By-Product assessment report

BP016

TC Union Vietnam

Report code	BP016	Date of issue	January 2025

1. Application details		
Applicant	TC Union Vietnam	
Applicant country	Vietnam	
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	Matthew Jew	
Internal peer review evaluation	Agree with evaluation	
Comments on the assessment	The two submitted byproduct species, yellowfin tuna and skipjack tuna, are both sourced from high-risk flag states, invoking a Step 3 assessment. The applicant provided additional details of catch and landing locations, allowing the risk rating for both species to be downgraded to Medium Risk. Therefore, both byproducts should be Approved, source with caution.	
3. Approval validity	Valid from 01/2025	Valid until 01/2026

4. Scope Extension Assessment		
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	Matthew Jew	
Internal peer review evaluation	Agree with evaluation	
Number of Assessment days	1	
Comments on the assessment	This assessment was originally completed in December 2024. In March 2025, the byproduct flag states and areas of origin were updated. This expanded the number of byproduct stocks covered from two to six. Of these six, two are sourced exclusively from Medium Risk flag states, and were 'Approved source with caution' without a Step 3 assessment. The remaining four are sourced from a mix of Medium and High Risk vessels and were therefore subjected to a Step 3 assessment. All four new byproducts passed this assessment and were downgraded to Medium Risk and 'Approved source with caution'.	
5. Approval validity	Valid from 03/2025	Valid until 01/2026

6. By-product assessment outcomes		Valid from: January 2025
By-product species name	**Flag country(ies)**	**MarinTrust approval status**
Skipjack tuna, *Katsuwonus pelamis, FAO71*	Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Korea, Taiwan, Vietnam, United States	Approved source with caution
Yellowfin tuna, *Thunnus albacares, FAO71*	Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Korea, Taiwan, Vietnam, United States	Approved source with caution

7. Scope Extension		Valid From: March 2025
By-product species name	**Flag country(ies)**	**MarinTrust approval status**
Skipjack tuna, *Katsuwonus pelamis*, FAO 77	Kiribati, Nauru, Korea, United States	Approved source with caution
Skipjack tuna, *Katsuwonus pelamis*, FAO 51	Spain, France	Approved source with caution
Skipjack tuna, *Katsuwonus pelamis*, FAO 71	Tuvalu, Vanuatu	Approved source with caution
Yellowfin tuna, *Thunnus albacares*, FAO 77	Kiribati, Nauru, Korea, United States	Approved source with caution
Yellowfin tuna, *Thunnus albacares*, FAO 51	Spain, France	Approved source with caution
Yellowfin tuna, *Thunnus albacares*, FAO 71	Tuvalu, Vanuatu	Approved source with caution

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?
Skipjack tuna, *Katsuwonus pelamis, FAO 71*	Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Korea, Taiwan, Vietnam, United States	Least concern	Not listed	High risk	Yes
Yellowfin tuna, *Thunnus albacares, FAO 71*	Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Korea, Taiwan, Vietnam, United States	Least concern	Not listed	High risk	Yes

Step 2 Assessment Outcomes – Scope Extension

By-product species name	Flag country(ies)	IUCN Red List	CITES Appendices	Step 2 risk status	Step 3 required?
Skipjack tuna, *Katsuwonus pelamis*, FAO 77	Kiribati, Nauru, Korea, United States	Least concern	Not listed	High risk	Yes
Skipjack tuna, *Katsuwonus pelamis*, FAO 51	Spain, France	Least concern	Not listed	Medium risk	No
Skipjack tuna, *Katsuwonus pelamis*, FAO 71	Tuvalu, Vanuatu	Least concern	Not listed	High risk	Yes
Yellowfin tuna, *Thunnus albacares*, FAO 77	Kiribati, Nauru, Korea, United States	Least concern	Not listed	High risk	Yes
Yellowfin tuna, *Thunnus albacares*, FAO 51	Spain, France	Least concern	Not listed	Medium risk	No
Yellowfin tuna, *Thunnus albacares*, FAO 71	Tuvalu, Vanuatu	Least concern	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
Skipjack tuna, *Katsuwonus pelamis*	Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Korea, Taiwan, Vietnam, United States	FAO 71		Pass	Path 2 – Yes	Risk downgraded to Medium risk
Yellowfin tuna, *Thunnus albacares*	Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Korea, Taiwan, Vietnam, United States	FAO 71		Pass	Path 2 – Yes	Risk downgraded to Medium risk
Skipjack tuna, *Katsuwonus pelamis*	Kiribati, Nauru, Korea, United States	FAO 77		Pass	Path 2 – Yes	Risk downgraded to Medium risk

