in the Pacific Ocean). Note also that WCPFC and IATTC have an area of overlap; WCPO catch figures reported here do not include those catches made in the WCPFC-IATTC overlap area.
Data sources: The main sources of information for this section are Day et al. (2023), Magnusson et al. (2023), Castillo Jordan et al. (2022), WCPFC (2024a) and WCPFC (2024b).
Conservation and Management Measures: WCPFC CMMs and Resolutions.
Last update: November, 2024.

About 51 percent of the world production of tuna is from the western and central Pacific Ocean (WCPO). Provisional catches of skipjack, yellowfin, and bigeye in 2023 were 2,490,300 tonnes, a 2% decrease from 2022. There has been a general increase in the total catch since 1980, with the highest peak in 2019 (**Figure WCPO-1**). This increase has been particularly pronounced for skipjack tuna.

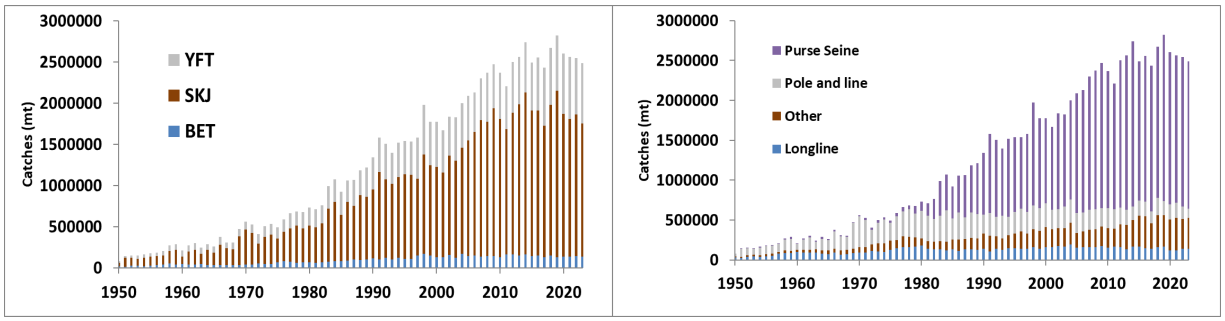


Figure WCPO-1. Trends in catch (mt) of bigeye, skipjack and yellowfin in the WCPO region, by species (left) and gear (right), 1950-2023.

Average catches for the five-year period 2019-2023 (2,605,000 tonnes) provide an indication of the recent performance of the fisheries (**Figure WCPO-2**): Skipjack accounts for 67% of the catches in weight, followed by yellowfin (28%) and bigeye (5%). Purse-seine vessels take 73% of the total catch, followed by pole-and-line (7%), longline (5%), and other gears.

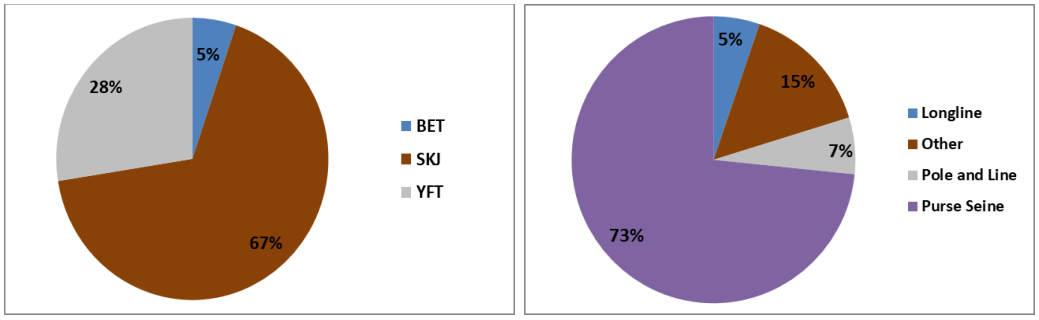


Figure WCPO-2. Average 2019-2023 catches of skipjack, yellowfin and bigeye tuna in the WCPO. The panel on the left shows the percentages by species, and the panel on the right shows the percentages by gear type.

WCPO Bigeye Tuna

Provisional bigeye catches in 2023 were about 133,700 tonnes, a 7% decrease from 2022. The main fishing gears are purse seine and longline (5-year average 44% and 39%, respectively) (**Figure WCPO-3**). Bigeye catches in the WCPO by other gears were relatively minor, but have increased in recent years. The latest assessment indicates that the WCPO bigeye tuna stock is not overfished, with biomass above the limit reference point established by WCPFC, and that overfishing is not occurring.

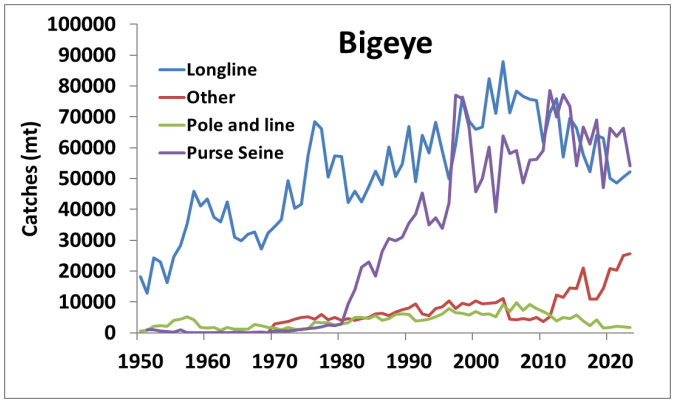


Figure WCPO-3. Catches of bigeye tuna in the WCPO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

In 2023, SPC conducted an assessment that included some improvements and a more rigorous approach than the previous assessment in 2020, such as estimating natural mortality internally in the model, reducing the number of regions considered, and incorporating estimation uncertainty for each of the models in the grid. All models in the uncertainty grid indicated the stock is above the biomass limit reference point as well as MSY-based reference points. The new assessment indicated the following (**Figure WCPO-4**):

1. The median ratio of F_{recent}/F_{MSY} is estimated at 0.59 (80% C.I. range: 0.46 and 0.74), indicating that overfishing is not occurring.
2. The median ratio of spawning biomass SSB_{recent}/SSB_{MSY} in the model runs is estimated at

1.83 (80% C.I. range: 1.32 to 2.38), indicating that the stock is not overfished.

3. The median estimate of MSY is 164,600 tonnes. MSY has been reduced to less than half its levels prior to 1970 through harvest of small bigeye. Catches in 2023 were below the estimated MSY.

The new assessment indicates that fishery impact is higher in the tropical regions and that the overall stock status is buffered with increased biomass levels due to low exploitation in the temperate regions.

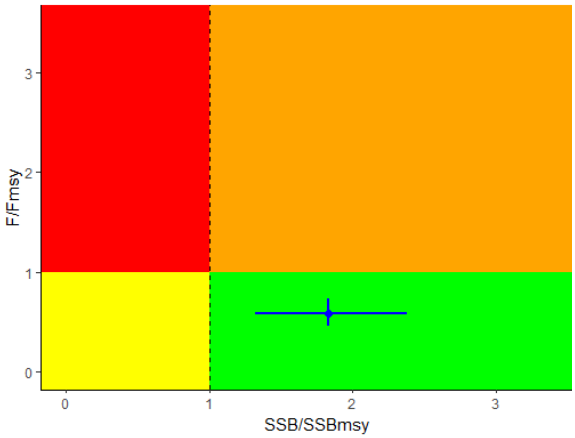


Figure WCPO-4. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for WCPO bigeye tuna. Dashed black line represents limit reference point.

MANAGEMENT

Harvest Strategy: No, but CMM 2023-01 acts as a bridge to the adoption of a harvest strategy. So far, the following components have been agreed:

Management Objectives: Not defined. Interim maximum acceptable risk level for breaching the LRP agreed in 2016 (20%).

Limit reference point: 20% of the average spawning biomass that would be expected in the absence of fishing under current (most recent 10 years of the current assessment, excluding the last year) environmental conditions ($20\%SSB_{current,\ F=0}$). The median value of $SSB_{recent}/SSB_{F=0}$ is 0.35, which is above this limit.

Target reference point: Not defined for the long term. CMM 2023-01 establishes that, pending agreement on a TRP, the spawning biomass depletion ratio ($SB/SB_{F=0}$) is to be maintained at or above the average $SB/SB_{F=0}$ for 2012-2015, which is a value of 0.34 calculated across the unweighted 2023 model grid.

Harvest control rule: Not defined. CMM-2014-06, superseded by CMM 2022-03, calls for WCPFC to develop and implement a harvest strategy approach that includes target reference points, harvest control rules and other elements. The workplan and its deadlines have been revised in subsequent meetings of the Commission.

Management Strategy Evaluation: Ongoing work under a mixed fishery framework that involves developing stock specific Management Procedures for skipjack, South Pacific albacore and bigeye, in line with the agreed WCPFC harvest strategy workplan. The interaction of these MPs, as well as their impact on yellowfin, would then be evaluated using a combined evaluation framework.

Management measures:

The main binding conservation measure for bigeye established by the WCPFC is CMM 2023-01. For the period 2024-2027, it calls for:

1. A one and a half months closure (July to mid-August) of fishing on FADs (including the prohibition of deploying, servicing or setting on FADs) in EEZ waters and on the High Seas between 20°N and 20°S. VMS polling frequency is increased to 30 minutes during the closure;
2. In addition to (1), each member shall choose between extending the FAD closure for one additional month of the year in the High Seas in either April, May, November or December, with some exemptions for Kiribati- and Philippines-flagged vessels;
3. To reduce the entanglement of sharks, marine turtles or any other species, CCMs shall ensure that the design and construction of any new FADs to be deployed in the WCPFC area are fully non-entangling without netting in their construction. To reduce the amount of synthetic marine debris, the use of non-plastic and biodegradable materials for FADs construction is promoted and encouraged and the initiation of retrieval programs for lost, abandoned or stranded FADs is also encouraged;
4. A limit of no more than 350 drifting Fish Aggregating Devices (FADs) with activated instrumented buoys at sea at any one time per purse seine vessel. And the buoy shall be activated exclusively while it is on board the vessel;
5. A limitation in the number of vessel days: For PNA members, the limit in their collective EEZs is the 2010 level. For other coastal states with effort in their EEZs exceeding 1,500 days annually over (2006-2010), the limit is either the 2001-2004 average or the 2010 level.
6. For non-SIDS members, purse seine effort on the high seas will be limited to levels specified in the CMM. Each member shall not allow the number of fishing days in the high seas to increase above limits specified in the CMM;
7. A full-retention requirement for all purse seine vessels regarding bigeye, skipjack and yellowfin tunas between 20°N and 20°S;
8. 100% Regional observer coverage for all purse seine vessels fishing on the high seas, on the high seas and in waters under the jurisdiction of one or more coastal States, or vessels fishing in waters under the jurisdiction of two or more coastal States during the same trip; all purse seiners fishing between 20°N and 20°S must have an observer onboard. Moreover, all purse seine vessels fishing solely in their EEZ between 20°N and 20°S should also carry a national observer and the CCMs are encouraged to submit the data to the Commission.
9. A limit between 20°N and 20°S in the number of purse seine and longline vessels with freezing capacity at the 2012 level for most countries (and specifically not including vessels of Small Island Developing States);

10. Flag-specific catch limits for non-SIDS fleets[6] for bigeye caught by longliners, with monthly reporting to monitor the utilization of the limits. These catch limits may be increased, up to 10%, if linked to a proportional increase of observer coverage (achieved by human and/or Electronic Monitoring).

The first comprehensive management plan adopted for tropical tunas was CMM 2008-01 and has been amended annually since then. The CMM is complex with many "either/or" choices, exemptions or exclusions and decisions yet to be made with respect to some measures, which makes it difficult to predict the outcomes in terms of actual future catch and effort levels.

In addition, CMM 2009-02 provides more guidance on the FAD closure and full retention requirements in Highs Seas.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	75	Condition Needed*
	*For WCPFC to adopt Target Reference Points		
1.2.2	Harvest control rules and tools	60	Condition Needed**
	**For WCPFC to adopt a well-defined HCR robust to uncertainties, and tools		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	100	Passing Score

SUMMARY

WCPO BET	ESTIMATE	YEARS	NOTES
RECENT CATCH	134	2023	
5-YEAR CATCH	135	2019-23	
MSY	165	2021	range: 143-181
F/F_{MSY}	0.59	2018-21	range: 0.46-0.74
SSB/SSB_{MSY}	1.83	2018-21	range: 1.32-2.38
$SSB/SSB_{f=0}$	0.35	2018-21	range: 0.31-0.40
TAC	N/A		

[6] Catches of chartered vessels are attributed to the chartering State.

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY}. The spawning biomass is above the MSY level.
FISHING MORTALITY		F < F_{MSY}. F is below the MSY level.

Last date of a change in Color Ratings: October, 2018.
Changes from the previous (October 2017) Color Ratings: Abundance and F ratings changed from Yellow to Green.

WCPO Yellowfin Tuna

Provisional yellowfin catches in the WCPO in 2023 were about 737,400 tonnes, an 8% increase from 2022. The main fishing gear is purse seine (55% of the catch). Thirty-one percent of the catches are taken by a number of mixed gears in the Philippines and Indonesia, and 11% by longliners (**Figure WCPO-5**). The Western and Central Pacific yellowfin tuna stock is not overfished, and overfishing is not occurring. Most of the catches are taken from the tropical region where the stock is considered fully exploited and there is little or no room for increased fishing pressure in this region.

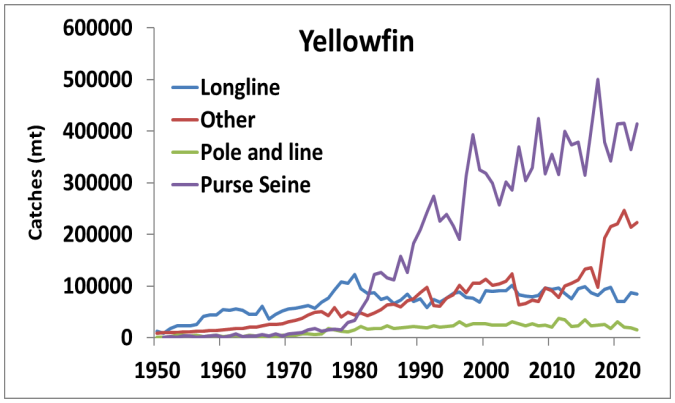


Figure WCPO-5. Catches of yellowfin tuna in the WCPO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

The last yellowfin assessment was conducted in 2023. The assessment incorporated significant improvements from the previous assessment in 2020, such as estimating natural mortality internally in the model, reducing the number of regions considered, and incorporating estimation uncertainty for each of the models in the grid. The results were in general less optimistic compared to previous assessments. All models in the uncertainty grid indicate the stock is over the biomass limit reference point as well as MSY-based reference points. Assessment results indicated that (**Figure WCPO-6**):

1. The yellowfin stock is not in an overfished state as spawning biomass is above the SSB_{MSY} level (SSB_{recent}/SSB_{MSY} = 2.30, 80% C.I. range: 1.77-2.89).
2. The ratio F_{recent}/F_{MSY} (for the period 2017-2020) is estimated to be 0.50 (80% C.I. range: 0.42-0.61). None of the 54 models estimated that $F_{recent}>F_{MSY}$, indicating that overfishing is not occurring.
3. Median MSY is estimated to be 700,400 tonnes (80% C.I. range: 644,300-739,600). Current (2023) catch is above MSY.
4. The optimistic estimate of overall stock status should be tempered by the patterns estimated at a sub-regional level. The tropical Pacific, from which most of the catches are taken, is at least fully exploited with no potential for a substantial increase in catches to be sustainable.

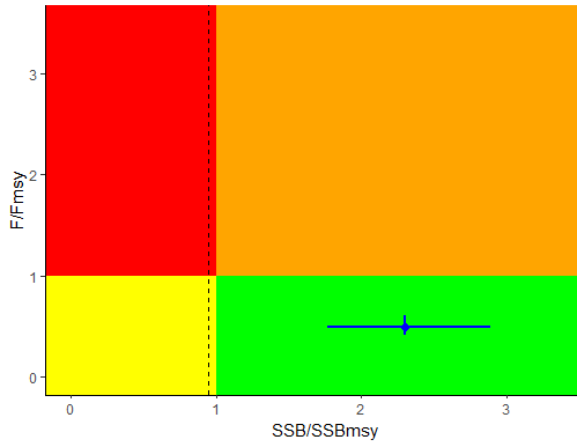


Figure WCPO-6. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for WCPO yellowfin tuna. Dashed black line represents limit reference point.

MANAGEMENT

Harvest Strategy: No, but CMM 2023-01 acts as a bridge to the adoption of a harvest strategy. So far, the following components have been agreed:

Management Objectives: Not defined. Interim maximum acceptable 20% of risk level for breaching the LRP agreed in 2016.

Limit reference point: 20% of the equilibrium spawning biomass that would be expected in the absence of fishing under current (most recent 10 years of the current assessment, excluding the last year) environmental conditions ($20\%SSB_{current,\ F=0}$). The yellowfin stock is estimated to be above this limit. The median value of $SSB_{recent}/SSB_{F=0}$ across all models chosen by the Scientific Committee in 2023 to evaluate stock status is 0.47, which is above this 20% limit.

Target reference point: Not defined. CMM 2023-01 establishes that, pending agreement on a TRP, the spawning biomass depletion ratio ($SB/SB_{F=0}$) is to be maintained at or above the average $SB/SB_{F=0}$ for 2012-2015, which is a value of 0.44 calculated across the unweighted 2023 model grid.

Harvest control rule: Not defined. CMM-2014-06, superseded by CMM 2022-03, calls for WCPFC to develop and implement a harvest strategy approach that includes target reference

points, harvest control rules and other elements. The workplan and its deadlines have been revised in subsequent meetings of the Commission.

Management Strategy Evaluation: Ongoing work under a mixed fishery framework that involves developing stock specific Management Procedures for skipjack, South Pacific albacore and bigeye, in line with the agreed WCPFC harvest strategy workplan. The interaction of these MPs, as well as their impact on yellowfin, would then be evaluated using a combined evaluation framework.

Management measures:

The main binding conservation measure for yellowfin established by the WCPFC is CMM 2023-01. For the period 2024-2027, it calls for:

1. A one and a half months closure (July to mid-August) of fishing on FADs (including the prohibition of deploying, servicing or setting on FADs) in EEZ waters and on the High Seas between 20°N and 20°S. VMS polling frequency is increased to 30 minutes during the closure;
2. In addition to (1), each member shall choose between extending the FAD closure for one additional month of the year in the High Seas in either April, May, November or December, with some exemptions for Kiribati- and Philippines-flagged vessels;
3. To reduce the entanglement of sharks, marine turtles or any other species, CCMs shall ensure that the design and construction of any new FADs to be deployed in the WCPFC area are fully non-entangling without netting in their construction. To reduce the amount of synthetic marine debris, the use of non-plastic and biodegradable materials for FADs construction is promoted and encouraged and the initiation of retrieval programs for lost, abandoned or stranded FADs is also encouraged;
4. A limit of no more than 350 drifting Fish Aggregating Devices (FADs) with activated instrumented buoys at sea at any one time per purse seine vessel. And the buoy shall be activated exclusively while it is on board the vessel;
5. A limitation in the number of vessel days: For PNA members, the limit in their collective EEZs is the 2010 level. For other coastal states with effort in their EEZs exceeding 1,500 days annually over (2006-2010), the limit is either the 2001-2004 average or the 2010 level.
6. For non-SIDS members, purse seine effort on the high seas will be limited to levels specified in the CMM. Each member shall not allow the number of fishing days in the high seas to increase above limits specified in the CMM;
7. A full-retention requirement for all purse seine vessels regarding bigeye, skipjack and yellowfin tunas between 20°N and 20°S;
8. 100% Regional observer coverage for all purse seine vessels fishing on the high seas, on the high seas and in waters under the jurisdiction of one or more coastal States, or vessels fishing in waters under the jurisdiction of two or more coastal States during the same trip; all purse seiners fishing between 20°N and 20°S must have an observer onboard. Moreover, all purse seine vessels fishing solely in their EEZ between 20°N and 20°S should also carry a national observer and the CCMs are encouraged to submit the data to the Commission.
9. A limit between 20°N and 20°S in the number of purse seine and longline vessels with freezing capacity at the 2012 level for most countries (and specifically not including vessels of Small Island Developing States).

In addition, CMM 2009-02 provides more guidance on the FAD closure and full retention requirements on Highs Seas.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	75	Condition Needed*
	*For WCPFC to adopt Target Reference Points		
1.2.2	Harvest control rules and tools	60	Condition Needed**
	**For WCPFC to adopt a well-defined HCR robust to uncertainties, and tools		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	100	Passing Score

SUMMARY

WCPO YFT	ESTIMATE	YEARS	NOTES
RECENT CATCH	737	2023	
5-YEAR CATCH	717	2019-23	
MSY	700	2017-20	range: 644-740
F/F_{MSY}	0.50	2017-20	range: 0.42-0.61
SSB/SSB_{MSY}	2.30	2018-21	range: 1.77-2.89
$SSB/SSB_{f=0}$	0.47	2018-2021	range: 0.42-0.52
TAC	N/A		

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY}.
FISHING MORTALITY		F < F_{MSY}.

Last date of a change in Color Ratings: March, 2019.
Changes from the previous (original 2010 report) Color Ratings: F rating changed from yellow to green to harmonize with ratings methodology.

WCPO Skipjack Tuna

The WCPO Skipjack stock supports the largest tuna fishery in the world, accounting for 35% of worldwide tuna landings. Catches in 2023 were 1,619,100 tonnes, a 6% decrease from 2022. Purse seining, which accounts for 83% of the catches, increased steadily over the past three decades. In contrast, pole-and-line fishing (about 8%) has been declining since the mid-1980's (**Figure WCPO-7**). Overfishing is not occurring, and the stock is not overfished.

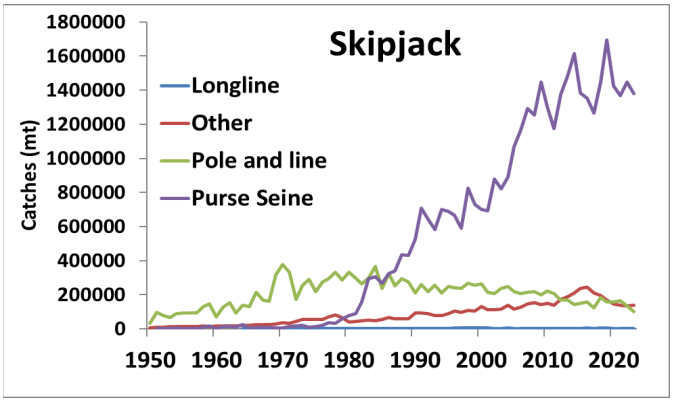


Figure WCPO-7. Catches of skipjack tuna in the WCPO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

The last skipjack assessment was conducted in 2022. Stock status was determined over an uncertainty grid of 18 models. There were several new developments and improvements to the stock assessment compared to the 2019 assessment, including application of a new approach to estimate fishing mortality, use of a new approach to determine effective sample size, a different treatment of tagging periods, inclusion of an alternative growth model, and use of new free-school indices of abundance. Results of the assessment indicate that (**Figure WCPO-8**):

1. Fishing mortality rates have increased significantly since the beginning of industrial tuna fishing. The median ratio F_{recent}/F_{MSY} is estimated to be 0.32 (10^{th} - 90^{th} percentiles:0.18-0.45), indicating that overfishing is not occurring.
2. The stock is not in an overfished state as spawning biomass is above the SSB_{MSY} level: median SSB_{recent}/SSB_{MSY} = 2.98 (10^{th} - 90^{th} percentiles: 2.20-4.22).
3. Median MSY is estimated to be 2.65 million tonnes. Recent catches (2023) are lower than MSY.

