By-Product assessment report

Document TEM-003 (prev. FISH-1) - Version 3.0
Issued July 2024 – Effective July 2024

BP125: TROPICANDINA S.A. – Ecuador

Report code	BP125	Date of issue	November 2025

1. Application details		
Applicant	TROPICANDINA S.A.	
Applicant country	Ecuador	
2. Certification Body details		
Name of Certification Body (CB)	LRQA	
Contact information for CB		
Assessor name	José Peiró Crespo	
CB internal peer reviewer name	Sam Peacock	
Internal peer review evaluation	Agree with evaluation	
Comments on the assessment	This assessment addresses three byproduct species, all of which are caught exclusively by Ecuadorian vessels caught in FAO Areas 77 and 87 and landed at national ports (Manta). None of the byproduct species included in this assessment meet the MT criteria for Endangered, Threatened, or Protected (ETP) species; therefore, all are eligible for byproduct evaluation. As Ecuador is classified as a High-Risk flag state, Step 3 of the assessment process was required. The client provided detailed information on the fisheries' operational areas and landing ports. Based on this data, Step 3 was conducted, leading to the conclusion that all listed byproducts—skipjack, yellowfin, and bigeye tuna—from FAO areas 77 and 87 may be sourced with caution.	
3. Approval validity	Valid from 11/2025	Valid until 11/2026

1.	2. By-product assessment outcomes		
By-product species name *Common and Latin names*	**Flag country(ies)**	**FAO area**	**MarinTrust approval status**
Skipjack tuna (*Katsuwonus pelamis*)	Ecuador	FAO 77 and 87	Approved source with caution
Yellowfin tuna (*Thunnus albacares*)	Ecuador	FAO 77 and 87	Approved source with caution
Bigeye tuna (*Thunnus obesus*)	Ecuador	FAO 77 and 87	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

By-product species name *Common and Latin names*	**Flag country(ies)**	**IUCN Red List** *Select IUCN red list category from dropdown*	**CITES Appendices** *Select CITES appendix status from dropdown*	**Step 2 risk status** *Low risk/ Medium risk/ High risk*	**Step 3 required** *Yes / No*	**Step 3 risk Outcome** *Not applicable /Risk downgraded to Medium risk/ Remains High risk*
Skipjack tuna (*Katsuwonus pelamis*) FAO 77 and 87	Ecuador	Least concern	Not listed	High risk	Yes	Risk downgraded to Medium risk
Yellowfin tuna (*Thunnus albacares*) FAO 77 and 87	Ecuador	Least concern	Not listed	High risk	Yes	Risk downgraded to Medium risk
Bigeye tuna (*Thunnus obesus*) FAO 77 and 87	Ecuador	Vulnerable	Not listed	High risk	Yes	Risk downgraded to Medium risk

Appendix 2 – detailed assessment outcomes

(step 2 and step 3 if applicable)

Step 2 outcomes

Assessor note: Copy and paste from Spreadsheet.

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
Ecuador	High	2.58	2.11	2.43	1	3	1	1	35.38%

Step 3 outcomes

Category C assessment

This section presents the relevant species categorized by ocean: Atlantic, Pacific, and Indian.

Pacific Ocean: eastern

Species name	Skipjack tuna (*Katsuwonus pelamis*)		
Fishing area and stock	**FAO Areas 77 and 87 (Eastern 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.

One stock of skipjack is defined in the eastern Pacific Ocean (EPO). In the eastern Pacific Ocean (EPO), the majority of catch is taken by the purse seine fishery. Since 1990 the purse-seine fishery associated with floating objects has become the dominant fishery type.