Skipjack tuna, *Katsuwonus pelamis*	Tuvalu, Vanuatu	FAO 71		Pass	Path 2 – Yes	Risk downgraded to Medium risk
Yellowfin tuna, *Thunnus albacares*	Kiribati, Nauru, Korea, United States	FAO 77		Pass	Path 2 – Yes	Risk downgraded to Medium risk
Yellowfin tuna, *Thunnus albacares*,	Tuvalu, Vanuatu	FAO 71		Pass	Path 2 – Yes	Risk downgraded to Medium risk
Comments on Step 3 Assessment: *Assessor note: N/A*						

Appendix 2 – detailed assessment outcomes

(step 2 and step 3 if applicable)

Step 2 outcomes

Flag state	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
Micronesia (FS of)	High	1.92	2.94	1.93	1	1	5	1	31.13%
Kiribati	High	1.79	3.11	1.96	1	1	5	1	42.92%
Marshall Isl.	High	1.79	3.17	1.89	1	1	5	1	37.74%
Nauru	Medium	2.04	1	1.64	1	1		1	53.30%
Korea (Rep. South)	Medium	3.67	3.11	1.97	1	1	1	1	83.96%
Taiwan	High	4.17	3.06	2.27	1	1	5	1	90.57%
Vietnam	High	2.3	2.11	2.8	1	3	1	1	36.32%
USA	Medium	2.29	3	2.37	1	1	1	1	91.04%

Spain	Medium	3.21	3.39	2.03	1	1	1	1	75.94%
France	Medium	3.17	2.39	1.67	1	1	1	1	85.38%
Tuvalu	High	1.67	2.67	1.81	1	1	5	1	47.64%
Vanuatu	High	2.88	1.56	2.17	2	1	1	1	48.58%

Step 3 outcomes

Category C assessment

Due to the High Risk ratings in Step 2, the applicant was asked for additional information for both byproduct species. The information provided by the applicant indicated the following:

- All catches of both species took place in FAO Area 71, Western Pacific.
- Catches were landed in Vietnam, Tuvalu, Micronesia, or Marshall Islands.

Category C assessment

Species name		Skipjack tuna, *Katsuwonus pelamis*	
Fishing area and stock		**FAO 71, Western and Central Pacific skipjack tuna**	
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:

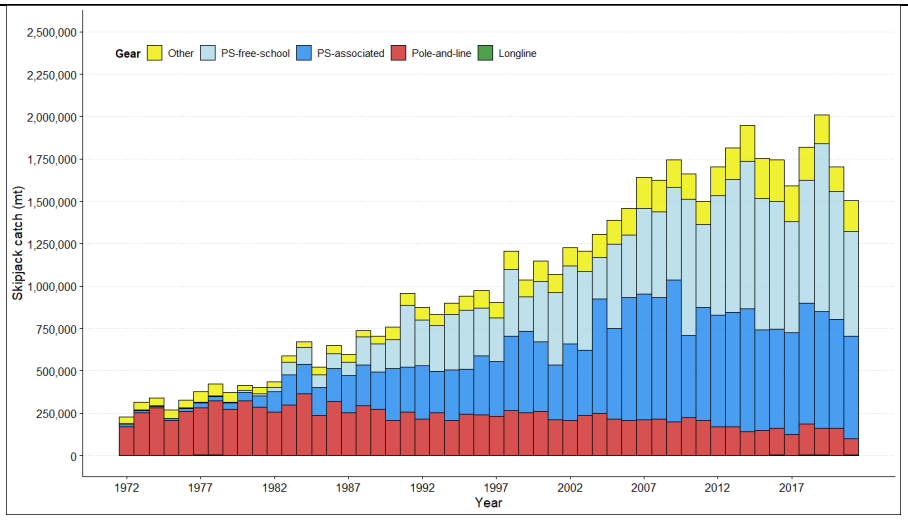


Figure 12. Annual catches of skipjack by gear type in the WCPO area covered by the stock assessment (WCPO 2023)

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 $SB_{recent}/SB_{F=0} = 0.5$.