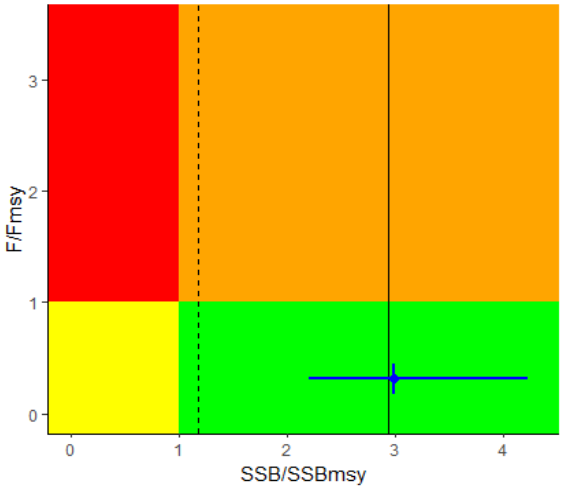


Figure WCPO-8. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue) for WCPO skipjack tuna. Solid black line represents interim target reference point and dashed black line represents limit reference point.

MANAGEMENT

Harvest Strategy: Yes, defined in CMM 2022-01. The MP applies to the catch and effort of purse seine and pole and line fisheries, and other commercial fisheries referred to in paragraph 47 of CMM 2021-01 taking more than 2,000 tonnes of tropical tunas (bigeye, yellowfin and skipjack) in the Exclusive Economic Zones and high seas.

Management Objectives: To ensure that:

a. the spawning potential depletion ratio of skipjack tuna is maintained on average at a level consistent with the target reference point; and
b. the spawning potential depletion ratio of skipjack tuna is maintained above the limit reference point with a risk of the limit reference point being breached no greater than 20 percent;

in a manner that achieves the objective of relative stability in fishing levels between management periods and in the longer term.

Limit reference point: 20% of the equilibrium spawning biomass that would be expected in the absence of fishing under current (most recent 10 years of the current assessment, excluding the last year) environmental conditions ($20\%SSB_{current,\ F=0}$). The median value of $SSB_{recent}/SSB_{F=0}$ is 0.51, which is above this limit.

Target reference point: CMM 2022-01 establishes that the TRP is calculated using two biomass depletion levels: (a) the equilibrium SSB of skipjack tuna average depletion level over the period 2018-2021 and (b) long-term equilibrium SSB that would be reached based on agreed baseline fishing effort (i.e., 2012 purse seine effort, 2001-04 pole and line effort, and 2016-2018 domestic fisheries effort in Region 5). The TRP is the average of both depletion levels, calculated as medians from the stock assessment grid.

Harvest control rule: Defined in CMM 2022-01. Features include:

a. The input to the harvest control rule is the estimated spawning potential depletion ratio

for the latest estimation year ($SB_{latest}/SB_{F=0,\ t1\text{-}t2}$) of the most recent skipjack stock assessment, where SB_{latest} is the averaged estimated spawning potential in the absence of fishing for the last 10 years;

b. The output from the harvest control rule is a scalar (multiplier) that adjusts future catch or effort relative to baseline fishing conditions (purse seine effort at 2012 levels, pole and line effort at average 2001-04 levels, and the domestic fisheries in assessment region 5 at average 2016-18 levels);
c. Scalars apply to effort for purse seine fisheries, and to catch for all other fisheries; and
d. For each 3-year management period, the harvest control rule uses the estimate of stock status ($SB_{latest}/SB_{F=0,\ t1\text{-}t2}$), as determined by the most recent stock assessment, to calculate a scalar that adjusts catches or effort up or down relative to the baseline fishing conditions.

Management Strategy Evaluation: Ongoing (finalized for current HS).

Management measures:

The main binding conservation measure for skipjack established by the WCPFC is CMM 2023-01. For the period 2024-2027, it calls for:

1. A one and a half months closure (July to mid-August) of fishing on FADs (including the prohibition of deploying, servicing or setting on FADs) in EEZ waters and on the High Seas between 20°N and 20°S. VMS polling frequency is increased to 30 minutes during the closure;
2. In addition to (1), each member shall choose between extending the FAD closure for one additional month of the year in the High Seas in either April, May, November or December, with some exemptions for Kiribati- and Philippines-flagged vessels;
3. To reduce the entanglement of sharks, marine turtles or any other species, CCMs shall ensure that the design and construction of any new FADs to be deployed in the WCPFC area are fully non-entangling without netting in their construction. To reduce the amount of synthetic marine debris, the use of non-plastic and biodegradable materials for FADs construction is promoted and encouraged and the initiation of retrieval programs for lost, abandoned or stranded FADs is also encouraged;
4. A limit of no more than 350 drifting Fish Aggregating Devices (FADs) with activated instrumented buoys at sea at any one time per purse seine vessel. And the buoy shall be activated exclusively while it is on board the vessel;
5. A limitation in the number of vessel days: For PNA members, the limit in their collective EEZs is the 2010 level. For other coastal states with effort in their EEZs exceeding 1,500 days annually over (2006-2010), the limit is either the 2001-2004 average or the 2010 level.
6. For non-SIDS members, purse seine effort on the high seas will be limited to levels specified in the CMM. Each member shall not allow the number of fishing days in the high seas to increase above limits specified in the CMM;
7. A full-retention requirement for all purse seine vessels regarding bigeye, skipjack and yellowfin tunas between 20°N and 20°S;
8. 100% Regional observer coverage for all purse seine vessels fishing on the high seas, on the high seas and in waters under the jurisdiction of one or more coastal States, or vessels fishing in waters under the jurisdiction of two or more coastal States during the same trip; all

purse seiners fishing between 20°N and 20°S must have an observer onboard. Moreover, all purse seine vessels fishing solely in their EEZ between 20°N and 20°S should also carry a national observer and the CCMs are encouraged to submit the data to the Commission.

9. A limit between 20°N and 20°S in the number of purse seine and longline vessels with freezing capacity at the 2012 level for most countries (and specifically not including vessels of Small Island Developing States).

In addition, CMM 2009-02 provides more guidance on the FAD closure and full retention requirements on High Seas.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	80	Passing Score
1.2.2	Harvest control rules and tools	75	Condition Needed*
	*For evidence that the HCR tools in use are appropriate and effective		
1.2.3	Information / monitoring	90	Passing Score
1.2.4	Assessment of stock status	95	Passing Score

SUMMARY

WCPO SKJ	ESTIMATE	YEARS	NOTES
RECENT CATCH	1619	2023	
5-YEAR CATCH	1753	2019-23	
MSY	2648	2018-21	range: 2168-4777
F/F_{MSY}	0.32	2018-21	range: 0.18-0.45
SSB/SSB_{MSY}	2.98	2018-21	range: 2.20-4.22
$SSB/SSB_{f=0}$	0.51	2018-21	range: 0.43-0.64
TAC	N/A		

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY}.
FISHING MORTALITY		F < F_{MSY}.

Last date of a change in Color Ratings: None.
Changes from the previous (original) Color Ratings: None.

PACIFIC-WIDE STOCKS

RFMOs: Western and Central Pacific Fisheries Commission (WCPFC) and Inter-American Tropical Tuna Commission (IATTC). The ISC evaluates North Pacific albacore and Pacific bluefin and the results are reviewed by the IATTC staff, the IATTC SAC and the WCPFC SC, who make recommendations to either IATTC or WCPFC. The SPC evaluates South Pacific albacore and the results are reviewed by the WCPFC SC providing management recommendations to the WCPFC.

Last Scientific Committee meetings:

- WCPFC: August, 2024
- IATTC: June, 2024
- ISC: July, 2024

Last Commission meeting:

- WCPFC: December, 2023
- IATTC: September, 2024

Three of the major commercial tunas with Pacific-wide distributions are warranted treatment as Pacific-wide stocks due to their scales of movement between the WCPO and the EPO: North Pacific albacore, South Pacific albacore and Pacific bluefin. The responsibility for their management is shared between IATTC and WCPFC.
Data sources: The main sources of information for this section are WCPFC (2024a), WCPFC (2024b), Teears et al. (2024), ISC (2023), ISC (2024a), ISC (2024b).
Conservation and Management Measures: IATTC Resolutions, WCPFC CMMs and Resolutions.
Last update: November, 2024.

PO North Pacific Albacore

North Pacific albacore provisional catches in 2023 were about 34,000 tonnes, a 31% decrease from 2022. Approximately a 77% of the catch occurs in the WCPO and a 23% in the EPO. The main fishing gears are longline (45%) and pole-and-line (31%), followed by trolling (19%) (**Figure PO-1**). Catches by longlining have shown a decreasing trend since 1999. The North Pacific albacore stock is likely not overfished nor subject to overfishing. However, increasing fishing effort will not likely result in higher yield.

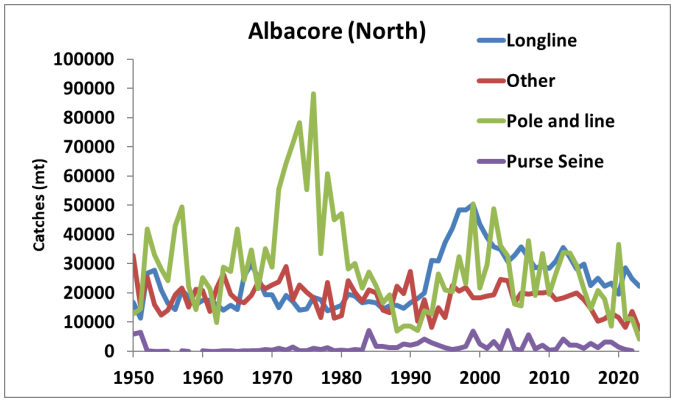


Figure PO-1. Catches of albacore tuna in the North PO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

The north Pacific albacore stock was last assessed by ISC in 2023. A length-based, age-, and sex-structured stock assessment model over the 1994-2021 period was used following a base-case assessment approach. The assessment results indicated that (**Figure PO-2**):

1. The ratio SSB_{latest}/SSB_{MSY} is 3.02 (95% CI: 2.24-3.81), indicating that the stock is not in an overfished state.
2. The average fishing intensity during 2018-2020 was estimated to be $F_{59\%SPR}$ (95% CI: $F_{72\%SPR}$ – $F_{46\%SPR}$), indicating that the stock is likely not experiencing overfishing.
3. The estimate of MSY is 121,880 tonnes. Current catches (2023) are below the MSY.

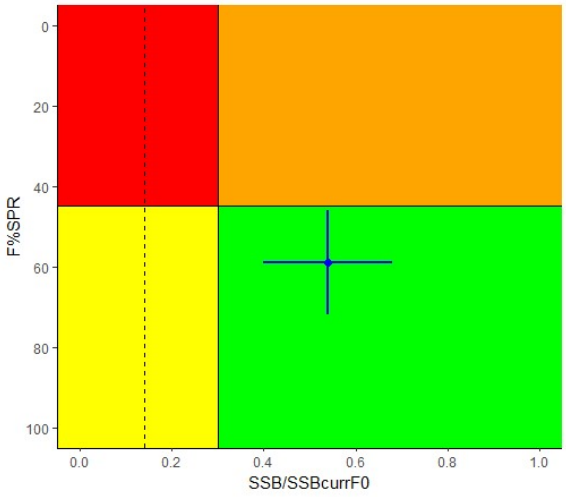


Figure PO-2. Latest estimate of SSB relative to $SSB_{current,\ F=0}$ and Spawning Potential Ratio (SPR) as a measure of fishing mortality (in blue) for albacore tuna in the northern PO. Horizontal solid black line represents the F target reference point, while the vertical one represents the SSB 'threshold' reference point. Dashed black line represents the limit reference point.

MANAGEMENT

Harvest Strategy: Yes, the IATTC (IATTC Res. C-23-02) and WCPFC (Harvest Strategy 2023-01) adopted a full HS and Harvest Control Rule in 2023, which will be applied for the first time in 2024 based on the latest stock assessment performed in 2023. The IATTC SAC recommended how to potentially translate the change in fishing intensity required by the harvest strategy into catch and effort measures (IATTC, 2024c). IATTC/WCPFC HSs are aligned, therefore, the elements below refer to both tuna RFMOs, unless specified otherwise.

Management Objectives:

a. Maintain Spawning Stock Biomass (SSB) above the Limit Reference Point, with a probability of at least 80% over the next 10 years. The risk of breaching the Limit Reference Point based on the most current estimate of SSB shall be no greater than 20%.
b. Maintain depletion of total biomass around historical (2006-2015) average depletion over the next 10 years.
c. Maintain fishing intensity (F) at or below the target reference point with a probability of at least 50% over the next 10 years.
d. To the extent practicable, management changes (e.g., catch and/or effort) should be relatively gradual between years.

Limit reference point:
LRP =14%$SSB_{current,F=0}$, which is 14% of the dynamic unfished spawning stock biomass.

Target reference point:
TRP = $F_{45\%}$, which is the fishing intensity (F) level that results in the stock producing 45% of spawning potential ratio (SPR). They also adopted a biomass *threshold* reference point that triggers management actions: $SSB_{threshold}$ = 30%$SSB_{current,F=0}$, which is 30% of the dynamic unfished spawning stock biomass.

Harvest control rule:
The HCR parameters produce a relationship between stock status and fishing intensity and are as follows with the minimum allowed fishing intensity (F_{min}) equal to $F87_{\%}$, which is the fishing

intensity (F) level that results in the stock producing 87% of SPR. $SSB_{current}$ refers to SSB in the terminal year of the assessment and $SSB_{current, F=0}$ to the terminal year dynamic unfished spawning stock biomass.
i. If $SSB_{current}/SSB_{current, F=0}$ is above or equal to $SSB_{threshold}$ with a probability of at least 50%, fishing intensity shall be maintained at or below the TRP on average over 10 years.
ii. If $SSB_{current}/SSB_{current, F=0}$ is below $SSB_{threshold}$ with a probability greater than 50%, and is above the LRP with a probability of at least 50%, fishing intensity shall be reduced to a level in accordance with the following formula:

$$F = ((TRP - F_{min})/(SSB_{threshold} - LRP))*(SSB_{current}/SSB_{current, F=0} - LRP) + F_{min}$$

iii. If $SSB_{current}/SSB_{current, F=0}$ is at or below the LRP with a probability greater than 50%, the IATTC/WCPFC, shall, in collaboration with the ISC and in coordination with each other, adopt rebuilding measures that will rebuild SSB to levels of at least the $SSB_{threshold}$ with a probability of at least 65 % within 10 years of $SSB_{current}/SSB_{current, F=0}$ having been identified to be at or below the LRP with a probability greater than 50%. In the absence of such rebuilding measures, fishing intensity shall be set at F_{min}.

If $SSB_{current}/SSB_{current, F=0}$ is above the LRP and below $SSB_{threshold}$, the maximum increase or decrease in catch or effort between the three-year management periods shall be 20% relative to the catch and effort levels specified for the previous year.

Management Strategy Evaluation: Ongoing.

Management measures:

The main binding conservation measure for North Pacific albacore established by the WCPFC is CMM 2019-03 which called for members not to increase fishing effort for North Pacific albacore in the Convention Area north of the equator and not to increase fishing effort directed at North Albacore beyond 2002-2004 annual average levels. In the IATTC, Resolution C-05-02 called for members not to increase fishing effort directed at North Albacore beyond the "current level". IATTC Resolution C-13-03 supplements C-05-02 and requires the reporting of fishing vessel information for 2007-2012. IATTC Resolution C-18-03 amends Resolution C-13-03 and extends that period to 2017.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	70	Condition Needed*
	*For evidence that the HCR (management procedure) is able to bring about required changes in fishing intensity at lower stock levels		
1.2.2	Harvest control rules and tools	<60	Fail**
	**Lack of evidence that the HCR tools in use are appropriate and effective		
1.2.3	Information / monitoring	90	Passing Score
1.2.4	Assessment of stock status	95	Passing Score

SUMMARY

PO ALB-N	ESTIMATE	YEARS	NOTES
RECENT CATCH	34	2023	
5-YEAR CATCH	50	2019-23	
MSY	122	2021	
F/F_{MSY}	0.59	2018-20	Range: 0.46-0.72 ($F_{\%SPR}$ used as proxy)
SSB/SSB_{MSY}	3.02	2021	
$SSB/SSB_{f=0}$	0.54	2021	
TAC	N/A		

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY}.
FISHING MORTALITY		F < F_{MSY}.

Last date of a change in Color Ratings: October, 2017.
Changes from the previous (original) Color Ratings: Fishing mortality rating changed from Yellow to Green to reflect the more optimistic results of the 2017 assessment.

PO South Pacific Albacore

South Pacific albacore extends beyond the WCPFC Convention Area. However, the stock is assessed by WCPFC. South Pacific albacore provisional catches in 2023 were about 67,700 tonnes, a 26% decrease from 2022 catches. Approximately 70% of the catch occurs in the WCPO and 30% in the EPO. The main fishing gear is longline, accounting for 95% of the catch. Relatively minor amounts are taken by other gears like trolling (**Figure PO-3**). The Southern Pacific albacore tuna stock is not overfished nor subject to overfishing.

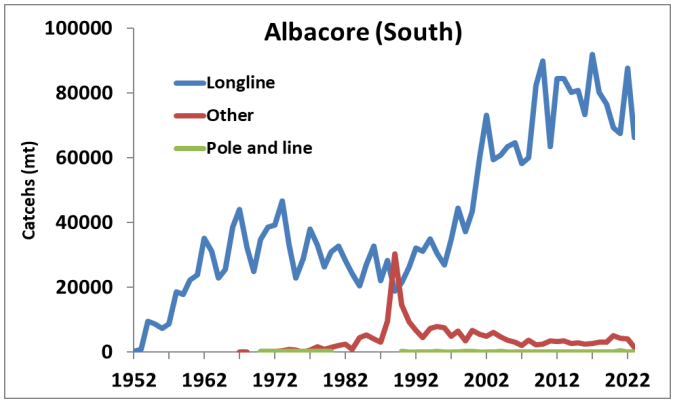


Figure PO-3. Catches of albacore tuna in the South PO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

The last full assessment was conducted in 2024 and covers the whole South Pacific, including catches from the IATTC Convention Area. The 2024 assessment provides stock status based upon an uncertainty ensemble comprising 100 models derived from prior distributions for average natural mortality and steepness together with estimation error for individual models.. The assessment results were similar to those in 2021 and indicated the following (**Figure PO-4**):

1. The estimated ratio F_{recent}/F_{MSY} in 2018-2021 is 0.18 (10^{th} - 90^{th} percentiles: 0.06-0.44), indicating that overfishing is not occurring.
2. The estimated ratio of spawning biomass SSB_{recent}/SSB_{MSY} in 2019-2022 is 3.02 (10^{th} - 90^{th} percentiles: 2.04-5.21). This indicates that the stock is not in an overfished state. However, the stock's biomass may be approaching an un-profitably level for fisheries targeting South Pacific Albacore.
3. The estimate of MSY is 101,100 tonnes (the median across the uncertainty grid) with a range between 74,018 and 176,330 tonnes (10^{th} - 90^{th} percentiles).

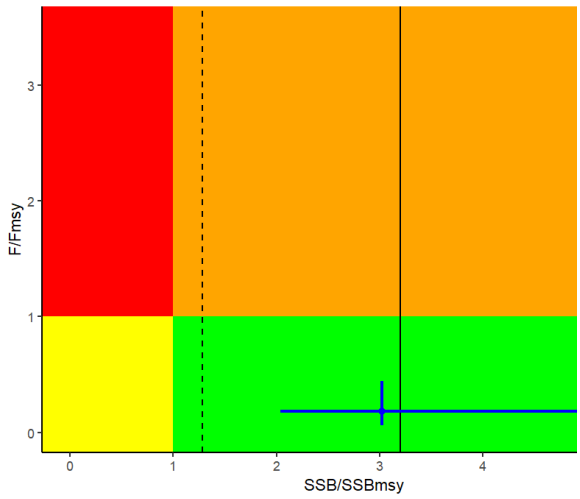


Figure PO-4. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue) for albacore tuna in the southern PO. Solid black line represents interim target reference point and dashed black line represents limit reference point. Note that the X axis has been adjusted to the SSB/SSB_{MSY} range.

MANAGEMENT

Harvest Strategy: No, but the following components have been agreed:

Management Objectives: Not agreed.

Limit reference point: (WCPFC) 20% of the equilibrium spawning biomass that would be expected in the absence of fishing under current (most recent 10 years of the current assessment, excluding the last year) environmental conditions ($20\%SSB_{current,\ F=0}$). The median value of $SSB_{current}/SSB_{F=0}$ is 0.48, which is above this limit.

Target reference point: In 2018, WCPFC agreed on an interim target reference point (TRP) for south Pacific albacore at 56% of spawning stock biomass in the absence of fishing (0.56 $SSB_{F=0}$). This interim TRP was reviewed to 0.5 $SSB_{F=0}$ following the 2024 stock assessment, as requested by the WCPFC. The median value of $SSB_{current}/SSB_{F=0}$ is 0.48, which is slightly below the re-estimated interim TRP of 0.5 $SSB_{F=0}$.

Harvest control rule: Not defined. CMM-2022-03, that superseded CMM 2014-06, calls for WCPFC to develop and implement a harvest strategy approach that includes target reference points, harvest control rules and other elements. The workplan and its deadlines have been revised in subsequent meetings of the Commission.

Management Strategy Evaluation: Ongoing.

Management measures:

The main binding conservation measure for south Pacific albacore established by the WCPFC is CMM 2015-02 which aims to limit fishing mortality by establishing a cap on the number of vessels fishing for South Pacific albacore by each Commission member, with some exemptions for small island developing states. This capacity limitation is for the number of vessels not to increase over

the 2005 level, or the 2000-2004 average. IATTC adopted Resolution C-24-04 encouraging collaboration and alignment with WCPFC in south Pacific albacore management.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score[7]	Evaluation
1.2.1	Harvest Strategy	70	Condition Needed*
	*For IATTC/WCPFC to adopt a Harvest Strategy that is responsive to the state of the stock		
1.2.2	Harvest control rules and tools	60	Condition Needed**
	**For IATTC/WCPFC to adopt a well-defined HCR robust to uncertainties, and tools		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	90	Passing Score

SUMMARY

PO ALB-S	ESTIMATE	YEARS	NOTES
RECENT CATCH	68	2023	
5-YEAR CATCH	77	2019-2023	
MSY	101	2022	range: 74-176
F/F_{MSY}	0.18	2018-2021	range: 0.06-0.44
SSB/SSB_{MSY}	3.02	2019-2022	range: 2.04-5.21
$SSB/SSB_{f=0}$	0.48	2019-2022	range: 0.36-0.62
TAC	N/A		

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY}.
FISHING MORTALITY		F < F_{MSY}.

Last date of a change in Color Ratings: None.
Changes from the previous (original) Color Ratings: None.

[7] These scores have not been updated to reflect latest (2024) changes in stock assessment or management.

PO Pacific Bluefin Tuna

Reported Pacific bluefin provisional catches in 2023 were about 18,200 tonnes, a 3% increase from estimates available for 2022. Most of the catch (71%) occurs in the western Pacific Ocean. About 52% of the Pacific-wide catch is made by purse seine fisheries, followed by a variety of gears such as coastal set nets and troll (29%) and longline (18%). (**Figure PO-5**). Pacific Bluefin tuna was heavily overfished but has rebuilt to interim rebuilding targets. Management has been implemented to rebuild the stock towards possible target reference points.

