By-Product assessment report

BP051

Marine Biotechnology Products Côte d'Ivoire

Document TEM-003 (prev. FISH-1) - Version 3.1

Issued April 2025 – Effective April 2025

Report code	BP051	Date of issue	April 2025

1. Application details	
Applicant	Marine Biotechnology Products Côte d'Ivoire
Applicant country	Côte d'Ivoire

2. Certification Body details	
Name of Certification Body (CB)	NSF
Contact information for CB	NSF-MarinTrust@nsf.org
Assessor name	Ana Elisa Almeida Ayres
CB internal peer reviewer name	Matthew Jew
Internal peer review evaluation	Agree with evaluation
Number of Assessment days	1
Comments on the assessment	None of the byproduct species listed in this assessment meet the MarinTrust definition of an Endangered, Threatened, or Protected (ETP) species; therefore, all are eligible for byproduct assessment. The yellowfin tuna (*Thunnus albacares*), bigeye tuna (*Thunnus obesus*), and skipjack tuna (*Katsuwonus pelamis*) are caught by vessels flagged under Côte d'Ivoire, Ghana, Belize, Curacao, Spain, France, Italy, Senegal, Seychelles, as Ghana received a High-Risk rating in Step 2, Step 3 was required for these byproducts. Notice that Curacao is a country within the Kingdom of the Netherlands and it is not evaluated on the IUU Fishing Risk Index.

	The client provided information on the fisheries' operational areas and landing ports (coastal and port details) for all the byproducts under the evaluation. Based on the fishing areas provided, 4 stocks were identified: Atlantic yellowfin tuna, Atlantic bigeye tuna, eastern Atlantic skipjack and western Atlantic skipjack. Based on this data, Step 3 was conducted, concluding that all byproducts from Marine Biotechnology Products Côte d'Ivoire may be sourced with caution.	
3. Approval validity	Valid from 04/2025	Valid until 04/2026
4. Assessment Cycle	Initial	

5. By-product assessment outcomes			
By-product species name	**Flag country(ies)**	**Fishing Areas**	**MarinTrust approval status**
Yellowfin tuna (*Thunnus albacares*)	Côte d'Ivoire, Ghana, Belize, Curacao, Spain, France, Italy, Senegal, Seychelles	FAO Areas 34, 41, 47	Approved source with caution
Bigeye tuna (*Thunnus obesus*)	Côte d'Ivoire, Ghana, Belize, Curacao, Spain, France, Italy, Senegal, Seychelles	FAO Areas 34, 41, 47	Approved source with caution
Skipjack tuna (*Katsuwonus pelamis*)	Côte d'Ivoire, Ghana, Belize, Curacao, Spain, France, Italy, Senegal, Seychelles	FAO Areas 34, 41, 47	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
Yellowfin tuna (*Thunnus albacares*)	Ghana, Bahamas, Lithuania, France, Italy, Mauritius, Seychelles, Spain	Least concern	Not listed	High risk	Yes
Bigeye tuna (*Thunnus obesus*)	Ghana, Bahamas, Lithuania, France, Italy, Mauritius, Seychelles, Spain	Vulnerable	Not listed	High risk	Yes
Skipjack tuna (*Katsuwonus pelamis*)	Ghana, Bahamas, Lithuania, France, Italy, Mauritius, Seychelles, Spain	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
Yellowfin tuna (*Thunnus albacares*)	Ghana, Bahamas, Lithuania, France, Italy, Mauritius, Seychelles, Spain	FAO Areas 34, 41, 47	Atlantic yellowfin tuna	Pass	Path 2 - Yes	Risk downgraded to Medium Risk
Bigeye tuna (*Thunnus obesus*)	Ghana, Bahamas, Lithuania, France, Italy, Mauritius, Seychelles, Spain	FAO Areas 34, 41, 47	Atlantic bigeye tuna	Pass	Path 2 - Yes	Risk downgraded to Medium Risk
Skipjack tuna (*Katsuwonus pelamis*)	Ghana, Bahamas, Lithuania, France, Italy, Mauritius, Seychelles, Spain	FAO Areas 34, 41, 47	Eastern and Western Atlantic skipjack	Pass	Path 2 - Yes	Risk downgraded to Medium Risk
Comments on Step 3 Assessment: Notice that Curacao is a country within the Kingdom of the Netherlands and it is not evaluated on the IUU Fishing Risk Index.						