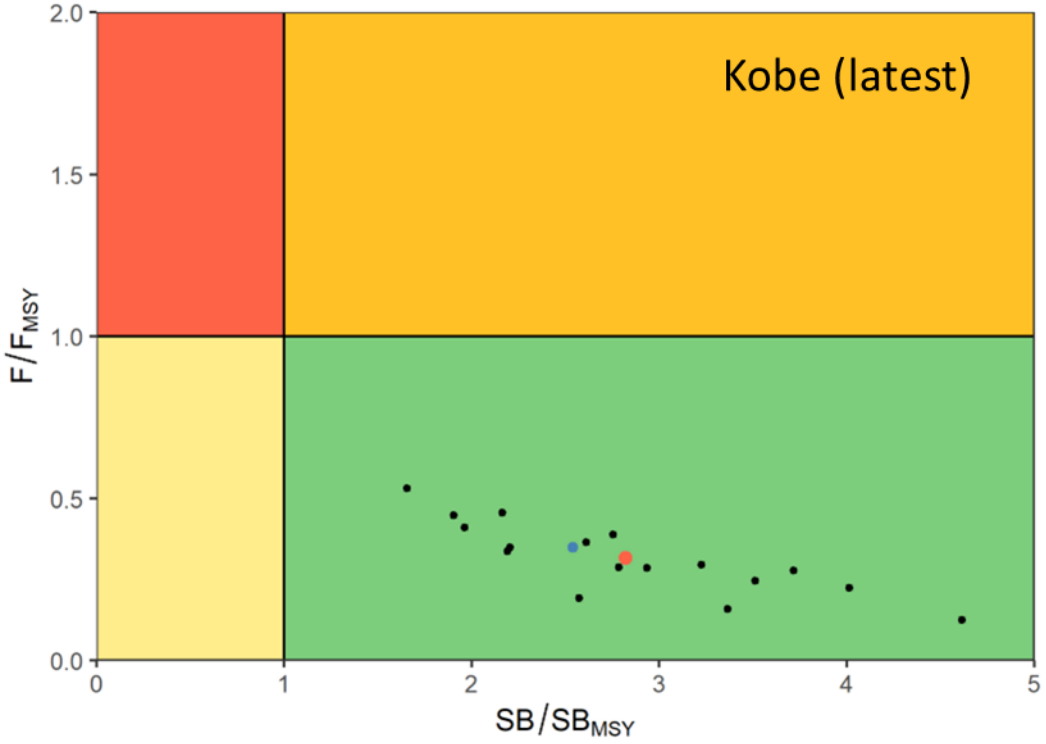


FIGURE 13. Kobe plot summarising the results for each of the models in the "latest" period (i.e. 2021). The black dots represent model outcomes, the blue point is the diagnostic model, and the red point is the median (WCPFC 2023).

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		Yellowfin tuna, *Thunnus albacares*	
Fishing area and stock		**FAO 71, 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 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.

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:

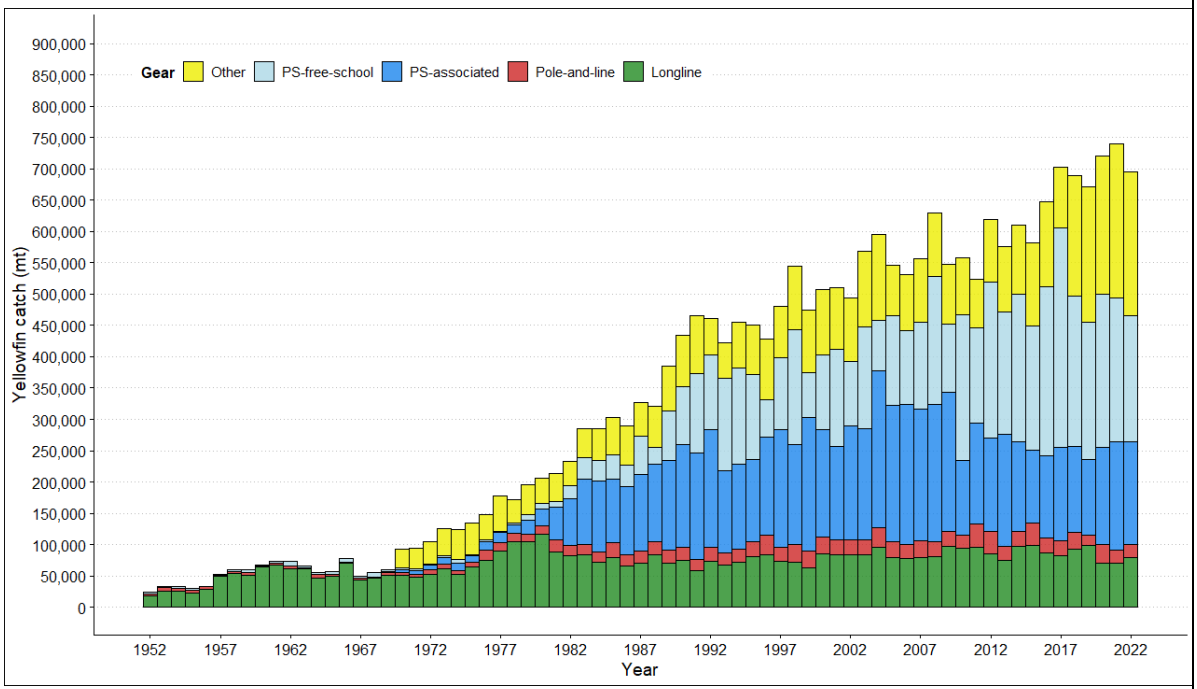


Figure 8. WCPO yellowfin catches, 1952-2022 (WCPFC 2023)

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).

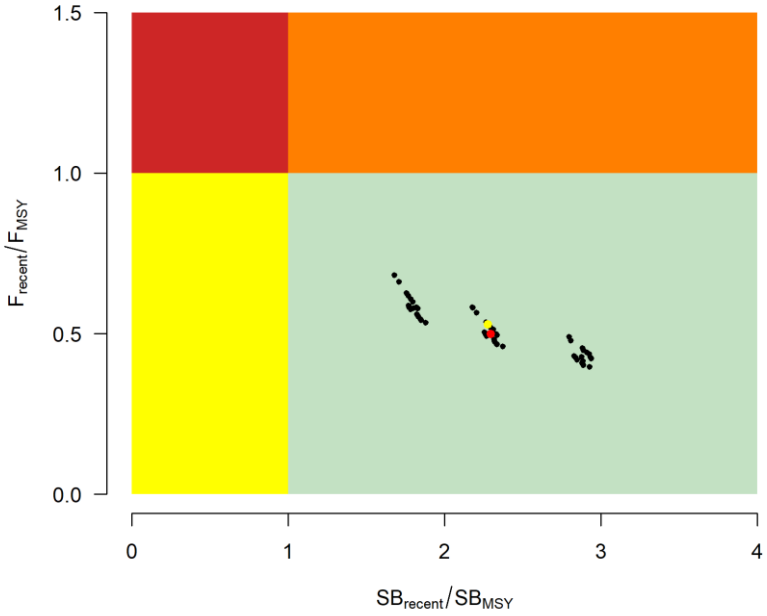


Figure 9. WCPO yellowfin tuna, Kobe plot summarising the results of each of the stock assessment models. The yellow dot is the 2023 diagnostic model and the red dot is the median (WCPFC 2023).

