By-Product assessment report

BP022

Thai Union Ingredients Co. Ltd

Report code	BP022	Date of issue	May 2025

1. Application details		
Applicant	Thai Union Ingredients Co. Ltd	
Applicant country	Thailand	
2. Certification Body details		
Name of Certification Body (CB)	NSF / Global Trust Certification Ltd.	
Contact information for CB	Fisheries@nsf.org	
Assessor name	Sam Peacock	
CB internal peer reviewer name	Léa Lebechnech	
Internal peer review evaluation	Agree with evaluation	
Number of Assessment days	3	
Comments on the assessment	This application covers byproducts sourced from all major skipjack, yellowfin, albacore and bigeye tuna stocks worldwide. The application indicated that each species was caught by nine different flag states. As these included high-risk flag states, all byproducts required a Step 3 assessment. Due to the number of stocks, this resulted in 18 Category C assessments, all of which were Passed. The applicant provided very limited traceability information, which allowed a small number of flag state / species combinations to Pass via Path 2 and ultimately be Approved source with caution. All other byproducts were Not Approved.	
3. Approval validity	Valid from 05/2025	Valid until 05/2026
4. Assessment cycle	Initial	

5. By-product assessment outcomes			
By-product species name	**Flag country(ies)**	**Fishing Areas**	**MarinTrust approval status**
Katsuwonus pelamis - Skipjack tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	FAO 34, 41, 51, 57, 61, 71, 77 and 87	Not approved
Katsuwonus pelamis - Skipjack tuna	Marshall Islands	FAO 71	Approved source with caution
Thunnus albacares - Yellowfin Tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	FAO 34, 51, 57, 61, 71, 77 and 87	Not approved
Thunnus albacares - Yellowfin Tuna	Micronesia	FAO 71	Approved source with caution
Thunnus alalunga - Albacore tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	FAO 21, 27, 31, 34, 41, 47, 51, 57, 71, 77, 81 and 87	Not approved
Thunnus alalunga - Albacore tuna	Taiwan	FAO 51	Approved source with caution
Thunnus obesus - Bigeye tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	FAO 34, 41, 47, 51, 57, 71 and 77	Not approved

Guidance for on-site auditor
For the audit, the auditor will check how the facility manages by-products deemed medium risk. Any by-products downrated from high to medium risk will require additional due diligence checks.

It is important that facilities check all raw materials from and verify their suppliers especially if there is a perceived risk of sourcing from known or suspected IUU fishing activity. This requires checking supplier records or procedures in place to understand how the supplier can ensure there is no IUU in the raw material they provide. For raw materials risk rated medium, additional or more frequent checks may be required until the facility is certain that the raw materials are not from IUU fishing activity.

The audit requirements are covered in clause 2.11.3 of the MarinTrust Global Standard for Responsible Supply of Marine Ingredients (the MarinTrust Standard) and associated interpretation guidance.

Approved by-products

- No further checks are required beyond those included in the MarinTrust Standard.

Additional checks of Approved Source with Caution by-products

- Review supplier records or procedures in place.

Additional checks of by-products Approved Source with Caution via Step 3 assessment

- In addition to checks for medium risk Approved Source with Caution by-products, by-products that have had risk downgraded from high to medium at Step 3 (use **Appendix 1** to identify these by-product species), confirm that the relevant traceability information continues to be collected for this by-product. During the audit, a traceability check on any by-products downgraded from high to medium risk shall be included as part of the required traceability checks (Section 4).

Guidance for the applicant/certificate holder
The applicant/certificate holder is responsible for ensuring the relevant actions are taken to comply with the MarinTrust Standard.
The certificate holder is responsible for communicating any changes to the by-products sourced by submitting a scope extension request through the MarinTrust online Application Portal.

Appendix 1 – assessment outcomes

Step 2 Assessment Outcomes

By-product species name	Flag country(ies)	IUCN Red List	CITES Appendices	Step 2 risk status	Step 3 required
Katsuwonus pelamis - Skipjack tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	Least concern	Not listed	High risk	Yes
Thunnus albacares - Yellowfin Tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	Least concern	Not listed	High risk	Yes
Thunnus alalunga - Albacore tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	Least concern	Not listed	High risk	Yes
Thunnus obesus - Bigeye tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	Vulnerable	Not listed	High risk	Yes

Step 3 Assessment Outcomes

By-product species name	Flag country(ies)	Fishing Area	Stock name	Category C Assessment Outcome	Traceability information	Step 3 Risk Outcome
Katsuwonus pelamis - Skipjack tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	FAO 34, 41, 51, 57, 61, 71, 77 and 87	East and West Atlantic, East and West Pacific, Indian Ocean	Pass	Mixed – see Step 3	Mixed – see Step 3
Thunnus albacares - Yellowfin Tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	FAO 34, 51, 57, 61, 71, 77 and 87	Atlantic, East and West Pacific, Indian Ocean	Pass	Mixed – see Step 3	Mixed – see Step 3
Thunnus alalunga - Albacore tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	FAO 21, 27, 31, 34, 41, 47, 51, 57, 71, 77, 81 and 87	North and South Atlantic, North and South Pacific, Indian Ocean	Pass	Mixed – see Step 3	Mixed – see Step 3
Thunnus obesus - Bigeye tuna	France, China, Indonesia, Japan, USA, Malaysia, Spain, Seychelles, Korea.	FAO 34, 41, 47, 51, 57, 71 and 77	Atlantic, East and West Pacific, Indian ocean	Pass	No information provided	Remains high risk
Comments on Step 3 Assessment: *N/A*						

Appendix 2 – detailed assessment outcomes (step 2 and step 3 if applicable)

Step 2 outcomes

Flag state (dropdown)	Risk rating	Flag score	Port score	General score	Flag State is contracting party or cooperating non-contracting party to all relevant RFMOs	'Carded' under EU Carding system	Flag state party to PSMA	Flag state mandatory vessel tracking for commercial seagoing fleet	WGI Governance rank
China	High	4.21	4.33	3.2	1	1	5	1	36.79%
France	Medium	3.17	2.39	1.67	1	1	1	1	85.38%
Indonesia	Medium	3.33	2.56	2.47	1	1	1	1	59.43%
Japan	Medium	2.92	2.06	1.93	1	1	1	1	91.51%
Korea (Rep. South)	Medium	3.67	3.11	1.97	1	1	1	1	83.96%
Malaysia	High	1.96	2.89	2.13	1	1	5	1	72.64%
Seychelles	Medium	1.79	2.39	1.57	1	1	1	1	62.26%
Spain	Medium	3.21	3.39	2.03	1	1	1	1	75.94%

Step 3 outcomes

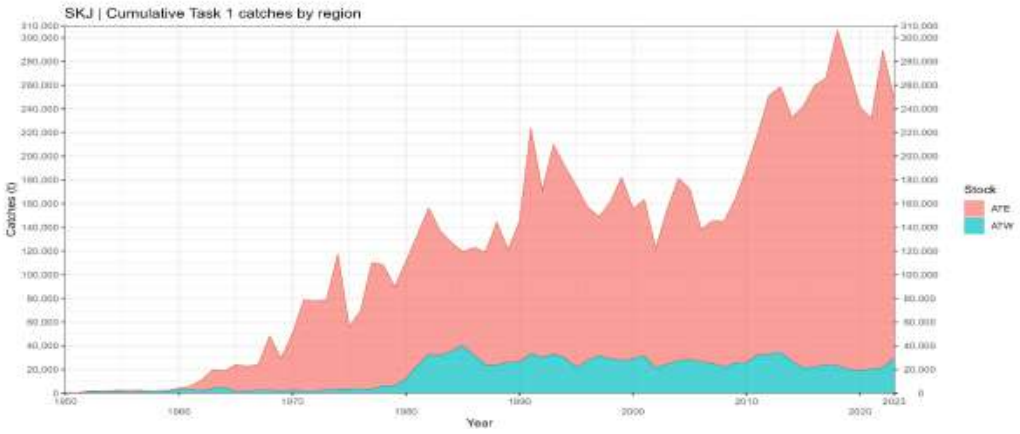
Category C assessment

Skipjack tuna in FAO Areas 34, 41, 51, 57, 61, 71, 77 and 87

Species name		***Katsuwonus pelamis* - Skipjack tuna**	
Fishing area and stock		**East Atlantic skipjack**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process OR are considered by scientific authorities to be negligible.

The most recent stock assessment conducted for Eastern Atlantic skipjack tuna was carried out in 2022. The stock assessment applied non-equilibrium and Bayesian state-space production models to integrated statistical assessment models using the available catch data up to and including 2020 (ICCAT 2022). Multiple models were used to represent potential population dynamic scenarios, and to account for uncertainty in outputs. The ICCAT stock assessment group decided to combine the results of several models to capture all major uncertainties. Despite this, there was a high degree of uncertainty in the resultant estimates of stock biomass; however, the group were able to produce management advice and have made several recommendations for the improvement of future stock assessments.

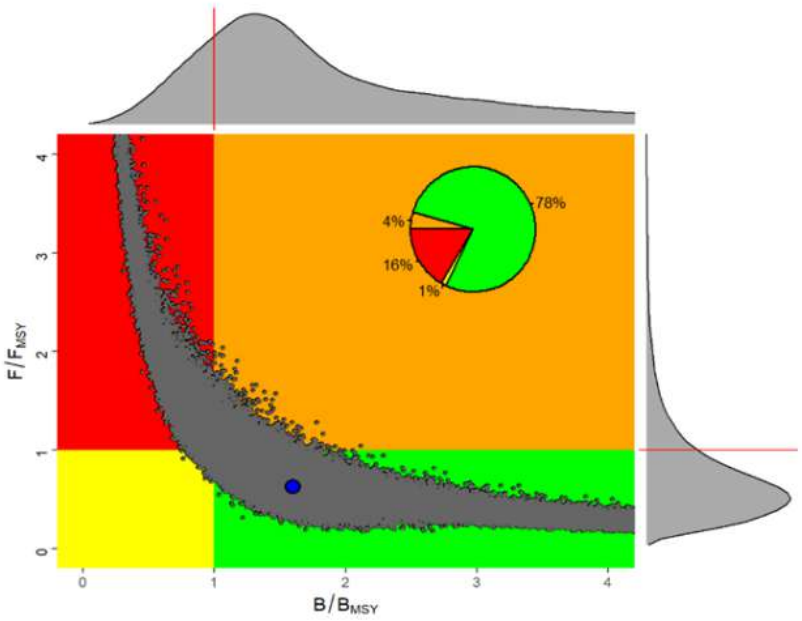


Atlantic skipjack catches by stock (Pink = East, Blue = West) (ICCAT 2022)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The 2022 stock assessment of Eastern Atlantic skipjack tuna concluded that there was a 78% probability that the stock is neither overfished nor subject to overfishing (ICCAT 2022). Relative biomass (B_{2020}/B_{MSY}) was estimated to be 1.60, although the assessment produced a wide 95% confidence interval (0.50 – 5.79). However, as the biomass is likely to be above the target reference point, it is highly likely to be above any potential limit reference point.



Combined Kobe phase plot for the various models performed for Eastern Atlantic skipjack tuna in 2022. The blue point shows the median of 180,000 iterations for SSB_{2020}/SSB_{MSY} or B_{2020}/B_{MSY} and F_{2020}/F_{MSY} for the entire set of runs in the grid. Grey points represent the 2020 estimates of relative fishing mortality and relative spawning stock biomass for 2020 for each of the 180,000 iterations (ICCAT 2022)

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

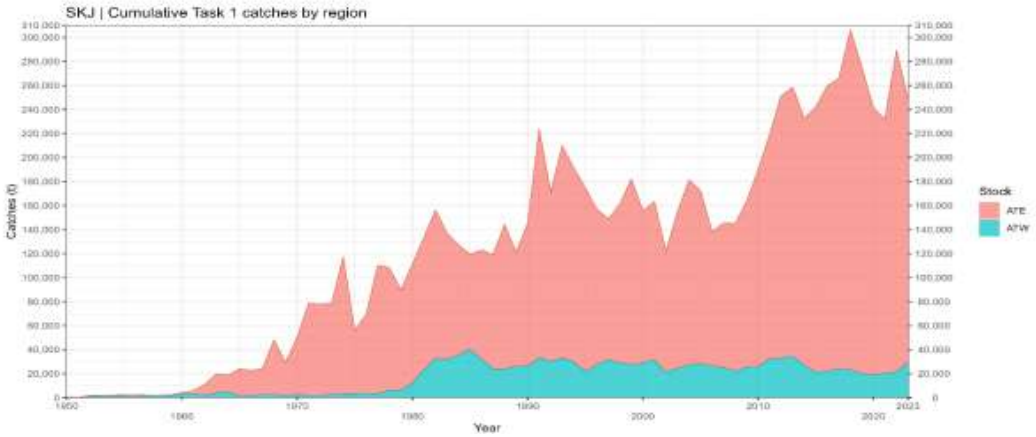
ICCAT (2022). Species executive summary, skipjack tuna. https://www.iccat.int/Documents/SCRS/ExecSum/SKJ_ENG.pdf

Species name		***Katsuwonus pelamis* - Skipjack tuna**	
Fishing area and stock		**West Atlantic skipjack**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS

	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process OR are considered by scientific authorities to be negligible.