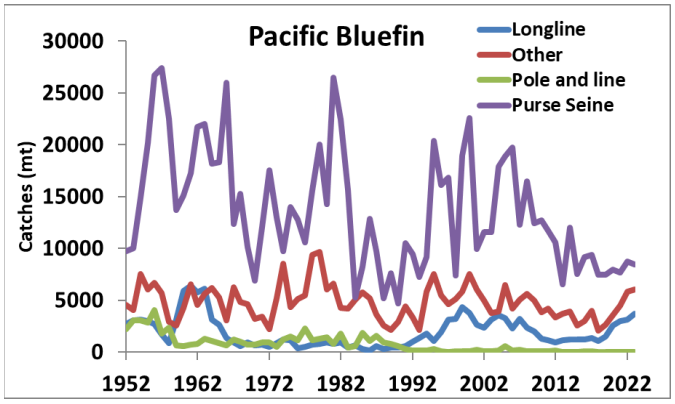


Figure PO-5. Catches of Pacific bluefin tuna from 1952 to 2023, by gear type.

STOCK ASSESSMENT

In 2024, a benchmark stock assessment was conducted. All aspects of the model were critically reviewed, and some modifications were made to improve the model. One of the major changes was to shorten the time series by starting in 1983 instead of 1952. The 2024 benchmark assessment used a fully integrated age-structured model fitted to catch, size-composition and catch-per-unit of effort- based abundance index data following a base-case assessment approach (no grid of models was considered to address uncertainty). Results indicate that (**Figure PO-6**):

1. The spawning stock biomass steadily declined from 1996 to 2010, but SSB has rapidly increased since 2011. In 2022, SSB was estimated to be 23.2% of the unfished level, having achieved the second rebuilding target set by WCPFC and IATTC in 2021. The point estimate of the depletion level is now above the biomass depletion-based Limit Reference Point of 20% of the unfished stock biomass set by the Commission for all other WCPFC key tuna stocks (20%$SSB_{F=0}$) and the 7.7% $SSB_{F=0}$ that IATTC uses for tropical tuna stocks. However, if uncertainty had been considered more broadly, it is likely that some alternative hypotheses would have led to lower depletion estimates.
2. The recent (2020-2022) $F_{\%SPR}$ is estimated to produce a fishing intensity of 23.6%SPR and is below the level corresponding to overfishing for some F-based reference points proposed for tuna species, including $SPR_{20\%}$. However, this should be taken with precaution, as this estimate of F is a point estimate from a base case assessment and does not include an uncertainty range.
3. Since pacific bluefin tuna can grow close to 300 cm, the current catch composed mainly by

small bluefin individuals can result in a loss of potential yield, i.e. the catches that could be hypothetically taken by other gears that target larger individuals, such as longlining. This is known as "growth overfishing".

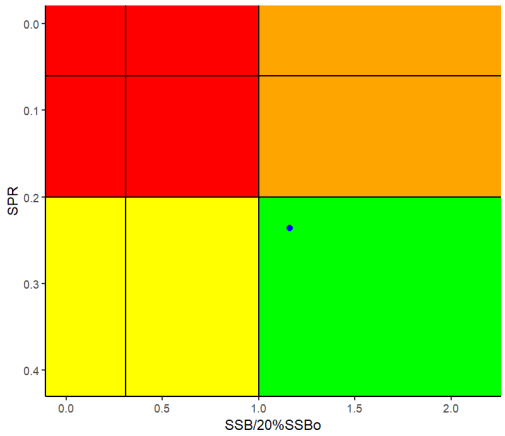


Figure PO-6. Latest estimate of SSB relative to 20%SSB_0 and Spawning Potential Ratio (SPR) as a measure of fishing mortality (in blue) for pacific bluefin tuna. Solid black lines represent the first and second biomass rebuilding target reference points and the corresponding fishing mortality that produces SPR. Note that 20%SSB_0 is normally taken as a limit reference point and is probably below SSB_{MSY}.

MANAGEMENT

Harvest Strategy: No, but the following components have been agreed:

Management Objectives: Not agreed.

Limit reference point: Not formally defined, but 20%$SSB_{F=0}$ is considered as both a rebuilding target (see below) and a potential limit in the longer term.

Target reference point: The initial rebuilding target for the PBF stock size is the median SSB estimated for the period 1952 through 2014 (which translates to 6.7% of $SSB_{F=0}$), to be reached by 2024 with at least 60% probability. The second rebuilding target for the PBF stock size is 20%$SSB_{F=0}$, to be reached by 2034, or 10 years after reaching the initial rebuilding target, whichever is earlier, with at least 60% probability. There is not yet a formally adopted target for the long term but maintaining the stock at levels capable of producing maximum sustainable yield is considered as a potential target. According to the latest assessment, the second target was reached in 2021.

Harvest control rule:
- Initial rebuilding period: The stock will be evaluated frequently by ISC. If the SSB projection indicates that the probability of achieving the initial rebuilding target by 2024 is less than 60%, management measures will be modified to increase it to at least 60% (these measures include either reductions in the small fish catch limits or transferring part of the small fish catch limit to the large fish one). If the SSB projection indicates that the probability of achieving the initial rebuilding target by 2024 is at 75% or larger, the catch limits may increase if the probability is maintained at 70% or larger, and the probability of reaching the second rebuilding target by the agreed deadline remains at least 60%.

- Second rebuilding period: The HCRs will also rely on ISC stock assessments and projections. If the SSB projection indicates that the probability of achieving the second rebuilding target by 2034 (or ten years after the initial target) is less than 60%, management measures shall be modified to increase it to at least 60%. If the probability was 75% or larger, fishery controls may be changed, including adjustments to catch limits provided that the probability to achieve the second rebuilding target remains at 70% or larger. The ISC projection results indicate that, under all investigated scenarios, there is 99% or 100% probability to achieve the initial biomass rebuilding target (6.7% of $SSB_{F=0}$ by 2024 with at least 60% probability) and that the estimated probability of achieving the second biomass rebuilding target (20% of $SSB_{F=0}$) 10 years after the achievement of the initial rebuilding target or by 2034, whichever is earlier, is greater than 90%.

  From the year in which the stock has achieved the second rebuilding target of 20%SSB_0 a long-term harvest strategy based on an MSE process will be implemented to maintain the SSB above the LRP (20%SSB_0) with a probability of 60%.

  Management Strategy Evaluation: In development, but MSE development has been slow despite the second rebuilding target being reached in 2021 according to the latest assessment.

Management measures:

WCPFC CMM 2023-02 establishes management measures to rebuild the Pacific bluefin spawning biomass to its historical median level (the median point estimate for 1952-2014) by 2024 with at least 60% probability. This CMM limits total fishing effort north of 20°N to below the average 2002-2004 levels. Members are also required to reduce juvenile (less than 30 kg) catches 50% of the 2002-2004 average annual catch levels. Annual catch limits for Pacific bluefin tuna 30 kg or larger are limited to 115% of the 2002-2004 average annual level or 30 tonnes for a CCM who does not have an initial catch limit for Pacific bluefin tuna 30 kg or larger before 2022, but any member can use part of its juvenile catch limit to catch adults. Any overage or underage of the catch limit will be deducted or added from the following year TAC, with a maximum undercatch that can be carried over in any given not exceeding 5% of its annual initial catch limit.

An overall combined total commercial catch limit of 12,585 tonnes during 2025-2026 was set by IATTC in Resolution C-24-02. IATTC Resolution C-23-01 describes the objectives of both rebuilding periods and establishes HCRs for the second rebuilding period and the period after the second objective is met, sets over- and under-harvest limits and calls the Commission to collaborate with the WCPFC Northern Committee to develop candidate reference points and HCRs. IATTC Resolution C-24-03 establishes a regime for the monitoring and control of the bluefin tuna fishery in the EPO by which CPCs are requested to report annually on the implementation of monitoring and control measures relating to bluefin tuna fisheries and farms.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score[8]	Evaluation
1.2.1	Harvest Strategy	80	Passing Score
1.2.2	Harvest control rules and tools	75	Condition Needed*
	*For IATTC/WCPFC to adopt a well-defined HCR to achieve a target objective (i.e. not a rebuilding target)		
1.2.3	Information / monitoring	90	Passing Score
1.2.4	Assessment of stock status	95	Passing Score

SUMMARY

PO-PBF	ESTIMATE	YEARS	NOTES
RECENT CATCH	18	2023	
5-YEAR CATCH	15	2019-23	
MSY	N/A		
F/F_{MSY}	N/A		
SSB/SSB_{MSY}	N/A		
SSB/SSB_0	0.232	2022	
TAC			

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB relative to SSB_{MSY} was not estimated by ISC. However, SSB is 23.2% of the unfished level.
FISHING MORTALITY		F relative to F_{MSY} was not estimated by ISC. F estimated in the assessment is below some indicators used as proxies for F_{MSY}. However, this should be taken with precaution, as this F is a point estimate with no uncertainty range.

Last date of a change in Color Ratings: November, 2024.
Changes from the previous (November, 2022) Color Ratings: Fishing mortality rating changed from Yellow to Green.

[8] These scores have not been updated to reflect latest (2024) changes in stock assessment or management.

STOCKS IN THE ATLANTIC OCEAN

RFMO: International Commission for the Conservation of Atlantic Tunas (ICCAT). The stocks are assessed by the SCRS who makes recommendations to ICCAT.
Last Scientific Committee (SCRS) meeting: September, 2024.
Last Commission meeting: November, 2023.
Tuna stocks managed by ICCAT: AO Yellowfin, AO Bigeye, Eastern AO Skipjack, Western AO skipjack, North AO Albacore, South AO Albacore, Mediterranean Albacore, Western AO bluefin, Eastern and Mediterranean AO bluefin.
Data sources: The main sources of information for this section are ICCAT (2020), ICCAT (2021), ICCAT (2022), ICCAT (2023), and ICCAT (2024).
Conservation and Management Measures: ICCAT Resolutions, Recommendations and other Decisions.
Last update: November, 2024.

About 11 percent of the world production of tuna is from Atlantic Ocean (AO) stocks. Catches of skipjack, yellowfin, bigeye, albacore and bluefin in 2023 were 544,700 tonnes, a 9% decrease from 2022 catch levels. There was a general tendency for the total catch to decline since the mid-1990s, followed by a new upward trend since 2009. (**Figure AO-1**).

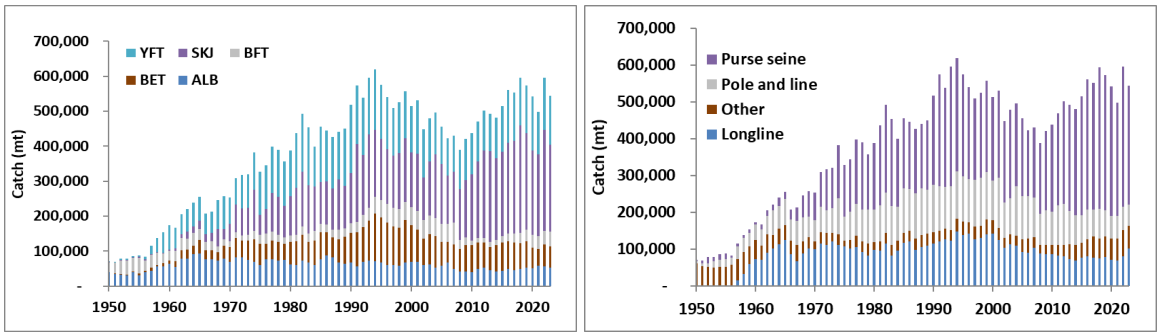


Figure AO-1. Trends in catch (mt) of bigeye, skipjack, yellowfin, albacore and bluefin in the AO region, by species (left) and gear (right), 1950-2023.

Average catches for the five-year period 2019-2023 (551,000 tonnes) provide an indication of the recent performance of the fisheries (**Figure AO-2**): Skipjack accounts for 47% of the catches in weight, followed by yellowfin (25%), bigeye (11%), albacore (10%), and bluefin (7%). Purse seine vessels take 63% of the total catch, followed by longline (15%), pole-and-line (some of which operate jointly with purse seiners, 11%) and other gears (11%).

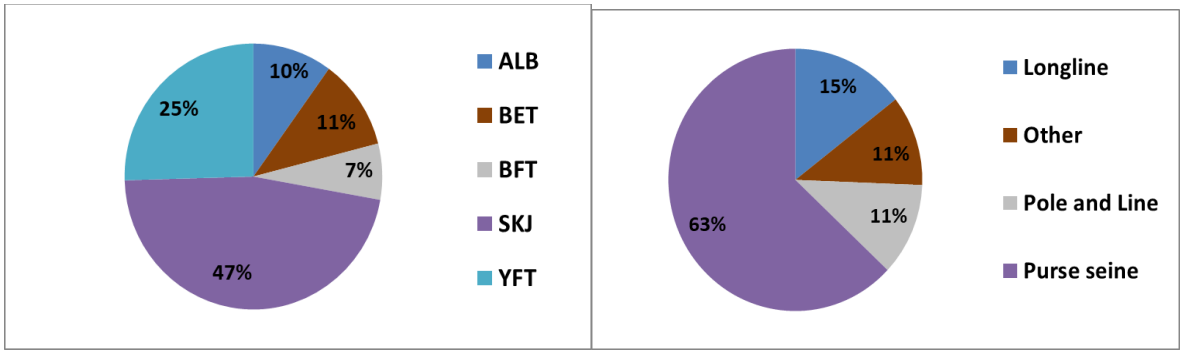


Figure AO-2. Average 2019-2023 catches of skipjack, yellowfin, bigeye, albacore and bluefin tuna in the AO. The panel on the left shows the percentages by species, and the panel on the right shows the percentages by gear type.

AO Bigeye Tuna

Atlantic bigeye catches in 2023 were about 61,300 tonnes, a 2% decrease from 2022. Catches by longline, the main fishing gear (50% of the catch), declined sharply between 1999 and 2006, but they have declined more slowly during the last few years. Purse seine and pole-and-line vessels account for about 31% and 10% of the catches, respectively (**Figure AO-3**). The stock is estimated to be overfished, but overfishing is not occurring.

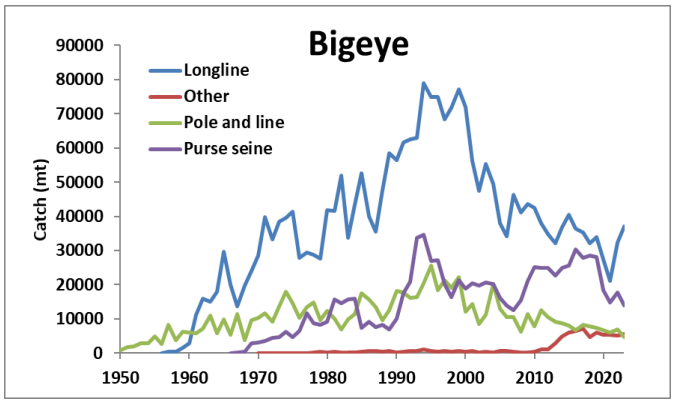


Figure AO-3. Catches of bigeye tuna in the AO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

The last (2021) assessment conducted by SCRS (ICCAT Standing Committee on Research and Statistics) gave more optimistic results than the 2018 assessment. Changes to the data and models included updates to data and biological parameters, and changes to the abundance indices and fleet structure used. Sensitivity analyses demonstrated that such changes in stock status partially result from replacing the 2018 “late period” joint longline index with the updated “late period” joint longline index developed with slightly different methodology and incorporating new mortality at age vectors based. The SCRS indicated that while uncertainty on natural mortality was included in the grid, the uncertainty related to the longline index was not incorporated in the advice, which provided a more pessimistic stock status. Based on combining several model-data scenarios, the SCRS determined that: (**Figure AO-4**):

1. The ratio of $F_{current}/F_{MSY}$ in 2019 was estimated at 1.00 (range: 0.63-1.35), indicating that overfishing is not occurring.
2. The ratio of spawning biomass $SSB_{current}/SSB_{MSY}$ in 2019 was estimated at 0.94 (range: 0.71-1.37). This indicates that the stock is in an overfished state but very close to the MSY level.
3. The estimate of MSY was 86,800 tonnes (range: 72,200 to 106,400 tonnes). MSY has been reduced considerably through harvest of small bigeye. Current catches (61,300 tonnes) are below the MSY, and just below the adopted catch limit (62,000 tonnes).

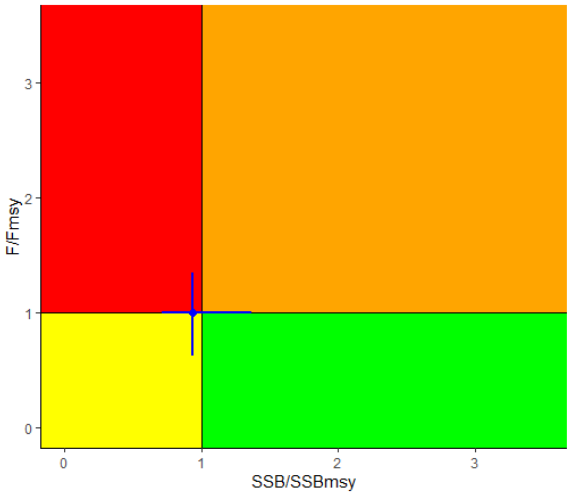


Figure AO-4. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for bigeye tuna in the AO.

MANAGEMENT

Harvest Strategy: No.

Management Objectives: Not defined.

Limit reference point: Not defined.

Target reference point: Not defined. "Green" quadrant in Kobe plot implied as target (Rec. 11-13).

Harvest control rule: Not defined, but Recs. 11-13 and 15-07 provide a framework.

Management Strategy Evaluation: Early stages.

Management measures:

The main binding conservation measure established by ICCAT for bigeye is Recommendation 22-01, amended by Rec. 23-01, which superseded several previous Recommendations. This management plan for tropical tunas calls for:

1. A Total Allowable Catch of 62,000 t in 2024, with catch limits given to ICCAT members based on reductions from their previous catch limits or recent average catch. The SCRS estimated that a future constant catch of 62,000 t will have a 97% probability of maintaining the stock in the green quadrant of the Kobe plot by 2034. The measure includes detailed

provisions for countries to be penalized with lower quotas if their limits are exceeded;
2. Quarterly reporting to the Secretariat of the amount of tropical tuna by species caught (monthly reporting in the case of purse seiners and large longline vessels);
3. A capacity limitation consisting in each member producing an annual capacity/fishing plan that outlines how its overall longline and purse seine fleet capacity will be managed to ensure that the member can meet its obligation to limit the catch of bigeye, and its yellowfin and skipjack catches. Additionally, members shall report information on their support vessels;
4. The establishment of a record of vessels actively fishing for bigeye, or supporting fishing activities;
5. A 72-day closure (1st January to 12 March) prohibition in 2024 of purse seine and baitboat vessels fishing on floating objects, including their support vessels' activities, in the high seas or EEZs. In addition, a prohibition to deploy drifting FADs during the 15 days prior to the closure;
6. Observer coverage (human or electronic) of 100% for purse seine vessels and 10% for large longline vessels;
7. Annual submission of FAD management plans by countries with purse seine and baitboat (pole-and-line) fisheries;
8. A limit of 300 FADs with operational buoys at any one time per vessel in 2024. Each CPC with purse seine fishing vessels is encouraged not to increase its total fishing effort on FADs from its 2018 level.
9. To reduce the entanglement of sharks, marine turtles or any other species and reduce the amount of synthetic marine debris, CPCs shall endeavor to ensure that all FADs deployed are non-entangling, and constructed from biodegradable materials, including non-plastics, with the exception of materials used in the construction of FAD tracking buoys.

While a TAC of 62,000 tonnes is specified for 2024, consistent with SCRS advice, the permissible catch under Recommendation 22-01 (amended by Rec. 23-01) may exceed 62,000 tonnes due to various exemptions in the catch limits provisions. There is concern that fishing capacity remains high, and is growing due to longline, pole and line and purse seine vessels moving from the IO and PO into the AO.

Additionally, Recommendation 17-01 establishes a ban on discards of bigeye, skipjack and yellowfin tuna by purse seine vessels.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	65	Condition Needed*
	*For evidence that the HS is responsive to the state of the stock and that HS elements work together towards achieving stock management objectives		
1.2.2	Harvest control rules and tools	65	Condition Needed**
	**For ICCAT to adopt a well-defined HCR and tools		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	100	Passing Score

SUMMARY

AO BET	ESTIMATE	YEARS	NOTES
RECENT CATCH	61	2023	
5-YEAR CATCH	61	2019-23	
MSY	87	2019	Range: 72-106
F/F_{MSY}	1.00	2019	Range: 0.63-1.35
SSB/SSB_{MSY}	0.94	2019	Range: 0.71-1.37
SSB/SSB_0	0.28	2017	Range: 0.18-0.19
TAC	62	2024	

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		$SSB \leq SSB_{MSY}$.
FISHING MORTALITY		$F \approx F_{MSY}$.

Last date of a change in Color Ratings: March, 2022.
Changes from the previous (November, 2015) Color Ratings: The Abundance rating changed from Orange to Yellow. The Fishing mortality rating changed from Orange to Green.

AO Yellowfin Tuna

Yellowfin catches in 2023 were about 139,500 tonnes, a 6% decrease from 2022. The main fishing gear is purse seining (about 68% of the catch) (**Figure AO-5**). Purse seine catches have shown a general decrease since the early 1990s but started growing again after 2007. About 13% of the catch is made by longlining and 5% by pole-and-line vessels. The yellowfin tuna stock in the Atlantic Ocean is not overfished and overfishing is not taking place.

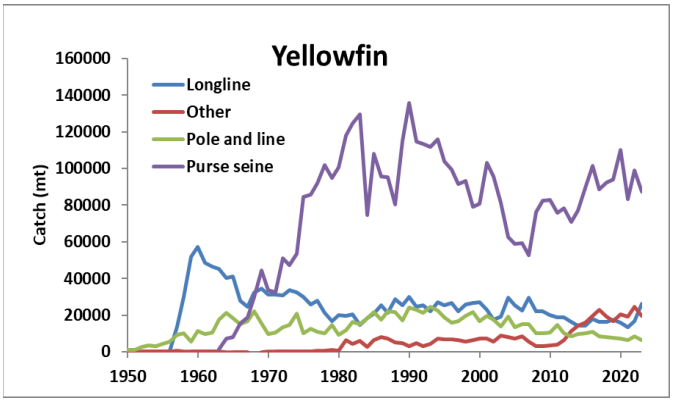


Figure AO-5. Catches of yellowfin tuna in the AO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

The most recent full assessment of yellowfin tuna was carried out by SCRS in 2024 using an age-structured model framework applied to the available data through 2022. These results are more optimistic than those of the previous (2019) assessment and indicate that (**Figure AO-6**):

1. The ratio of F_{2022}/F_{MSY} is estimated at 0.89 (80% C.I.: 0.40-1.46), indicating that overfishing is not occurring.
2. The ratio of spawning biomass SSB_{2022}/SSB_{MSY} is estimated at 1.37 (80% C.I.: 0.91-2.15). This indicates that the stock in 2022 was not overfished.
3. The estimate of MSY is 121,661 tonnes (80% C.I.: 107,485-188,456). MSY is lower than in previous decades because the overall fishery selectivity has shifted towards smaller yellowfin, mainly through fishing on FADs. Current catch (139,500 t) is above the MSY and the adopted catch limit (110,000 tonnes).

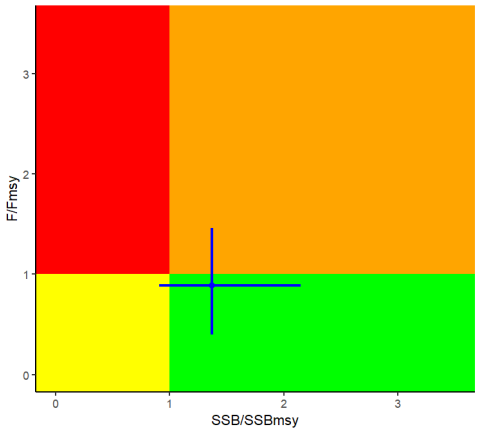


Figure AO-6. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for yellowfin tuna in the AO.