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
Ghana	High	1.67	2	2.23	1	3	1	1	44.81%
Cote d'Ivoire	Medium	2	2.83	2.27	1	1	1	1	46.23%
Belize	Medium	2.29	1.57	2	1	1		1	35.85%
France	Medium	3.17	2.39	1.67	1	1	1	1	85.38%
Italy	Medium	2.54	2.17	1.73	1	1	1	1	68.87%
Senegal	Medium	2.38	2.72	2.4	1	1	1	1	41.04%
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

Species name	Yellowfin tuna (*Thunnus albacares*)
Fishing area and stock	**FAO Areas 34, 41, 47 (Atlantic yellowfin tuna)**

C 1	**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.

A full stock assessment was conducted for yellowfin tuna in 2024 using an age-structured model framework (Stock Synthesis) applied to the available data through 2022.

The assessment incorporated all available catch data along with three key abundance indices: a joint-CPC tropical Atlantic longline index; an acoustic echosounder buoy index; and a purse seine free school index (ICCAT 2024a).

Figure 1. Yellowfin tuna total catch 1950-2023 by main fishing gear group. The red dotted line represents the TAC (ICCAT 2024a).

Fishery removals of the species in the fishery under assessment are included in the stock assessment process, C1.1 is met.

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. The median estimate of SSB_{2022}/SSB_{MSY} was 1.37 (80% confidence interval: 0.91 - 2.15), indicating the stock was not overfished in 2022 with 81% probability. The median estimate of F_{2022}/F_{MSY} was 0.89 (0.40 - 1.46), indicating that overfishing was not occurring in 2022 with 58% probability. The median MSY estimated was 121,661 t with 80% confidence intervals of 107,485 and 188,456 t. The probability of the stock being in each quadrant of the Kobe plot in 2022 is provided in figure below. There was a 58% probability that the stock was in the green quadrant (not overfished nor subject to overfishing) a 23% probability of being in the orange quadrant (subject to overfishing but not being overfished), and a 19% probability in the red quadrant (being both overfished and subject to overfishing)(ICCAT, 2024a). Therefore, the stock is likely that stock biomass was above the target reference point level, and therefore highly likely to be above the limit reference point level.
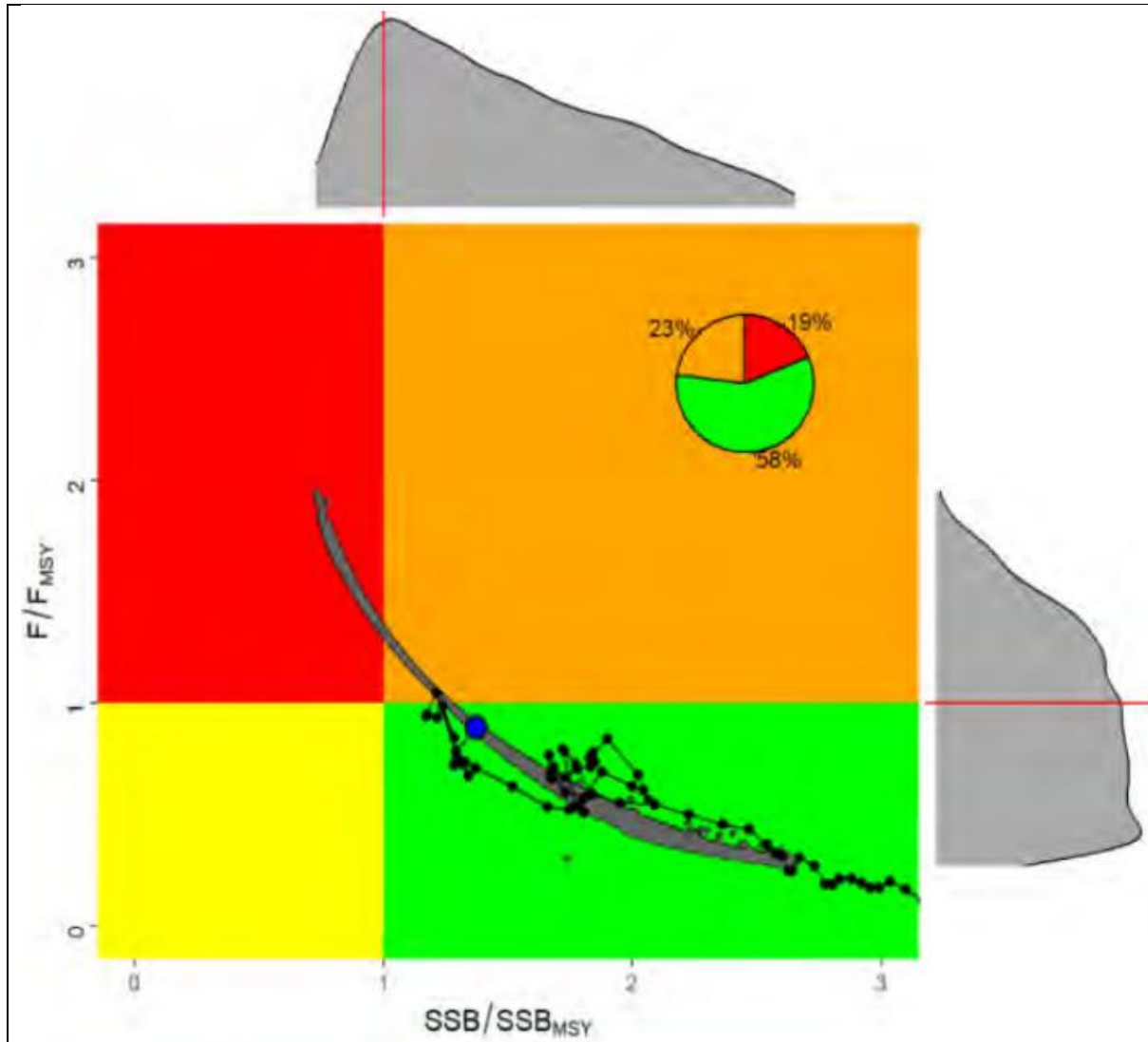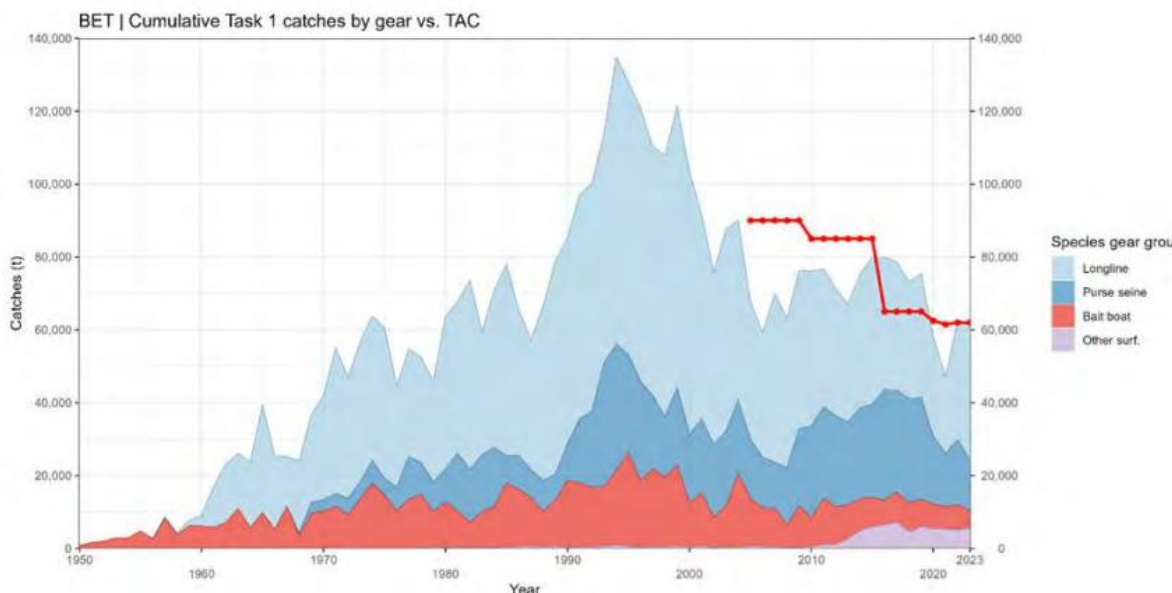
Figure 2. Kobe plot of the stock status of Atlantic yellowfin tuna in 2022. Gray dots are the 4,000-stock synthesis model runs; the blue circle is the median of these runs and marginal histograms represent the distribution of either SSB/SSBMSY or F/FMSY. The black line indicates the stock status trajectory starting in 1958. 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 2024a).