Several data sources are available to fit the model, including data from sixteen defined fisheries and five "surveys". The fisheries are classified by gear type (purse-seine, longline) and purse-seine set type, which includes dolphin-associated (DEL), floating-object associated (OBJ), and unassociated (NOA) sets, as well as by geographical area of operation. The "surveys" data include: a) catch-per-set indices for purse-seine sets, by set type (OBJ, NOA), where the relationship between catch-per-set and abundance remains uncertain; b) an index based on recently developed echosounder buoy data; c) absolute biomass from a spatiotemporal Petersen-type model applied to tag-recapture data; and d) an index of relative biomass from a tagging biomass model that uses a flexible effort assumption

Catch data is available and it is used by the IATTC to assess the stock status of skipjack tuna in the area (IATTC 2024). **C1.1. is met.**

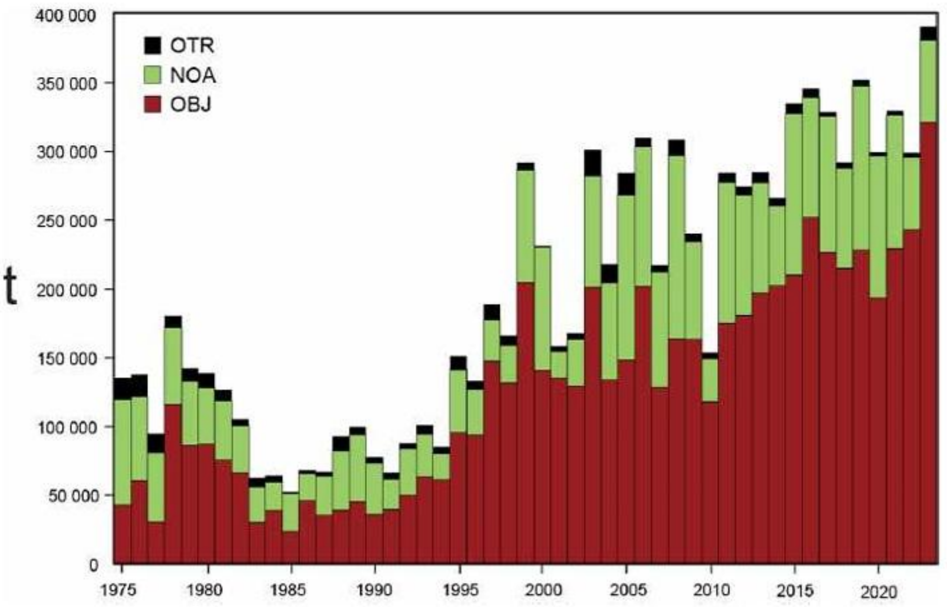

FIGURE 1. *TOTAL CATCHES (RETAINED CATCHES PLUS DISCARDS) FOR THE PURSE-SEINE FISHERIES, BY SET TYPE (NOA, OBJ) AND RETAINED CATCHES FOR THE OTHER (OTR) FISHERIES, OF SKIPJACK TUNA IN THE EASTERN PACIFIC OCEAN, 1975- 2023. THE PURSE-SEINE CATCHES ARE ADJUSTED TO THE SPECIES COMPOSITION ESTIMATE OBTAINED FROM SAMPLING THE CATCHES. THE 2020 CATCH DATA ARE PRELIMINARY (IATTC 2024)*.

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 benchmark stock assessment for skipjack tuna in the EPO was conducted using an integrated statistical age-structured catch-at-length model in Stock Synthesis. This assessment represents a significant improvement from the initial interim assessment conducted in 2022. It reflects major advancements in the assessment methodologies and incorporates new data sets, including tagging data collected through the Regional Tuna Tagging Program in the EPO.

MSY-based quantities cannot be estimated because the trade off between growth and natural mortality, in combination with the assumption that recruitment is independent of stock size, implies fish should be caught at the youngest ages to maximize yield, implying that the optimal fishing mortality should be infinite. Therefore, a conservative proxy for the target biomass of SBR = 0.3 based on values for bigeye and yellowfin, and the fishing mortality corresponding to that biomass, are proposed as the target reference points (SAC-14-09; SAC-14 INF-O). The reference model estimated that the 2023 exploitation rate was below status quo (average level of 2017-2019). Only one of the sensitivity analyses, which removed the ECHO index, estimated exploitation rates that exceeded the status quo in 2023 slightly. The reference model and most of the sensitivity analyses estimate that the current biomass is above the target reference point and the fishing mortality is below the target fishing mortality. None of these scenarios estimate that the stock is below the limit reference point (IATTC 2024).