The most recent stock assessment for Western Atlantic skipjack tuna was also conducted in 2022 using a Bayesian state-space production model and an integrated statistical assessment model (ICCAT 2022). The stock status estimates from the two approaches utilised in the assessment agreed with each other. Available catch data was incorporated into the assessment, alongside a range of other fishery data.

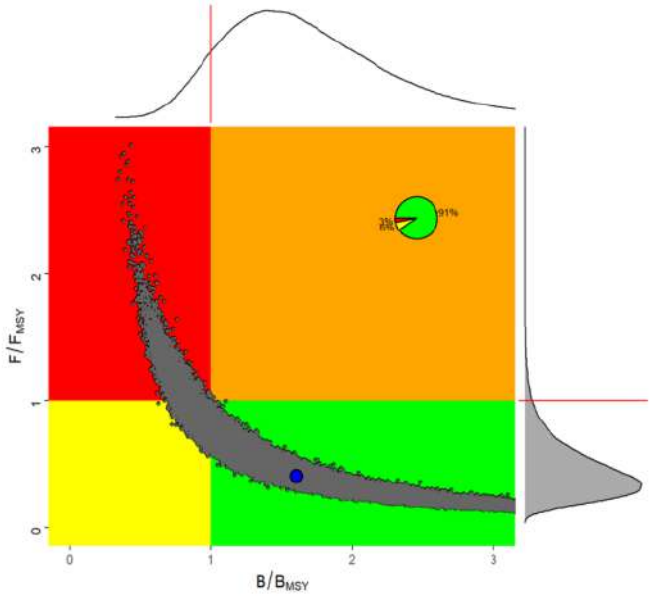


Atlantic skipjack catches by stock (Pink = East, Blue = West) (ICCAT 2022)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The results of the 2022 stock assessment indicated that there is a high probability (91%) that the Western Atlantic skipjack stock is not overfished and not currently subject to overfishing. The relative biomass (B_{2020}/B_{MSY}) was estimated to be 1.60, with a 95% confidence interval of 0.90 – 2.87 (ICCAT 2022). There was an estimated 9.1% probability that the stock was overfished (i.e. that biomass is below the target reference point). As it is highly likely that biomass is currently above the target reference point, it is also highly likely to be above any potential limit reference point.



Combined Kobe phase plot for the various models performed for Western Atlantic skipjack tuna in 2022. The blue point shows the median of 200,000 iterations for SSB_{2020}/SSB_{MSY} and F_{2020}/F_{MSY} for the entire set of runs in the grid. Grey points represent the 2020 estimates of relative fishing mortality and relative spawning stock biomass for 2020 for each of the 200,000 iterations. The upper graph represents the smoothed frequency distribution of SSB/SSB_{MSY} estimates for 2020. The right graph represents the smoothed frequency distribution of F/F_{MSY} estimates for 2020. The inserted pie graph represents the percentage of each 2020 estimate that fall in each quadrant of the Kobe plot (ICCAT 2022).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

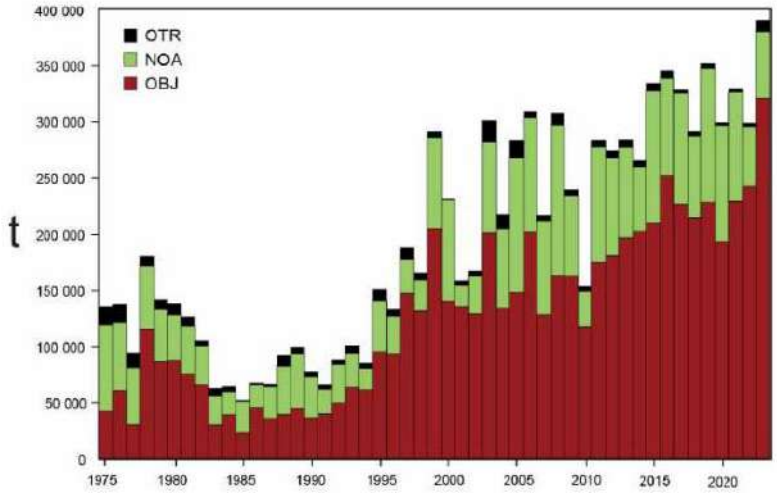
References

ICCAT (2022). Species executive summary, skipjack tuna.
https://www.iccat.int/Documents/SCRS/ExecSum/SKJ_ENG.pdf

Species name		***Katsuwonus pelamis* - Skipjack tuna**	
Fishing area and stock		**East Pacific skipjack**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process OR are considered by scientific authorities to be negligible.

EPO skipjack has historically been subject to "interim" integrated statistical age-structured catch-at-length stock assessments carried out by the IATTC. In 2023, a benchmark stock assessment was conducted using an integrated statistical age-structured catch-at-length model in Stock Synthesis, which is considered by the IATTC to represent "a significant improvement from the initial interim assessment conducted in 2022" (IATTC 2024). The assessment incorporates all available data from across the EPO, including catch data but also size and age frequency data and other sources.

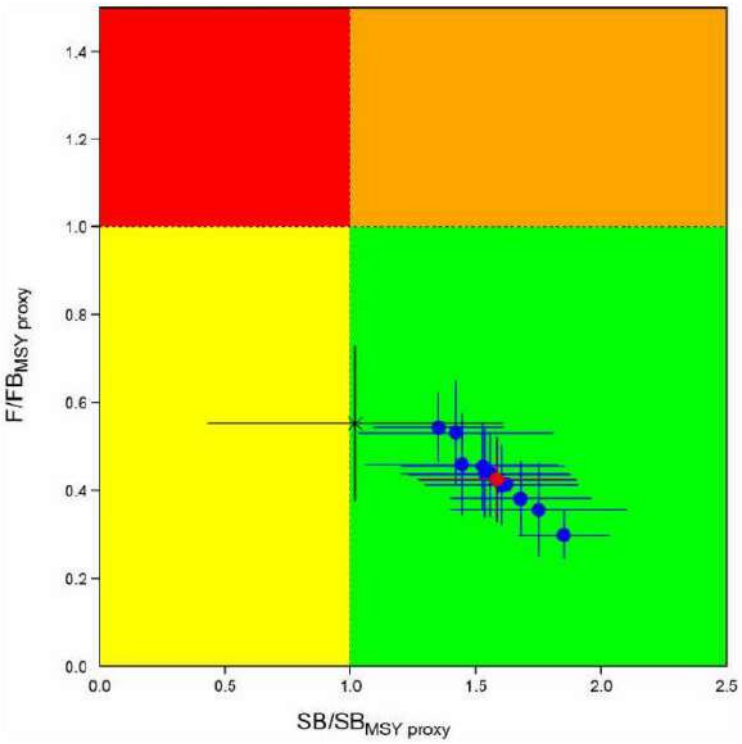


Skipjack catches (retained plus discards) in the EPO, 1975-2023 (IATTC 2024).

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

MSY-based estimates and reference points cannot be estimated for EPO Skipjack due to the nature of the model used. Instead, the IATTC management process utilises a conservative proxy for target biomass of SBR = 0.3, with the fishing mortality corresponding to that target biomass used as the target reference point for fishing mortality (IATTC 2024). The reference model and most of the sensitivity analyses conducted in 2023 indicated that biomass is above the target reference point and fishing mortality is below the target level. None of the model scenarios concluded that stock biomass is below the limit reference point level.



Kobe plot for skipjack tuna in the EPO (IATTC 2024).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

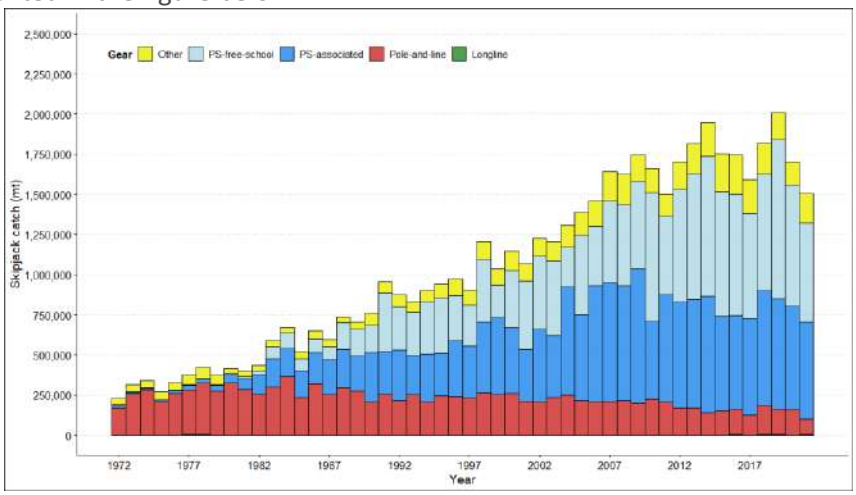
IATTC (2024). The tuna fishery in the Eastern Pacific Ocean in 2023. https://www.iattc.org/GetAttachment/1ed36788-07ce-4bf4-80e4-10c6c3b2b14d/No-22-2024_Tunas,-stocks-and-ecosystem-in-the-eastern-Pacific-Ocean-in-2023.pdf

Species name		***Katsuwonus pelamis* - Skipjack tuna**	
Fishing area and stock		**West Pacific skipjack**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process OR are considered by scientific authorities to be negligible.

WCPO skipjack tuna is subjected to regular stock assessments by the WCPFC. The most recent of these was carried out in 2022, using data up to 2021. The assessment incorporated catch, effort- and length-frequency estimates, and tag-recapture data (WCPFC 2022). The stock assessment report includes a discussion of structural uncertainties and needs for further data gathering; however, it does not raise major concerns.

Catches are presented in the figure below:

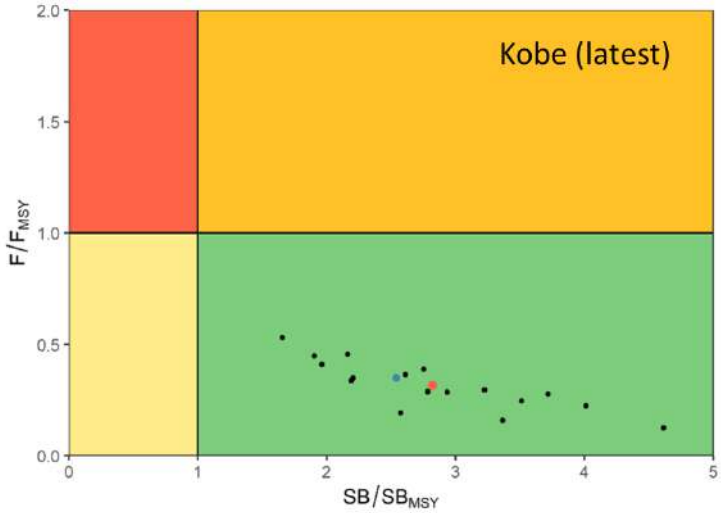


Annual catches of skipjack by gear type in the WCPO area covered by the stock assessment (WCPO 2023)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The 2022 stock assessment for WCPO skipjack concluded that "according to WCPFC reference points the stock is not overfished, not undergoing overfishing" (WCPFC 2023). None of the model outcomes produced by the stock assessment indicated that the stock biomass was below the limit reference point of $0.2*SB_{F=0}$. The median model outcome indicated that stock biomass is very close to the interim target reference point of $SB_{recent}/SB_{F=0} = 0.5$.



Kobe plot summarising the results for each of the models in the "latest" period (i.e. 2021). The black dots represent model outcomes, the blue point is the diagnostic model, and the red point is the median (WCPFC 2023).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

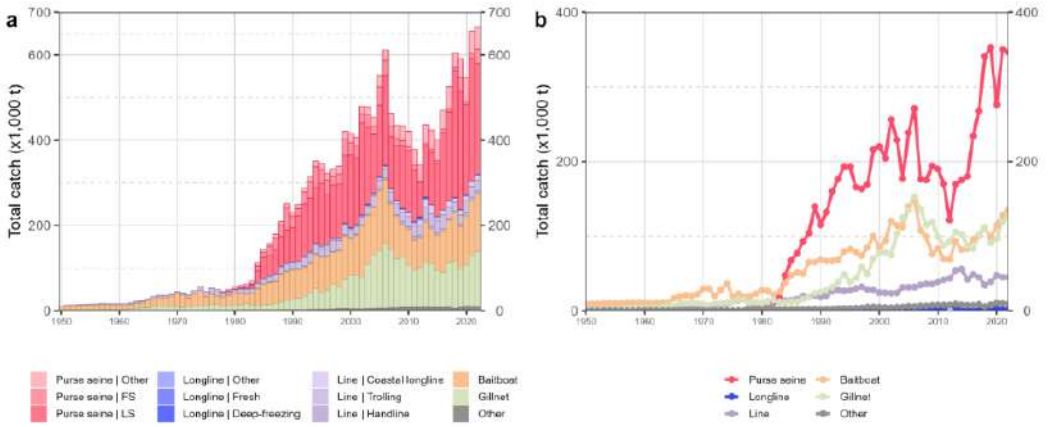
WCPFC (2022). WCPO skipjack tuna stock assessment, 2022. https://meetings.wcpfc.int/node/16242

WCPFC (2023). Skipjack tuna, current stock status and advice. https://www.wcpfc.int/file/987813

Species name		***Katsuwonus pelamis* - Skipjack tuna**	
Fishing area and stock		**Indian Ocean skipjack**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

The stock assessment conducted by the Indian Ocean Tuna Commission (IOTC) takes all fishery removals into account. The most recent assessment was conducted in 2023. Landings in recent years were reported as a total catch in 2022 of 666,408t, and an average catch 2018-2022 of 613,061t (IOTC 2024). Full catch datasets, including catch and effort by month, species, gear, and vessels flag, and size-frequency datasets, are made available on the IOTC website (IOTC 2025).