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference points (or proxy), C1.2 is met

References

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

Species name	Bigeye tuna (*Thunnus obesus*)	
Fishing area and stock	FAO Areas 34, 41, 47 (Atlantic bigeye tuna)	

C **1**	**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.

A stock assessment for bigeye tuna was conducted by the ICCAT in 2021. That assessment was conducted using similar assessment models to those used in 2018, updating the data until 2019, including catch data.

Figure 3. 7. Bigeye tuna estimated and reported catches for all the Atlantic stock (t). the red dotted line indicates the TAC (ICCAT, 2025).

Fishery removals of the species in the fishery under assessment are included in the stock assessment process, C1.1 is met.

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 age structured model (SS3) was the primary source of information used to evaluate this stock and shows a substantially more optimistic stock status than estimated in 2018 due to improving longline abundance indices and incorporating new mortality-at-age vectors (Medley & Gascoigne 2024). The results of the assessment, based on the median of the entire uncertainty grid shows that in 2019 the Atlantic bigeye tuna stock was overfished (median $SSB2019/SSBMSY = 0.94$ and 80% confidence interval (CI) of 0.71 and 1.37) and was not undergoing overfishing (median $F2019/FMSY=1.00$ and 80% CI of 0.63 and 1.35). The average of MSY was estimated as 86,833 t with (80% CI of 72,210 t and 106,440 t) from the uncertainty grid deterministic runs (ICCAT 2025). Based on that information it seems that the stock is closed to the target point and therefore over any potential limit point.
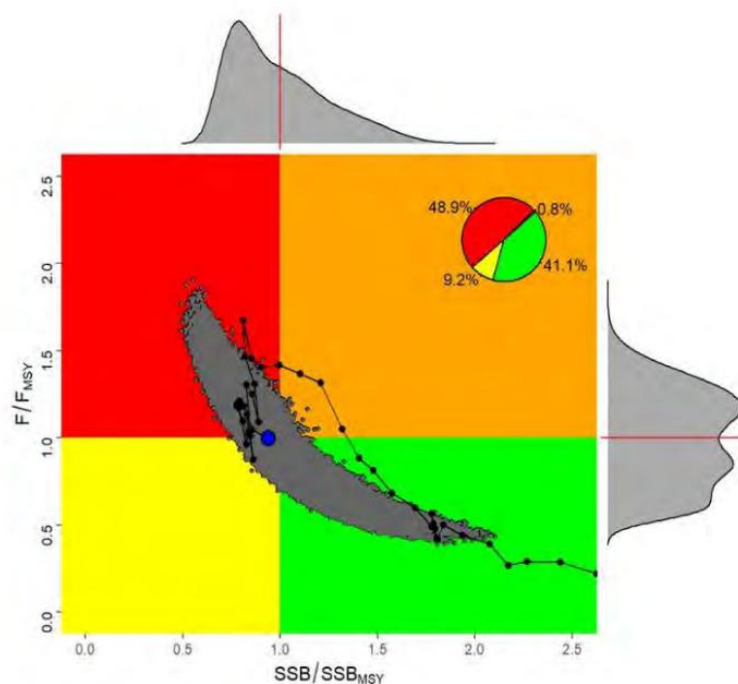

Figure 4. Stock synthesis: Kobe plot of SSB/SSBMSY and F/FMSY for stock status of Atlantic bigeye tuna in 2019 based on the log multivariate normal approximation across the 27 uncertainty grid model runs of stock synthesis with an insert pie chart showing the probability of being in the red quadrant (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/SSBMSY OR F/FMSY (ICCAT, 2025).