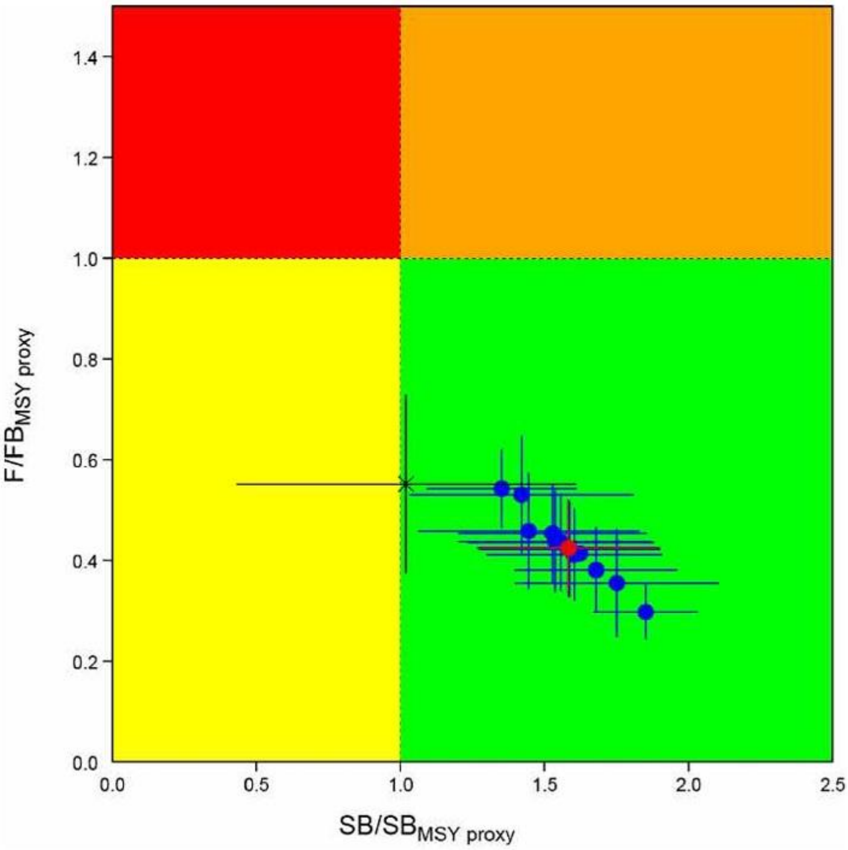

FIGURE 2. KOBE PLOT SHOWING THE STOCK STATUS ESTIMATES FROM ALL THE MODELS. THE RED DOT AND ERROR BARS REPRESENT THE ESTIMATES FROM THE REFERENCE MODEL. THE BLACK CROSS AND ERROR BARS REPRESENT THE ESTIMATES FROM THE MODEL THAT REMOVED THE ECHO INDEX (IATTC 2024).

The biomass of the stock is above the limit reference point. **C1.2 is met.**

References

IATTC (2023). The tuna fishery in the Eastern Pacific Ocean in 2022. Available at : https://www.iattc.org/en-US/publication/commission/Fishery-Status-Report

IATTC (2024). The tuna fishery in the Eastern Pacific Ocean in 2022. Available at: https://www.iattc.org/en-US/publication/commission/Fishery-Status-Report

Species name	Yellowfin tuna (*Thunnus alalunga*)		
Fishing area and stock	**FAO Areas 77 and 87 (Eastern Pacific bigeye 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.

Two discrete stocks of yellowfin are recognised in the Pacific Ocean delimited:

1. Western Central Pacific Ocean (WCPO) yellowfin, managed via the Western and Central Pacific Fisheries Commission (WCPFC).