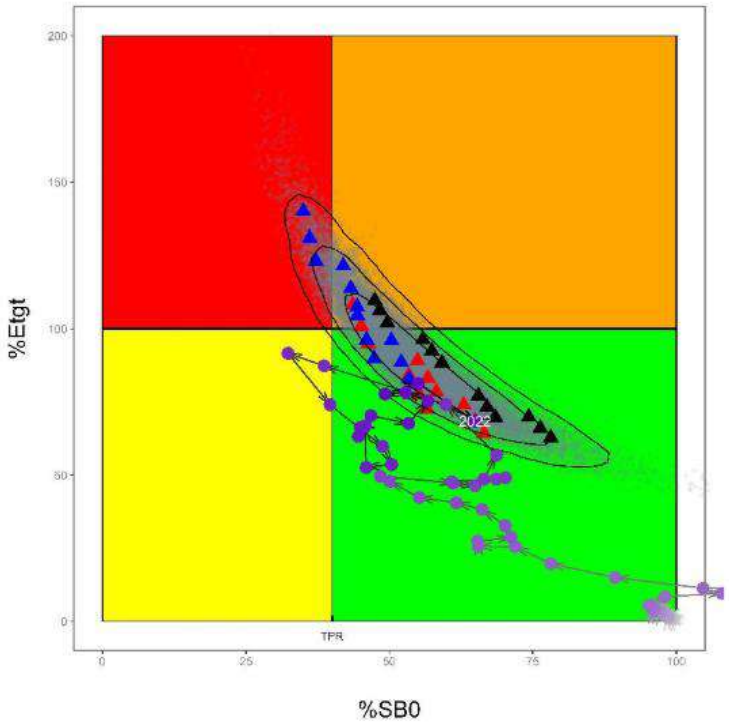
Annual time series of (a) cumulative nominal catches (metric tonnes; t) by fishery and (b) individual nominal catches (metric tonnes; t) by fishery group for Indian Ocean skipjack tuna during 1950-2022 (IOTC 2024)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The most recent stock assessment was carried out in 2023, as reported in a 2023 stock status report published by the IOTC (IOTC 2024). The stock assessment conclusion states that "The outcome of the 2023 stock assessment model is more optimistic than the previous assessment (2020) despite the high catches recorded in the period 2021-2022, which exceeded the catch limits established in 2020 for this period" (IOTC 2024).

Biomass was estimated to be around 53% of the unfished level, which is above $SB_{MSY.}$ The IOTC also notes that "Over the history of the fishery, biomass has been well above the adopted limit reference point ($20\%SB_0$)" (IOTC 2024).



Indian Ocean skipjack tuna, Kobe plot of the 2023 stock assessment. Triangles represent outputs from individual models, grey dots represent uncertainty from individual models (IOTC 2024)

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

IOTC (2024). Indian Ocean Skipjack Tuna Stock Status: Executive Summary. https://iotc.org/sites/default/files/content/Stock_status/2024/English/IOTC-2024-SC27-ES03_SKJE.pdf

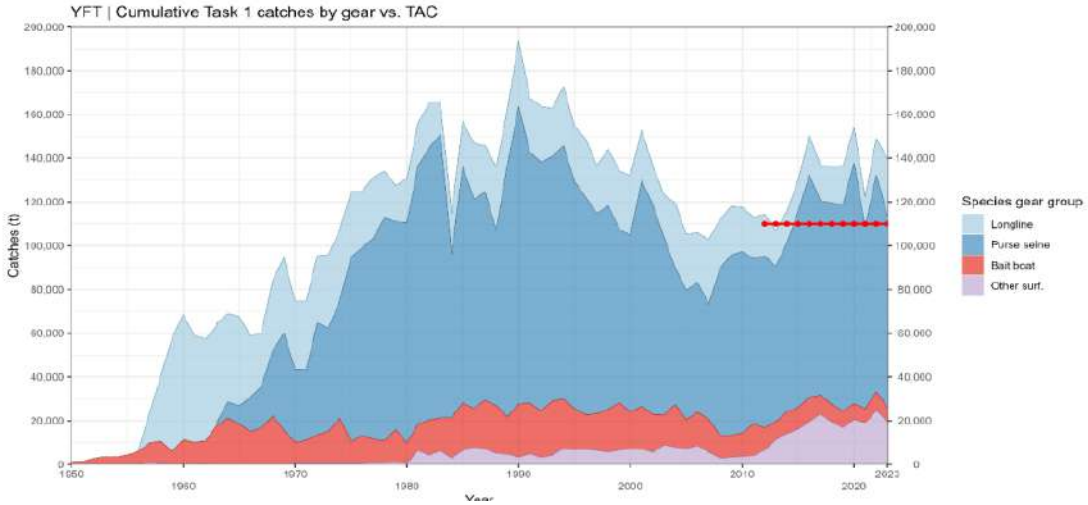
IOTC (2025). Available datasets. https://www.iotc.org/data/datasets

Yellowfin tuna in FAO Areas 34, 51, 57, 61, 71, 77 and 87

Species name		***Thunnus albacares* -Yellowfin Tuna**	
Fishing area and stock		**Atlantic yellowfin**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

Management of this yellowfin tuna stock is coordinated by the International Commission for the Conservation of Atlantic Tunas (ICCAT). The most recent stock assessment was conducted in 2024, using data up to and including 2022, and utilised an age-structured model framework (Stock Synthesis). The assessment incorporated all available catch data, along with three indices of abundance; the joint-CPC tropical Atlantic longline index, the acoustic echosounder buoy index, and the purse seine free school index (ICCAT 2024).



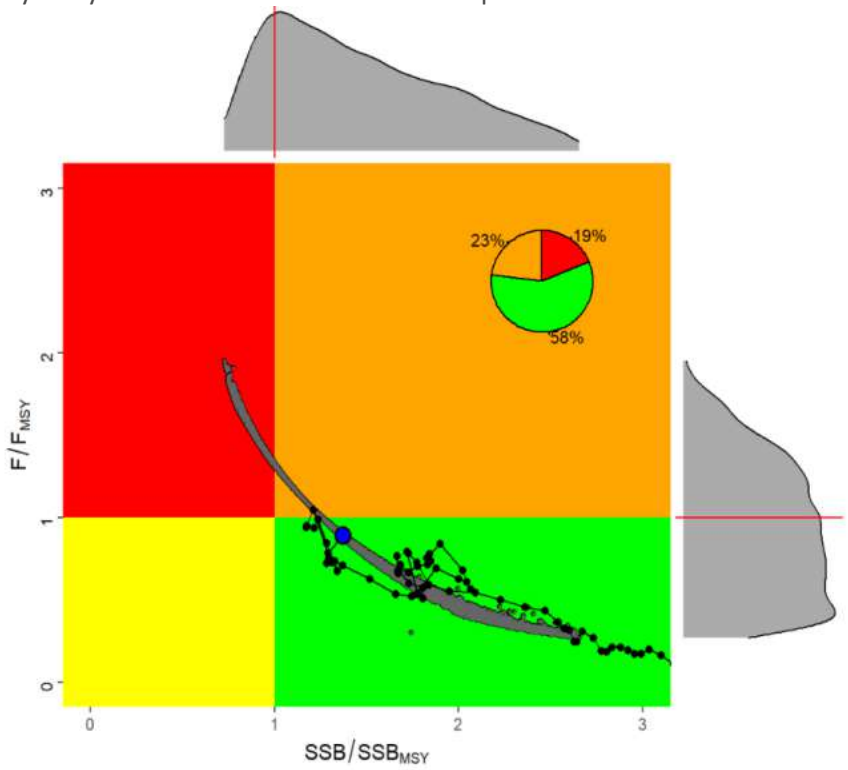
Yellowfin tuna in the Atlantic Ocean, total catch 1950-2023 by main fishing gear group. The red dotted line represents the TAC (ICCAT 2024).

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The ICCAT stock assessment report includes an indication of the estimated stock status relative to target reference points. B_{2022}/B_{MSY} was estimated to be 1.37, with an 80% confidence interval of 0.91

– 2.15, meaning that it is likely that stock biomass was above the target reference point level, and therefore highly likely to be above the limit reference point level.



Kobe plot of the status of Atlantic yellowfin tuna in 2022 (based on the outcomes of the assessment conducted in 2024). Blue circle is the median of the stock synthesis model runs, which are marked in grey. The inserted pie chart indicates the proportion of model iterations within each Kobe colour quadrant, 58% in the green quadrant, 23% in the orange quadrant, and 19% in the red quadrant (ICCAT 2024).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

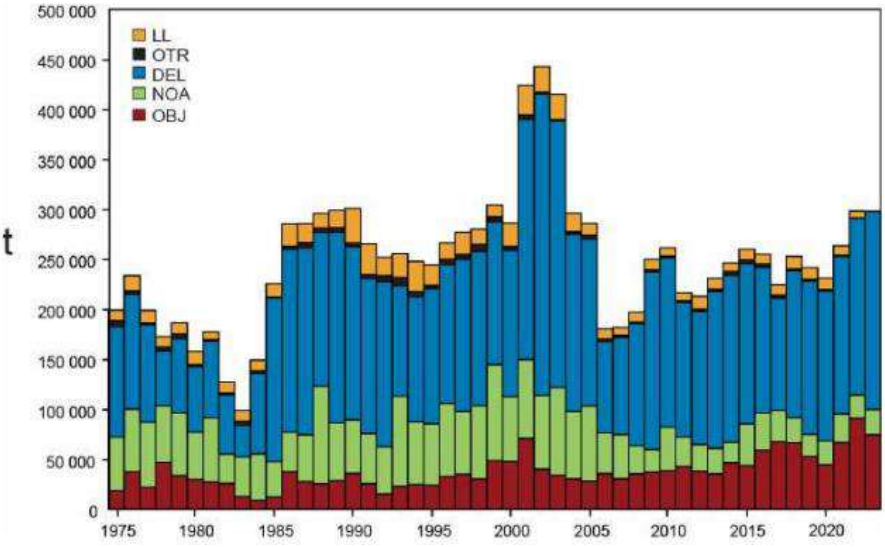
ICCAT (2024). Stock summary, yellowfin tuna. https://www.iccat.int/Documents/SCRS/ExecSum/YFT_ENG.pdf

Species name		***Thunnus albacares* -Yellowfin Tuna**	
Fishing area and stock		**East Pacific yellowfin**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR	PASS

		removals by the fishery under assessment are considered by scientific authorities to be negligible.	
			Clause outcome: PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

The Eastern Pacific Ocean (EPO) yellowfin tuna stock is managed and assessed by the Inter-American Tropical Tunas Commission (IATTC). A new risk-based approach was introduced to the management of the stock in 2022, with Stock Status Indicators (SSIs) developed using catch and other data collected from the EPO as a whole. This approach continued in 2023 (IATTC 2024). SSIs are considered to be important alternatives to formal stock assessments, particularly where those stock assessments may be too unreliable to form the basis for management advice (IATTC 2022). Fishery removals are a key component of the modelling used to generate SSI's, and their development and use is evidence that managers have sought out alternative mechanisms where stock assessment uncertainty is high. The most recent full stock assessment was conducted in 2020.

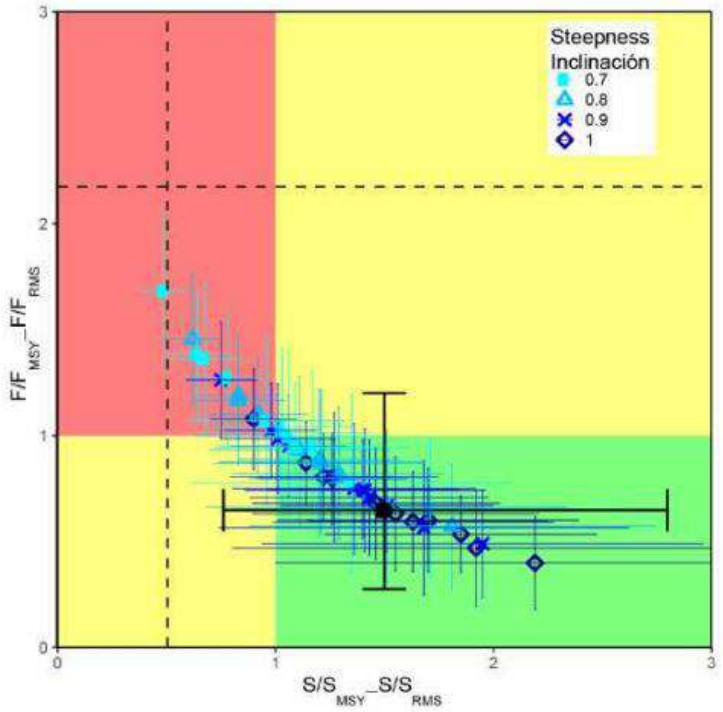


Total catches of yellowfin tuna in the EPO by set type (IATTC 2024).