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference points (or proxy), C1.2 is met.

References

ICCAT. 2025. BIGEYE TUNA. EXECUTIVE SUMMARY. Available at: https://www.iccat.int/en/assess.html

Medley, P.A.H. & Gascoigne, J. (2024). An Evaluation of the Sustainability of Global Tuna Stocks Relative to Marine Stewardship Council Criteria (Version 11). ISSF Technical Report 2024-06. International Seafood Sustainability Foundation, Pittsburgh, PA, USA.

Species name	Skipjack tuna (*Katsuwonus pelamis*)
Fishing area and stock	FAO 34,41,47 (Eastern and Western 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

There are two skipjack stocks in the Atlantic (eastern and western stock). Both are considered in the sections below.
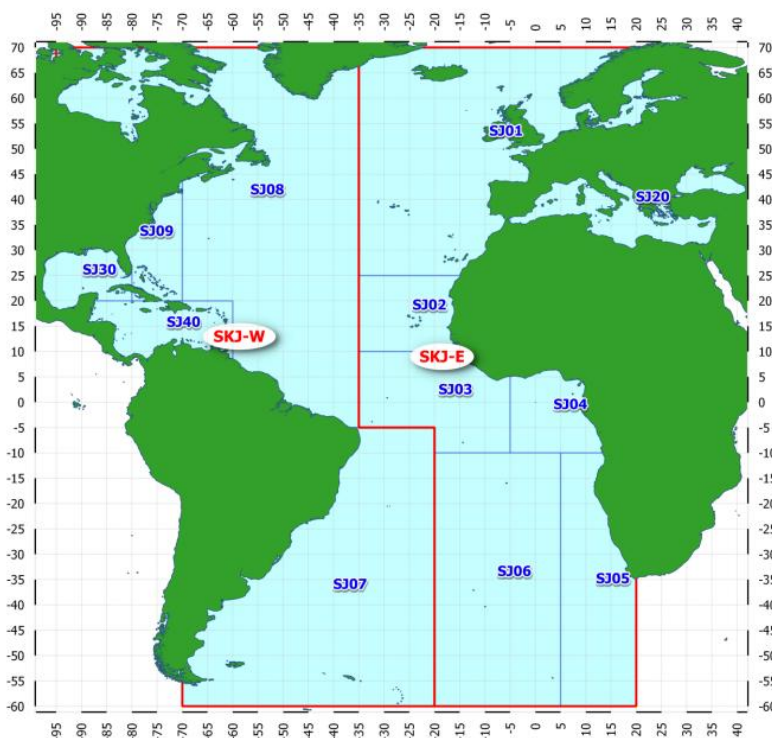

Figure 5. ICCAT Convention Area for the Atlantic eastern (SKJ-E) and western (SKJ-E) skipjack stock (ICCAT, 2016).

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.

a) Eastern Skipjack Tuna

The last stock assessment of the eastern skipjack stock was performed in 2022 and concluded the stock was in a healthy condition. The stock assessment applied non-equilibrium and Bayesian state-