MANAGEMENT

Harvest Strategy: No.

Management Objectives: Not defined.

Limit reference point: Not defined.

Target reference point: Not defined. "Green" quadrant in Kobe plot implied as target (Rec. 11-13)

Harvest control rule: Not defined, but Recommendations 11-13 and 15-07 provide a framework.

Management Strategy Evaluation: Early stages.

Management measures:

The main binding conservation measure established by ICCAT for yellowfin is Recommendation 22-01 (amended by Rec. 23-01), which superseded several previous Recommendations. This multi-annual management plan for tropical tunas calls for:

1. An overall TAC of 110,000 tonnes (unallocated by country);
2. Quarterly reporting to the Secretariat of the amount of tropical tuna by species caught (monthly reporting in the case of purse seiners and large longline vessels);
3. A capacity limitation consisting in each member producing an annual capacity/fishing plan that outlines how its overall longline and purse seine fleet capacity will be managed to ensure that the member can meet its obligation to limit the catch of bigeye, and its yellowfin and skipjack catches. Additionally, members shall report information on their support vessels;
4. The establishment of a record of vessels actively fishing for yellowfin, or supporting fishing activities;
5. A 72-day closure (1st January to 12 March) prohibition in 2024 of purse seine and baitboat vessels fishing on floating objects, including their support vessels' activities, in the high seas or EEZs. In addition, a prohibition to deploy drifting FADs during the 15 days prior to the closure;
6. Observer coverage (human or electronic) of 100% for purse seine vessels and 10% for large longline vessels;
7. Annual submission of FAD management plans by countries with purse seine and baitboat (pole-and-line) fisheries.
8. A limit of 300 FADs with operational buoys at any one time per vessel in 2024. Each CPC with purse seine fishing vessels is encouraged not to increase its total fishing effort on FADs from its 2018 level.
9. To reduce the entanglement of sharks, marine turtles or any other species and reduce the amount of synthetic marine debris, CPCs shall endeavor to ensure that all FADs deployed are non-entangling, and constructed from biodegradable materials, including non-plastics, with the exception of materials used in the construction of FAD tracking buoys.

The TAC adopted by ICCAT in 2016 (and maintained in Rec. 22-01, amended by Rec. 23-01) was consistent with the advice provided by SCRS in recent years. However, recent catches have been above the TAC and MSY since 2015 and the SCRS has warned that catches above MSY levels are expected to further degrade the condition of the yellowfin stock in the future. The TAC is not allocated between CPCs, which makes it difficult to enforce.

Additionally, Recommendation 17-01 establishes a ban on discards of bigeye, skipjack and yellowfin tuna by purse seine vessels.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score[9]	Evaluation
1.2.1	Harvest Strategy	80	Passing Score
1.2.2	Harvest control rules and tools	<60	Fail*
	*ICCAT to adopt a well-defined HCR robust to uncertainties, and tools		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	90	Passing Score

[9] These scores have not been updated to reflect latest (2024) changes in stock assessment or management.

SUMMARY

AO YFT	ESTIMATE	YEARS	NOTES
RECENT CATCH	140	2023	
5-YEAR CATCH	140	2019-23	
MSY	122	2022	Range: 107-188
F/F_{MSY}	0.89	2022	Range: 0.40-1.46
SSB/SSB_{MSY}	1.37	2022	Range: 0.91-2.15
SSB/SSB_0	0.43[10]	2023	Range: 0.37-0.48)
TAC	110	2024	

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY} in 2022.
FISHING MORTALITY		F < F_{MSY}. However, the catch has exceeded MSY and the TAC in recent years.

Last date of a change in Color Ratings: March, 2020.
Changes from the previous (November, 2016) Color Ratings: The Abundance rating changed from Yellow to Green.

[10] From Stock Synthesis stock assessment results (value not available in ICCAT SCRS reports)

AO Eastern Skipjack Tuna

There are two (eastern and western) skipjack stocks in the Atlantic. Skipjack catches in the eastern Atlantic Ocean in 2023 were about 219,900 tonnes, an 18% decrease from 2022. Purse seine (89%) and pole-and-line (7%) dominate the catches (**Figure AO-7**). The purse seine catches had been decreasing from the early 1990s to 2009, but increased substantially since then, reaching a high peak in 2018 and again in 2022. Catches by other gears have remained stable. It is estimated that the Eastern Atlantic skipjack stock is not overfished and overfishing is not occurring.

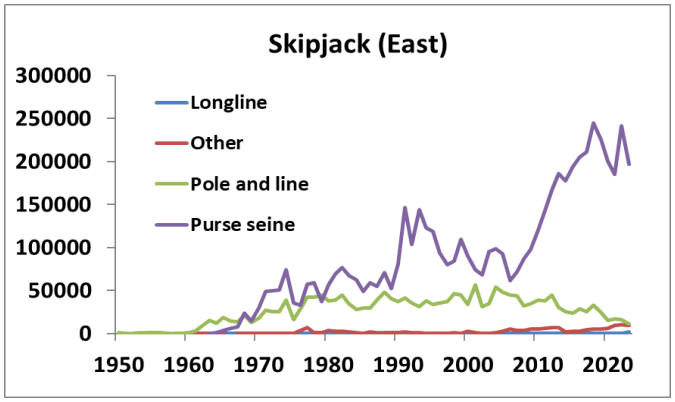


Figure AO-7. Catches of skipjack tuna in the Eastern AO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

The stock was last assessed in 2022, using data up to 2020 and two different model platforms. The combined results of both assessment models, based on the median of an uncertainty grid with 18 scenarios in each model, show that (**Figure AO-8**):

1. The ratio of $F_{current}/F_{MSY}$ is estimated to be 0.63 (95% C.I.: 0.18-2.35), indicating that overfishing is not occurring.
2. The ratio of spawning biomass $SSB_{current}/SSB_{MSY}$ is estimated to be 1.60 (95% C.I.: 0.50-5.79), indicating that the stock is not in an overfished state.
3. The estimate of MSY is 216,617 t (95% C.I.: 172,735-284,658 t). Current catch levels (219,900 t in 2023) are slightly above the MSY.

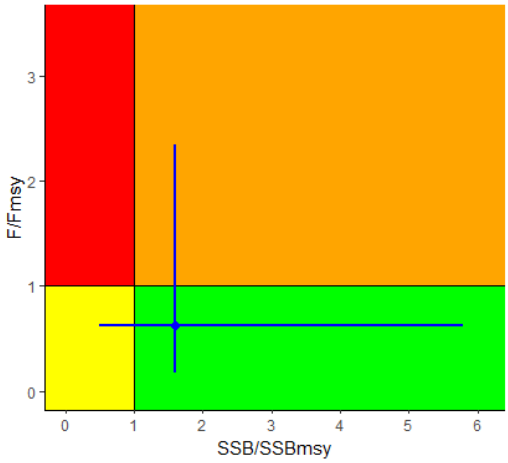


Figure AO-8. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for skipjack tuna in the eastern AO. Note that the X axis has been adjusted to the SSB/SSB_{MSY} range.

MANAGEMENT

Harvest Strategy: No.

Management Objectives: Not defined.

Limit reference point: Not defined.

Target reference point: Not defined. "Green" quadrant in Kobe plot implied as target (Rec. 11-13)

Harvest control rule: Not defined, but Recs. 11-13 and 15-07 provide a framework.

Management Strategy Evaluation: Early stages.

Management measures:

The main binding conservation measure established by ICCAT for skipjack is Recommendation 22-01, amended by Rec. 23-01, which superseded several previous Recommendations. This multi-annual management plan for tropical tunas calls for:

1. Quarterly reporting to the Secretariat of the amount of tropical tuna by species caught (monthly reporting in the case of purse seiners and large longline vessels);
2. A capacity limitation consisting in each member producing an annual capacity/fishing plan that outlines how its overall longline and purse seine fleet capacity will be managed to ensure that the member can meet its obligation to limit the catch of bigeye, and its yellowfin and skipjack catches. Additionally, members shall report information on their support vessels;
3. The establishment of a record of vessels actively fishing for skipjack, or supporting fishing activities;
4. A 72-day closure (1st January to 12 March) prohibition in 2024 of purse seine and baitboat vessels fishing on floating objects, including their support vessels' activities, in the high seas or EEZs. In addition, a prohibition to deploy drifting FADs during the 15 days prior to the closure;
5. Observer coverage (human or electronic) of 100% for purse seine vessels and 10% for large longline vessels;
6. Annual submission of FAD management plans by countries with purse seine and baitboat (pole-and-line) fisheries;
7. A limit of 300 FADs with operational buoys at any one time per vessel in 2024. Each CPC with purse seine fishing vessels is encouraged not to increase its total fishing effort on FADs from its 2018 level.
8. To reduce the entanglement of sharks, marine turtles or any other species and reduce the amount of synthetic marine debris, CPCs shall endeavor to ensure that all FADs deployed are non-entangling, and constructed from biodegradable materials, including non-plastics, with the exception of materials used in the construction of FAD tracking buoys.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	75	Condition Needed*
	*For evidence that the HS is responsive to the state of the stock and that HS elements work together towards achieving stock management objectives		
1.2.2	Harvest control rules and tools	60	Condition Needed**
	**For ICCAT to adopt a well-defined HCR robust to uncertainties, and tools		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	85	Passing Score

SUMMARY

AO SKJ-E	ESTIMATE	YEARS	NOTES
RECENT CATCH	220	2023	
5-YEAR CATCH	235	2019-23	
MSY	217	2020	Range: 173-285
F/F_{MSY}	0.63	2020	Range: 0.18-2.35
SSB/SSB_{MSY}	1.60	2020	Range: 0.50-5.79
SSB/SSB_0	N/A		
TAC	N/A		

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY}.
FISHING MORTALITY		F < F_{MSY}.

Last date of a change in Color Ratings: None.
Changes from the previous (original) Color Ratings: None.

AO Western Skipjack Tuna

There are two (eastern and western) skipjack stocks in the Atlantic. Skipjack catches in the western Atlantic Ocean in 2023 were about 29,600 tonnes, a 37% increase from 2022. Pole-and-line fishing dominates the catches (69%), followed by purse seining (8%) (**Figure AO-9**). Pole and line catch levels remained relatively stable between the mid 1980's and the early 2010's, but have been much lower in recent years after a sharp decline in 2014-2015. It is estimated that the Western Atlantic skipjack stock is not overfished, and overfishing is not occurring.

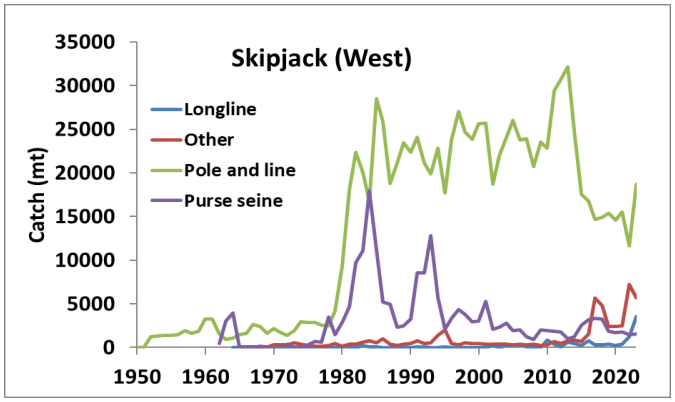


Figure AO-9. Catches of skipjack tuna in the Western AO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

The stock was assessed by SCRS in 2022, using data up to 2020. Stock status was estimated by combining the results of the 9 scenarios in the uncertainty grid. The SCRS concluded that (**Figure AO-10**):

1. The ratio of $F_{current}/F_{MSY}$ is around 0.41 (95% C.I.: 0.19-0.89), indicating that overfishing is not occurring.
2. The ratio of spawning biomass $SSB_{current}/SSB_{MSY}$ is 1.60 (95% C.I.: 0.90-2.87), indicating that the stock is not overfished.
3. The value of MSY is estimated as 35,277 tonnes (95% C.I.: 28,444-46,340 t), higher than current catch levels (29,600 t in 2023).

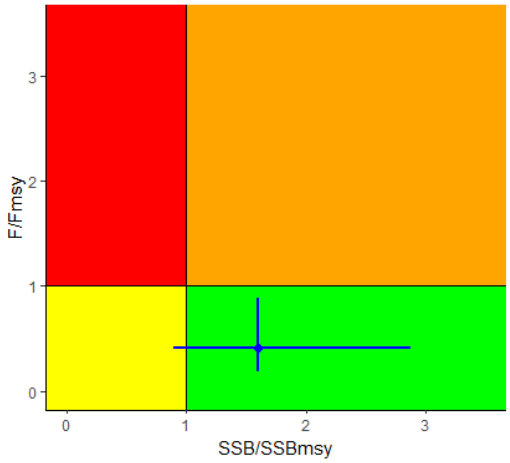


Figure AO-10. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue) for skipjack tuna in the western AO.

MANAGEMENT

Harvest Strategy: No.

Management Objectives: Not defined, but preliminary performance indicators have been identified. Resolution 2022-02 presents 'conceptual' objectives to be used in 2023 in the development of initial operational management objectives.

Limit reference point: Not defined.

Target reference point: Not defined. "Green" quadrant in Kobe plot implied as target (Rec. 11-13)

Harvest control rule: Not defined, but Recs. 11-13 and 15-07 provide a framework.

Management Strategy Evaluation: Ongoing.

Management measures:

The main binding conservation measure established by ICCAT for skipjack is Recommendation 22-01, amended by Rec. 23-01, which superseded several previous Recommendations. This multi-annual management plan for tropical tunas calls for:

1. Quarterly reporting to the Secretariat of the amount of tropical tuna by species caught (monthly reporting in the case of purse seiners and large longline vessels);
2. A capacity limitation consisting in each member producing an annual capacity/fishing plan that outlines how its overall longline and purse seine fleet capacity will be managed to ensure that the member can meet its obligation to limit the catch of bigeye, and its yellowfin and skipjack catches. Additionally, members shall report information on their support vessels;
3. The establishment of a record of vessels actively fishing for skipjack, or supporting fishing activities;
4. A 72-day closure (1st January to 12 March) prohibition in 2024 of purse seine and baitboat

vessels fishing on floating objects, including their support vessels' activities, in the high seas or EEZs. In addition, a prohibition to deploy drifting FADs during the 15 days prior to the closure;

5. Observer coverage (human or electronic) of 100% for purse seine vessels and 10% for large longline vessels;
6. Annual submission of FAD management plans by countries with purse seine and baitboat (pole-and-line) fisheries;
7. A limit of 300 FADs with operational buoys at any one time per vessel in 2024. Each CPC with purse seine fishing vessels is encouraged not to increase its total fishing effort on FADs from its 2018 level.
8. To reduce the entanglement of sharks, marine turtles or any other species and reduce the amount of synthetic marine debris, CPCs shall endeavor to ensure that all FADs deployed are non-entangling, and constructed from biodegradable materials, including non-plastics, with the exception of materials used in the construction of FAD tracking buoys.

Recommendation 17-01 establishes a ban on discards of bigeye, skipjack and yellowfin tuna by purse seine vessels.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	75	Condition Needed*
	*For evidence that the HS is responsive to the state of the stock and that HS elements work together towards achieving stock management objectives		
1.2.2	Harvest control rules and tools	60	Condition Needed**
	**For ICCAT to adopt a well-defined HCR robust to uncertainties, and tools		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	95	Passing Score

SUMMARY

AO SKJ-W	ESTIMATE	YEARS	NOTES
RECENT CATCH	30	2023	
5-YEAR CATCH	22	2019-23	
MSY	35	2020	Range: 28-46
F/F_{MSY}	0.41	2020	Range: 0.19-0.89
SSB/SSB_{MSY}	1.60	2020	Range: 0.90-2.87
SSB/SSB_0	N/A		
TAC	N/A		

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY}.
FISHING MORTALITY		F < F_{MSY}.

Last date of a change in Color Ratings: None.
Changes from the previous (original) Color Ratings: None.

AO Northern Albacore Tuna

There are three stocks of albacore tuna in the ICCAT Area: North Atlantic, South Atlantic and Mediterranean. Albacore catches in the North Atlantic in 2023 were about 28,200 tonnes, an 11% decrease from 2022 catch levels. Catches are made by a variety of fishing gears including pole-and-line (38%), trawl (27%), troll (19%) and longline (16%) (**Figure AO-11**). Based on the last stock assessment, the North Atlantic albacore stock is not overfished and overfishing is not occurring.

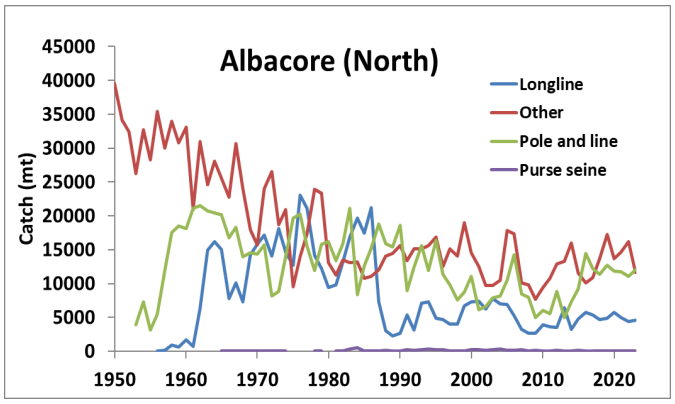


Figure AO-11. Catches of albacore tuna in the North AO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

The most recent assessment for the northern albacore stock was conducted by SCRS in 2023 using data up to 2021. In addition to the surplus production model that is part of the adopted Management Procedure, a Stock Synthesis model was also used, which provided similar results. The Stock synthesis model was used to characterize stock status, as well as to verify that catch projections were consistent with the catch advice provided by the Management Procedure. The results indicate that (**Figure AO-12**):

1. The ratio of $F_{current}/F_{MSY}$ is estimated at 0.45 (95% CI: (0.29-0.71), indicating that overfishing is not occurring.
2. The ratio of spawning biomass $SSB_{current}/SSB_{MSY}$ is estimated at 2.19 (95% CI: 1.21-4.01). This indicates that that the stock is not in an overfished state.
3. MSY is estimated at 42,000 tonnes. Current (2023) catch is 28,200 t. Catches have been below MSY level since 2007.

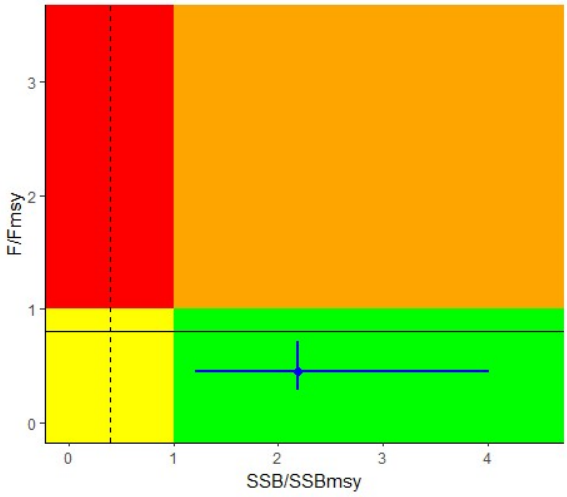


Figure AO-12. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for albacore tuna in the northern AO. Solid black line represents target reference point and dashed black line represents limit reference point.

MANAGEMENT

Harvest Strategy: Yes. Rec. 21-04 (amended by Rec. 23-05) provides a Management Procedure (MP) (including an HCR) to support the management objectives for North Atlantic Albacore set by the same Recommendation. The North Atlantic albacore stock assessment shall be conducted every three years, with the next stock assessment to occur in 2026. The MP sets a 3-year constant annual TAC using the following three values estimated from each stock assessment:

a. The estimate of current biomass with respect to B_{MSY}.
b. The estimate of the stock biomass at Maximum Sustainable Yield (B_{MSY}).
c. The estimate of the fishing mortality at MSY (F_{MSY}).

Management Objectives: The management objective established for Northern albacore stock in Rec. 21-04 (amended by Rec. 23-05) is to maintain the stock in the green quadrant of the Kobe plot ($SSB>SSB_{MSY}$ and $F<F_{MSY}$) with at least 60% of probability.

Limit reference points: Rec. 21-04 (amended by Rec. 23-05) establishes a biomass limit reference point of $0.4*B_{MSY}$.

Target reference points: Rec. 21-04 (amended by Rec. 23-05) sets F_{TAR} as $0.8 * F_{MSY}$. The Recommendation also establishes an HCR abundance threshold or control parameter equal to B_{MSY}, that is, the abundance level that triggers pre-agreed management actions to reduce the risk of breaching this threshold.

Harvest Control Rule: The HCR within the MP has the following control parameters:

a. The biomass threshold level is equal to the biomass corresponding to the maximum sustainable yield ($B_{THRESH} = B_{MSY}$).
b. A fishing mortality target corresponding to 80% of F_{MSY} ($F_{TAR} = 0.8*F_{MSY}$) will be applied when the stock status is at, or above, the threshold level (B_{THRESH}).
c. If the current biomass (B_{CURR}) is estimated to be below the threshold level (B_{THRESH}) and higher than B_{LIM}, then fishing mortality will be reduced linearly for the next multiannual

management period following the equations included in the Recommendation.

d. If the current biomass (B_{CURR}) is estimated to be at, or below, B_{LIM}, then the fishing mortality shall be set at F_{MIN}, with a view to ensure a level of catch for scientific monitoring.
e. The Maximum catch limit (C_{max}) recommended is 50,000 t to avoid adverse effects of potentially inaccurate stock assessments.
f. The maximum change in the catch limit (D_{max}) shall not exceed 25% in case of increase and 20% in case of decrease of the previous recommended catch limit when $B_{CURR} \geq B_{THRESH}$.
g. Data and stock assessment specification are included in the MP including which CPUE indices and stock assessment models should be used.
h. Exceptional circumstances are included requesting the SCRS to determine, examining various indicators, whether a change in advice resulting from the MP is required.

Management Strategy Evaluation: Ongoing (finalized for current HS).

Management measures:

In 2023, as a result of applying the MP, an annual TAC of 47,251 t was established for 2024-2026. The recommended TAC for 2024-2026 represents a 25% increase with respect to the previous TAC in 2021-23 and is above the MSY estimate for this stock (42,000 t) because the current biomass is well above B_{MSY}. The MP will be applied again in 2026.

Additionally, the multi-annual management program established by ICCAT for north Atlantic albacore (Rec. 21-04, amended by Rec. 23-05) calls for a limit in the number of vessels by each member targeting northern Atlantic albacore to its average level of 1993-1995.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	95	Passing Score
1.2.2	Harvest control rules and tools	80	Passing Score
1.2.3	Information / monitoring	90	Passing Score
1.2.4	Assessment of stock status	95	Passing Score

Summary

AO ALB-N	ESTIMATE	YEARS	NOTES
RECENT CATCH	28	2023	
5-YEAR CATCH	31	2019-23	
MSY	37	2018	
F/F_{MSY}	0.45	2021	Range: 0.29-0.71
SSB/SSB_{MSY}	2.19	2021	Range: 1.21-4.01
SSB/SSB_0	0.57[11]	2022	
TAC	47.3	2024-2026	

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY}
FISHING MORTALITY		F < F_{MSY}.

Last date of a change in Color Ratings: November, 2016.
Changes from the previous (December, 2013) Color Ratings: The Abundance rating changed from Yellow to Green.