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

In the full stock assessments for this stock, multiple reference models are utilised to create a risk-based understanding of stock status. The most recent results, from 2020, indicated that "the probability of the spawning biomass being below S_{MSY_d} [i.e. the target reference point] is low (12%)" (IATTC 2024), and that the probability of the biomass being below the limit reference point S_{LIMIT} is zero. There was therefore a low probability that biomass is currently below the target reference point and almost no possibility it was below the limit reference point.



Kobe plot for yellowfin tuna in the EPO of estimates of spawning stock size (S) and fishing mortality (F). Coloured panels are separated by the target reference points S_{MSY} and F_{MSY}. Limit reference points are approximately indicated by the dashed lines, although these vary between models. The solid black circle represents all models combined (IATTC 2024).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

IATTC (2022). Stock Status Indicators (SSIs) for tropical tunas in the Eastern Pacific Ocean. 13th Meeting of the IATTC Scientific Advisory Committee, Document SAC-13-06 Corr. https://www.iattc.org/GetAttachment/22511b5b-ba2b-4126-9ba2-0bffee89f4d5/SAC-13-06%20-%20Stock%20status%20indicators%20(SSIs)%20for%20tropical%20tunas%20in%20the%20EPO

IATTC (2024). The tuna fishery in the Eastern Pacific Ocean in 2023. https://www.iattc.org/GetAttachment/1ed36788-07ce-4bf4-80e4-10c6c3b2b14d/No-22-2024_Tunas,-stocks-and-ecosystem-in-the-eastern-Pacific-Ocean-in-2023.pdf

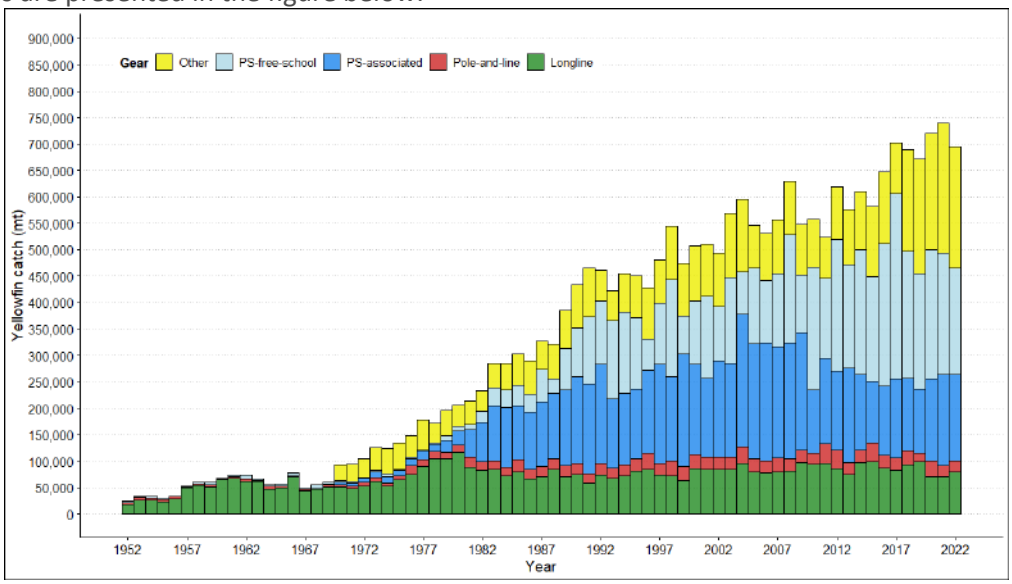
Species name		***Thunnus albacares* -Yellowfin Tuna**	
Fishing area and stock		**Western and Central Pacific yellowfin**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR	PASS

		removals by the fishery under assessment are considered by scientific authorities to be negligible.	
			Clause outcome: PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

Western and Central Pacific Ocean (WCPO) yellowfin tuna is subject to regular stock assessments by the Western and Central Pacific Fisheries Commission (WCPFC). The most recent stock assessment was conducted in 2023 and utilised all available catch data, as summarised in the graph below. 54 models were used to provide a range of potential outcomes based on different key variables, a process which reduces the inherent level of uncertainty.

Catches are presented in the figure below:



WCPO yellowfin catches, 1952-2022 (WCPFC 2023).

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The 2023 stock assessment produced a series of estimates of the current status of the stock relative to the target reference point BMSY. Biomass in 2021 was estimated to be between 1.91 and 3.11 times larger than BMSY with an 80% certainty; none of the model results indicated that biomass was below BMSY. Biomass is estimated by the most recent stock assessment to be above the target reference point with a high degree of certainty, and therefore also above any potential limit reference point (WCPFC 2023).

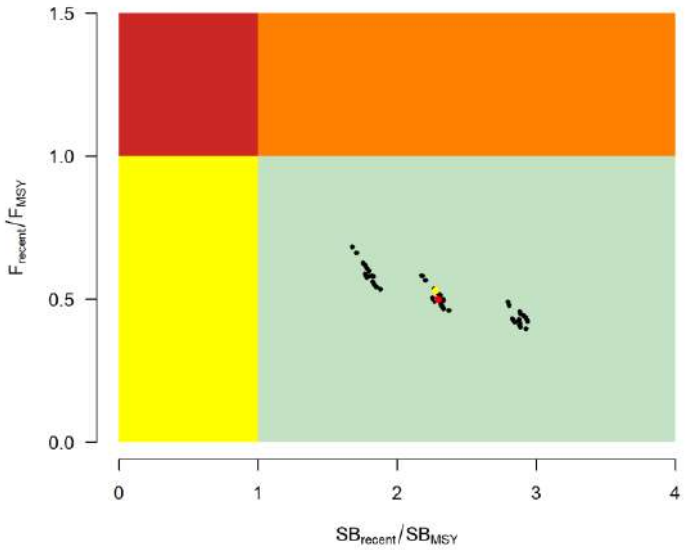


Figure 1. WCPO yellowfin tuna, Kobe plot summarising the results of each of the stock assessment models. The yellow dot is the 2023 diagnostic model and the red dot is the median (WCPFC 2023). **Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.**

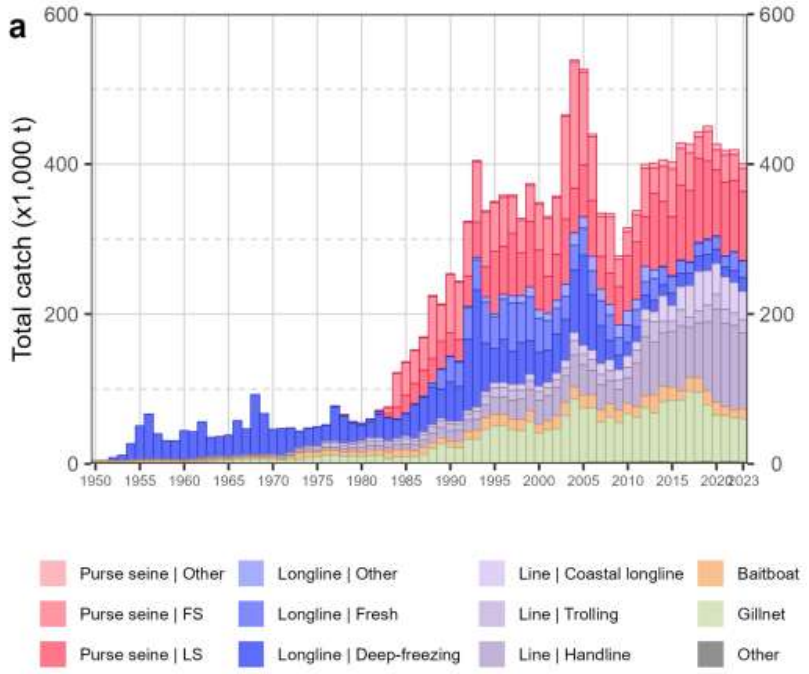
References

WCPFC (2023). WCPO Yellowfin Tuna, Stock Status and Management Advice. https://www.wcpfc.int/file/1008665/download?token=wFUhc7q7tern

Species name		***Thunnus albacares* -Yellowfin Tuna**	
Fishing area and stock		**Indian Ocean yellowfin**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

The stock assessment conducted by the Indian Ocean Tuna Commission (IOTC) takes all fishery removals into account. The most recent assessment was conducted in 2024. Landings in recent years were reported as a total catch in 2023 of 400,950t, and an average catch 2019-2023 of 423,142t (IOTC 2024). Full catch datasets, including catch and effort by month, species, gear, and vessels flag, and size-frequency datasets, are made available on the IOTC website (IOTC 2025).

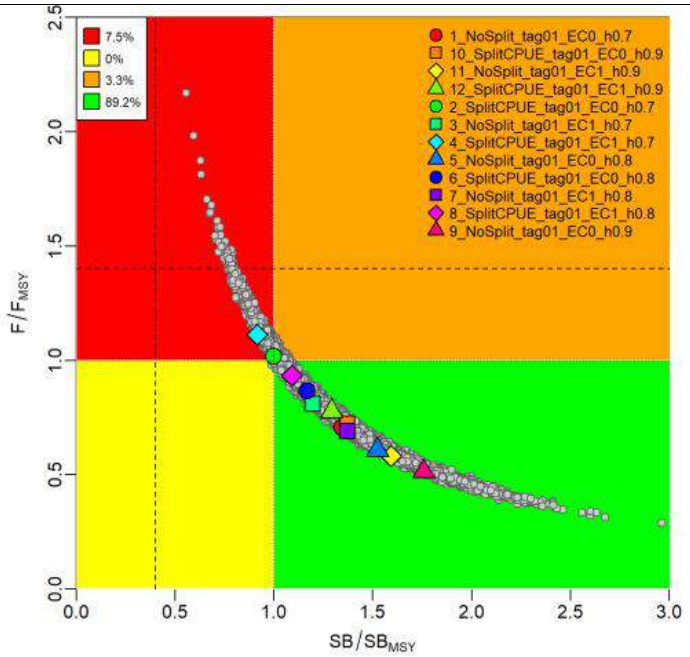


Catches of yellowfin tuna in the Pacific Ocean by gear type, 1950 – 2023 (IOTC 2024)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The most recent stock assessment was carried out in 2024 using data from 1975-2023, as reported in a 2024 stock status report published by the IOTC (IOTC 2024). The stock assessment conclusion states that "overall stock status estimates do not differ substantially from the previous assessment". Spawning biomass in 2023 was estimated to be around 44% of the unfished level and 32% higher than B_{MSY}. The biomass is therefore estimated to be above the target reference point, and therefore the stock is considered to have a biomass above the limit reference point in its most recent stock assessment (IOTC 2024).



Yellowfin tuna in the Pacific Ocean: Kobe chart estimating current stock status. Coloured symbols represent estimates from individual models. Grey dots represent statistical uncertainty from individual models. Dashed lines represent limit reference points (IOTC 2024)

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

IOTC (2025). Available datasets. https://www.iotc.org/data/datasets

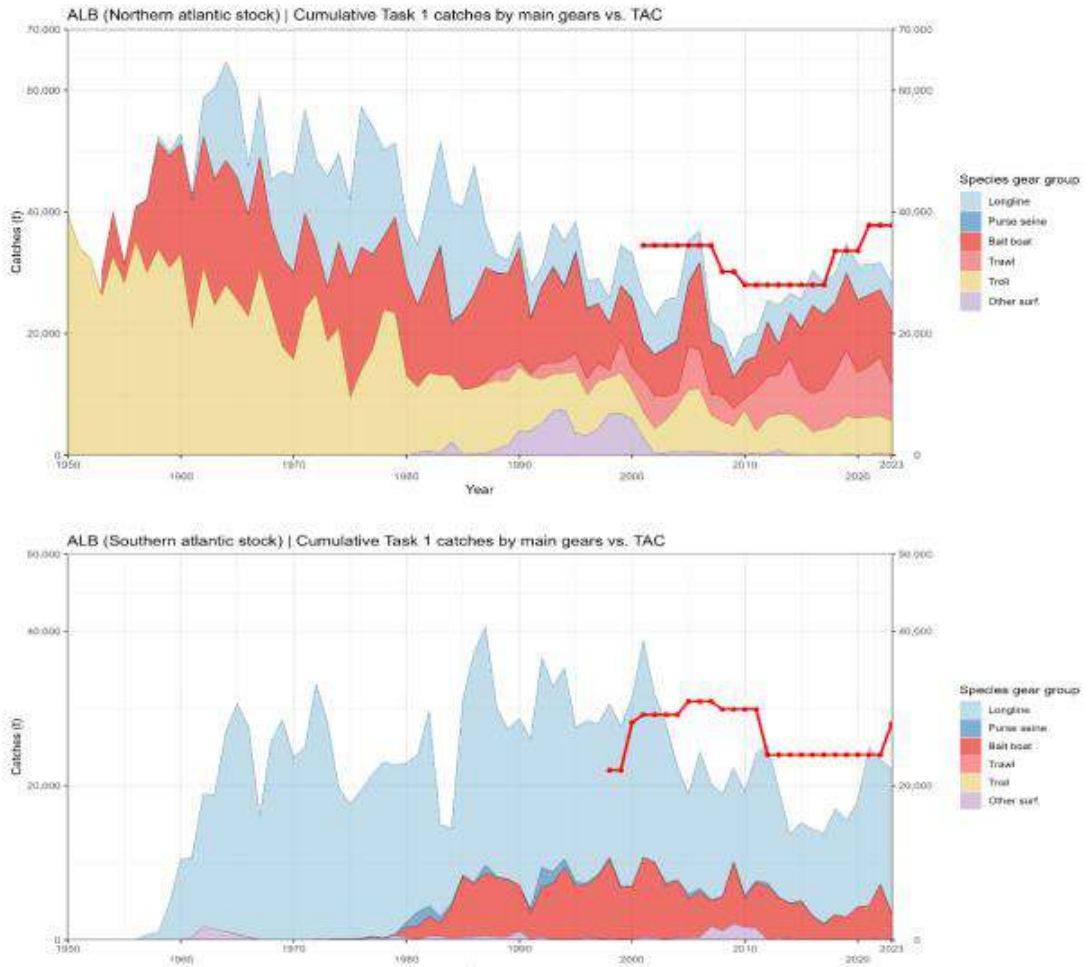
IOTC (2024). Indian Ocean Yellowfin Tuna Stock Status: Executive Summary. https://iotc.org/sites/default/files/content/Stock_status/2024/Engish/IOTC-2024-SC27-ES04_YFTE.pdf

Albacore tuna in FAO Areas 21, 27, 31, 34, 41, 47, 51, 57, 71, 77, 81 and 87

Species name		***Thunnus alalunga* - Albacore tuna**	
Fishing area and stock		**North Atlantic albacore**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process OR are considered by scientific authorities to be negligible.