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

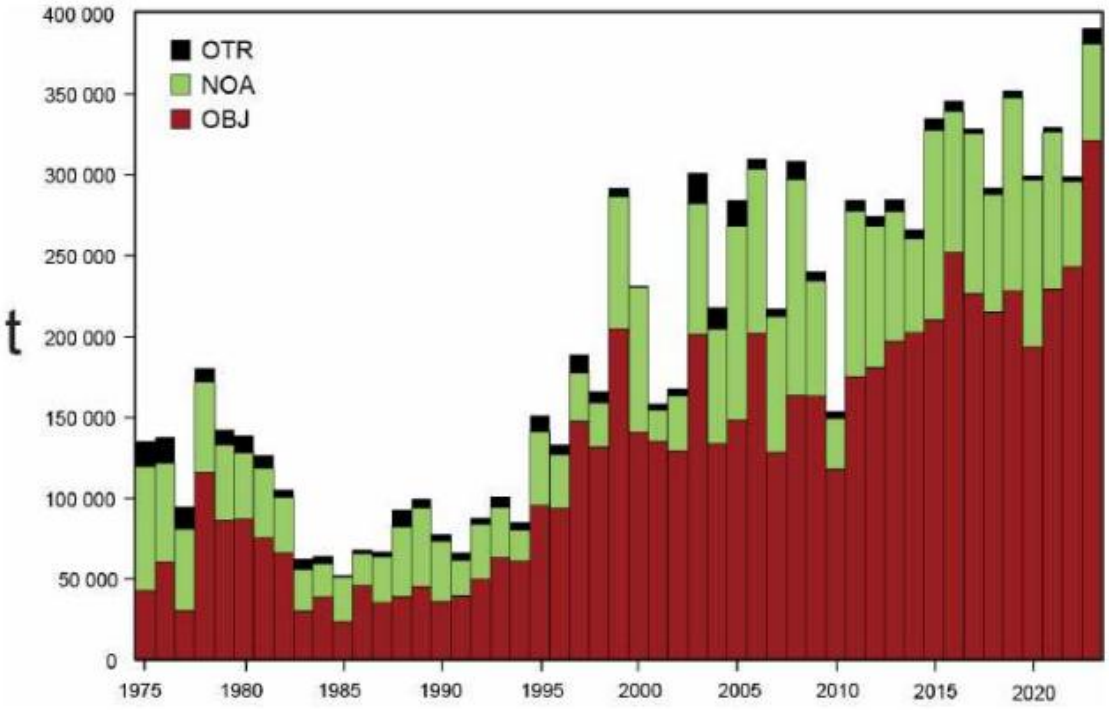
WCPFC (2023). WCPO Yellowfin Tuna, Stock Status and Management Advice. https://www.wcpfc.int/file/1008665/download?token=wFUhc7q7

Category C assessment – Scope Extension

Species name		Skipjack tuna, *Katsuwonus pelamis*	
Fishing area and stock		**FAO 77 – 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.