[11] From Stock Synthesis stock assessment results (value not available in ICCAT SCRS reports)

AO Southern Albacore Tuna

There are three stocks of albacore tuna in the ICCAT Area: North Atlantic, South Atlantic and Mediterranean. Albacore catches in the South Atlantic in 2023 were about 22,100 tonnes (**Figure AO-13**), a 6% decrease from 2022. Catches are made primarily by longline (78%) and pole-and-line (21%). The Southern Atlantic Albacore tuna stock is not overfished, and overfishing is not occurring.

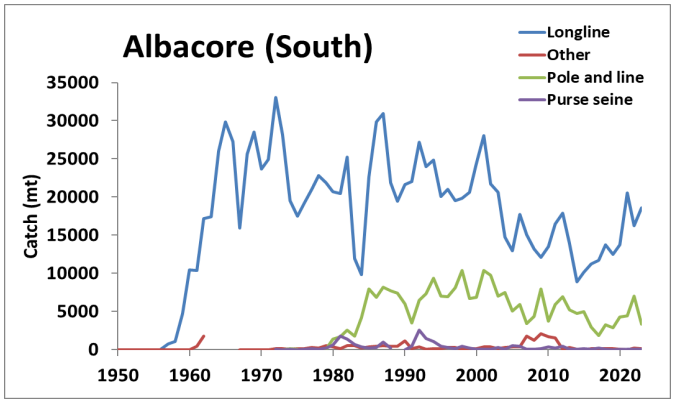


Figure AO-13. Catches of albacore tuna in the South AO from 1950 to 2023, by gear type.

STOCK ASSESSMENT

The most recent assessment for the southern stock of albacore was conducted by SCRS in 2020, including data until 2018. The assessment used similar models to the previous ICCAT stock assessment (2016), but the results were more optimistic than those in the previous one. The new analyses indicated that (**Figure AO-14**):

1. The median ratio of $F_{current}/F_{MSY}$ in 2018 was estimated at 0.40 (95% CI: 0.28-0.59), indicating that overfishing is not occurring.
2. The ratio of biomass $SSB_{current}/SSB_{MSY}$ in 2018 was estimated at 1.58 (95% CI:1.14-2.05). This indicates that the stock is not overfished.
3. MSY is estimated at 27,300 tonnes (95% CI: 23,734-31,567 t.). Current (2023) catch is 22,100 t, below the MSY.

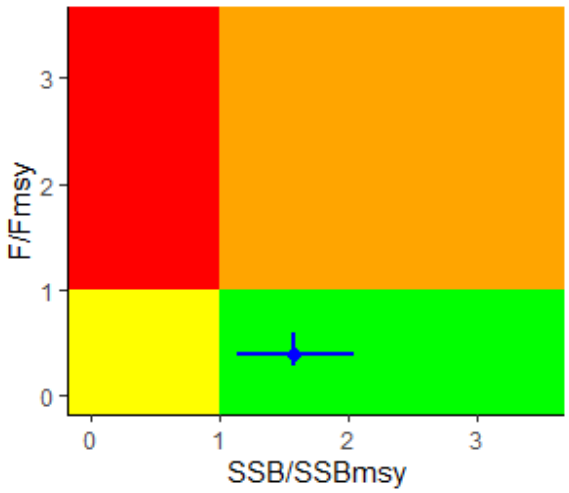


Figure AO-14. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for albacore tuna in the southern AO.

MANAGEMENT

Harvest Strategy: No.

Management Objectives: Not defined.

Limit reference point: Not defined.

Target reference point: Not defined. "Green" quadrant in Kobe plot implied as target (Rec. 11-13)

Harvest control rule: Not defined, but Rec. 11-13 provides a framework.

Management Strategy Evaluation: No.

Management measures:

Since 2011, following SCRS advice, the TAC was lowered to 24,000 tonnes. ICCAT Recommendation 22-06 increased the TAC to 28,000 t for the period 2023-2026. Permissible catch under Rec. 22-06 may exceed 28,000 tonnes due to individual allocations. The Recommendation requires major fishing countries to improve their monitoring and reporting of catch.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	80	Passing Score
1.2.2	Harvest control rules and tools	60	Condition Needed*
	*For ICCAT to adopt a well-defined HCR robust to uncertainties, and tools		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	85	Passing Score

SUMMARY

AO ALB-S	ESTIMATE	YEARS	NOTES
RECENT CATCH	22	2023	
5-YEAR CATCH	21	2019-23	
MSY	27	2018	Range: 24-32
F/F_{MSY}	0.40	2018	Range: 0.28-0.59
SSB/SSB_{MSY}	1.58	2018	Range: 1.14-2.05
SSB/SSB_0	0.59	2018	Range: 0.42-0.76
TAC	28	2023-2026	

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY}.
FISHING MORTALITY		F < F_{MSY}.

Last date of a change in Color Ratings: November, 2016.
Changes from the previous (December, 2011) Color Ratings: The Abundance rating changed from Orange to Green. The Fishing mortality rating changed from Yellow to Green.

AO Mediterranean Albacore Tuna

There are three stocks of albacore tuna in the ICCAT Area: North Atlantic, South Atlantic and Mediterranean. Albacore catches in the Mediterranean in 2023 were about 2,300 tonnes, similar to 2022 levels. Catches are highly variable and are made primarily by longline (95%) and the remainder by other surface gears (**Figure AO-15**). There is high uncertainty on the stock status of Mediterranean Albacore tuna due to poor monitoring and basic fishery statistics.

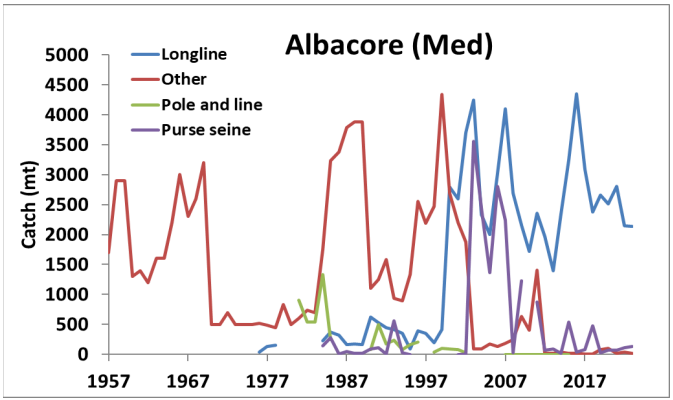


Figure AO-15. Catches of albacore tuna in the Mediterranean Sea from 1950 to 2023, by gear type.

STOCK ASSESSMENT

The Mediterranean albacore stock was last assessed in 2024 using data up to 2022. The data sets used are extremely sparse, there is considerable uncertainty with reported catches, and the available indices of abundance show a limited ability to monitor stock trends. In particular, uncertainty related to the larval survey index made the SCRS consider two different scenarios with two different outcomes (**Figures AO-16 and AO-17**):

Scenario 1 – larval survey index as a continuous series

1. The ratio of $F_{current}/F_{MSY}$ in 2022 was 1.22 (95% CI: 0.66 - 2.10). In this scenario, overfishing is probably occurring.
2. The ratio of $SSB_{current}/SSB_{MSY}$ in 2022 was estimated to be 0.58 (95% CI: 0.31 - 1.10). In this scenario, the stock is probably overfished.
3. MSY is estimated to be 3,564 t (95% CI: 2,584-4,663 t). Current catches (2,300 tonnes in 2023) are below the MSY and the TAC.

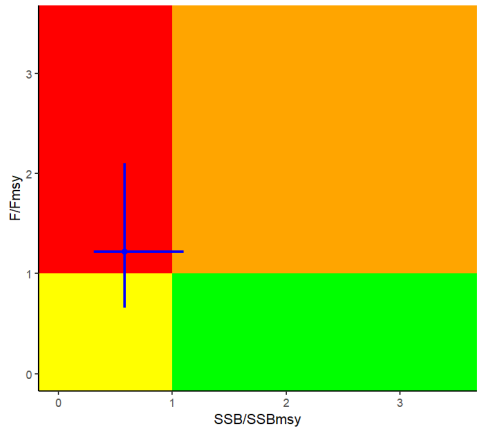


Figure AO-16. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for albacore tuna in the Mediterranean.

Scenario 2 – larval survey index split into two time series (2001-2005/2012-2022).

1. The ratio of $F_{current}/F_{MSY}$ in 2022 was 0.42 (95% CI: 0.13 – 1.17). In this scenario, overfishing is probably not occurring.
2. The ratio of $SSB_{current}/SSB_{MSY}$ in 2022 was estimated to be 1.44 (95% CI: 0.59 – 2.64). In this scenario, the stock is probably not overfished.
3. MSY is estimated to be 4,174 t (95% CI: 2,831-7,936 t). Current catches (2,300 tonnes in 2023) are below the MSY and the TAC.

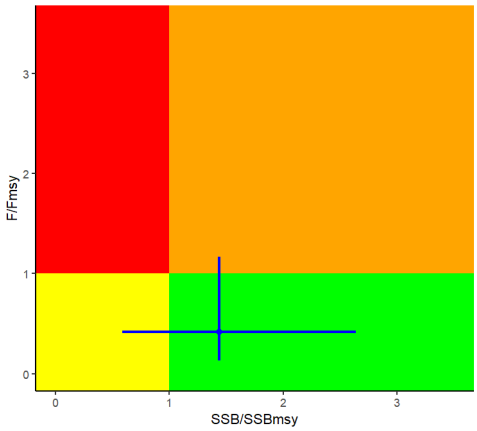


Figure AO-17. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for albacore tuna in the Mediterranean.

MANAGEMENT

Harvest Strategy: No, but Recommendation 2021-06 *Rebuilding Plan for Mediterranean Albacore* (amended by Rec. 2022-05) establishes a 15-year rebuilding plan for Mediterranean albacore for the period 2022-2036.

Management Objectives: The management objective of the rebuilding plan is to achieve SSB_{MSY} with at least 60% of probability.

Limit reference point: Not defined.

Target reference point: Not defined. "Green" quadrant in Kobe plot implied as target (Rec. 11-13)

Harvest control rule: Not defined, but Rec. 11-13 provides a framework.

Management Strategy Evaluation: No.

Management measures:

A TAC of 2,500 t is set for 2022-2024. Each CPC shall limit the number of their fishing vessels authorized to fish for Mediterranean albacore to the number of vessels that were authorized in 2017 (or to 2018 if licenses were first issued then), with a 10% tolerance margin. CPCs shall report a list of all sport and recreational vessels authorized to catch Mediterranean albacore, and these vessels will have a limit of three specimens retained/transshipped/landed per day. The Recommendation also establishes a prohibition to fish, retain on board, transship or land Mediterranean albacore between during either i) 1 October and 30 November and during an additional period of one month between 15 February and 31 March, or, alternatively, ii) during the period from 1 January to 31 March each year.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score[12]	Evaluation
1.2.1	Harvest Strategy	60	Condition Needed*
	*For evidence that the HS is responsive to the state of the stock and that HS elements work together towards achieving stock management objectives		
1.2.2	Harvest control rules and tools	60	Condition Needed**
	**For ICCAT to adopt a well-defined HCR to achieve a target objective (i.e. not a rebuilding target)		
1.2.3	Information / monitoring	65	Condition Needed***
	***For improving the level of accuracy and coverage of fisheries monitoring		
1.2.4	Assessment of stock status	85	Passing Score

[12] These scores have not been updated to reflect latest (2024) changes in stock assessment or management.

SUMMARY

AO ALB-M	ESTIMATE	YEARS	NOTES
RECENT CATCH	2.3	2023	
5-YEAR CATCH	2.6	2019-23	
MSY	Sc1: 3.6 Sc2: 4.2		Range Sc1: 2.6-4.7 Range Sc2: 2.8-7.9
F/F_{MSY}	Sc1: 1.22 Sc2: 0.42	2022	Range Sc1: 0.66-2.10 Range Sc2: 0.13-1.17
SSB/SSB_{MSY}	Sc1: 0.58 Sc2: 1.44	2022	Range Sc1: 0.31-1.10 Range Sc2: 0.59-2.64
SSB/SSB_0	Sc1: 0.22 Sc2: 0.53	2022	Proxy: SSB_{2022}/K
TAC	2.5	2022-2024	

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		The latest (2024) assessment has substantial limitations and large uncertainty.
FISHING MORTALITY		The latest (2024) assessment has substantial limitations and large uncertainty.

Last date of a change in Color Ratings: November, 2024.
Changes from the previous (March, 2022) Color Ratings: The SSB and F ratings changed from Orange to Yellow.

AO Eastern Atlantic and Mediterranean Bluefin Tuna

Atlantic bluefin tuna (*Thunnus thynnus*) are found in the entire North Atlantic and its adjacent seas, primarily the Mediterranean Sea. ICCAT recognizes two stocks: Western Atlantic, and eastern Atlantic and Mediterranean bluefin. There is considerable mixing between the two.

Eastern Atlantic bluefin catches have been subject to a high degree of misreporting between the mid-1990s and the recent past, although for the most recent few years, such misreported catch levels are thought to have diminished considerably. In 2023, reported catches were about 39,200 tonnes (**Figure AO-18**), a 12% increase from 2022 reported catches. Purse seiners take 62% of the catch, followed by traps (16%), longline (15%), and a variety of surface gears, including pole-and-line, handline and trolling. There is considerable uncertainty about its level of abundance. The TAC in place and strict controls have ended overfishing.

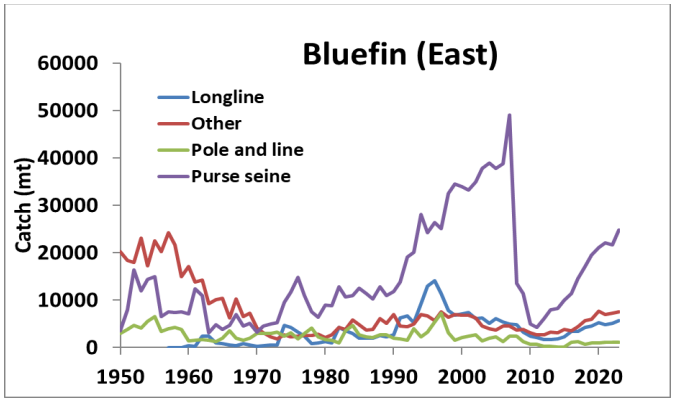


Figure AO-18. Catches of Eastern Atlantic and Mediterranean bluefin from 1950 to 2023, by gear type.

STOCK ASSESSMENT

ICCAT's SCRS last assessed the eastern Atlantic bluefin stock in 2022. The stock assessment is subject to considerable uncertainties due to scarcity of CPUE data and to high levels of misreporting that took place primarily in the 2000s. The SCRS concluded the following (**Figure AO-19**):

1. The current ratio of spawning biomass $SSB_{current}/SSB_{MSY}$ is unknown, as biomass-based reference points were not estimated.
2. The ratio of F_{recent}/F_{MSY} (using the $F_{0.1}$ proxy) was estimated at 0.81 (95% CI:0.48-1.62) Thus, overfishing is not taking place. Catches were reduced by over 70% since 2007 due to strict limits and controls but have been progressively increasing in recent years as the stock recovered and catches are now ~50% less than 2007 levels.
3. The estimate of MSY is unknown.

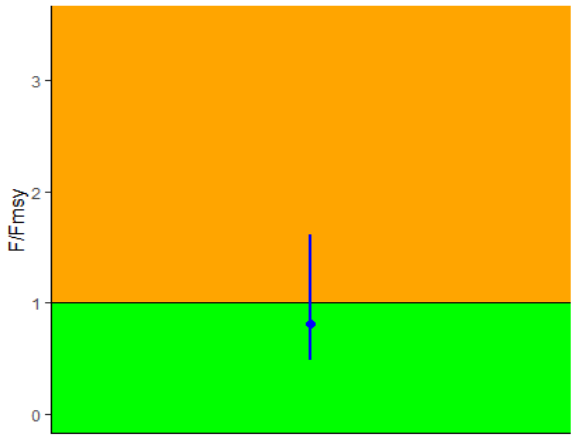


Figure AO-19. Latest estimate of F/F_{MSY} (using proxy; in blue, including range) for bluefin tuna in the Eastern Atlantic and Mediterranean. Solid black line represents Fishing mortality MSY-based interim target reference point, using $F_{0.1}$ as a proxy for F_{MSY}.

MANAGEMENT

Harvest Strategy: Yes, Rec. 2023-07 establishes a Management Procedure for both Atlantic bluefin tuna stocks.

Management Objectives:

a. Stock Status: Both the western and eastern stocks should have a 60% or greater probability of occurring in the green quadrant of the Kobe plot (no overfishing occurring and not overfished);
b. Safety: There should be a 15% or less probability of either stock falling below B_{LIM};
c. Yield: Maximize overall catch levels in both the western and eastern management areas; and,
d. Stability: Any change in TAC between consecutive management periods in both the western and eastern management areas should be no more than a 20% increase or a 35% decrease.

Limit reference point: For the purposes of this MP, defined as 40% of the dynamic SSB_{MSY}.

Target reference point: Not defined for the long term. "Green" quadrant in Kobe plot implied as target (Rec. 11-13 and 23-07). Interim target is to maintain the biomass around $B_{0.1}$, achieved by fishing at or less than $F_{0.1}$, which the SCRS considers to be reasonable proxy for F_{MSY}.

Harvest control rule: Description and formulae for calculating TACs, as well as an Exceptional Circumstances protocol, are included in Rec. 23-07.

Management Strategy Evaluation: Ongoing (finalized for current HS).

Management measures:

The eastern Atlantic and Mediterranean bluefin stock has been the subject of a rebuilding program since 2006 (ICCAT Rec. 06-05), which has been amended every year in 2007-2010 and again in 2012 (Rec. 12-03). By adopting Rec. 22-08 (replacing Rec. 21-08, 20-07,19-04 and 18-02), ICCAT moved from that rebuilding plan to a management plan starting in 2019 with the objective of maintaining the biomass around $B_{0.1}$. Rec. 22-08 was amended by Rec. 23-06.

The management plan set up in Rec. 22-08 (amended by Rec. 23-06) is very comprehensive and combines multiple conservation elements with enforcement ones. Using the results of the MP, the annual TAC for 2023-2025 is set at 40,570 tonnes. In addition to the TACs, the plan includes the following measures, among others:

1. Manages fishing capacity (including mandated capacity adjustments to make fishing capacity more commensurate with quotas) and farming capacity;
2. Establishes closed fishing seasons for large-scale longlines (seven months), purse seiners (11 months), and requires CPCs to provide information on closed fishing seasons for other vessel types in their annual fishing plans;
3. Sets minimum sizes of 8 and 30 kg (75 and 115 cm, respectively), depending on the fishery;
4. Bycatch limits on bluefin, requiring CPCs to describe the authorized bycatches as well as

the methodology to calculate those in their annual fishing plans;
5. Establishes records of authorized fishing vessels, authorized traps and authorized farming facilities;
6. Requires that CPCs establish annual farming management plans;
7. Establishes provision for recreational and sport fisheries, requiring CPCs to regulate those fisheries and prohibiting the catch and retention on board, transshipment or landing of more than one bluefin tuna per vessel per day for recreational fisheries.
8. Requires bi-weekly catch reports to ICCAT;
9. Establishes an observer program with 100% coverage for purse seiners, for transfers to cages and operations in tuna farms, for operations from traps, and of towing vessels;
10. Establishes an observer program with 20% coverage for active pelagic trawlers, longline vessels, and baitboats (all over 15 meters)
11. Requires VMS on every vessel over 15 m in length, and transmissions of the VMS data to ICCAT;
12. Prohibits trade of bluefin not accompanied by valid catch documents (Recs. 21-19, 2022-16);
13. Establishes procedures for at-sea boarding and inspection;
14. Allows SCRS to access all MCS data from the management plan.

The multiple amendments made to the management plan since 2006 have resulted in increasingly tighter controls of the actual catches. Combined with lower quotas, fishing mortality rates have been reduced substantially (current F is below F_{MSY}).

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	95	Passing Score
1.2.2	Harvest control rules and tools	80	Passing Score
1.2.3	Information / monitoring	75	Condition Needed*
	*For better characterizing the quantity of current and historical unreported catches		
1.2.4	Assessment of stock status	90	Passing Score

SUMMARY

AO BFT-E	ESTIMATE	YEARS	NOTES
RECENT CATCH	39	2023	
5-YEAR CATCH	35	2019-23	
MSY	N/A		
F/F_{MSY}	0.81	2017-2020	$F/F_{0.1}$ as F/F_{MSY} proxy Range: 0.48-1.62
SSB/SSB_{MSY}	N/A		
SSB/SSB_0	N/A		
TAC	41	2023-25	

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		Unknown but increasing in recent years.
FISHING MORTALITY		$F < F_{MSY}$. Fishing mortality has clearly been reduced through a TAC and strict controls.

Last date of a change in Color Ratings: February, 2015.
Changes from the previous (original) Color Ratings: The Abundance rating changed from Orange to Yellow.

AO Western Atlantic Bluefin Tuna

Atlantic bluefin tuna are found in the entire North Atlantic and its adjacent seas, primarily the Mediterranean Sea. ICCAT recognizes two stocks: Western Atlantic, and eastern Atlantic and Mediterranean bluefin. There is considerable mixing between the two.

Western Atlantic bluefin catches in 2023 were about 2,600 tonnes, a 5% decrease from 2022. Sport gears (hand line, rod-and-reel) take 61% of the catch, followed by longline (32%) and other surface gears. Purse seine catches in recent years have been very minor (**Figure AO-20**). There is uncertainty about stock status but overfishing is not occurring.

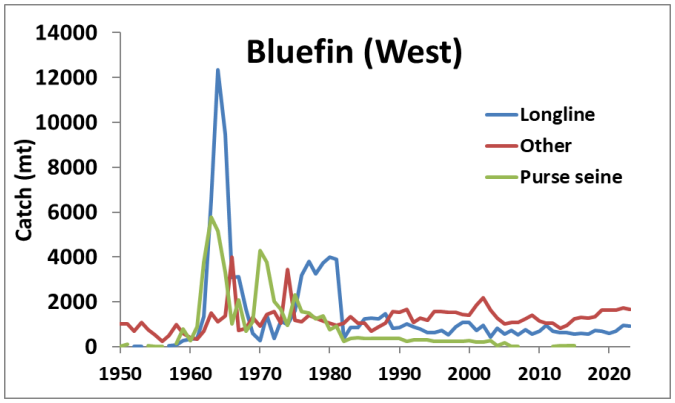


Figure AO-20. Catches of Western Atlantic bluefin tuna from 1950 to 2023, by gear type.

STOCK ASSESSMENT

ICCAT's SCRS assessed the western Atlantic bluefin stock in 2021. The models used underwent substantial changes compared to the 2020 "update" assessment, such as revised abundance indices, alternative assumptions about fleet selectivity and the addition of two years of data (2019 and 2020). The SCRS cautioned that conclusions from the 2021 assessment do not capture the full degree of uncertainty in the assessments and projections. Using the assessment results, the SCRS concluded the following (**Figure AO-21**):

1. The current ratio of spawning biomass $SSB_{current}/SSB_{MSY}$ is unknown, as biomass-based reference points were not estimated.
2. The ratio of $F_{current}/F_{MSY}$ (using $F_{0.1}$ as a proxy for F_{MSY}) was estimated at 0.53 (80% CI: 0.49-0.58). Thus, overfishing is not taking place.
3. The estimate of MSY is unknown.