Stock assessments are carried out on behalf of the International Commission for the Conservation of Atlantic Tunas (ICCAT). The most recent stock assessment for North Atlantic albacore was conducted in 2023 (ICCAT 2025). The stock assessment utilised catch and effort data up to 2018 and 2021 respectively, and no concerns were raised relating to the completeness of the data.



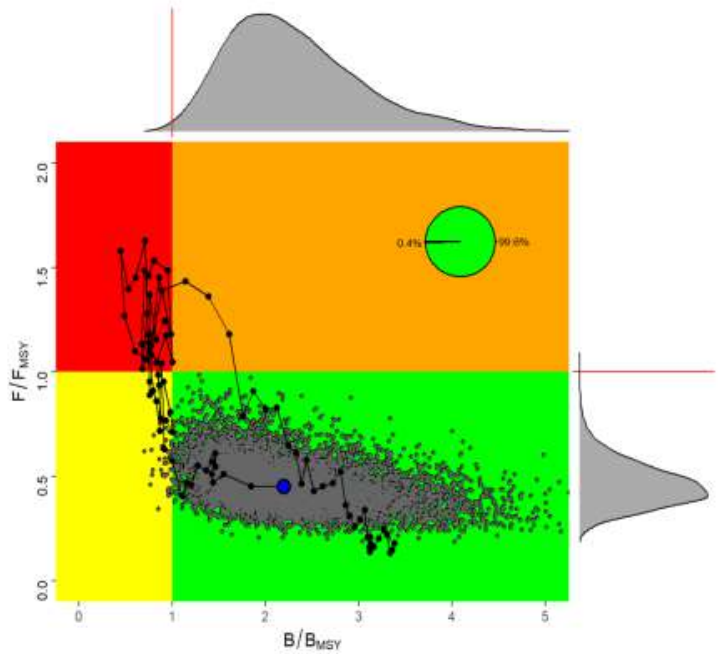
Total albacore catches for the North (top) and South (bottom) Atlantic albacore stocks by gear type. Red dotted line shows the TAC (ICCAT 2025)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The most recent stock assessment for North Atlantic albacore, conducted in 2023, concluded that "the probability of the stock currently being in the green area of the Kobe plot (not overfished and not undergoing overfishing, $F<F_{MSY}$ and $B>B_{MSY}$) is 99.6%" (ICCAT 2025). The probability of being in

the red area was estimated to be 0%. Taken together these outcomes provide strong evidence that the stock is above the target reference point, and therefore above any possible limit reference point. Overall, this is clear evidence that the stock is above any potential limit reference point.



North Atlantic albacore (Kobe plot). Stock status trajectories of B/B_{MSY} and F/F_{MSY} over time (1930-2021), as well as uncertainty (grey dots) around the current (F_{2021}/F_{MSY}, B_{2021}/B_{MSY}) estimate (blue point) based on Stock Synthesis model with probability of being overfished and overfishing (red, 0%), of being neither overfished nor overfishing (green, 99.6%), and of being overfished (yellow, 0.4%) (ICCAT 2025).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

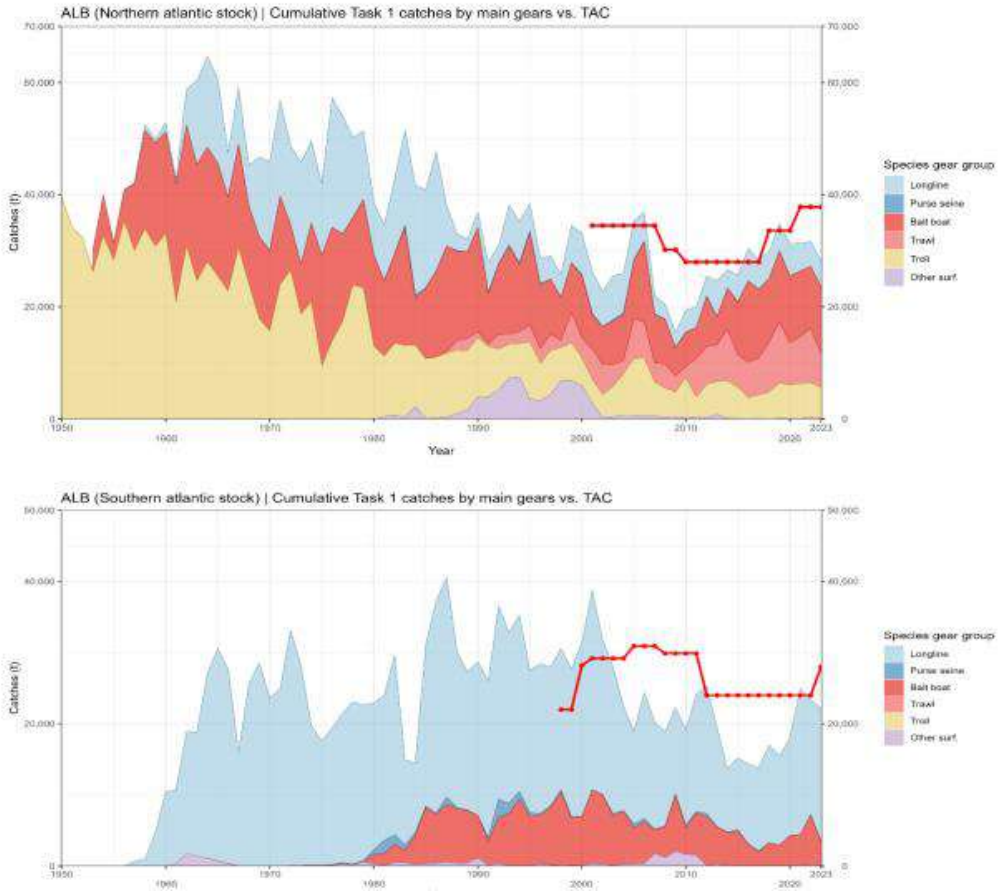
References

ICCAT (2025). Atlantic albacore tuna, stock assessment summary. https://www.iccat.int/Documents/SCRS/ExecSum/ALB_ENG.pdf

Species name		***Thunnus alalunga* - Albacore tuna**	
Fishing area and stock		**South Atlantic albacore**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process OR are considered by scientific authorities to be negligible.

Stock assessments are carried out on behalf of the International Commission for the Conservation of Atlantic Tunas (ICCAT). The most recent stock assessment for South Atlantic albacore was conducted in 2020 (ICCAT 2025). The stock assessment utilised catch and effort data up to 2018 and 2021 respectively, and no concerns were raised relating to the completeness of the data.



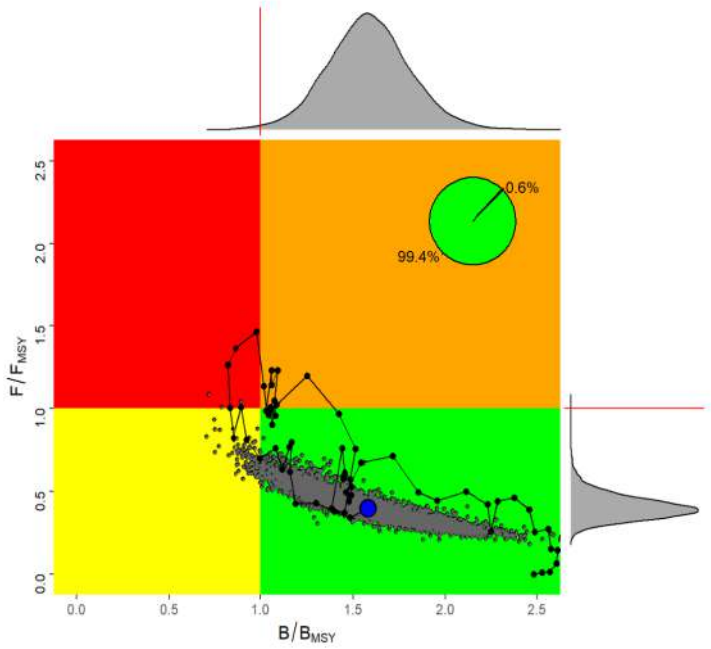
Total albacore catches for the North (top) and South (bottom) Atlantic albacore stocks by gear type. Red dotted line shows the TAC (ICCAT 2025)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The most recent stock assessment for South Atlantic albacore, conducted in 2020, concluded that there was "a 99.4% probability that the South Atlantic albacore stock is neither overfished nor subject to overfishing" (ICCAT 2025). The median estimated MSY value was 27,264t, and the median estimate of B_{2018}/B_{MSY} was 1.58. Taken together these outcomes provide strong evidence that the stock is above the target reference point, and therefore above any possible limit reference point.

The projected biomass for the stock was also expected to remain above 27,000t up to the projection horizon of 2033, with a probability of 90%. Overall, this is clear evidence that the stock is above any potential limit reference point.



South Atlantic albacore tuna, Kobe plot. Stock status trajectories of B/BMSY and F/FMSY over time (1956-2018), as well as uncertainty (grey dots) around the current (2018) estimate (blue point) based on Bayesian surplus production model with probability of being overfished and overfishing (red, 0%), of being neither overfished nor overfishing (green, 99.4%), and of being overfished (yellow, 0.6%) (ICCAT 2025).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

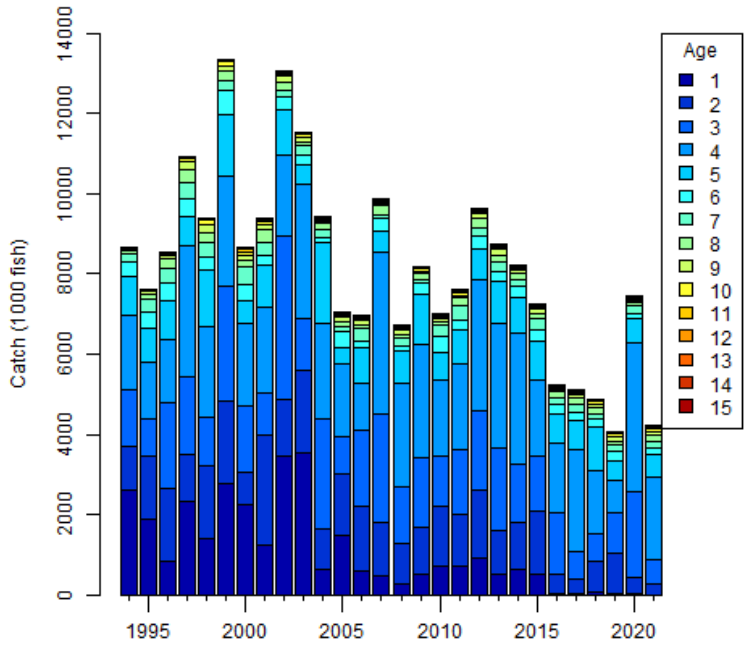
ICCAT (2025). Atlantic albacore tuna, stock assessment summary. https://www.iccat.int/Documents/SCRS/ExecSum/ALB_ENG.pdf

Species name		***Thunnus alalunga* - Albacore tuna**	
Fishing area and stock		**North Pacific albacore**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR	PASS

		removals by the fishery under assessment are considered by scientific authorities to be negligible.	
			Clause outcome: PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

The most recent available stock assessment for the northern Pacific albacore stock was conducted in 2023 and utilised all available data up to 2021. Catch and size composition data were used to inform a length-based, age- and sex-structured Stock Synthesis model. No concerns were raised in the reporting documentation as to the completeness of the catch data (WCPFC 2024).