space production models to integrated statistical assessment models using the available catch data from 1950 up to and including 2020 (ICCAT, 2022a).
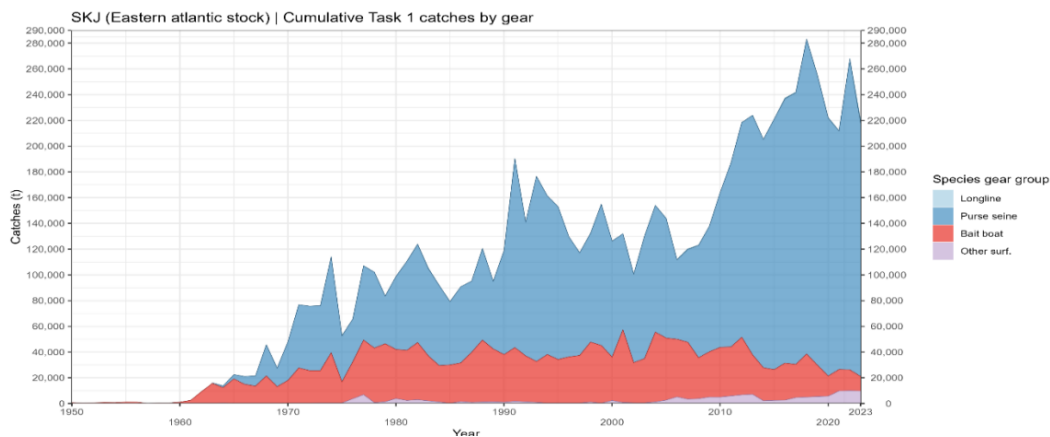

Figure 6. Skipjack catches in the eastern Atlantic, by gear (1950-2023). The values for 2023 are preliminary (ICCAT, 2022a).

a) Western skipjack Tuna

The last stock assessment of the eastern skipjack stock was performed in 2022 and concluded the stock was in a healthy condition. The stock assessment applied non-equilibrium and Bayesian state-space production models to integrated statistical assessment models using the available catch data from 1952 up to and including 2020 (ICCAT, 2022a).
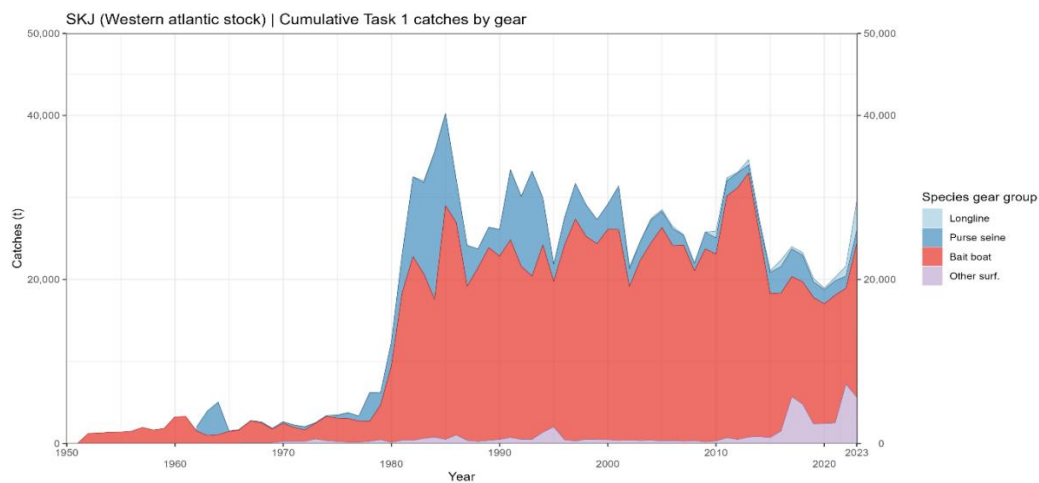

Figure 7. Skipjack catches in the western Atlantic, by gear (1950-2023). The values for 2023 are preliminary (ICCAT, 2022a).

Fishery removals of the species in the fishery under assessment are included in the stock assessment process, C1.1 is met.

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) Eastern Skipjack Tuna

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

1. The ratio of Fcurrent/FMSY is estimated to be 0.63 (95% C.I.: 0.18-2.35), indicating that overfishing is not occurring.

2. The ratio of spawning biomass SSBcurrent/SSBMSY is estimated to be 1.60 (95% C.I.: 0.50-5.79) , indicating that the stock is not in an overfished state.