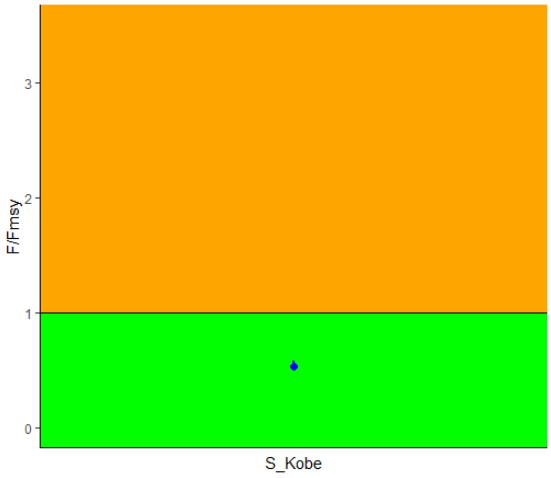


Figure AO-21. Latest estimate of F/F_{MSY} (using proxy; in blue, including range) for bluefin tuna in the Western Atlantic Ocean. Solid black line represents Fishing mortality MSY-based target reference point using $F_{0.1}$ as a proxy for F_{MSY}.

MANAGEMENT

Harvest Strategy: Yes, Rec. 2023-07 establishes a Management Procedure for both Atlantic bluefin tuna stocks.

Management Objectives:

a. Stock Status: Both the western and eastern stocks should have a 60% or greater probability of occurring in the green quadrant of the Kobe plot (no overfishing occurring and not overfished);
b. Safety: There should be a 15% or less probability of either stock falling below B_{LIM};
c. Yield: Maximize overall catch levels in both the western and eastern management areas; and,
d. Stability: Any change in TAC between consecutive management periods in both the western and eastern management areas should be no more than a 20% increase or a 35% decrease.

Limit reference point: For the purposes of this MP, defined as 40% of the dynamic SSB_{MSY}.

Target reference point: Not defined for the long term. “Green” quadrant in Kobe plot implied as target (Rec. 11-13 and 23-07). Interim target is to maintain the biomass around $B_{0.1}$, achieved by fishing at or less than $F_{0.1}$, which the SCRS considers to be reasonable proxy for F_{MSY}.

Harvest control rule: Description and formulae for calculating TACs, as well as an Exceptional Circumstances protocol, are included in Rec. 23-07.

Management Strategy Evaluation: Ongoing (finalized for current HS).

Management measures:

Western Atlantic bluefin has been the subject of a rebuilding program since 1998 (ICCAT Rec. 98-07), which has been amended every other year since 2002. Then, an interim conservation and

management plan was in place for the 2018-2022 period (Rec. 17-06, Rec. 21-07). Recommendation 2022-10 sets up a Conservation and Management Plan starting in 2023, that includes the establishing of TACs based on the application of the bluefin tuna management procedure (MP) (Rec. 23-07). The annual TAC set for 2023-2025 is 2,726 t, allocated by country in Rec. 2022-10. This Conservation and Management Plan also includes a 30-kg minimum size and the prohibition of directed fisheries in the Gulf of Mexico (the only known spawning area for the stock).

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	95	Passing Score
1.2.2	Harvest control rules and tools	80	Passing Score
1.2.3	Information / monitoring	75	Condition Needed*
	*For improving key data inputs to the stock assessment		
1.2.4	Assessment of stock status	90	Passing Score

SUMMARY

AO BFT-W	ESTIMATE	YEARS	NOTES
RECENT CATCH	2.6	2023	
5-YEAR CATCH	2.4	2019-23	
MSY	N/A		
F/F_{MSY}	0.53	2018-20	$F/F_{0.1}$ as F/F_{MSY} proxy Range: 0.49-0.58
SSB/SSB_{MSY}	N/A		
SSB/SSB_0	N/A		
TAC	2.73	2023-25	

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		Unknown.
FISHING MORTALITY		$F < F_{MSY}$.

Last date of a change in Color Ratings: October, 2017.
Changes from the previous (February, 2015) Color Ratings: The Abundance rating changed from Orange to Yellow.

STOCKS IN THE INDIAN OCEAN

RFMO: Indian Ocean Tuna Commission (IOTC). The stocks are assessed by the IOTC SC, which makes recommendations to the IOTC.
Last Scientific Committee (SC) meeting: December, 2023.
Last Commission meeting: May, 2024.
Tuna stocks managed by IOTC: IO Yellowfin, IO Bigeye, IO Skipjack, IO Albacore.
Data sources: The main sources of information for this section IOTC (2023).
Conservation and Management Measures: IOTC CMMs.
Last update: November, 2024.

Over 22 percent of the world production of tuna is from the Indian Ocean (IO), making this the second largest region for tuna fishing after the western and Central Pacific Ocean. Catches of skipjack, yellowfin, bigeye and albacore in 2022 were about 1,226,000 tonnes, a 2% increase from 2021. There was a general tendency for the total catch to decline since 2005, when a record 1.2 million tonnes were caught, followed by an increase in recent years to reach 2005 catch levels again (**Figure IO-1**). Catches of southern bluefin tuna occur substantially in the IO Convention Area. This stock is covered in a different section of this report, under Southern Hemisphere.

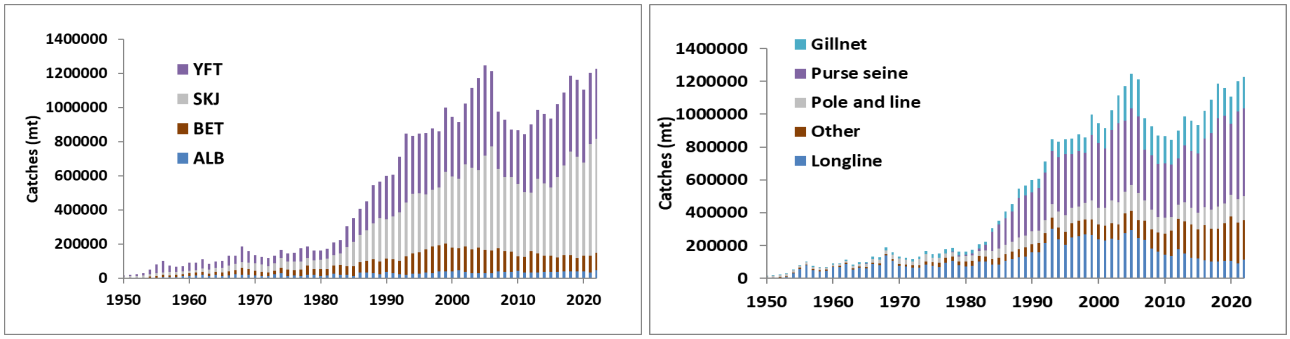


Figure IO-1. Trends in catch (mt) of bigeye, skipjack, yellowfin and albacore in the IO region, by species (left) and gear (right), 1950-2022.

Average catches for the five-year period 2018-2022 (1,176,000 tonnes) provide an indication of the recent performance of the fisheries (**Figure IO-2**): Skipjack accounts for 52% of the catches in weight, followed by yellowfin (37%), bigeye (8%), and albacore (3%). Purse-seine vessels take about 44% of the total catch, followed by gillnets (16%), longline (9%), and pole-and-line (11%). Gillnet fisheries are generally poorly monitored.

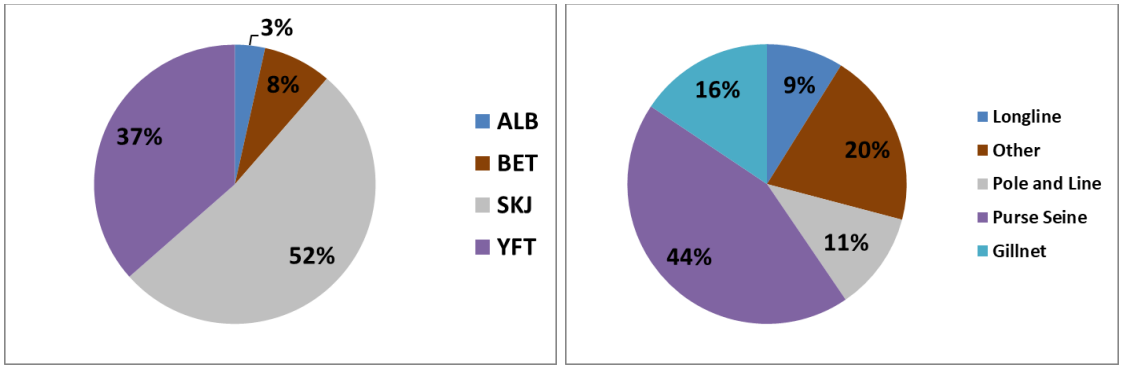


Figure IO-2. Average 2018-2022 catches of skipjack, yellowfin, bigeye and albacore in the IO. The graph on the left shows the percentages by species, and the graph on the right shows the percentages by gear type.

IO Bigeye Tuna

Bigeye catches in 2022[13] were about 102,600 tonnes, a 7% increase from 2021. For the period 2018-2022, the main fishing gear is purse seine (46%), followed by longline (34%). Catches by this gear have declined dramatically from a high in 2004 (**Figure IO-3**), due to vessels moving away from the main fishing grounds to avoid piracy but increased sharply in 2012 to decrease again since then. In contrast, catches from purse seine vessels have been relatively stable since 2000, with the exception of 2018 and 2021-2022 during which catches were elevated. The stock is determined to be overfished and subject to overfishing.

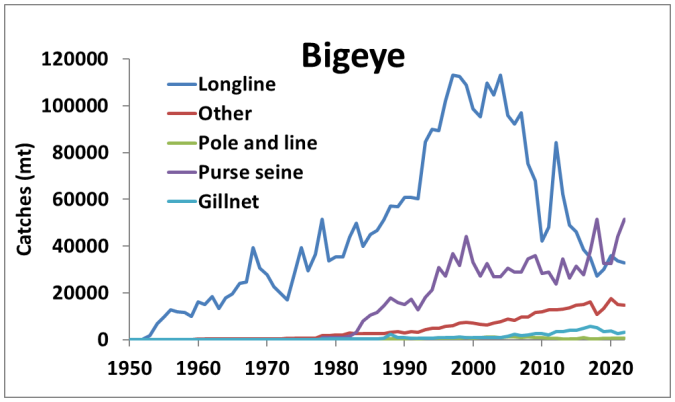


Figure IO-3. Catches of bigeye tuna in the IO from 1950 to 2022, by gear type.

[13] Best scientific estimates of nominal catch data for IOTC species as of 22-Nov-2023

STOCK ASSESSMENT

The latest assessment was conducted by the Scientific Committee in 2022. The reported stock status is based on a grid of 24 model configurations designed to capture the uncertainty on stock recruitment relationship, longline selectivity, growth and natural mortality. The results of the 2022 assessment indicated the following (**Figure IO-4**):

1. The ratio of $F_{current}/F_{MSY}$ is estimated to be 1.43 (80% C.I.: 1.10 – 1.77), indicating that overfishing is occurring.
2. The ratio of spawning biomass $SSB_{current}/SSB_{MSY}$ is 0.90 (80% C.I.: 0.75 to 1.05), indicating that the stock is in an overfished state.
3. The estimate of MSY is 96,000 tonnes. The 2022 estimated catch (102,600 t) is above this level and above the TAC for 2024-2025 (80,583 tonnes).

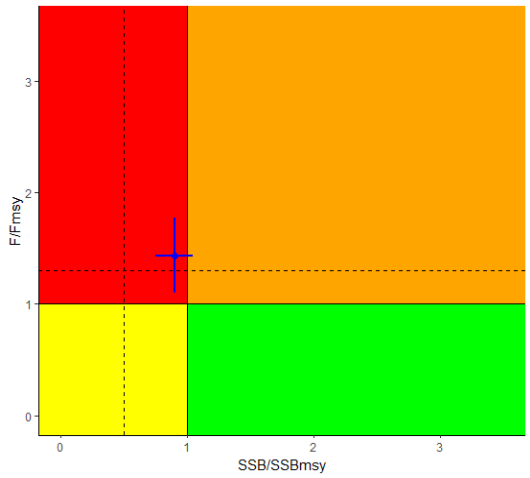


Figure IO-4. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for IO bigeye. Solid black lines represent interim target reference points and black dashed lines represent interim limit reference points.

MANAGEMENT

Harvest Strategy: Yes, IOTC adopted a Management Procedure (MP) for bigeye in Resolution 22/03, known as MP1 Harvest, for setting the TAC for 2024-2025 with the objective of maintaining the stock in the green zone of the Kobe plot while maximizing the average catch from the fishery and reducing the variation in the TAC between management periods.

Management Objectives:

a. 60% probability that the bigeye tuna spawning stock biomass achieves the target reference point of SSB_{MSY} by 2034-2038;
b. the bigeye tuna spawning stock biomass avoids breaching the interim limit reference point specified in Resolution 15/10 with a high probability;
c. the maximum increase or decrease in the TAC shall be 15% relative to the previous TAC.

Limit reference point: Interim limits of 0.5*SSB_{MSY} and 1.3*F_{MSY} (Resolution 15/10). $SSB_{current}/SSB_{MSY}$ equals 0.9, which is about 1.8 times above the limit SSB. $F_{current}/F_{MSY}$ equals 1.43, which is about 10% above the limit F.

Target reference point: Interim targets of SSB_{MSY} and F_{MSY} (Resolution 15/10). Current SSB is below the target SSB and current F is above the target F.

Harvest control rule: The HCR used to calculate a TAC has two data inputs: total catch biomass and spatially aggregated longline CPUE. Then, a Pella-Tomlinson biomass dynamic model to the CPUE data given the catch biomass is applied to estimate a series of parameters and derive the two key variables used in the HCR: Ratio of fishing mortality to the value which produces MSY (F_{MSY} ratio) and relative biomass or depletion (B/K).

The HCR is a simple hockey stick type in which for biomass depletion above 0.4 the HCR multiplier (HCR_{mult}) is 1 and it decreases to (almost) zero linearly by a biomass depletion of 0.1. In 2023 the Commission adopted a TAC of 80,583 t for 2024 and 2025 based on the outcome of the MP (Resolution 23/04). After 2025, the TAC will be applied in each of the subsequent three years following the year it is set by the Commission.

Management Strategy Evaluation: Ongoing (finalized for current HS).

Management measures:

1. The only conservation measure established by the IOTC specifically for bigeye is Resolution 23/04, which establishes catch limits by CPCs as per the Management Procedure.
2. Resolution 21/01 on yellowfin requests CPCs to gradually reduce supply vessels by 31 December 2022.
3. Resolution 24/06 establishes a ban on discards of bigeye, skipjack and yellowfin tuna by purse seine vessels. CPCs shall encourage vessels using other gear types to also avoid discards.
4. Resolution 24/02 established procedures on a FADs management plan, including:
    i. An IOTC-wide FAD register effective as of 1 January 2026.
    ii. A limit of 250 instrumented buoys at sea at any one time per vessel from 1 January 2026 (225 from 1 January 2028) and a limit of 400 instrumented buoys to be acquired annually by each fishing vessel. Higher limits are set for CPCs that operate less than three purse seine vessels and for Small Island Developing Coastal CPCs.
    iii. A requirement that flag CPCs ensure that the instrumented buoy supplier company or their vessels report daily information on all active DFADs to the IOTC with a time delay of 30 to 60 days.
    iv. Ban, prevention and reporting measures for Abandoned, Lost or Otherwise Discarded DFADs.
    v. A requirement that CPC vessels use non-entangling FADs constructed without netting material and remove from the water all traditional FADs encountered (e.g. those made of entangling materials or designs).
    vi. A stepwise timeline to transition to the use of biodegradable FADs between 1 Jan 2026 and 1 Jan 2030.
    vii. A DFAD marking scheme requiring that the instrumented buoys attached to DFADs

deployed are permanently marked with the unique reference number marking (ID provided by the manufacturer) and the IOTC unique vessel identifier, and -- as of 1 January 2026 -- that DFADs are permanently marked with a specific IOTC DFAD unique identifier provided by the IOTC Secretariat.

viii. A timeline to reduce supply vessels in tropical tuna purse seine operations.

5. Resolution 23/01 mandates CPCs to develop national anchored FADs management plans and that aFADs subsurface aggregators are constructed only with non-entangling, non-mesh and biodegradable materials.
6. Resolution 23/03 asks the IOTC Scientific Committee to provide advice on appropriate fishing closures applicable to all fishing gears. It also encourages CPCs to ensure that their vessels targeting tropical tuna do not fish for a minimum period of 31 consecutive days, or that, alternatively, they implement voluntary catch reductions for yellowfin (and for skipjack and bigeye).
7. Anticipating the possible need for management measures, Resolution 16/10 was adopted to promote the implementation of IOTC Conservation and Management Measures and Resolution 17/02 established a Working Party on the Implementation of Conservation and Management Measures (WPICMM).

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score[14]	Evaluation
1.2.1	Harvest Strategy	75	Condition needed*
	*For direct evidence that management objectives are being achieved		
1.2.2	Harvest control rules and tools	<60	Fail**
	**IOTC to successfully enforce catch reductions that meet the HS-derived TAC		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	100	Passing Score

[14] These scores have not been updated to reflect latest (2024) changes in stock assessment or management.

SUMMARY

IO BET	ESTIMATE	YEARS	NOTES
RECENT CATCH	103	2022	
5-YEAR CATCH	93	2018-22	
MSY	96	2021	
F/F_{MSY}	1.43	2021	Range: 1.10 to 1.77
SSB/SSB_{MSY}	0.90	2021	Range: 0.75 to 1.05
SSB/SSB_{f0}	0.25	2021	Range: 0.23-0.27
TAC	80.6[15]	2024-2025	

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB < SSB_{MSY}.
FISHING MORTALITY		F > F_{MSY}.

Last date of a change in Color Ratings: March, 2023.
Changes from the previous (March, 2020) Color Ratings: The Stock Abundance rating changed from Green to Orange.

[15] Allocated by CPC as per Resolution 23/04

IO Yellowfin Tuna

Yellowfin catches in 2022[16] were about 410,300 tonnes, a 2% decrease from 2021 catch levels. The main fishing gears for yellowfin for the 2018-2022 period are purse seine (~33% of the catch), gillnets (16%), handlines (23%), other line fisheries such as troll and coastal longline (15%), longline (9%) and pole and line (4%) (**Figure IO-5**). Catches by gillnet (16%) and miscellaneous line gears (38% including handline, troll and coastal longline) have become increasingly important in recent years. Catches by these gears are poorly estimated. Catches from pole-and-line vessels (4%) have been relatively stable. Overall, catches have declined by 24% from a record high of 540,000 tonnes in 2004; but annual catches have stayed above 400,000 tonnes since 2013 and another peak of over 450,000 tonnes was reached in 2019. The stock is estimated to be overfished and overfishing is occurring due to an increase in catch levels in recent years.

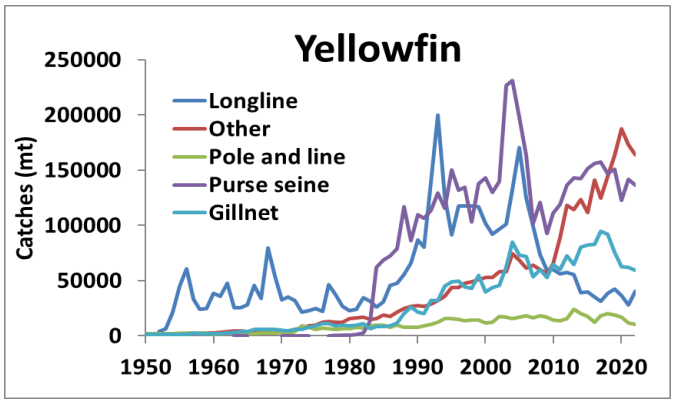


Figure IO-5. Catches of yellowfin tuna in the IO from 1950 to 2022, by gear type.

STOCK ASSESSMENT

In 2021 a new stock assessment was carried out for yellowfin tuna in the IOTC area of competence. The model used in 2021 is based on the model developed in 2018 with a series of revisions. The new model grid represents a marked improvement over the previous results available in 2018 and incorporates a far wider range of uncertainty. Stock status estimates are more pessimistic, but do not differ substantially, from the previous assessment (**Figure IO-6**):

1. The ratio of $F_{current}/F_{MSY}$ in 2020 is estimated at 1.32 (80% CI: 0.68-1.95), indicating that overfishing is occurring.
2. The stock is in an overfished state as spawning biomass in 2020 is estimated to be below the SSB_{MSY} level. $SSB_{current}/SSB_{MSY}$ = 0.87 (80% CI: 0.63-1.10).
3. The value of MSY is estimated to be 349,000 (80% CI: 286,000-412,000 tonnes). Catches since 2012 (~410,300 t in 2022) are above the estimated MSY.

[16] Best scientific estimates of nominal catch data for IOTC species as of 22-Nov-2023

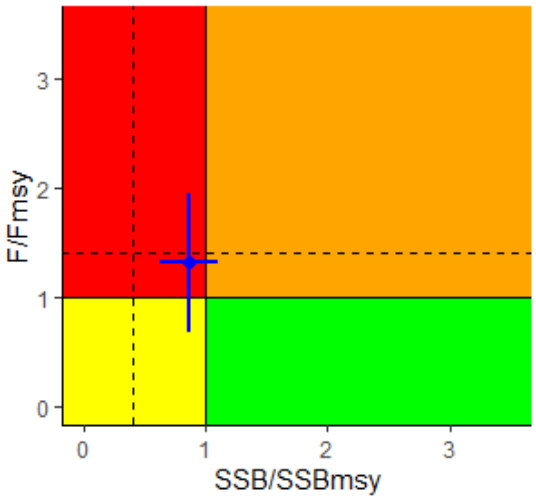


Figure IO-6. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for IO yellowfin. Solid black lines represent interim target reference points and black dashed lines represent interim limit reference points.

MANAGEMENT

Harvest Strategy: No, but Resolution16/09 established a Technical Committee on Management Procedures to help guide the Commission on policy choices for establishing Management Procedures. The following components have been agreed:

Management Objectives: Not defined, but candidate objectives are identified.

Limit reference point: Interim limit reference point of $0.4*SSB_{MSY}$ and $1.4*F_{MSY}$ (Resolution 15/10). $F_{current}/F_{MSY}$ equals 1.32, which is about 6% below the limit F; $SSB_{current}/SSB_{MSY}$ equals 0.87, which is over 2 times above the limit SSB.

Target reference point: Interim targets of SSB_{MSY} and F_{MSY} (Resolution 15/10). Current SSB and F are breaching these targets.

Harvest control rule: Not defined yet. Resolution 16/09 requests IOTC to guide the Commission to agree on Management Procedures including HCRs designed to maintain or restore stocks to the “Green” quadrant of the Kobe plot.

Management Strategy Evaluation: Early stages.

Management measures:

1. Resolution 19/01, superseded by Resolution 21/01, establishes an interim plan for rebuilding the Indian ocean yellowfin tuna stock in the IOTC area of competence. This plan details yellowfin tuna catch limits and provisions by CPCs requiring that Contracting Parties whose fleets exceed their catch limits will have that over-catch deducted from their annual limits in future years. Moreover, Resolution 21/01 requests CPCs to gradually reduce supply vessels by 31 December 2022.
2. Resolution 24/06 establishes a ban on discards of bigeye, skipjack and yellowfin tuna by purse seine vessels. CPCs shall encourage vessels using other gear types to also avoid discards.