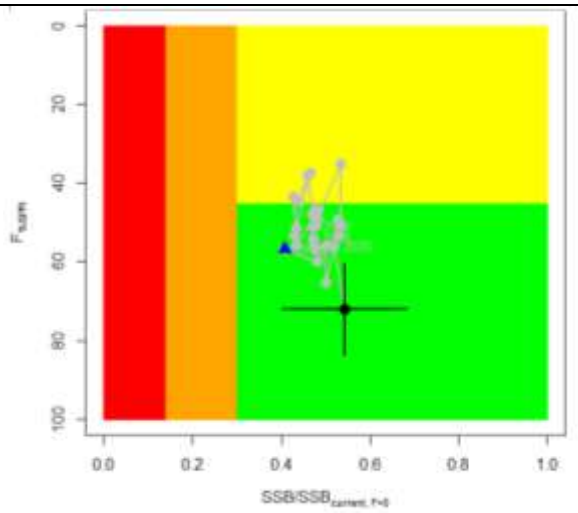


Historical catch-at-age of North Pacific Albacore estimated by the base case stock assessment model (WCPFC 2024)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

A limit reference point is established for the northern Pacific albacore stock, and is based on dynamic biomass estimates and therefore fluctuates according to changes in recruitment. The limit reference point 14%$SSB_{current, F=0}$ is calculated as 14% of the unfished dynamic female spawning biomass in the terminal year of the assessment (WCPFC 2024). SSB in the most recent stock assessment, conducted in 2023 and providing an indication of stock status in 2021, was estimated to be 54% of $SSB_{current, F=0}$, considerably above the limit reference point. The conclusion reached at the time of the stock assessment was that the stock is likely not overfished relative to the limit reference point.



Stock status phase plot showing the status of the north Pacific albacore (*Thunnus alalunga*) stock relative to the biomass-based threshold and limit reference points, and fishing intensity-based target reference point (F45%SPR) over the modelling period (1994 – 2021). (WCPFC 2024).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

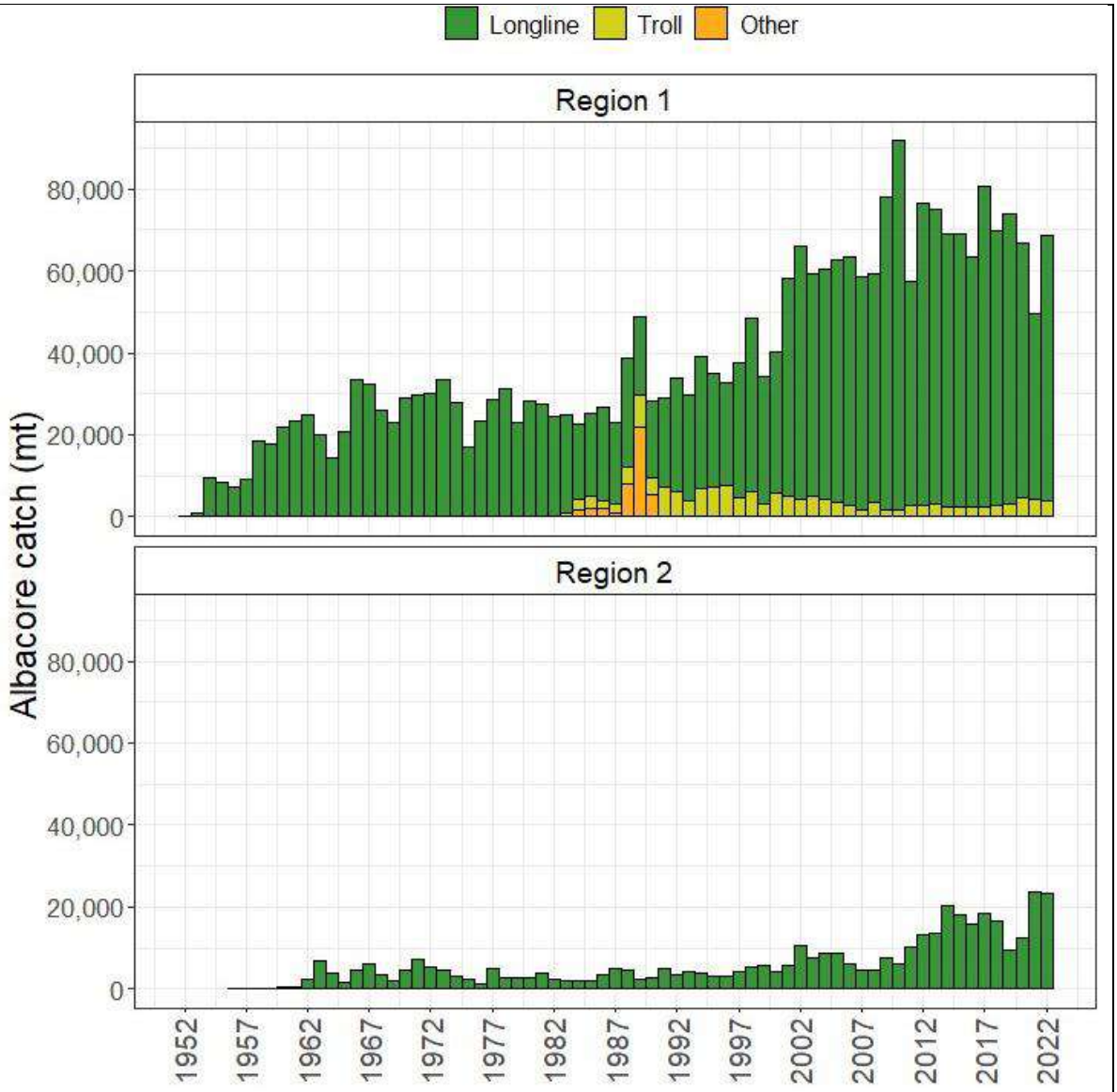
References

WCPFC (2024). North Pacific albacore tuna, stock assessment summary. https://www.wcpfc.int/doc/05/north-pacific-albacore-tuna

Species name		***Thunnus alalunga* - Albacore tuna**	
Fishing area and stock		**South Pacific albacore**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

The most recent stock assessment for albacore tuna in the south Pacific was conducted in 2024, using data up to 2022. The assessment used catch data including international catches by fishing gear. The published stock assessment summary (WCPFC 2025) does not appear to include any concerns relating to the availability of catch data.



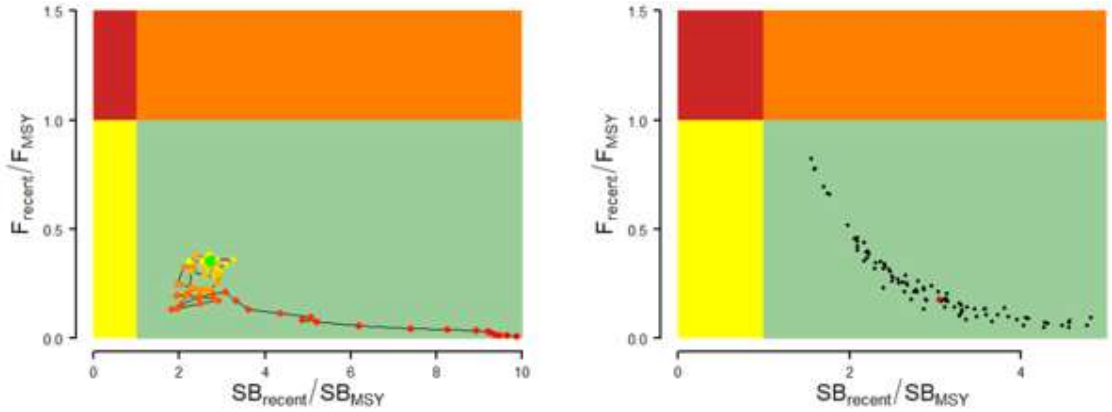
Historical catches of South Pacific albacore in each model region (WCPFC-CA = region 1, EPO = region 2) from 1952-2022 by gear type (WCPFC 2025)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The stock is assessed relative to a range of potential reference points (WCPFC 2025), with the key reference point used to determine whether the stock was overfished being 20%$SB_{F=0}$. The 2024 stock assessment concluded that "the median recent spawning biomass from the model ensemble with estimation uncertainty is well above the spawning biomass to achieve MSY" (WCPFC 2025), and that

in "all models…$SB_{recent}/SB_{F=0}$ was above the limit reference point of 0.2" (WCPFC 2025). The most recent stock assessment concluded that the stock biomass is highly likely above the target and limit reference points.



Kobe plots for Southern Pacific albacore tuna the results for the dynamic MSY analysis (left) and each of the models in the model ensemble for the recent period (2019– 2022; right). Colours for dynamic MSY go from red to green over time. The red point in the model ensemble (right) represents the median (WCPFC 2022).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

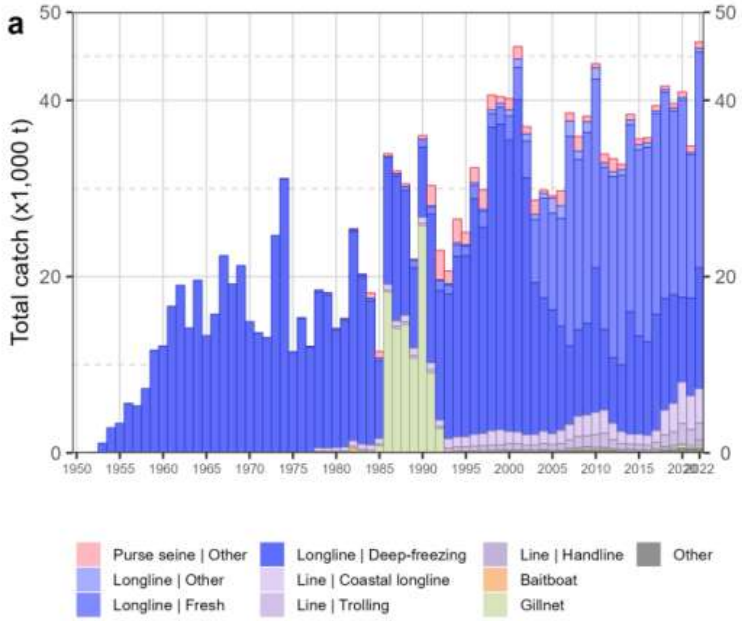
WCPFC (2025). Stock status and advice key documents, South Pacific albacore tuna. https://www.wcpfc.int/doc/04/south-pacific-albacore-tuna

Species name		***Thunnus alalunga* - Albacore tuna**	
Fishing area and stock		**Indian Ocean albacore**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

Albacore in the Indian Ocean is subject to regular stock assessment by the ITOC. The most recent was conducted in 2022 using Stock Synthesis III, and utilised international catch and CPUE data. There are several CPUE indices available – including those for the North-Western and South-Western fisheries, and several eastern indices – which indicate trends in separate components of the Indian Ocean albacore stock. The stock assessment summary concludes that the western indices

"may best represent the abundance of albacore at this time", and that "the eastern indices are affected by changes in targeting" (IOTC 2024).
Catches are presented in the figure below:



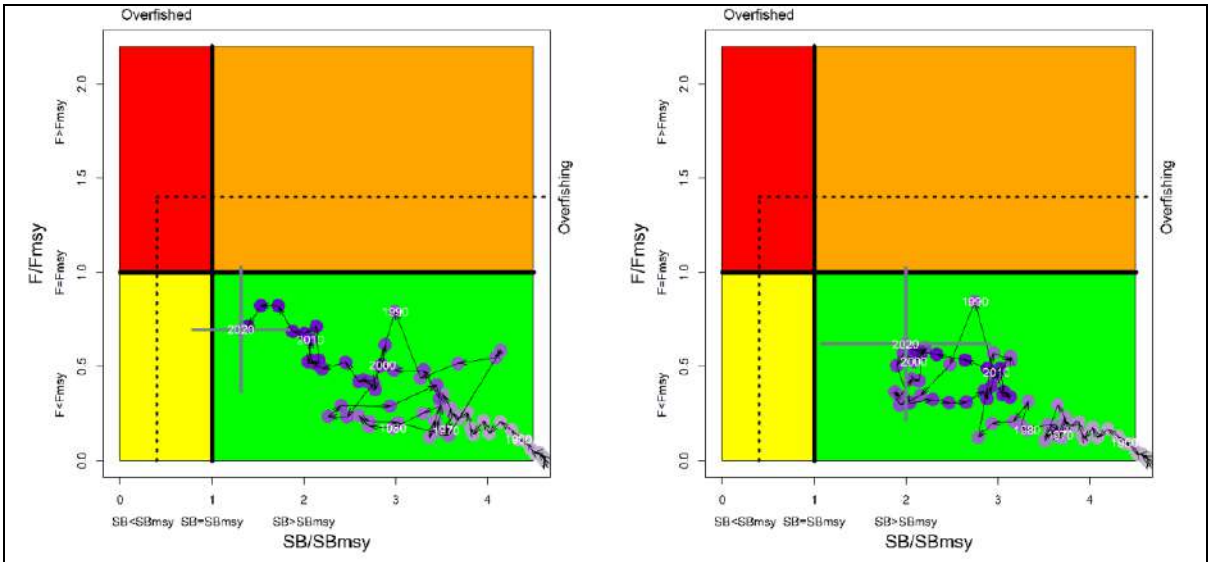
Albacore tuna in the Indian Ocean: Cumulative nominal catches by gear type (IOTC 2024)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The 2022 stock assessment concluded that in relation to the IOTC's interim target reference points, the stock is "not overfished and is not subject to overfishing" (IOTC 2024). The biomass target reference point is set at $0.4*SB_{MSY}$ (i.e. 40% of the target reference point SB_{MSY}), and therefore the stock assessment also concluded that "current spawning biomass is considered to be above the limit reference point" (IOTC 2024).