2. Eastern Pacific Ocean (EPO) yellowfin, managed by the Inter-American Tropical Tuna Commission (IATTC).

Those stocks are assessed by the WCPFC and the IATTC respectively using reference points. As this assessment refers to FAO areas 77 and 87, only the EPO stock is considered:

<u>Eastern Pacific Ocean (EPO) yellowfin tuna</u>

The last benchmark assessment for yellowfin tuna was conducted in 2020 and followed a risk assessment framework. 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. Data on catches of yellowfin tuna is reported in the most recent IATTC report (IATTC 2024). It covers the period 1975-2023. The purse-seine catches of yellowfin tuna were 298,000 t in 2023, which is about 25% higher than the average for the previous 10 years. Catches from other gears (mainly longline) are about 5% of the total catches. The catches on floating objects where about 67,000 t in 2021, increased to 91,000 t in 2022 and decreased to 74,000 t in 2023. This recent increase in the catch of yellowfin on floating-object sets in 2022 was particularly strong, which was at the highest level since 2000 (increase of ~50% from 2021 to 2022, in bias-adjusted weight). This was of concern due to the increase in the number of floating objects sets (IATTC 2024). Catches are considered in the assessment, **C1.1. is met.**

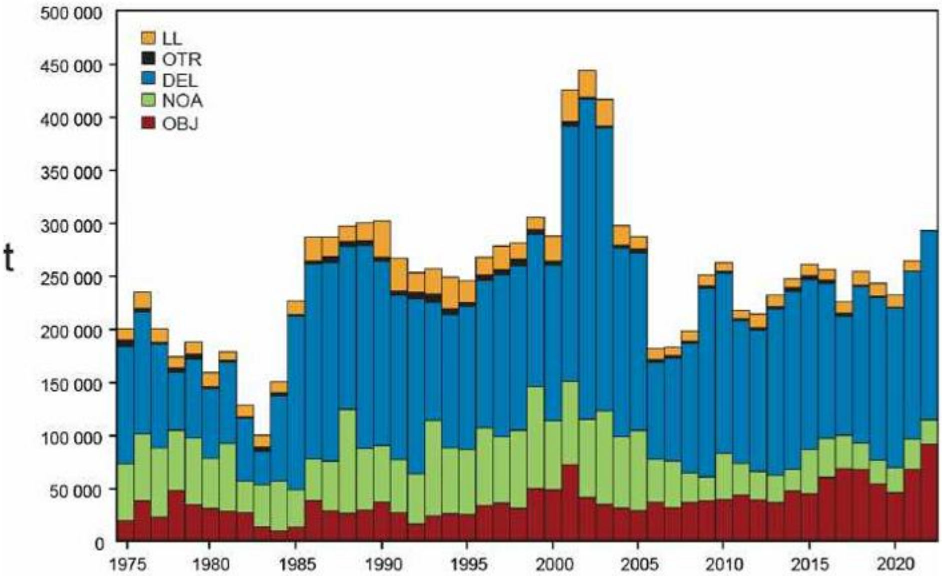

FIGURE 3. TOTAL CATCHES (RETAINED CATCHES PLUS DISCARDS) FOR THE PURSE-SEINE FISHERIES, BY SET TYPE (DEL, NOA, OBJ), AND RETAINED CATCHES FOR THE LONGLINE (LL) AND OTHER (OTR) FISHERIES, OF YELLOWFIN TUNA IN THE EASTERN PACIFIC OCEAN, 1975-2023. THE PURSE-SEINE CATCHES ARE ADJUSTED TO THE SPECIES COMPOSITION ESTIMATE OBTAINED FROM SAMPLING THE CATCHES. THE 2020 AND 2021 DATA ARE PRELIMINARY (IATTC 2024).

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 most recent full stock assessments for this stock, conducted in 2020, multiple reference models were used to develop a risk-based understanding of stock status. Pprobabilities of exceeding the reference points where computed using each model result and its associated weight. Results indicated that there is a low probability of Fcur being above FMSY (9%). The probability of Fcur being above FLIMIT is zero. The probability of the spawning biomass being below SMSY_d is low (12%). The probability of the spawning biomass exceeding SLIMIT is zero. The combined expected risk of F exceeding FMSY is below 50% for six closure durations, varying from 26% (no 50 closure) to 5% (100 days), with a low risk (9%) for the current closure (72 days) (IATTC 2023).