3. Resolution 24/02 established procedures on a FADs management plan, including:
    i. An IOTC-wide FAD register effective as of 1 January 2026.
    ii. A limit of 250 instrumented buoys at sea at any one time per vessel from 1 January 2026 (225 from 1 January 2028) and a limit of 400 instrumented buoys to be acquired annually by each fishing vessel. Higher limits are set for CPCs that operate less than three purse seine vessels and for Small Island Developing Coastal CPCs.
    iii. A requirement that flag CPCs ensure that the instrumented buoy supplier company or their vessels report daily information on all active DFADs to the IOTC with a time delay of 30 to 60 days.
    iv. Ban, prevention and reporting measures for Abandoned, Lost or Otherwise Discarded DFADs.
    v. A requirement that CPC vessels use non-entangling FADs constructed without netting material and remove from the water all traditional FADs encountered (e.g. those made of entangling materials or designs).
    vi. A stepwise timeline to transition to the use of biodegradable FADs between 1 Jan 2026 and 1 Jan 2030.
    vii. A DFAD marking scheme requiring that the instrumented buoys attached to DFADs deployed are permanently marked with the unique reference number marking (ID provided by the manufacturer) and the IOTC unique vessel identifier, and -- as of 1 January 2026 -- that DFADs are permanently marked with a specific IOTC DFAD unique identifier provided by the IOTC Secretariat.
    viii. A timeline to reduce supply vessels in tropical tuna purse seine operations.
4. Resolution 23/01 mandates CPCs to develop national anchored FADs management plans and that aFADs subsurface aggregators are constructed only with non-entangling, non-mesh and biodegradable materials.
5. Resolution 23/03 asks the IOTC Scientific Committee to provide advice on appropriate fishing closures applicable to all fishing gears. It also encourages CPCs to ensure that their vessels targeting tropical tuna do not fish for a minimum period of 31 consecutive days, or that, alternatively, they implement voluntary catch reductions for yellowfin (and for skipjack and bigeye).
6. Anticipating the possible need for capacity building to implement the adopted management measures, Resolution 16/10 was adopted to promote the implementation of IOTC Conservation and Management Measures and Resolution 17/02 established a Working Party on the Implementation of Conservation and Management Measures (WPICMM).

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score[17]	Evaluation
1.2.1	Harvest Strategy	65	Condition Needed*
	*For evidence that the HS is responsive to the state of the stock and that HS elements work together towards achieving stock management objectives		
1.2.2	Harvest control rules and tools	<60	Fail**
	**IOTC to adopt a well-defined HCR robust to uncertainties, and tools		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	95	Passing Score

SUMMARY

IO YFT	ESTIMATE	YEARS	NOTES
RECENT CATCH	410	2022	
5-YEAR CATCH	429	2018-22	
MSY	349	2020	Range: 286-412
F/F_{MSY}	1.32	2020	Range: 0.68-1.95
SSB/SSB_{MSY}	0.87	2020	Range: 0.63-1.10
SSB/SSB_0	0.31	2020	Range: 0.24-0.38
TAC	N/A	Specified by CPC[18] in Res. 21/01	

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB < SSB_{MSY}. The low level of stock biomass is attributable to increased catch levels in recent years.
FISHING MORTALITY		F > F_{MSY}.

Last date of a change in Color Ratings: February, 2016.
Changes from the previous (December 2011) Color Ratings: The Abundance rating changed from Green to Orange. The Fishing mortality rating changed from Green to Orange.

[17] These scores have not been updated to reflect latest (2024) changes in stock assessment or management.

[18] Catch limits for each CPC depend on different baseline year catches (2014 or 2015) and /or recent catches (2017-2019).

IO Skipjack Tuna

Skipjack catches in the Indian Ocean in 2022[19] were about 666,400 tonnes, a 2% increase from 2021. Purse seine (54%), pole-and-line (19%) and gillnets (18%) dominate the catches (**Figure IO-7**). Pole-and-line, purse seine and gillnet catches have been decreasing since the mid-2000s, but their catches showed an increasing trend after 2012, notably so for purse seine. Overfishing is not occurring and the stock is not overfished.

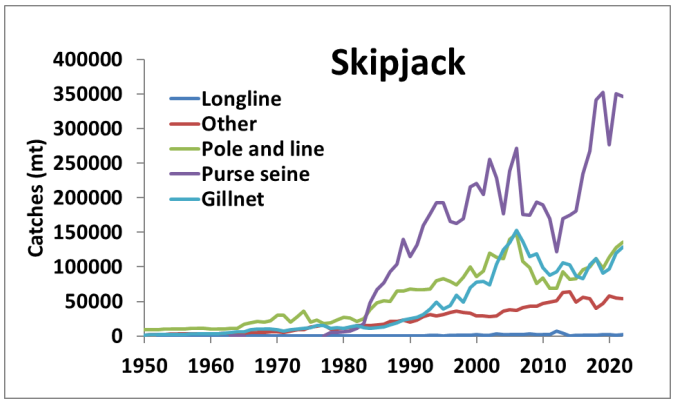


Figure IO-7. Catches of skipjack tuna in the IO from 1950 to 2022, by gear type.

STOCK ASSESSMENT

The most recent stock assessment of skipjack was conducted in 2023 with data up to 2022. Model results are more optimistic than the previous assessment (2020) despite large catches recorded in 2021-2022, which were higher than the annual catch limits in effect during that period. The increase in abundance despite catches exceeding the recommended limits was primarily driven by an increase in recent recruitment —possibly linked to environmental conditions— which was estimated to be well above the long-term average.

The results of the assessment indicated that (**Figure IO-8**):

1. The ratio of $F_{current}/F_{MSY}$ is estimated to be 0.49 (80% CI: 0.32-0.75). Therefore, overfishing is not occurring.
2. The stock is not in an overfished state as spawning biomass is above the SSB_{MSY} level ($SSB_{current}/SSB_{MSY}$ = 2.30, 80% CI: 1.57-3.40).
3. The median estimate of MSY is estimated to be 584,800 tonnes (80% CI: 512,200 to 686,100 t). Catches in 2022 (666,400 t) are above this level.

As for skipjack the stock assessment model was unable to accurately estimate MSY-based reference points, following Resolution 15/10 *on target and limit reference points and a decision framework* – which requests that reference points will be set at a rate of initial biomass (SSB_0) when

[19] Best scientific estimates of nominal catch data for IOTC species as of 22-Nov-2023

MSY-based reference points cannot be robustly estimated – and Resolution 21/03 on Skipjack Harvest Control Rules; skipjack stock status and reference points are provided relative to SSB_0 levels. These are given below.

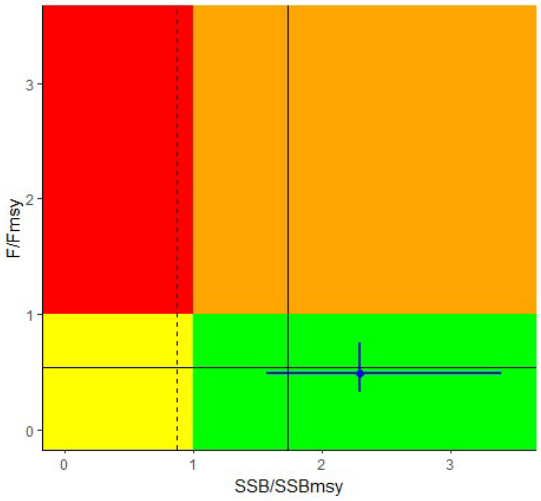


Figure IO-8. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for IO skipjack. Solid black lines represent interim target reference points and black dashed lines represent interim limit reference points.

MANAGEMENT

Harvest Strategy: Yes, IOTC adopted a Management Procedure (MP) for skipjack in Resolution 24/07 known as MP-SKJ.

Management Objectives:

a. At least 50% probability that the skipjack tuna spawning stock biomass achieves the biomass level of 40% SB_0 by 2034-2038.
b. The skipjack tuna spawning stock biomass is maintained above the biomass of SB_{MSY} with very high probability.
c. The skipjack tuna spawning stock biomass is maintained above the biomass of 20% of SB_0 at all times
d. The maximum increase or decrease of TAC shall be of (+15% or -10%) relative to the previous TAC.

Limit reference point: Interim limit reference points are $0.2*SSB_0$ and $F_{0.2SSB0}$ (the fishing mortality value associated with sustaining the stock at $0.2*SSB_0$) (Resolutions 23/07 and 15/10). The value of $SSB_{current}/SSB_0$ is 0.53, which is above the SSB limit, and $F_{current}/F_{40\%SSB0}$ equals 0.90, which is below the F limit.

Target reference point: Interim target reference points are $0.4*SSB_0$ and $F_{0.4SSB0}$ (the fishing mortality value associated with sustaining the stock at $0.4*SSB_0$) (Resolutions 23/07 and 15/10). $F_{current}/F_{40\%SSB0}$ is 0.90, which is below the F target, and $SSB_{current}/SSB_0$ is 0.53 which is above the SSB target.

Harvest control rule: The MP-SKJ is empirical and uses two main components to estimate catch limits: (i) the stock status indicator and, (ii) the decision algorithm (or HCR).

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

The decision algorithm or HCR estimates the recommended catch limit TAC for the period (ty+1:3) using the stock status indicator (U_tU_y) as follows[20]:

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

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

iii) If $a_y \leq U_{safety}$; $TAC_{y+1:3}=C_{min}$

iv) The value U_y is calculated with equations taken from document IOTC-2024-TCMP08-04_Rev2E.

The MP will be run for the first time in 2025 to estimate the TAC for the period 2027-2029. Thereafter, the MP will be applied every three years.

Management Strategy Evaluation: Ongoing (finalized for current HS).

Management measures:

Based on the results of the stock assessment of skipjack tuna in 2023, IOTC adopted an annual catch limit of 628,606 tonnes for skipjack for the period 2024-2026 following the application of the previous Harvest Control Rule in Resolution 21/03. Large catches that exceed previous catch limits have been recorded in the past several years. In 2021 and 2022, for example, the catch limits established in 2020 for this period were exceeded by 27% and 30%, respectively. Hence, although the new catch limit is higher than for the previous period, IOTC needs to ensure that catches of skipjack do not exceed the agreed limit.

There are no other conservation measures established specifically for skipjack.

1. Resolution 21/01 on yellowfin requests CPCs to gradually reduce supply vessels by 31 December 2022.
2. Resolution 24/06 establishes a ban on discards of bigeye, skipjack and yellowfin tuna by purse seine vessels. CPCs shall encourage vessels using other gear types to also avoid discards.
3. Resolution 24/02 established procedures on a FADs management plan, including:
   i. An IOTC-wide FAD register effective as of 1 January 2026.
   ii. A limit of 250 instrumented buoys at sea at any one time per vessel from 1 January 2026 (225 from 1 January 2028) and a limit of 400 instrumented buoys to be acquired annually by each fishing vessel. Higher limits are set for CPCs that operate less than

[20] See Table 1 in Resolution 24/07 for all term definitions

three purse seine vessels and for Small Island Developing Coastal CPCs.

iii. A requirement that flag CPCs ensure that the instrumented buoy supplier company or their vessels report daily information on all active DFADs to the IOTC with a time delay of 30 to 60 days.

iv. Ban, prevention and reporting measures for Abandoned, Lost or Otherwise Discarded DFADs.

v. A requirement that CPC vessels use non-entangling FADs constructed without netting material and remove from the water all traditional FADs encountered (e.g. those made of entangling materials or designs).

vi. A stepwise timeline to transition to the use of biodegradable FADs between 1 Jan 2026 and 1 Jan 2030.

vii. A DFAD marking scheme requiring that the instrumented buoys attached to DFADs deployed are permanently marked with the unique reference number marking (ID provided by the manufacturer) and the IOTC unique vessel identifier, and -- as of 1 January 2026 -- that DFADs are permanently marked with a specific IOTC DFAD unique identifier provided by the IOTC Secretariat.

4. A timeline to reduce supply vessels in tropical tuna purse seine operations.
5. Resolution 23/01 mandates CPCs to develop national anchored FADs management plans and that aFADs subsurface aggregators are constructed only with non-entangling, non-mesh and biodegradable materials.
6. Resolution 23/03 asks the IOTC Scientific Committee to provide advice on appropriate fishing closures applicable to all fishing gears. It also encourages CPCs to ensure that their vessels targeting tropical tuna do not fish for a minimum period of 31 consecutive days, or that, alternatively, they implement voluntary catch reductions for yellowfin (and for skipjack and bigeye).
7. Anticipating the possible need for capacity building to implement the adopted management measures, Resolution 16/10 was adopted to promote the implementation of IOTC Conservation and Management Measures and Resolution 17/02 established a Working Party on the Implementation of Conservation and Management Measures (WPICMM).

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score[21]	Evaluation
1.2.1	Harvest Strategy	80	Passing Score
1.2.2	Harvest control rules and tools	75	Condition Needed*
	*For IOTC to successfully enforce catch reductions that meet the HS-derived TAC		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	95	Passing Score

[21] These scores have not been updated to reflect latest (2024) changes in stock assessment or management.

SUMMARY

IO SKJ	ESTIMATE	YEARS	NOTES
RECENT CATCH	666	2022	
5-YEAR CATCH	613	2018-22	
MSY	585	2022	Range: 512-686
F/F_{MSY}	0.49	2022	Range: 0.32-0.75
SSB/SSB_{MSY}	2.30	2022	Range: 1.57-3.40
SSB/SSB_0	0.53	2022	Range: 0.42-0.68
TAC	629	2024-2026	

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY}.
FISHING MORTALITY		F < F_{MSY}.

Last date of a change in Color Ratings: December, 2011.
Changes from the previous (original) Color Ratings: The Abundance rating changed from Yellow to Green.

IO Albacore Tuna

Albacore catches in the Indian Ocean in 2022[22] were about 46,600 tonnes, a 34% increase from 2021. Almost all catches are made by pelagic longlines (**Figure IO-9**). The Indian Ocean albacore stock is not overfished and is not subject to overfishing. However, there is considerable uncertainty associated with the latest stock assessment.

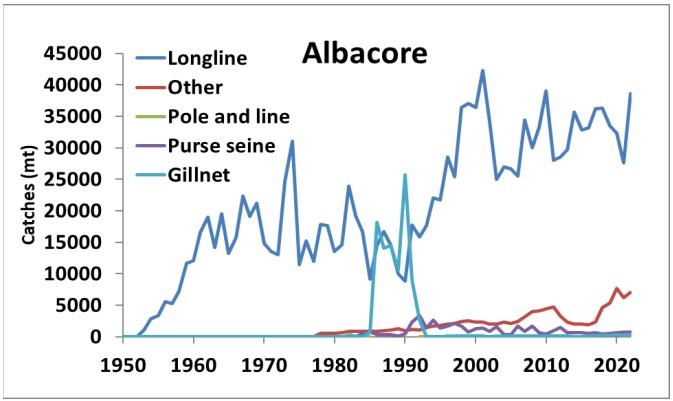


Figure IO-9. Catches of albacore tuna in the IO from 1950 to 2022, by gear type.

STOCK ASSESSMENT

The latest assessment was performed by the Scientific Committee in 2022, using data through 2020. The model used in 2022 is based on the model developed in 2019 with a series of revisions. There are some noticeable changes compared to the previous assessment data set, mainly related to how the fisheries are structured, and how the CPUE indices and length composition data are treated within the assessment model. The conclusions from the assessment indicate that (**Figure IO-10**):

1. The ratio of $F_{current}/F_{MSY}$ is estimated to be 0.68 (range: 0.42-0.94). Therefore, overfishing is not occurring.
2. The stock is not in an overfished state as spawning biomass is above the SSB_{MSY} level ($SSB_{current}/SSB_{MSY}$ = 1.56; range: 0.89-2.24).
3. The median estimate of MSY is estimated to be 45,000 tonnes. Current catch (~46,600 t in 2022) is above this level.

[22] Best scientific estimates of nominal catch data for IOTC species as of 22-Nov-2023

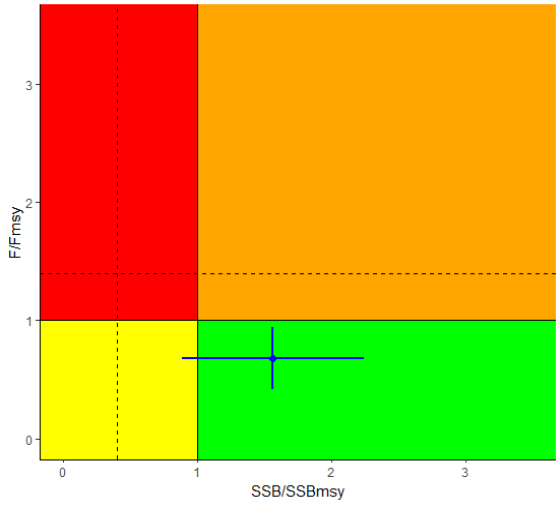


Figure IO-10. Latest estimate of SSB/SSB_{MSY} and F/F_{MSY} (in blue, including range) for IO albacore. Solid black lines represent interim target reference points and black dashed lines represent interim limit reference points.

MANAGEMENT

Harvest Strategy: No, but Resolution16/09 established a Technical Committee on Management Procedures to help guide the Commission on policy choices for establishing Management Procedures. The following components have been agreed:

Management Objectives: Not defined, but candidate objectives are identified.

Limit reference point: Interim limits of $0.4*SSB_{MSY}$ and $1.4*F_{MSY}$ (Resolution 15/10). The value of $SSB_{current}/SSB_{MSY}$ is 1.56, about 4 times higher than the SSB limit. F/F_{MSY} is 0.68, which is well below the limit F.

Target reference point: Interim targets of SSB_{MSY} and F_{MSY} (Resolution 15/10). Current F is below the F target and current SSB is above the SSB target.

Harvest control rule: Not defined yet. Resolution 16/09 requests IOTC to guide the Commission to agree on Management Procedures including HCRs designed to maintain or restore stocks to the "Green" quadrant of the Kobe plot.

Management Strategy Evaluation: Ongoing.

Management measures:

There are no conservation and management measures adopted by IOTC for albacore.

Anticipating the possible need for capacity building to implement the adopted management measures, Resolution 16/10 was adopted to promote the implementation of IOTC Conservation and Management Measures and Resolution 17/02 established a Working Party on the Implementation of Conservation and Management Measures (WPICMM).

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score	Evaluation
1.2.1	Harvest Strategy	60	Condition Needed*
	*For evidence that the HS is responsive to the state of the stock and that HS elements work together towards achieving stock management objectives		
1.2.2	Harvest control rules and tools	<60	Fail**
	**IOTC to adopt a well-defined HCR robust to uncertainties, and tools		
1.2.3	Information / monitoring	80	Passing Score
1.2.4	Assessment of stock status	90	Passing Score

SUMMARY

IO ALB	ESTIMATE	YEARS	NOTES
RECENT CATCH	47	2022	
5-YEAR CATCH	41	2018-22	
MSY	45	2020	Range: 35-55
F/F_{MSY}	0.68	2020	Range: 0.42-0.94
SSB/SSB_{MSY}	1.56	2020	Range: 0.89-2.24
SSB/SSB_0	0.36	2020	Range: 0.26-0.45
TAC	N/A		

Catches, MSY and TAC in 1000 tonnes.

STOCK ABUNDANCE		SSB > SSB_{MSY}. However, there is considerable uncertainty in the assessment results.
FISHING MORTALITY		F < F_{MSY}.

Last date of a change in Color Ratings: March, 2023.
Changes from the previous (March, 2020) Color Ratings: Fishing mortality rating was changed from Orange to Green to reflect the results of the 2022 assessment.

SOUTHERN HEMISPHERE STOCKS

RFMO: Commission for the Conservation of Southern Bluefin Tuna (CCSBT). The stock is assessed by the CCSBT SC who makes recommendations to the CCSBT.
Last Scientific Committee meeting: September, 2024.
Last Commission meeting: October, 2024.
Tuna stocks managed by CCSBT: Southern bluefin tuna.
Data sources: The main source of information for this section is CCSBT (2024a), CCSBT (2024b).
Conservation and Management Measures: CCSBT Conservation and Management.
Last update: November, 2024.

SH Southern Bluefin Tuna

Southern bluefin tuna (*Thunnus maccoyii*) is found in the southern hemisphere, mainly in waters between 30° and 50° S. The stock is assessed and managed by the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). While the IATTC, ICCAT, IOTC and WCPFC have in principle a mandate to manage all tunas in their respective Convention Areas, in practice they defer to CCSBT for management of southern bluefin. Practically all of the catches are made in the IOTC, ICCAT and WCPFC convention areas (62% in the Indian Ocean, 25% in the Pacific Ocean and 13% in the Atlantic Ocean).

Southern bluefin catches in 2023 were about 17,300 tonnes, a 1% increase from 2022. Virtually all of the catches are made by longline (70%) and purse seine (28%). Current catches are about 20% of what they were at their peak, in 1961. (**Figure SH-1**). The stock of southern bluefin is heavily overfished. However, overfishing is not occurring due to measures taken in a rebuilding plan.

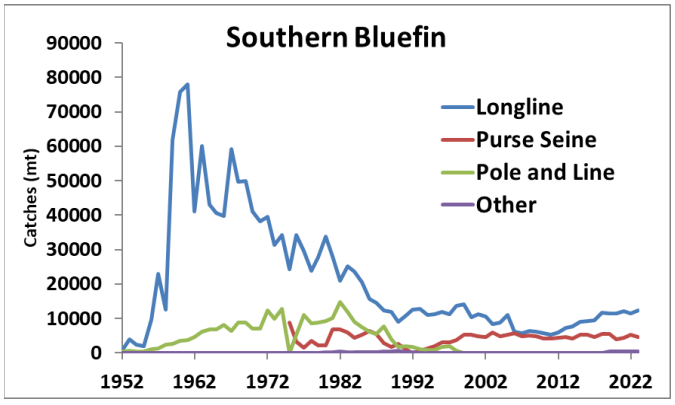


Figure SH-1. Catches of southern bluefin tuna from 1952 to 2023, by gear type.

STOCK ASSESSMENT

Southern bluefin tuna is assessed by the Extended Scientific Committee (ESC) of the CCSBT. The latest full stock assessment was conducted in 2023. Since 2017, CCSBT has measured reproductive capacity as Total Reproductive Output (TRO) rather than SSB. The 2023 stock assessment suggested that the southern bluefin TRO is at 23% of its initial value as well as below

the level that could produce maximum sustainable yield. According to the 2023 assessment (**Figure SH-2**):

1. The current ratio of $TRO_{current}/TRO_{MSY}$ is estimated at 0.85 (range: 0.61-1.29). This indicates that the stock is in an overfished state. TRO is estimated to be between 21% and 29% of the unfished level. Spawning biomass has been rebuilding since the implementation of CCSBT's management procedure.
2. The ratio of $F_{current}/F_{MSY}$ is estimated at 0.46 (range: 0.34-0.65), indicating that overfishing is not occurring. While overfishing was taking place in recent years, current fishing mortality has been reduced below the MSY level following reductions in overall catch.
3. The estimate of MSY is 30,648 tonnes, well above current catch levels (17,251 t in 2023).

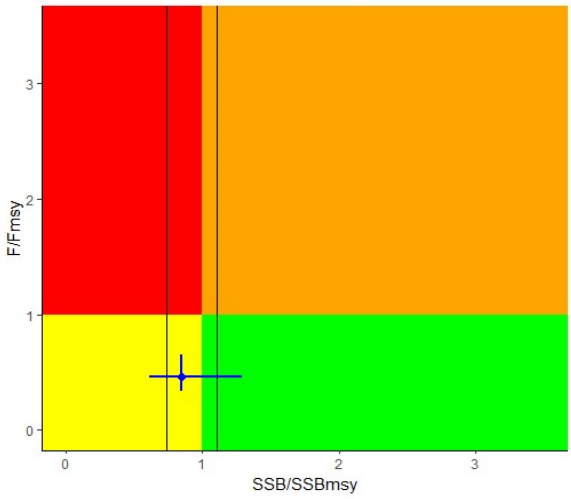


Figure SH-2. Latest estimate of SSB/SSB_{MSY} (TRO/TRO_{MSY} used as proxy) and F/F_{MSY} (in blue, including range) for southern bluefin tuna. Solid black lines represent rebuilding target reference points.

