MarinTrust Standard V2

By-product Fishery Assessment

Bigeye tuna (Thunnus obesus) FAO 51 & 57, Indian Ocean, Western and Eastern

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Table 1 Application details and summary of the assessment outcome

Fishery Under Assessment	Species:	Bigeye tuna (*Thunnus obesus)*
	Geographical area:	FAO areas 51 & 57, Indian Ocean, Western and Eastern
	Country of origin of the product:	United States (flag state(s): Ghana, Belize, Spain, France, Italy)
	Stock:	Indian Ocean bigeye tuna
Date	16 June 2023	
Report Code	USA07	
Assessor	Léa Lebechnech	
Country of origin of the product - PASS	United States (flag state(s): Ghana, Belize, Spain, France, Italy)	
Country of origin of the product - FAIL	NA	

Application details and summary of the assessment outcome			
Company Name(s): The Scoular Company - Pioneer Food Cannery Limited (ID preserved)			
Country: United States			
Email address:		Applicant Code:	
Certification Body Details			
Name of Certification Body:		Global Trust Certification	
Assessor	Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-approval
Léa Lebechnech	Matthew Jew	0.5	Surveillance 1
Assessment Period	Up to June 2023		

Scope Details	
Main Species	Bigeye tuna (*Thunnus obesus*)
Stock	Indian Ocean bigeye tuna
Fishery Location	FAO areas 51 & 57, Indian Ocean Western and Eastern
Management Authority (Country/ State)	IOTC and the national fisheries management of Ghana, Belize, Spain, France, Italy
Gear Type(s)	Purse seine, longline, handlines, trolling, baitboat, gillnet and other
Outcome of Assessment	
Peer Review Evaluation	Agree with assessor's recommendation
Recommendation	APPROVED

Table 2. Assessment Determination

Assessment Determination
If any species is categorised as Endangered or Critically Endangered on IUCN's Red List, or if it appears in the CITES appendices, it cannot be approved for use as Marin trust raw material. Bigeye tuna (*Thunnus obesus*) does not appear as Endangered or Critically Endangered on IUCN's Red List, and does not appear in CITES appendices; therefore, bigeye tuna is eligible for approval for use as Marin trust by-product raw material. The bigeye tuna in FAO 51 is managed by the Indian Ocean Tuna Commission (IOTC) which is an intergovernmental organization responsible for managing tuna and tuna-like species in the Indian Ocean. The IOTC provides stock assessments and advice for these species on a three-year cycle (approximately). The most recent stock assessment for bigeye tuna was conducted in 2022. Fishery removals are included in the stock assessment and it PASSES Clause C1.1. However, the stock is considered, in its most recent stock assessment, to have biomass below the limit reference point, so it **FAILS** Clause C1.2. As the stock fails category C, it was assessed under category D. Table D1 (PSA) shows that the stock has an average productivity score of 1.71 and an average susceptibility score of 3. The PSA risk rating results (Table D3) determined that the species passes. Therefore, Indian Ocean bigeye tuna in the Indian Ocean (FAO areas 51 & 57) is **APPROVED** for the production of fishmeal and fish oil under the current MarinTrust v2.0 by-products.
Fishery Assessment Peer Review Comments
The assessor correctly classified Indian Ocean bigeye tuna in FAO Area 51 as Category C, the stock is subject to a specific management regime and reference points are defined by IOTC. Fishery removals are considered in the stock assessment process. The most recent stock assessment shows that the stock is below biomass reference points. Therefore, the stock is considered to have biomass below the limit reference point (or proxy), so it was correctly assessed under Category D. The assessor correctly assigned values and scores on table D1. The given average attribute scores result in a passing score on Table D3. Indian Ocean bigeye tuna passes Category D and the PSA and therefore should be approved under the MarinTrust Standard v.2.
Notes for On-site Auditor
N/A

Species Categorisation

NB: If any species is categorised as Endangered or Critically Endangered on the IUCN Red List, or if it appears in CITES Appendix 1, it **cannot** be approved for use as an MarinTrust raw material.

IUCN Red list Category

By-product material from a species listed by IUCN (the International Union for Conservation of Nature) under the Red List for the following categories shall immediately fail the assessment;

- EXTINCT (E) AND EXTINCT IN THE WILD (EW)
- CRITICALLY ENDANGERED (CR) facing an extremely high risk of extinction in the wild.
- ENDANGERED (EN) facing a very high risk of extinction in the wild.

By-product material may be used from the following categories provided that all clauses in the MarinTrust standard are passed.