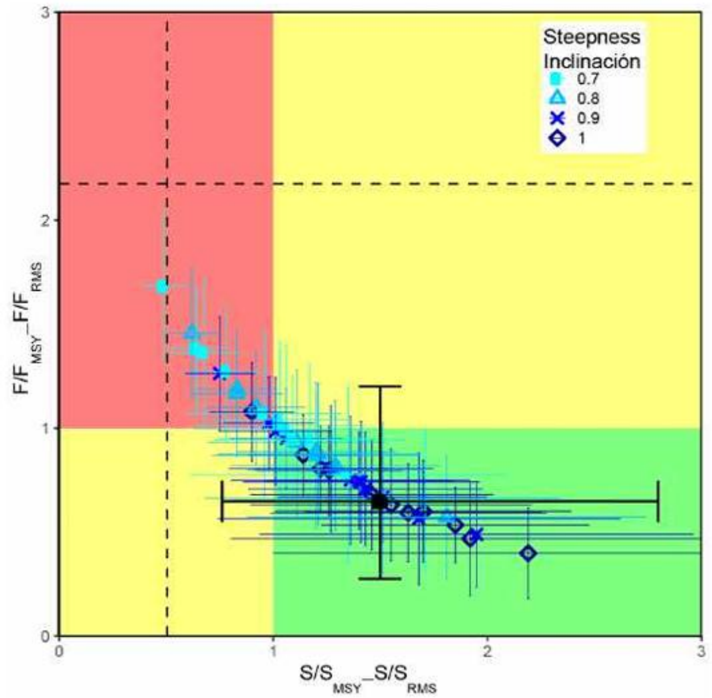

FIGURE 4. KOBE (PHASE) PLOT OF THE TIME SERIES OF ESTIMATES OF SPAWNING STOCK SIZE (S) AND FISHING MORTALITY (F) OF YELLOWFIN TUNA RELATIVE TO THEIR MSY REFERENCE POINTS (IATTC 2023).

In 2024, exploratory stock-assessment models were fitted to an abundance index from dolphin-associated purse-seine sets in the EPO. The models could not incorporate the associated length-frequency data because the EPO-wide index combines fish from areas with distinct size compositions. The core area for dolphin-associated sets contains fish of intermediate size, while smaller fish occur northward (off Mexico) and larger fish occur to the west and south. These spatial patterns are persistent across time and gears (SAC-15-03). Because the exploratory assessment focused only on the core area, and tagging data indicate limited movement and potential local depletion, there is concern that stock status varies spatially and is not fully captured by the assessment. Persistent uncertainty about stock and spatial structure continues to impede a full yellowfin tuna assessment, and in some areas existing data are insufficient to resolve it. A recently developed spatiotemporal model for deriving absolute abundance from tagging data (SAC-13-08, SAC-14-INF-E), which enabled the first benchmark skipjack assessment (SAC-15-04), provides a promising way forward. Continued tagging, with a study design that covers areas potentially containing separate stocks, is recommended.
However, no new stock assessment was conducted.
The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point, **C1.2. is met.**

References

IATTC (2023). The tuna fishery in the Eastern Pacific Ocean in 2022. Available at : https://www.iattc.org/en-US/publication/commission/Fishery-Status-Report

IATTC (2024). The tuna fishery in the Eastern Pacific Ocean in 2022. Available at: https://www.iattc.org/en-US/publication/commission/Fishery-Status-Report

Species name	Bigeye tuna (*Thunnus obesus*)		
Fishing area and stock	**FAO Areas 77 and 87 (Eastern Pacific bigeye 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.

Bigeye tuna are distributed in tropical and temperate waters across the Pacific Ocean. In the eastern Pacific Ocean (EPO), the majority of catch before 1993 was taken by longline fisheries that target large bigeye. Due to the expansion of purse-seine fisheries associated with floating objects, purseseine fisheries that catch small bigeye have replaced longline fisheries as the dominant fishery type for EPO bigeye since 1996 (IATTC 2024).