MANAGEMENT

Harvest Strategy: Yes. In 2019, a new Management Procedure (MP) — the Cape Town Procedure (CTP) — was adopted to guide the setting of TACs until the new interim TRP is reached. The MP developed by the ESC specifies the data inputs, assessment framework, the HCR and actions to be taken based on any exceptional circumstances.

Limit reference point: Not defined.

Target reference point: 20% of the unfished biomass ($20\%TRO_0$) was used previously as an interim rebuilding target to be achieved with 70% probability by 2035. A new interim TRP of 30%TRO to be achieved with 50% probability by 2035 is included as an objective in the new Management Procedure. The stock is currently estimated to be above the $20\%TRO_0$ level.

Harvest control rule: Southern bluefin tuna is managed primarily through annual TACs. The MP HCR has three components, gene-tagging, CPUE and Close-Kin Mark Recapture indices; which are combined to estimate a TAC for a three-year period that would allow achieving both recovery targets.

Management objectives: The HCR incorporated as an objective, in addition to the previous interim recovery target as a performance metric, the new interim rebuilding target reference point of 30% of the original Total Reproductive Outcome by 2035 with 50% probability.

Management Strategy Evaluation: Ongoing (finalized for current HS).

Management measures:

TACs under the MP are set for three-year periods to maintain the stock on the planned rebuilding trajectory. The MP specifies the minimum and maximum permissible changes in TAC (either increase or decrease, depending on stock status relative to the rebuilding trajectory). The MP was applied in 2022 and recommended that the TAC for 2024-2026 be increased by the maximum allowed TAC change of 3,000 t (from 17,647 t to 20,647 t). The 2024 ESC found no evidence of exceptional circumstances and therefore confirmed the TAC recommendation for 2024-2026 of 20,647 t/year, which the Commission endorsed.

Management status against MSC standard:

MSC PI no.	MSC Performance Indicator (PI)	Score[23]	Evaluation
1.2.1	Harvest Strategy	95	Passing Score
1.2.2	Harvest control rules and tools	85	Passing Score
1.2.3	Information / monitoring	90	Passing Score
1.2.4	Assessment of stock status	100	Passing Score

SUMMARY

SBT	ESTIMATE	YEARS	NOTES
RECENT CATCH	17	2023	
5-YEAR CATCH	17	2019-23	
MSY	31	2022	Range: 29-31
F/F_{MSY}	0.46	2022	Range: 0.34-0.65
SSB/SSB_{MSY}	0.85	2022	TRO used as proxy Range: 0.61-1.29
SSB/SSB_0	0.23	2022	TRO used as proxy Range: 0.21-0.29
TAC	20.6	2024-2026	

Catches, MSY and TAC in 1000 tonnes.

[23] These scores have not been updated to reflect latest (2024) changes in stock assessment or management.

STOCK ABUNDANCE		SSB < SSB_{MSY}. Stock abundance is between 21% and 29% of the unfished level. However, there is evidence that the stock is rebuilding as a result of the management procedure in place.
FISHING MORTALITY		F < F_{MSY}.

Last date of a change in Color Ratings: February, 2018.
Changes from the previous (February, 2015) Color Ratings: The SSB rating changed from Orange to Yellow, as there is evidence that the stock is rebuilding.

Bibliography

Aires-da-Silva, A., Maunder, M.N., Xu, H., Minte-Vera, C., Valero, J.C. and Lennert-Cody, C.E. (2020). Risk analysis for management of the tropical tuna fishery in the Eastern Pacific Ocean, 2020. IATTC document SAC-11-08 REV.

Bi, R., Maunder, M., Xu, H., Minte-Vera, C., Valero, J. and A. Aires-da-Silva. (2024). Stock assessment of skipjack tuna in the Eastern Pacific Ocean: 2024 benchmark assessment. IATTC Document SAC-15-04 REV.

Castillo Jordán, C., Teears, T, Hampton, J., Davies, N., Scutt Phillips, J., McKechnie, S., Peatman, T., MacDonald, J., Day, J., Magnusson, A., Scott, R., Scott, F., Pilling, G., and Hamer, P. (2022). Stock assessment of skipjack tuna in the western and central Pacific Ocean. Eighteenth Regular Session of the Scientific Committee of the WCPFC. Online, 10-18 August 2022. WCPFC-SC18-2022/SA-WP-01-Rev.5.

CCSBT. (2024a). Report of the Twenty-Ninth Meeting of the Scientific Committee. Commission for the Conservation of Southern Bluefin Tuna. 5 September 2024, Taipei, Taiwan.

CCSBT. (2024b). Report of the Thirty First Annual Meeting of the Commission. Commission for the Conservation of Southern Bluefin Tuna. 10 October 2024, Taipei, Taiwan.

Day, J., Magnusson, A., Teears, T., Hampton, J., Davies, N., Castillo Jordán, C., Peatman, T., Scott, R., Scutt Phillips, J., McKechnie, S., Scott, F., Yao, N., Natadra, R., Pilling, G., Williams, P. and Hamer, P. (2023). Stock Assessment of Bigeye Tuna in the Western and Central Pacific Ocean: 2023. Nineteenth Regular Session of the Scientific Committee. Koror, Palau, 16–24 August 2023. WCPFC-SC19-2023/SA-WP-05 (Rev. 2)].

Duparc, A., FLoch, L., Cauquil, P., Depetris, M., Lebranchu, J., Yala, D. and Bach, P. (2020). Statistics of the French purse seine fishing fleet targeting tropical tunas in the Atlantic Ocean (1991-2019). Document SCRS/2020/137.

Edwards, C.T.T. (2024) Candidate Management Procedures for Indian Ocean skipjack tuna. IOTC document IOTC-2024-TCMP08-04-Rev2.

IATTC. (2024a). The tuna fishery in the Eastern Pacific Ocean in 2023. IATTC document SAC-15-01 CORR.

IATTC. (2024b). Stock status indicators (SSIs) for tropical tunas in the Eastern Pacific Ocean. IATTC document SAC-15 INF-F.

IATTC (2024c). Scientific advice on interpreting the fishing intensity metric from the North Pacific Albacore tuna Harvest Strategies in terms of catch and effort management measures. IATTC document SAC-15 INF-T.

ICCAT. (2020). 2020 SCRS Advice to the Commission. Madrid, Spain, 2020.

ICCAT. (2021). Report of the Standing Committee on Research and Statistics, 27 September to 2 October, 2021. Online.

ICCAT. (2022). Report of the Standing Committee on Research and Statistics, 26-30 September, 2022. Madrid (Spain)/Hybrid. (Revision, 6 October 2022).

ICCAT. (2023). Report of the Standing Committee on Research and Statistics, (Hybrid/Madrid (Spain) 25-29 September 2023). October 2023.

ICCAT. (2024). Report of the Standing Committee on Research and Statistics, (Hybrid/Madrid (Spain) 23-27 September 2024). October 2024.

IOTC. (2023). Report of the 26th Session of the IOTC Scientific Committee. India, 4-8 December 2023. IOTC–2023–SC26–R[E].

ISC. (2023). Stock assessment of albacore tuna in the North Pacific Ocean in 2023. Report of the albacore working group. International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC). Kanazawa, Japan, July 12–17, 2023. ISC/23/ANNEX/08.

ISC. (2024a). Report of the Twenty-fourth Meeting of the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean. Victoria, Canada, 19-24 June, 2024.

ISC. (2024b). Stock assessment of Pacific bluefin tuna in the Pacific Ocean in 2024. International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC). Victoria, Canada, June 19–24, 2024. ISC/24/ANNEX/13

Juan-Jordá, M.J., Murua, H., Arrizabalaga, H., Merino, G., Pacoureau, N. and Dulvy, N.K. (2022). Seventy years of tunas, billfishes, and sharks as sentinels of global ocean health. Science, 378(6620), eabj0211. https://doi.org/10.1126/science.abj0211

Magnusson, A., Day, J., Teears, T., Hampton, J., Davies, N., Castillo Jordán, C., Peatman, T., Scott, R., Scutt Phillips, J., McKechnie, S., Scott, F., Yao, N., Natadra, R., Pilling, G., Williams, P. and Hamer, P. (2023). Stock assessment of yellowfin tuna in the western and central Pacific Ocean: 2023. Nineteenth Regular Session of the Scientific Committee of the WCPFC. Koror, Palau, 16-24 August 2023. WCPFC-SC19-2023/SA-WP-04 (Rev. 2)

McKechnie, S., Pilling, G. and Hampton, J. (2017). Stock assessment of bigeye tuna in the western and central Pacific Ocean. Document WCPFC-SC13-2017/SA-WP-05. Rev 1 04-August.

Minte-Vera, C.V., Maunder, M. N., Xu, H., Valero, J.L., Lennert-Cody, C.E. and Aires-da-Silva, A. (2020). Yellowfin tuna in the Eastern Pacific Ocean, 2019: Benchmark assessment. IATTC document SAC-11-07 REV.

Minte-Vera, C.V., Maunder, M. N., Xu, H., Valero, J.L., Bi, R., Fuller, D. and Aires-da-Silva, A. (2024). Exploratory assessment and stock status indicators for yellowfin tuna in the EPO. IATTC document SAC-15-03 REV.

Ovando, D., Aires-da-Silva, A., Crear, D., De La Cadena, C., Fuller, D., Lennert-Cody, C., Lopez, J., Maunder, M., Minte-Vera, C.V. and Xu, H. (2024). Effects of the individual vessel threshold program on tropical tuna catches and fleet behavior in the EPO. IATTC document SAC-15 INF-K.

Pascual-Alayón, P.J., Rojo, V., Amatcha, H., Sow, F.N., Ramos, M.L. and Abascal F.J. (2020). Estadística de las pesquerías españolas atuneras en el océano Atlántico tropical, en el periodo 1990 a 2019. Document SCRS/2020/136.

Reid, C. and J. Raubani. (2015). Trends in economic conditions in the Southern longline fishery. Document WCPFC-SC11-2015/MI WP-03-Rev1.

Schaefer, K., D. Fuller, J. Hampton, S. Caillot, B. Leroy and D. Itano. (2014). Movements, dispersion, and mixing of bigeye tuna (Thunnus obesus) tagged and released in the equatorial Central Pacific Ocean, with conventional and archival tags. Fisheries Research 161(2015) 336-355.

Teears, T., Castillo Jordán, C., Davies, N., Day, J., Hampton, J., Magnusson, A., Peatman, T., Pilling, G., Xu, H., Vidal, T., Williams, P. and Hamer, P. (2024). Stock assessment of South Pacific albacore: 2024. WCPFC-SC20-2024/SA-WP-02-Rev 3. 14 August 2024.

WCPFC. (2024a). SC20 Outcomes Document. Manila, Philippines, 14-21 August 2024 (30Aug2024). WCPFC21-2024-SC20-01.

WCPFC. (2024b). Estimates of annual catches in the WCPFC statistical area. Document WCPFC-SC20-ST-IP-01.

WCPFC Harvest Strategy. https://www.wcpfc.int/harvest-strategy.

Xu, H., Maunder, M.N., Minte-Vera, C.V., Valero, J.L. and Lennert-Cody, C. (2024). Stock assessment of bigeye tuna in the Eastern Pacific Ocean: 2024 benchmark assessment. IATTC document SAC-15-02 revised.

Glossary and Acronyms

TERM	MEANING
AIDCP	The Agreement on the International Dolphin Conservation Program
ALB	Albacore tuna, *Thunnus alalunga*.
AO	Atlantic Ocean
B	Biomass. The total stock size, in weight.
BET	Bigeye tuna, *Thunnus obesus*.
BFT	Atlantic bluefin tuna, *Thunnus thynnus*.
B_{MSY}	(also "Biomass at MSY" or "MSY Biomass Level"). This is the stock size (biomass) that would result on average if FMSY was applied constantly year after year. BMSY is sometimes measured by the total biomass of the stock and sometimes by the biomass of the spawners ("spawning biomass", or SSB).
CCSBT	Commission for the Conservation of Southern Bluefin Tuna (www.ccsbt.org)
EPO	Eastern Pacific Ocean
F	Instantaneous fishing mortality rate, a measure of the intensity with which a stock is being exploited. The catch of a stock is roughly proportional to F multiplied by abundance.
FAD	Fish Aggregating Device. An inanimate object that attracts tunas and other marine life. In this report, "FAD" is used broadly for natural logs, as well as man-made objects, both anchored and drifting.
FIP	Fishery Improvement Project
Fishery Progress	FisheryProgress.org is a web site that stores updated information on the progress of global fishery improvement projects (FIPs).
F_{MSY}	(also "Fishing Mortality at MSY" or "MSY Fishing Mortality Level"). This is the level of fishing intensity that, if applied constantly year after year, would result in MSY.
Generation Length	Generation length is the average age of parents of the current cohort (i.e. newborn individuals in the population). Generation length therefore reflects the turnover rate of breeding individuals in a population.
HCR	Harvest Control Rules, one component of Harvest Strategies/Management Procedures
IATTC	Inter-American Tropical Tuna Commission (www.iattc.org)
ICCAT	International Commission for the Conservation of Atlantic Tunas (www.iccat.int)
IO	Indian Ocean
IOTC	Indian Ocean Tuna Commission (www.iotc.org)
ISC	International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (isc.ac.affrc.go.jp)
LRP	Limit Reference Point
MSC	Marine Stewardship Council.
MSE	Management Strategy Evaluation

MSY	The largest average catch or yield that can continuously be taken from a stock under existing environmental conditions. (For species with fluctuating recruitment, the maximum might be obtained by taking fewer fish in some years than in others.)
MP	Management Procedure (also called Harvest Strategies)
PBF	Pacific bluefin tuna, *Thunnus orientalis*
PNA	Parties to the Nauru Agreement
PO	Pacific Ocean
RFMO	Regional Fishery Management Organization
SBR	Spawning Biomass Ratio or Depletion ratio. Ratio of Spawning Stock Biomass (SSB) relative to the unfished SSB (SSB_0)
SBT	Southern bluefin tuna, *Thunnus maccoyii*
SH	Southern hemisphere
SIDS	Small Island Developing States
SKJ	Skipjack tuna, *Katsuwonus pelamis*
SPC / OFP	Secretariat of the Pacific Community (Oceanic Fisheries Programme)
SPR	Spawning Potential Ratio. The amount of eggs produced by a fish stock over its lifespan under a specific fishing regime, relative to the spawn that would have been produced over the fish stock's lifespan if there were no fishing. It is a measure of the impact that fishing has on the ability of a fish stock to contribute to spawning.
SSB	Spawning stock biomass. The weight of spawners (usually females only) in the stock at any given time. SSB is a proxy for the reproductive output of a stock.
SSB_0	Spawning stock biomass at an unfished (F=0) level. Sometimes $SSB_{F=0}$ is used.
$SSB_{F=0}$	Spawning stock biomass that would be expected in the absence of fishing
SSB_{MSY}	(also "spawning biomass at MSY" or "MSY Biomass Level"). This is the stock size (biomass) of spawners that would result on average if F_{MSY} was applied constantly year after year. SSB_{MSY} is often measured by the biomass of female spawners.
Stock	In general, a stock is a biological unit of one species forming a group of similar ecological characteristics and, as a unit, is the subject of assessment and management. However, there are many uncertainties in defining spatial and temporal geographical boundaries for such biological units that are 100% compatible with established tuna RFMO Convention Areas. The stocks listed in this report correspond to the assessment/management units established by the tuna RFMOs, even if there is migration of the same species to and from adjacent areas.
Stock Assessment	The application of statistical and mathematical tools to relevant data in order to obtain a quantitative understanding of the status of the stock relative to management benchmarks (e.g. B_{MSY}) as needed to make quantitative predictions of the stock´s reactions to alternative management measures.
TAC	Total Allowable Catch
TRP	Target reference point
WCPFC	Western and Central Pacific Fisheries Commission (www.wcpfc.int)
WCPO	Western and Central Pacific Ocean
YFT	Yellowfin tuna, *Thunnus albacares*

For extended definitions for these and other terms, please refer to the ISSF Glossary.

APPENDIX 1. Version Log

DATE	TECH REP.[24]	CHANGES
11/2024	2024-07	- Updated IATTC catch data, stock status and management - Updated WCPFC catch data - Updated Pacific-Wide catch data, stock status and management - Updated ICCAT catch data and stock status - Updated IOTC management - Updated CCSBT catch data and management
03/2024	2024-02	- Updated WCPFC management - Updated Pacific-Wide management - Updated ICCAT management - Updated IOTC catch data and stock status - Eliminated bycatch sections (now in another report)
11/2023	2023-12	- Updated IATTC catch data, stock status and management - Updated WCPFC catch data and stock status - Updated Pacific-Wide catch data, stock status and management - Updated ICCAT catch data and stock status - Updated IOTC management - Updated CCSBT catch data, stock status and management
03/2023	2023-01	- Updated WCPFC management - Updated Pacific-Wide management - Updated ICCAT management - Updated IOTC catch data and stock status - Updated CCSBT catch data and stock status - Some changes in report structure and contents
11/2022	2022-15	- Updated IATTC catch data - Updated WCPFC catch data and stock status - Updated Pacific-Wide catch data, stock status and management - Updated ICCAT catch data and stock status - Updated MSC-certified fisheries by stock
07/2022	2022-13	- Updated IATTC catch data and stock status - Updated IOTC management - Updated MSC-certified fisheries by stock
03/2022	2022-04	- Updated IATTC catch data and management - Updated WCPFC management - Updated Pacific-Wide management - Updated ICCAT catch data, stock status and management - Updated IOTC catch data and stock status - Updated MSC-certified fisheries by stock

[24] Earlier versions of the report can be requested by e-mail (info@iss-foundation.org)

09/2021	2021-13	- Updated IATTC catch data and stock status - Updated WCPFC catch data - Updated Pacific-Wide catch data, stock status and management - Updated IOTC management - Updated MSC-certified fisheries by stock - Added $SSB/SSB_{f=0}$ values to stock summary tables
03/2021	2021-10	- Updated IATTC management - Updated WCPFC management - Updated Pacific-Wide management - Updated ICCAT management - Updated IOTC catch data, stock status and management - Updated MSC-certified fisheries by stock
11/2020	2020-16	- Updated IATTC catch data and stock status - Updated WCPFC catch data and stock status - Updated Pacific-Wide catch data and stock status - Updated ICCAT catch data and stock status - Updated CCSBT catch data, stock status and management - Updated MSC-certified fisheries by stock
03/2020	2020-12	- Updated WCPFC management - Updated Pacific-Wide management - Updated ICCAT catch data, stock status and management - Updated IOTC catch data and stock status - Updated CCSBT catch data, stock status and management - Updated MSC-certified fisheries by stock
10/2019	2019-12	- Updated IATTC catch data, stock status and management - Updated IOTC management - Updated WCPFC catch data and stock status - Updated Pacific-Wide catch data - Added Management status against MSC standard for each stock
03/2019	2019-07	- Updated WCPFC management - Updated Pacific-Wide management - Updated ICCAT management - Updated IOTC catch data and stock status - Updated CCSBT catch data and stock status - Updated MSC-certified fisheries by stock
10/2018	2018-21	- Updated IATTC catch data, stock status and management - Updated WCPFC catch data and stock status - Updated Pacific-Wide catch data, stock status and management - Updated ICCAT catch data and stock status - Updated IOTC management - Updated MSC-certified fisheries by stock
02/2018	2018-02	- Updated WCPFC management - Updated Pacific-Wide management - Updated ICCAT management - Updated IOTC catch data and stock status - Updated CCSBT catch data, stock status and management. - Updated MSC-certified fisheries by stock

10/2017	2017-02A	- Updated IATTC catch data, stock status and management - Updated WCPFC catch data and stock status - Updated Pacific-Wide catch data and stock status - Updated ICCAT catch data and stock status - Updated IOTC management - Harmonized stock status plots ("Kobe plots") - Added MSC-certified fisheries by stock
02/2017	2017-02	- Updated IATTC catch data and management - Updated WCPFC management - Updated Pacific-Wide catch data and management - Updated ICCAT management - Updated IOTC catch data and stock status
11/2016	2016-05B	- Updated ICCAT catch data and stock status - Updated IATTC management of PBF. - Updated CCSBT catch data and management of southern bluefin.
09/2016	2016-05A	- Updated IATTC catch data, stock status and management - Updated WCPFC catch data and stock status - Updated Pacific-Wide catch data, stock status and management - Updated IOTC catch data and management
02/2016	2016-05	- Updated IATTC catch data - Updated WCPFC catch data and management - Updated Pacific-Wide catch data and management - Updated ICCAT catch data and management - Updated IOTC catch data and stock status - Updated CCSBT catch data
11/2015	2015-03A	- Updated IATTC catch data, stock status and management - Updated WCPFC catch data - Updated Pacific-Wide catch data, stock status - Updated ICCAT catch data, stock status - Updated IOTC management - Changed Purse Seine - Dolphin-tuna assoc. fishing method rating from Green to Yellow
02/2015	2015-03	- Updated WCPFC catch data and management - Updated ICCAT stock status and management - Updated IOTC stock status - Updated CCSBT stock status and management - Updated PBF management
08/2014	2014-09	- Updated IATTC stock status and management - Updated WCPFC stock status - Updated IOTC management - Updated Pacific-wide stock status
12/2013	2013-04B	- Updated ICCAT stock status and management - Updated IOTC stock status - Updated WCPFC stock status and management - Updated CCSBT management
08/2013	2013-04A	- Updated IATTC stock status - Updated Pacific bluefin - Updated IATTC management measures - Updated IOTC management measures

04/2013	2013-04	- Updated WCPFC catch data - Separated gillnet catches from "other" gears in the IO - Disaggregated Pacific-wide stocks - Added section on HCRs and Reference points for each stock
12/2012	2012-04B	- Updated ICCAT stock status and management - Updated WCPFC stock status and management for tropical tunas - Updated Pacific-wide stock status - Updated CCSBT status and management - Updated general introduction - Modified life-history tables (K. Schaefer review)
07/2012	2012-04A	- Updated EPO stock status - Updated WCPFC, IOTC and IATTC conservation measures adopted in 2012 - Corrected F status for North Pacific albacore - Updated Pacific bluefin catches
04/2012	2012-04	- Added 4 bluefin stocks - Reformatted entire report - Added Exec. Summary, Glossary and Introductory sections - Reorganized presentation of stocks to match regions
12/2011	2011-04C	- Updated IO stock status to reflect 12/2011 IOTC SC meeting - Updated AO management to reflect 11/2011 ICCAT Comm. meeting
11/2011	2011-04B	- Updated AO stock status to reflect 10/2011 ICCAT SCRS meeting - Updated WCPO stock status to reflect 08/2011 WCPFC SC meeting
08/2011	2011-04A	- Updated EPO management to reflect 06/2011 IATTC Comm. Meeting Note: Doc header erroneously labeled "May" instead of "August"
05/2011	2011-04	- Updated EPO stock status to reflect 05/2011 IATTC SAC meeting - Added new rating factor Environment (bycatch) - Added more exhaustive information on RFMO resolutions
02/2011	--	- IOTC stock status update
10/2010	--	- ICCAT stock status update
09/2010	--	- WCPFC stock status update
09/2010	--	- IATTC stock status update
05/2010	--	- Updated entire report - Added color ratings for F and Biomass
05/2009	--	- First stock status report for 19 stocks

INTERNATIONAL SEAFOOD SUSTAINABILITY FOUNDATION

iss-foundation.org

3706 Butler Street, Suite 307
Pittsburgh, PA 15201
United States

Phone: + 1 703 226 8101
E-mail: info@iss-foundation.org

ISSF Technical Report – 2024-07