Kobe charts showing the current fishery status are shown below.



Albacore tuna in the Indian Ocean: Kobe plots for two model options. On the left, the model fitted to the North-Western CPUE; on the right, the model fitted to the South-Western CPUE. Purple circles indicate the estimates of SB ratio and fishing mortality ratio for each year 1950-2020. Grey lines indicate 95% CI for the 2020 estimate. Dashed lines indicate biomass and fishing mortality limit reference points (IOTC 2023).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

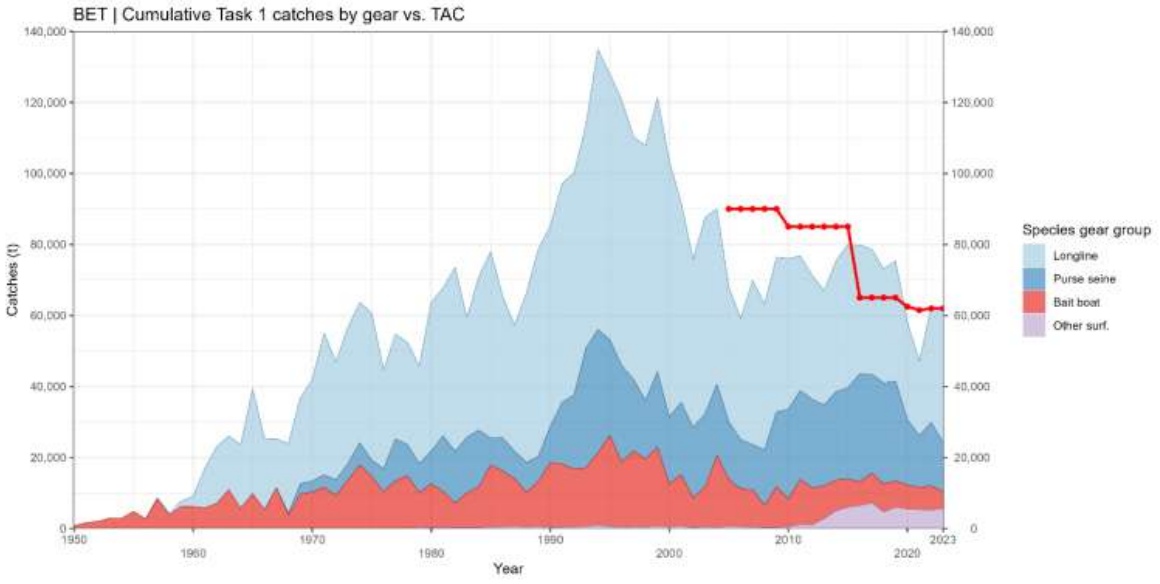
IOTC (2024). Albacore tuna stock status and advice, executive summary, 2024. https://iotc.org/sites/default/files/content/Stock_status/2024/Engish/IOTC-2024-SC27-ES01_ALBE.pdf

Bigeye tuna in FAO Areas 34, 41, 47, 51, 57, 71 and 77

Species name		***Thunnus obesus* - Bigeye tuna**	
Fishing area and stock		**Atlantic bigeye**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

The most recent stock assessment for Atlantic bigeye was conducted by the International Commission for the Conservation of Atlantic Tunas (ICCAT) in 2021 using all available catch data and several modelling approaches (ICCAT 2024). Different model formulations were used to test different potential representations of stock dynamics and characteristics to reduce uncertainties in the outcomes. Catch data are available by area, gear, and vessel flag, and were incorporated into the assessment.



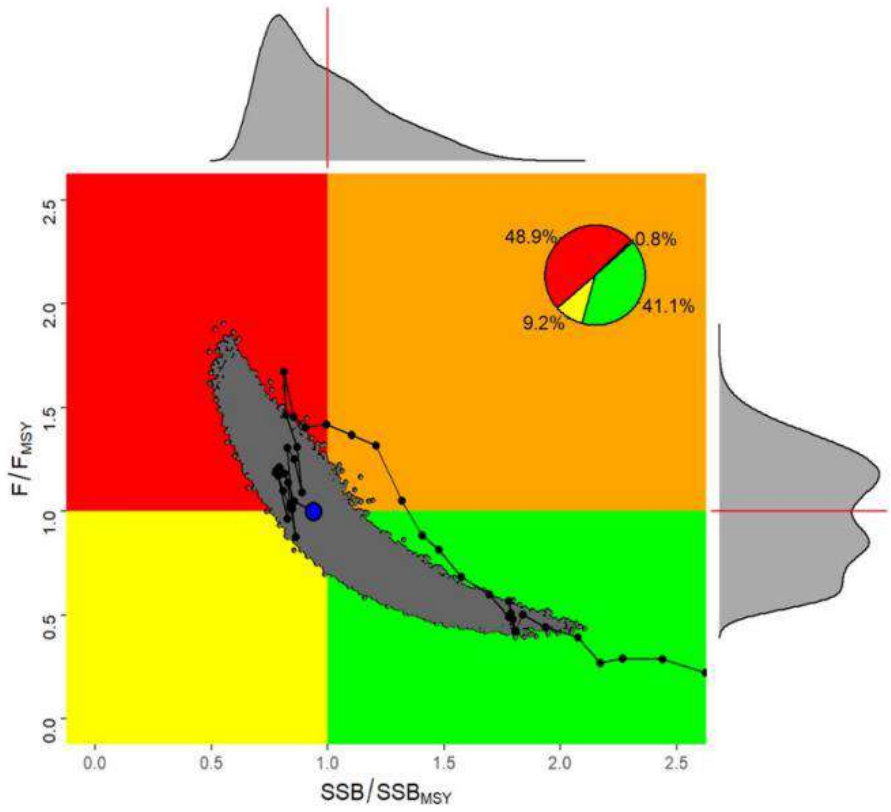
Atlantic bigeye tuna, estimated and reported catches by gear type. Red line indicates TAC (ICCAT 2024)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The 2021 stock assessment produced estimates of stock status in 2019. Relative spawning biomass (SSB_{2019}/SSB_{MSY}) was estimated to be 0.94, with a 96% confidence interval of 0.71 – 1.37. This places the stock into the Overfished section of the Kobe chart, and indicates that biomass is likely to be below the target reference point. The stock assessment also concluded that as of 2019 the stock was not subject to overfishing.

No limit reference point is defined for the stock. Where this is the case, the MT byproduct assessment guidance directs assessors to assume a limit reference point of $½B_{MSY.}$ The 95% confidence interval described above indicates that there is a very high probability the stock biomass is at least 0.71 B_{MSY}, and therefore is very likely to be above the default limit reference point.



Kobe plot of SSB/SSB_{MSY} and F/F_{MSY} for stock status of Atlantic bigeye tuna in 2019. Insert pie chart shows the probability that 2019 status is in the red quadrant (48.9 %), green quadrant (41.1 %), orange (0.8%) and in yellow (9.2 %). Blue circle is the median and marginal histograms represent distribution of either SSB/SSB_{MSY} or F/F_{MSY} (ICCAT 2024).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

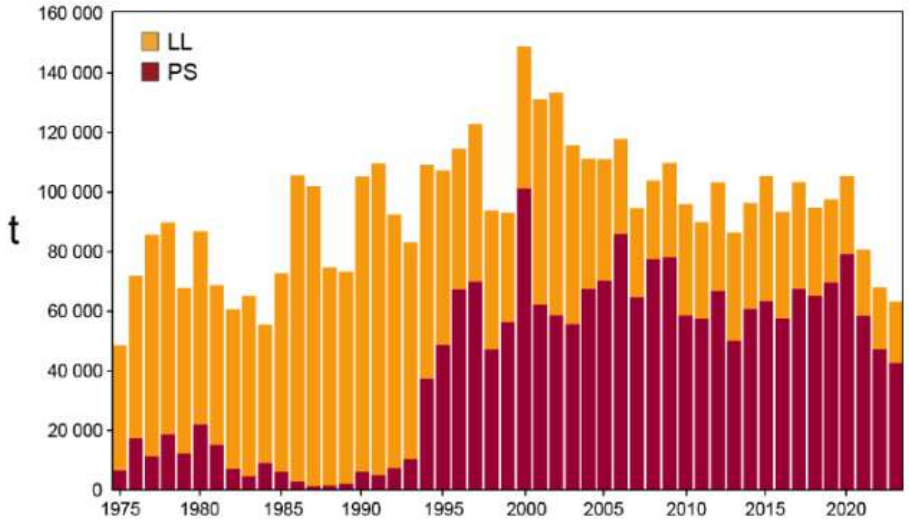
References

ICCAT (2024). Stock assessment executive summary, bigeye tuna. https://www.iccat.int/Documents/SCRS/ExecSum/BET_ENG.pdf

Species name	*Thunnus obesus* - Bigeye tuna	
Fishing area and stock	East Pacific bigeye	
C1	**Category C Stock Status - Minimum Requirements**	
C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
	Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

Bigeye tuna in the EPO is subject to regular stock assessment by the Inter-American Tropical Tuna Commission (IATTC). The most recent full stock assessment was conducted in 2024. The assessment utilised all international catch data. 33 models were applied to take into account the main sources of uncertainty, and the results are presented alongside the likely confidence intervals. In 2023, risk-based Stock Status Indicators (SSIs) were introduced. SSIs are considered to be important alternatives to formal stock assessments, particularly where those stock assessments may be too unreliable to form the basis for management advice. In the case of bigeye, they are incorporated into the annual stock status review (IATTC 2024).

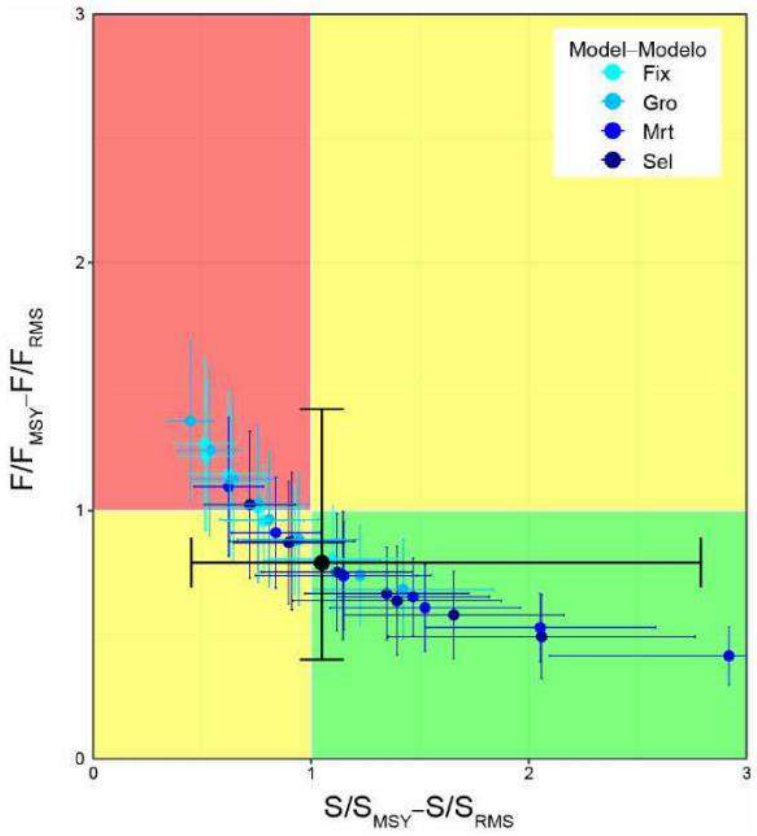


Total EPO bigeye catch by purse seine gears (PS), and retained catches by longline gears (LL), 1975 – 2023. 2020 and 2021 data are preliminary (IATTC 2024)

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The 2024 stock assessment produced statistical probabilities for the status of the stock relative to target and limit reference points. The key conclusion for the purposes of this byproduct assessment were that there is a "46.6% probability that the spawning biomass at the beginning of 2024 is below the target reference point", and a "0.2% probability that the spawning biomass at the beginning of 2024 is below the limit reference point" (IATTC 2024). Therefore, there was a very low probability of the biomass being below the limit reference point.