The assessment includes all available catch data, ensuring that criterion **C1.1 is met.**

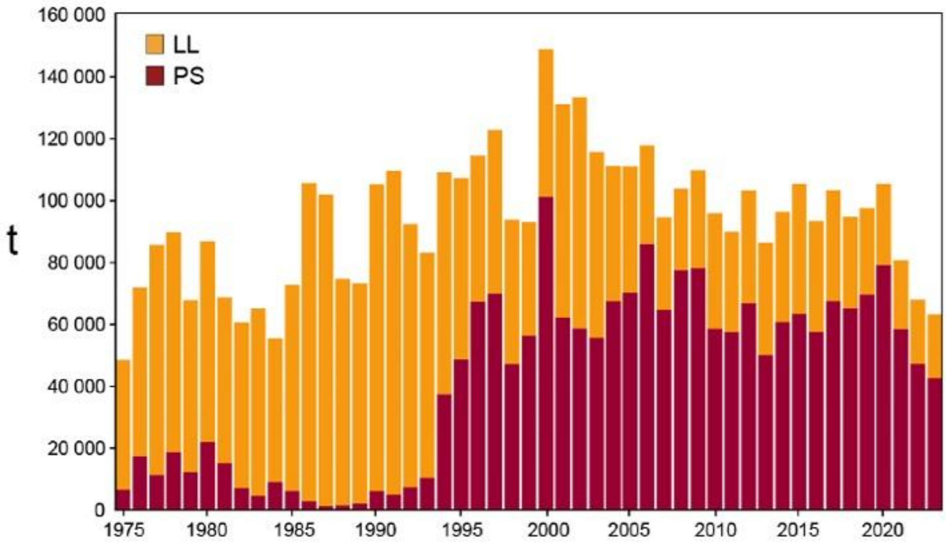

Figure 5. Total catches (retained catches plus discards) by the purse-seine (PS) fisheries, and retained catches by the longline (LL) fisheries, of bigeye tuna in the eastern Pacific Ocean, 1975-2023. The purse seine catches are adjusted to the species composition estimate obtained from sampling the catches. 2020 and 2021 data are preliminary (IATCC 2024).

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 bigeye tuna (Th*unnus obesus*) stock in the Eastern Pacific Ocean is regularly evaluated by the Inter-American Tropical Tuna Commission (IATTC). The most recent comprehensive evaluation, conducted in 2024, employed a risk-based analytical framework to support management decisions. This approach uses a hierarchical structure of three hypothesis levels to address key uncertainties in the assessment:

- Longline fishery length composition: Discrepancies in fitting length composition data, assuming asymptotic selectivity.
- Effort creep: Varying levels of annual increase in longline fleet effort.
- Stock-recruitment steepness: Uncertainty in the steepness of the stock-recruitment relationship.

At the first level, four alternative model configurations were tested, reflecting different biological and fishery assumptions, including fixed parameters, growth estimation, dome-shaped selectivity, and variable natural mortality. The second level considered three annual increases in longline catchability (0%, 1%, and 2%), while the third level evaluated three steepness values (1.0, 0.9, and 0.8). These combinations yielded 36 potential reference models, of which 33 were successfully used in the final risk analysis, with three models excluded due to convergence issues (IATTC 2024).

The estimates from the thirty-three converged reference models are combined in a risk analysis framework to provide management advice. The risk analysis indicates that there is a:

- 46.6% probability that the spawning biomass at the beginning of 2024 is below the target reference point ($SMSY\_d$);
- (2) 24.7% probability that the fishing mortality in 2021-2023 is above the target reference point ($FMSY$);
- (3) 58.5% probability that the fishing mortality in 2017-2019 (the status quo period) was above the target reference point ($FMSY$);
- (4) 0.2% probability that the spawning biomass at the beginning of 2024 is below the limit reference point ($SLimit$);
- and (5) 0.1% probability that the fishing mortality in 2021-2023 is above the limit reference point ($FLimit$).