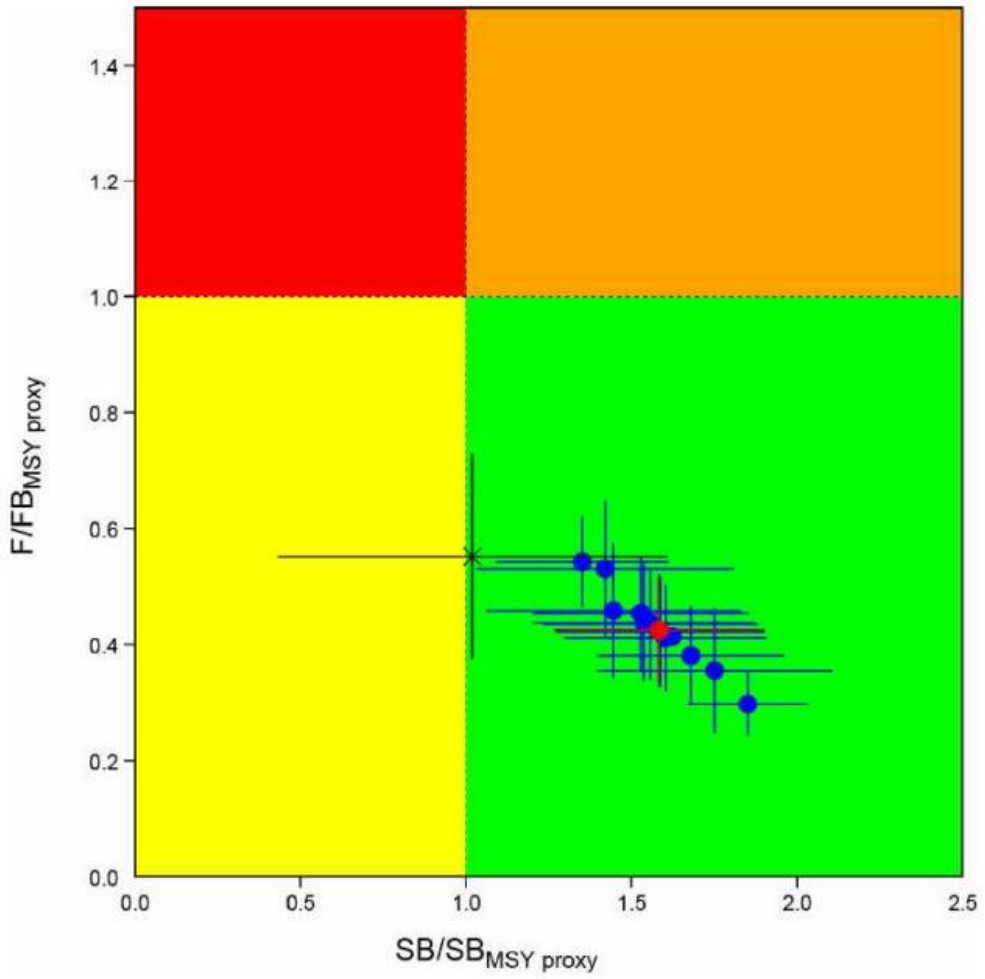


Skipjack catches (retained plus discards) in the EPO, 1975-2023 (IATTC 2024).

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.

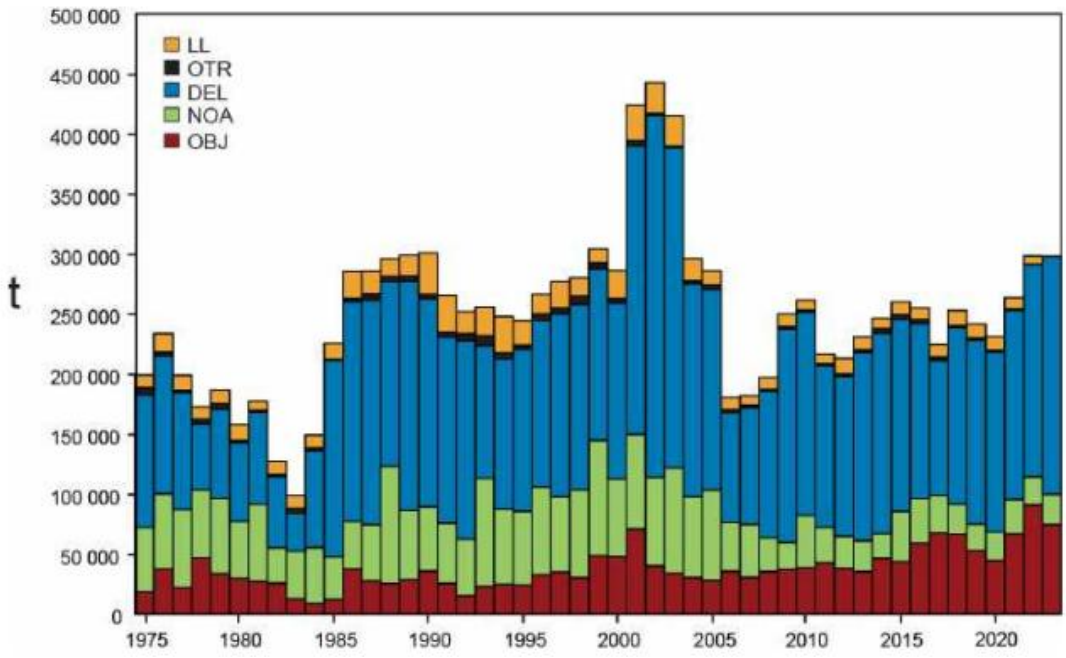
References

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		Yellowfin tuna, *Thunnus albacares*	
Fishing area and stock		**FAO 77 – 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 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 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.