Kobe plot of the most recent estimates of spawning biomass (S) and fishing mortality (F) relative to their MSY reference points (SMSY_d and FMSY) from the thirty-three reference models. Each dot is based on the average F over the most recent three years, 2021-2023, and the error bars represent the 95% confidence interval of model estimates. The black dot and error bars represent the medium and 95% confidence interval of combined values, respectively. (IATTC 2024).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

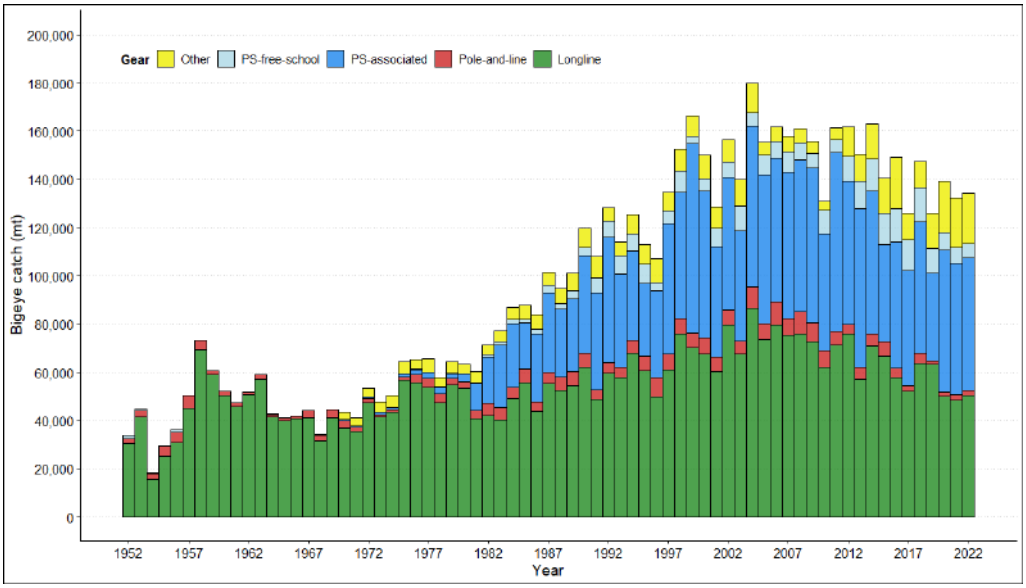
References

IATTC (2024). The tuna fishery in the Eastern Pacific Ocean in 2023. https://www.iattc.org/GetAttachment/1ed36788-07ce-4bf4-80e4-10c6c3b2b14d/No-22-2024_Tunas,-stocks-and-ecosystem-in-the-eastern-Pacific-Ocean-in-2023.pdf

Species name		*Thunnus obesus* - Bigeye tuna	
Fishing area and stock		Western and Central Pacific bigeye	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

Bigeye tuna in the Western and Central Pacific Ocean is subject to regular stock assessment by the Western and Central Pacific Fisheries Commission. The most recent stock assessment was conducted in 2023, using data up to 2021. The assessment utilised all international catch data. 54 models were applied to take into account the main sources of uncertainty, and the results are presented alongside the likely confidence intervals (WCPFC 2021). All available catch data are incorporated into the assessment.

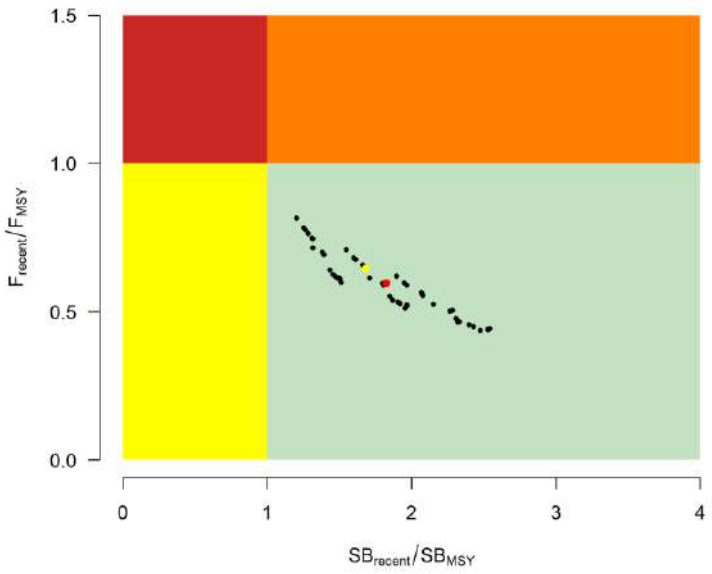


Time series of total annual catch ('000t) by fishing gear for the diagnostic model over the full assessment period. Green = longline; red = pole and line; blue = purse seine (WCPFC 2024).

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The results of the most recent stock assessment produced an estimate of the current status of the stock relative to target reference point SB_{MSY}. The assessment concluded across all 54 models that the mean value of SB_{latest}/SB_{MSY} was 1.76, with an 80% certainty that it was between 1.28 and 2.31 (WCPFC 2024). This translates to a very high probability that stock biomass is above the target reference point SB_{MSY}, and therefore also above any potential limit reference point. The most recent stock assessment summary also states that "For all models in the grid $SB_{recent}/SB_{F=0}$ was above the biomass limit reference point" (WCPFC 2024).



Western and Central Pacific bigeye tuna, Kobe plot for recent spawning potential (2018-2021) summarising the results for each of the models in the structural uncertainty grid. Median value is shown in red (WCPFC 2024).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

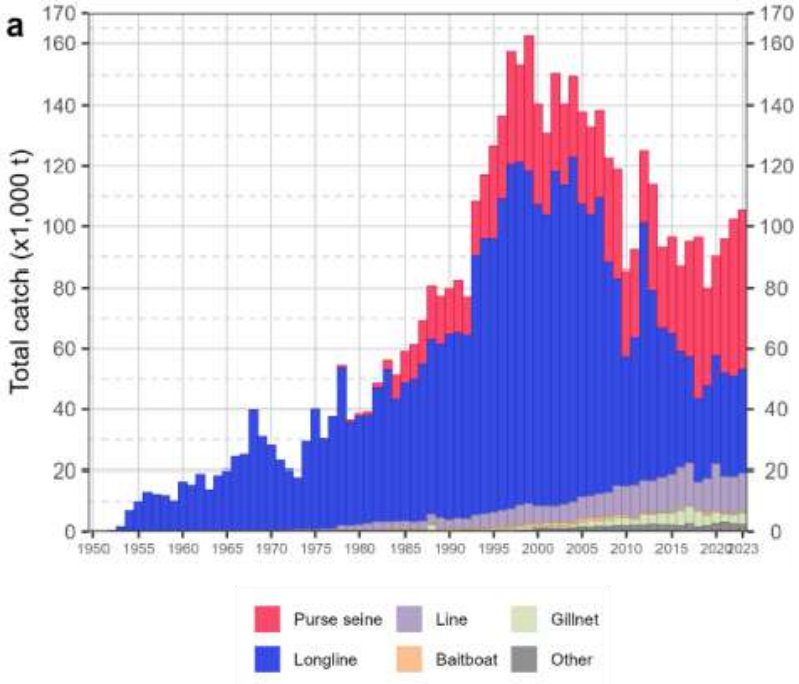
WCPFC (2024). WCPO bigeye tuna stock status and management advice. https://www.wcpfc.int/doc/01/bigeye-tuna

Species name		***Thunnus obesus* - Bigeye tuna**	
Fishing area and stock		**Indian Ocean bigeye**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS

	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	PASS

C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

Bigeye tuna in the Indian Ocean (IO bigeye) is subject to regular stock assessment by the IOTC. The most recent stock assessment was carried out in 2022 using a Stock Synthesis model with 24 model configurations. The assessment incorporated international catch data, and the range of models used was intended to capture uncertainty on stock recruitment relationship, longline selectivity, growth, and natural mortality (IOTC 2024).



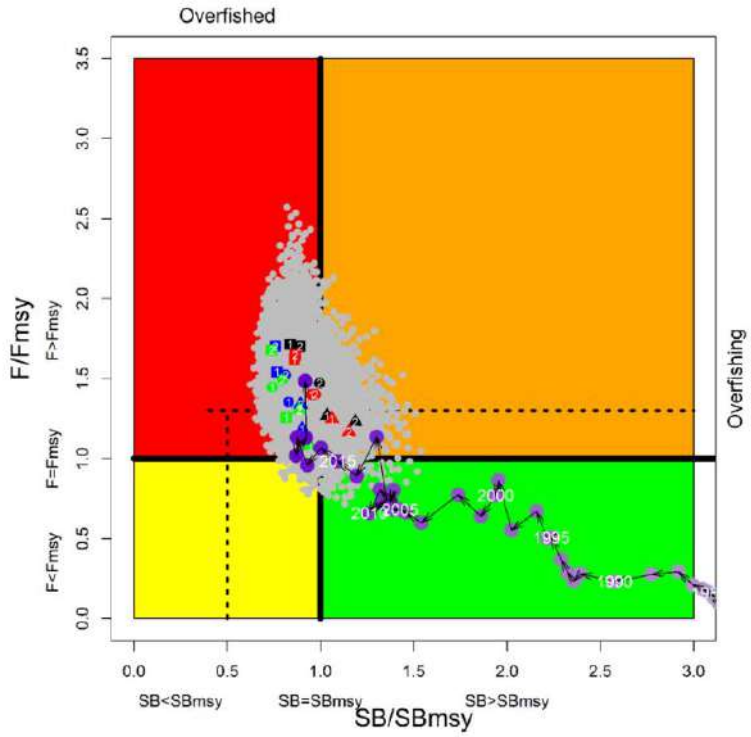
Indian Ocean bigeye tuna, catches (IOTC 2024).

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause C1.1.

C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The 2022 stock assessment concluded that spawning biomass levels in 2021 were 25% of the unfished level, and 90% of the level which can support MSY. Taking into account the uncertainty in the assessment process, the IOTC documentation concludes that the stock is "overfished and subject to overfishing" (IOTC 2023). This conclusion indicates that the stock is likely below the target reference point. However, the limit reference point for the stock is defined as $0.5*SB_{MSY}$; i.e. the

level at which stock biomass is half the level which can support MSY. As the stock is currently estimated to be at 90% of this level, it is likely above the limit reference point. Additionally, none of the outcomes of the 24 models indicated that biomass was below the LRP.
A Kobe chart showing the status of the fishery as estimated by the 2022 stock assessment is shown below.



Aggregated Indian Ocean stock assessment Kobe plot for bigeye tuna. Coloured points represent stock status estimates from each of the 24 models. Purple dots represent the time series of stock status estimates. Grey dots represent uncertainty from individual models. Dashed lines indicate IO bigeye tuna limit reference points (IOTC 2024).

Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.

References

IOTC (2024). Indian Ocean bigeye tuna stock status and advice, executive summary. https://iotc.org/sites/default/files/content/Stock_status/2024/Engish/IOTC-2024-SC27-ES02_BETE.pdf

Traceability information

Traceability information was provided by the applicant for a limited number of species/flag state combinations, as follows:

- Skipjack caught in FAO 71 by Marshall Islands-flagged vessels is caught in the Marshall Islands and Kiribati EEZs, and landed in Kiribati

- Yellowfin caught in FAO 71 by Micronesian-flagged vessels is caught in the Micronesian, Nauruan, and Papua New Guinea EEZs, and landed in Micronesia
- Albacore caught in FAO 51 by Taiwanese-flagged vessels is caught in the high seas and landed in Mauritius

Species name	Skipjack tuna in FAO 71 (Western Pacific skipjack)			
Path 1	Yes ☐ No ☒			
Confirm all KDEs are provided	Yes ☐ No ☐			
Path 2	Yes ☒ No ☐ *If yes for Path 2, complete the next section*			
Path 2 outcome *Countries may be different for Coastal State and Port State.*	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Marshall Islands	Medium Risk (Marshall Islands and Kiribati)	Medium Risk (Kiribati)	Downgraded to medium risk

Species name	Yellowfin tuna in FAO 71 (Western Pacific yellowfin)			
Path 1	Yes ☐ No ☒			
Confirm all KDEs are provided	Yes ☐ No ☐			
Path 2	Yes ☒ No ☐ *If yes for Path 2, complete the next section*			
Path 2 outcome *Countries may be different for Coastal State and Port State.*	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Micronesia	Medium Risk (Micronesia, Nauru, Papua New Guinea)	Medium Risk (Micronesia)	Downgraded to medium risk

Species name	Albacore tuna caught in FAO 51 (Indian Ocean albacore)			
Path 1	Yes ☐ No ☒			
Confirm all KDEs are provided	Yes ☐ No ☐			
Path 2	Yes ☒ No ☐ *If yes for Path 2, complete the next section*			
Path 2 outcome *Countries may be different for Coastal State and Port State.*	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Taiwan	Medium Risk (High Seas)	Medium Risk (Mauritius)	Downgraded to medium risk

Species name	All other byproducts not listed above			
Path 1	Yes ☐ No ☒			
Confirm all KDEs are provided	Yes ☐ No ☐			
Path 2	Yes ☐ No ☒ *If yes for Path 2, complete the next section*			
Path 2 outcome	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**

Countries may be different for Coastal State and Port State.	No traceability information provided	Remains high risk

Guidance for Applicants/Certificate holders on improved traceability

When by-product origin cannot be made more granular than major FAO Areas, or when the source fishery is taking place in the High Seas (i.e. outside of EEZs of all relevant nations), an assessor must evaluate the Coastal and Port scores for each nation that straddles that FAO Area. This may lead to higher risk outcomes for an applicant. To mitigate that risk, better practice involves securing KDEs from the source fishery of the by-products, thereby meeting Path 1 instead of Path 2.

What does better practices look like?
Comprehensive data collection and sharing: Collect detailed information using Key Data Elements (KDEs) including vessel identification and authorisation, species, catch areas, fishing method and dates. These are defined in the MarinTrust Standard clauses 2.11.2.2 and 3.2.5.
Supply chain transparency: Maintain detailed records at each step of the supply chain, from capture to final sale, to ensure traceability.
Interoperable systems and technologies to support the collection and transfer of this information.