- VULNERABLE (VU) facing a high risk of extinction in the wild.
- NEAR THREATENED (NT) does not qualify for above now, but is close or is likely to qualify for, a threatened category in the near future.
- LEAST CONCERN (LC) Widespread and abundant.
- DATA DEFICIENT (DD) and NOT EVALUATED (NE)

Table 3 Species Categorisation Table

Common name	Latin name	Stock	Management	Category	IUCN Red List Category[1]	CITES Appendix 1[2]
Bigeye tuna	*Thunnus obesus*	Indian Ocean bigeye tuna	IOTC	Failed C, Passed D	VU	No

[1] https://www.iucnredlist.org/
[2] https://cites.org/eng/app/appendices.php

CATEGORY C SPECIES

In a by-product assessment, Category C species are those which are subject to a species-specific management regime and are usually targeted species in fisheries for human consumption.

Clause C1 should be completed for each Category C species. If there are no Category C species in the fishery under assessment, this section can be deleted. Where a species fails this Clause, it should be assessed as a Category D species instead.

Species Name	**Bigeye tuna (*Thunnus obesus*)**	
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.	Yes
	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.	No
	Clause outcome:	**FAIL**

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.

Fishery removals of the stock under assessment are included in the IOTC stock assessment process with bigeye tuna catches being available to view through the IOTC Online Data Querying Service and are summarised annually (see figure below). Main fisheries (mean annual catch 2017-2021): bigeye tuna are caught using purse seine (41.7%), followed by longline (37%) and line (13.5%). The remaining catches taken with other gears contributed to 7.8% of the total catches in recent years.

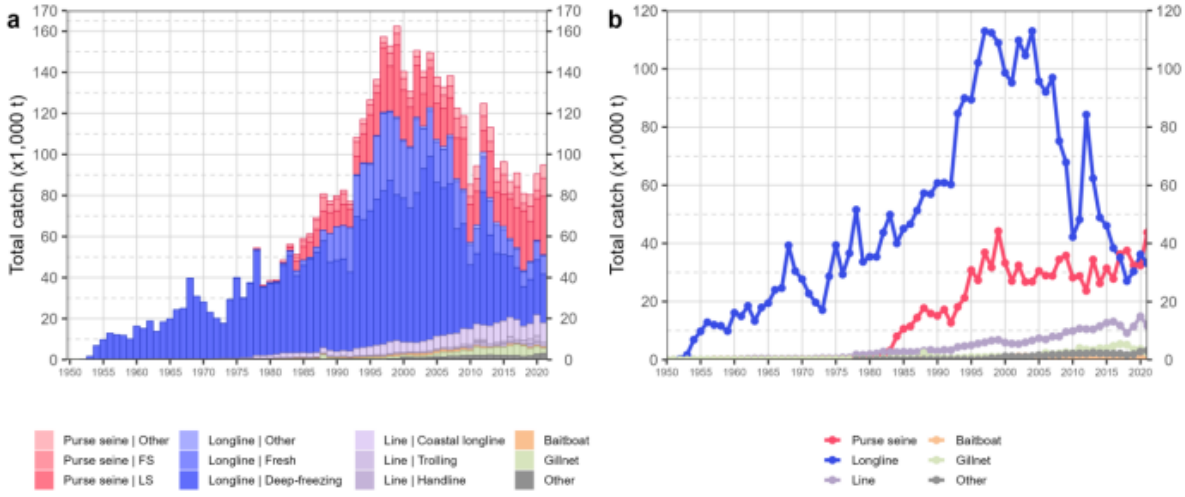


Figure 1. Annual time series of (a) cumulative nominal catches (metric tonnes; t) by fishery group and (b) individual nominal catches (metric tonnes; t) by fishery for bigeye tuna during 1950–2021. FS = free-swimming school; LS = schools associated with drifting floating objects; Purse seine | Other: coastal purse seine, purse seine of unknown school association type, ring net; Longline | Other: swordfish and sharks-targeted longlines; Other: all remaining fishing gears
Source: IOTC 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.

In 2022, a new stock assessment was carried out for bigeye tuna in the IOTC area of competence to update the stock assessment undertaken in 2019. 2 models were applied to the bigeye stock (Statistical Catch at Size (SCAS) and Stock Synthesis (SS3)), with the SS3 stock assessment selected to provide scientific advice. The reported stock status is based on a grid of 24 model configurations designed to capture the uncertainty on stock recruitment relationship, longline selectivity, growth and natural mortality. Spawning biomass in 2021 was estimated to be 25% (80% CI: 23-27%) of the unfished levels in 2021 (Table 1) and 90% (75-105%) of the level that can support MSY. Fishing mortality was estimated at 1.43 (1.1-1.77) times the F_{MSY} level. Considering the characterized uncertainty, the assessment indicates that SB_{2021} is below SB_{MSY} and that F_{2021} is above F_{MSY} (79%). On the weight-of-evidence available in 2022, **the bigeye tuna stock is determined to be overfished and subject to overfishing** (see table 3 and figure 2 below).