The weighted 10-year projection under the current fishing mortality suggests there is a 50% probability that the spawning biomass ratio at the beginning of 2034 will be above 0.27 (IATTC 2024). Therefore, there was a very low probability of the biomass being below the limit reference point, and **C1.2 is met.**

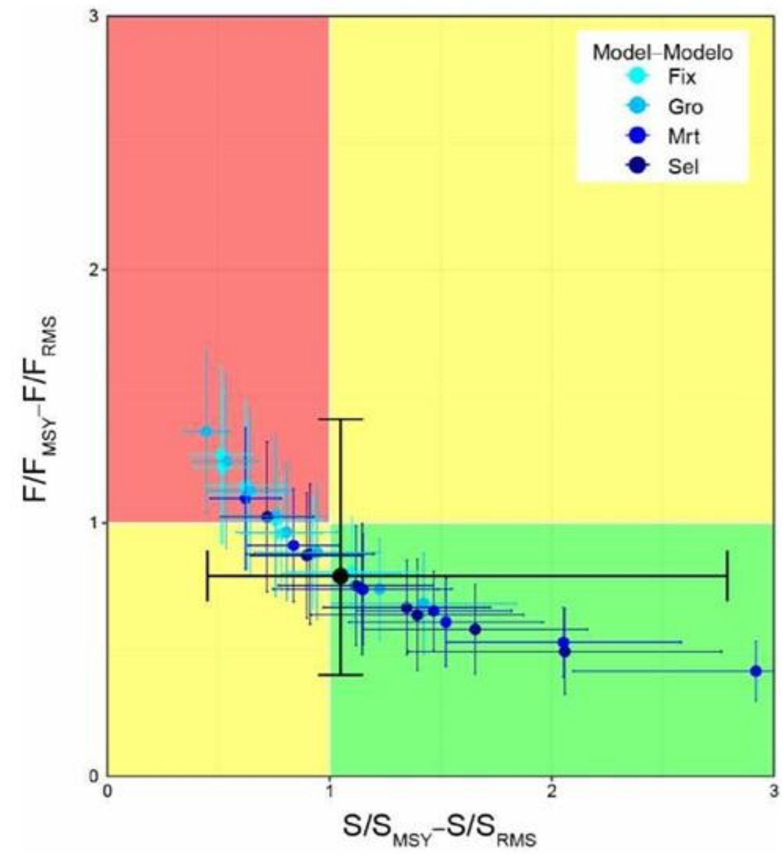

FIGURE 6 KOBE PLOT OF THE MOST RECENT ESTIMATES OF SPAWNING BIOMASS (S) AND FISHING MORTALITY (F) RELATIVE TO THEIR MSY REFERENCE POINTS (SMSY_D AND FMSY) FROM THE THIRTY-THREE REFERENCE MODELS. EACH DOT IS BASED ON THE AVERAGE F OVER THE MOST RECENT THREE YEARS, 2021-2023, AND THE ERROR BARS REPRESENT 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).

References

IATTC (2023). The tuna fishery in the Eastern Pacific Ocean in 2022. Available at : https://www.iattc.org/en-US/publication/commission/Fishery-Status-Report

IATTC (2024). The tuna fishery in the Eastern Pacific Ocean in 2022. Available at: https://www.iattc.org/en-US/publication/commission/Fishery-Status-Report

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**
	Ecuador	Ecuador (2.69, Medium risk) in FAO 77 and 87	Manta, Ecuador (2.11, Medium Risk)	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**
	Ecuador	Ecuador (2.69, Medium risk) in FAO 77 and 87	Manta, Ecuador (2.11, Medium Risk)	Downgraded to medium risk

Species name	Bigeye tuna (*Thunnus obesus*)			
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.	**Ecuador**	Ecuador (2.69, Medium risk) in FAO 77 and 87	Manta, Ecuador (2.11, Medium Risk)	Downgraded to medium risk