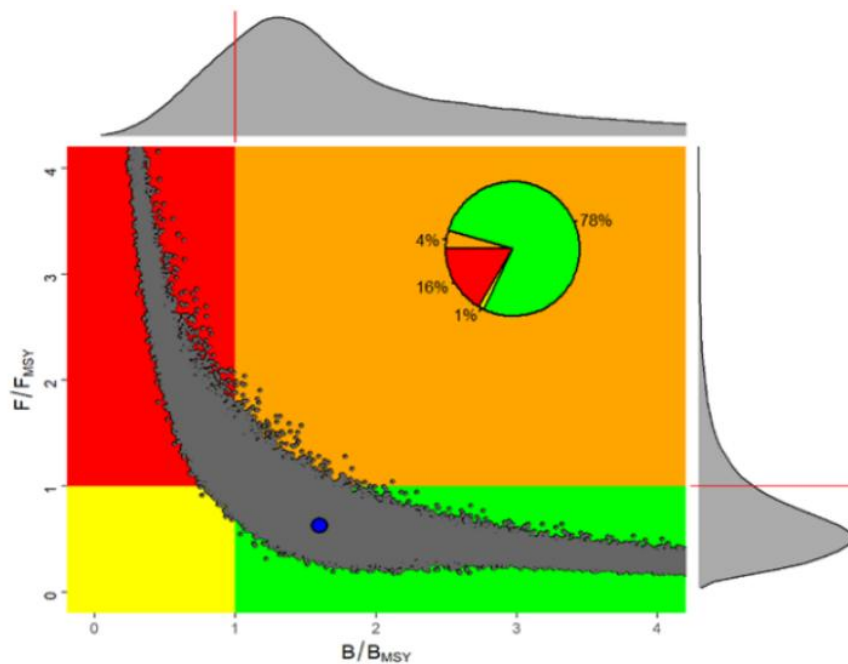3. The estimate of MSY is 216,617 t (95% C.I.: 172,735-284,658 t).

Figure 8. Joint Kobe phase plot for the 18 Stock Synthesis uncertainty grid runs and 18 JABBA uncertainty grid runs for the eastern Atlantic skipjack stock. For each run the benchmarks are calculated from the year-specific selectivity and fleet allocations, and based on 90,000 MVLN iterations for Stock Synthesis and 90,000 MCMC iterations for JABBA. The blue point shows the median of 180,000 iterations for SSB2020/SSBMSY or B2020/BMSY and F2020/FMSY 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. The upper graph represents the smoothed frequency distribution of SSB2020/SSBMSY or B2020/BMSY estimates for 2020. The right graph represents the smoothed frequency distribution of F2020/FMSY estimates for 2020. The inserted pie graph represents the percentage of each 2020 estimate that fall in each quadrant of the Kobe plot. All SSB for Stock Synthesis showed the values at the end of years (ICCAT, 2022a).