Table 3. Status of bigeye tuna (Thunnus obesus) in the Indian Ocean.
Source: IOTC, 2022.

Area[1]	Indicator	Value	Status[4]
Indian Ocean[1]	Catch in 2021 (t)[2]	94,803	79%*
	Average catch 2017-2021 (t)[3]	87,488	
	MSY (1,000 t) (80% CI)	96 (83 –108)	
	F_{MSY} (80% CI)	0.26 (0.18–0.34)	
	SB_{MSY} (1,000 t) (80% CI)	513 (332–694)	
	F_{2021} / F_{MSY} (80% CI)	1.43 (1.10–1.77)	
	SB_{2021} / SB_{MSY} (80% CI)	0.90 (0.75–1.05)	
	SB_{2021} / SB_0 (80% CI)	0.25 (0.23–0.27)	

[1]Boundaries for the Indian Ocean stock assessment are defined as the IOTC area of competence
[2]Proportion of 2021 catch fully or partially estimated by IOTC Secretariat: 20.4%
[3]Including re-estimations of EU PS species composition for 2018 (only requested for stock assessment purposes)
[4]The stock status refers to the most recent years' data used in the assessment conducted in 2022, i.e., 2021
*Estimated probability that the stock is in the respective quadrant of the Kobe Plot (**Table 2**), derived from the confidence intervals associated with the current stock status.

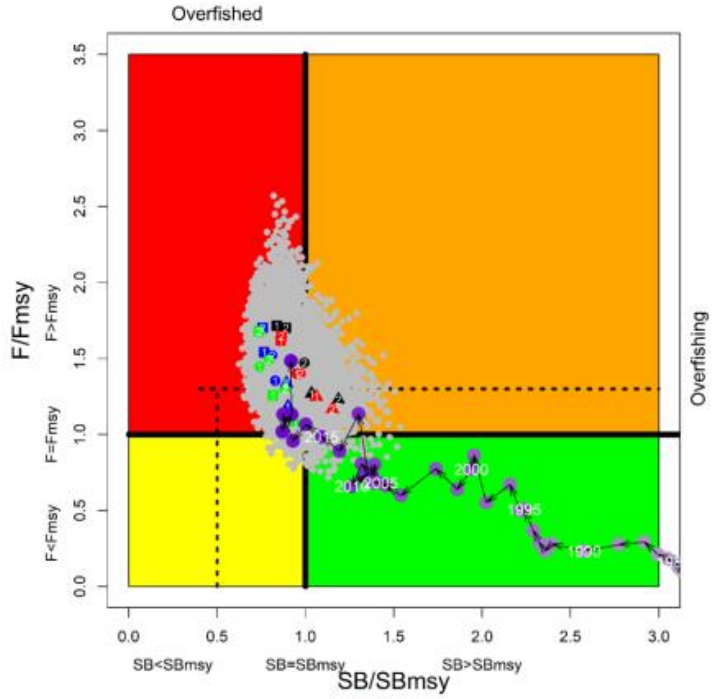


Figure 2. Bigeye tuna: SS3 Aggregated Indian Ocean assessment Kobe plot. The coloured points represent stock status estimates from the 24 model options. Coloured symbols represent Maximum posterior density (MPD) estimates from individual models: square, circle, and Triangles represents alternative steepness options; black, red, blue, and green represents alternative growth and natural mortality option combination; 1,2, represents alternative selectivity options. The purple dot and arrowed line represent estimates of the reference model (the last purple dot represents the terminal year of 2021). Grey dots represent uncertainty from individual models. The dashed lines represent limit reference points for IO bigeye tuna (SB_{lim} = 0.5 SB_{MSY} and F_{lim} = 1.4 F_{MSY})
Source: IOTC 2022.

Therefore, the species is not considered, in its most recent stock assessment, to have a biomass above the limit reference point, so it FAILS clause C1.2.

As per MT guidance, it has then to be assessed under category D.