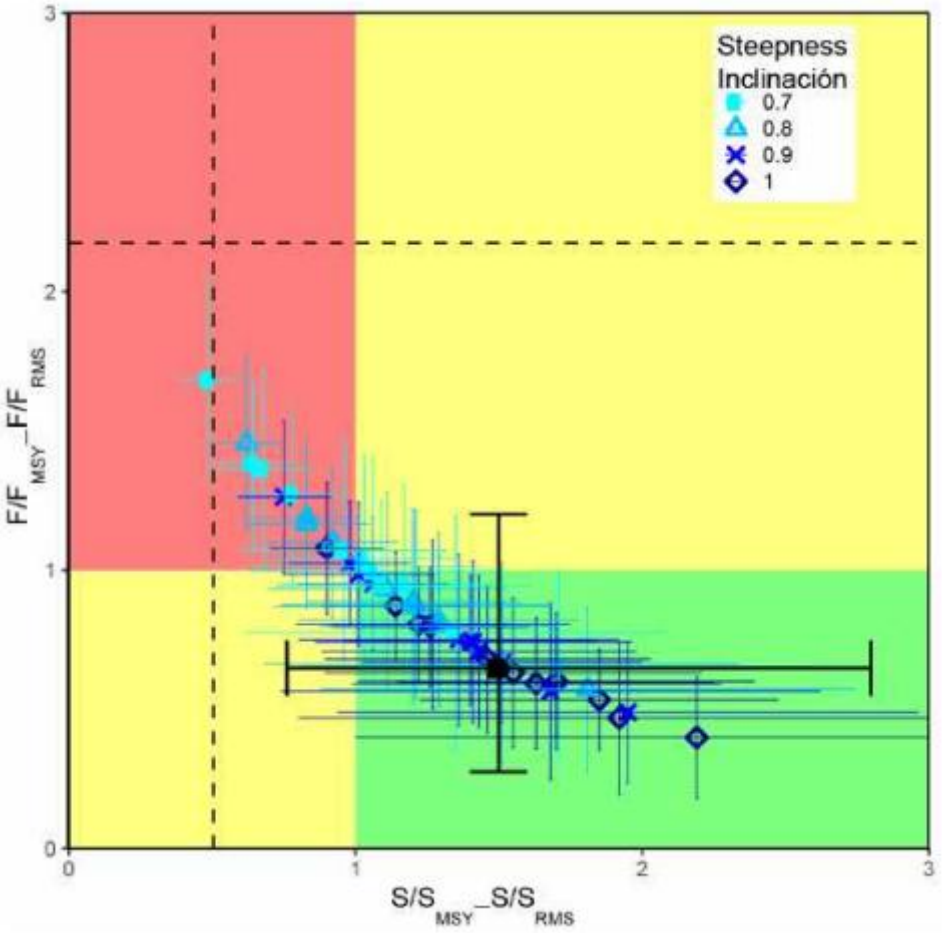


Total catches of yellowfin tuna in the EPO by set type (IATTC 2024)

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

Traceability information

Information provided for Step 3 Path 1 or Path 2

Species name	Skipjack tuna (*Katsuwonus pelamis*)			
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**
	All high-risk flag states under assessment (Micronesia, Kiribati, Marshall Island, Taiwan, and Vietnam	Medium risk (all countries in FAO 71 area)	Medium risk (Port states: Vietnam, Tuvalu, Marshall Islands, Micronesia)	Downgraded to medium risk

Species name	Yellowfin tuna (*Thunnus albacares*)			
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**
	All high-risk flag states under assessment (Micronesia, Kiribati, Marshall Island, Taiwan, and Vietnam	Medium risk (all countries in FAO 71 area)	Medium risk (Port states: Vietnam, Tuvalu, Marshall Islands, Micronesia)	Downgraded to medium risk

Traceability information – Scope Extension

Species name	Skipjack tuna			
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**
	All	Medium risk (multiple countries in FAO 77 area)	Medium risk (Port states: Vietnam, Tuvalu, Marshall Islands, Micronesia)	Downgraded to medium risk

Species name	Skipjack tuna			
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**
	All	Medium risk (multiple countries in FAO 71 area)	Medium risk (Port states: Tuvalu, Vanuatu)	Downgraded to medium risk

Species name	Yellowfin tuna			
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**
	All	Medium risk (multiple countries in FAO 77 area)	Medium risk (Port states: Vietnam, Tuvalu, Marshall Islands, Micronesia)	Downgraded to medium risk

Species name	Yellowfin tuna			
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**
	All	Medium risk (multiple countries in FAO 71 area)	Medium risk (Port states: Tuvalu, Vanuatu)	Downgraded to medium 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.