b) Western Skipjack Tuna

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

1. The ratio of Fcurrent/FMSY is around 0.41 (95% C.I.: 0.19-0.89), indicating that overfishing is not occurring.
2. The ratio of spawning biomass SSBcurrent/SSBMSY is 1.60 (95% C.I.: 0.90-2.87), indicating that the stock is not overfished.
3. The value of MSY is estimated as 35,277 tonnes (95% C.I.: 28,444-46,340 t).
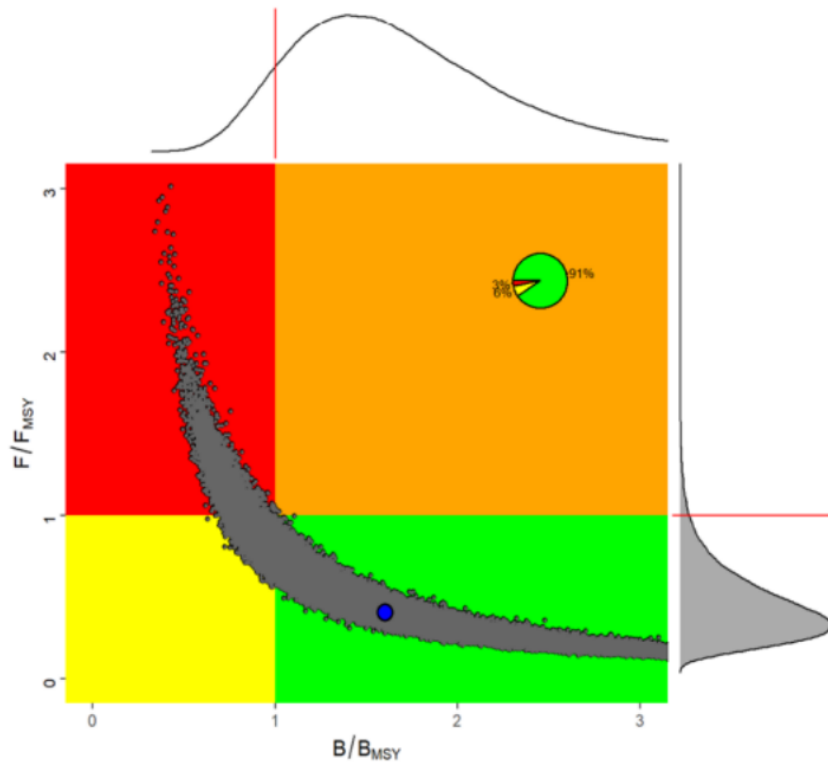

Figure 9. Kobe phase plot for the 9 Stock Synthesis uncertainty grid runs for the western Atlantic skipjack stock. For each run the benchmarks are calculated from the year-specific selectivity and fleet allocations and based on 200,000 MVLN iterations. The blue point shows the median of 200,000 iterations for SSB2020/SSBMSY and F2020/FMSY for the entire set of runs in the grid. Black line with black symbols represents the historical evolution of the median of all runs. 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/SSBMSY estimates for 2020. The right graph represents the smoothed frequency distribution of F/FMSY estimates for 2020. The inserted pie graph represents the percentage of each 2020 estimate that fall in each quadrant of the Kobe plot. All SSB showed the values at the end of years (ICCA, 2022a).

The species is considered, in its most recent stock assessment, to have a biomass above the limit reference points (or proxy), C1.2 is met

References

ICCAT. 2016. ICCAT geographical definitions. https://www.iccat.int/Data/ICCAT_maps.pdf

ICCAT. 2022a. EXECUTIVE SUMMARY. 9.3 SKJ – Skipjack. https://www.iccat.int/Documents/SCRS/ExecSum/SKJ_ENG.pdf

Traceability information

Information provided for Step 3 Path 1 or Path 2

Species name	Yellowfin tuna – Thunnus albacares			
Path 1	Yes ☐ No ☒			
Confirm all KDEs are provided	Yes ☐ No ☒			
Path 2	Yes ☒ No ☐			
Path 2 outcome	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Côte d'Ivoire, Ghana, Belize, Curacao, Spain, France, Italy, Senegal, Seychelles	Côte d'Ivoire, Ghana, Belize, Curacao, Spain, France, Italy, Senegal, Seychelles	Cote d'Ivoire	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 ☐			
Path 2 outcome	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Côte d'Ivoire, Ghana, Belize, Curacao, Spain, France, Italy, Senegal, Seychelles	Côte d'Ivoire, Ghana, Belize, Curacao, Spain, France, Italy, Senegal, Seychelles	Cote d'Ivoire	Downgraded to medium risk

Species name	Skipjack tuna – *Katsuwonus pelamis*			
Path 1	Yes ☐ No ☒			
Confirm all KDEs are provided	Yes ☐ No ☒			
Path 2	Yes ☒ No ☐			
Path 2 outcome	**Flag country**	**Coastal score**	**Port score**	**Risk outcome**
	Côte d'Ivoire, Ghana, Belize, Curacao, Spain, France, Italy, Senegal, Seychelles	Côte d'Ivoire, Ghana, Belize, Curacao, Spain, France, Italy, Senegal, Seychelles	Cote d'Ivoire MEDIUM RISK	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.