References	
IOTC, 2022. Appendix 2 Executive summary: bigeye tuna (2022). Indian Ocean Tuna Commission (IOTC) & Food and Agriculture Organization of the United Nations (FAO): https://iotc.org/sites/default/files/content/Stock_status/2022/Bigeye2022E.pdf	
Links	
MarinTrust Standard clause	1.3.2.2
FAO CCRF	7.5.3
GSSI	D.3.04, D5.01

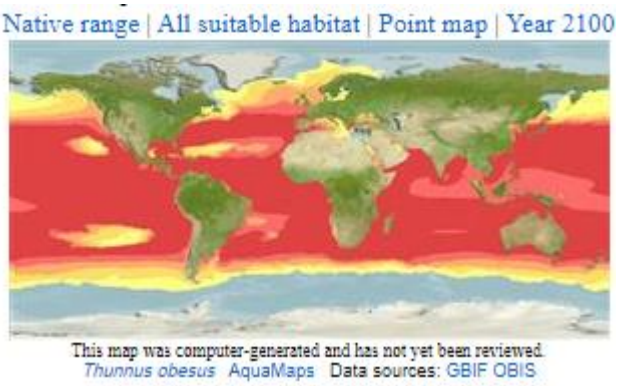
CATEGORY D SPECIES

Category D species are those which are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. The comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

D1	Species Name	Bigeye tuna (*Thunnus obesus*)	
	Productivity Attribute	**Value**	**Score**
	Average age at maturity (years)	2.3	1
	Average maximum age (years)	11.6	2
	Fecundity (eggs/spawning)	4,274,342	1
	Average maximum size (cm)	200.1	2
	Average size at maturity (cm)	97.4	2
	Reproductive strategy	Non guarders: open water/ substratum egg scatterers	1
	Mean trophic level	4.5	3
		Average Productivity Score	**1.71**
	Susceptibility Attribute	**Value**	**Score**
	Availability (area overlap)	>30% overlap	3
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	Depth range 0 - 1500 m, usually 0 - 500 m	3
	Selectivity of gear type	High susceptibility	3
	Post-capture mortality	Retained	3
		Average Susceptibility Score	**3**
		PSA Risk Rating (From Table D3)	**Pass**
		Compliance rating	**PASS**

Further justification for susceptibility scoring (where relevant)

For susceptibility attributes, please provide a brief rationale for scoring of parameters where there may be uncertainty affecting your decision



1. Encounterability: Gear types range and species range are matching, so this attribute scored as '3'.
2. Selectivity of gear type: Gear mesh size were not provided, so this attribute scored as '3' out of precaution.
3. Post-capture mortality: As it is a retained species, so it is scored as '3'.

References

Fishbase. *Thunnus obesus* (Lowe, 1839) Bigeye tuna: https://www.fishbase.se/summary/Thunnus-obesus.html

Standard clauses 1.3.2.2

Table D2 - Productivity / Susceptibility attributes and scores.

Productivity attributes	High productivity (Low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)
Average age at maturity	<5 years	5-15 years	>15 years
Average maximum age	<10 years	10-25 years	>25 years
Fecundity	>20,000 eggs per year	100-20,000 eggs per year	<100 eggs per year
Average maximum size	<100 cm	100-300 cm	>300 cm
Average size at maturity	<40 cm	40-200 cm	>200 cm
Reproductive strategy	Broadcast spawner	Demersal egg layer	Live bearer
Mean Trophic Level	<2.75	2.75-3.25	>3.25

Susceptibility attributes	Low susceptibility (Low risk, score = 1)	Medium susceptibility (medium risk, score = 2)	High susceptibility (high risk, score = 3)
Areal overlap (availability) Overlap of the fishing effort with the species range	<10% overlap	10-30% overlap	>30% overlap
Encounterability The position of the stock/species within the water column relative to the fishing gear, and the position of the stock/species within the habitat relative to the position of the gear	Low overlap with fishing gear (low encounterability).	Medium overlap with fishing gear.	High overlap with fishing gear (high encounterability). Default score for target species
Selectivity of gear type Potential of the gear to retain species	a Individuals < size at maturity are rarely caught	a Individuals < size at maturity are regularly caught.	a Individuals < size at maturity are frequently caught
	b Individuals < size at maturity can escape or avoid gear.	b Individuals < half the size at maturity can escape or avoid gear.	b Individuals < half the size at maturity are retained by gear.
Post-capture mortality (PCM) The chance that, if captured, a species would be released and that it would be in a condition permitting subsequent survival	Evidence of majority released post-capture and survival.	Evidence of some released post-capture and survival.	Retained species or majority dead when released.

D3		Average Susceptibility Score		
		1 - 1.75	1.76 - 2.24	2.25 - 3
Average Productivity Score	1 - 1.75	PASS	PASS	PASS
	1.76 - 2.24	PASS	PASS	TABLE D4
	2.25 - 3	PASS	TABLE D4	TABLE D4

D4	Species Name		
	Impacts On Species Categorised as Vulnerable by D1-D3 - Minimum Requirements		
	D4.1	The potential impacts of the fishery on this species are considered during the management process, and reasonable measures are taken to minimise these impacts.	
	D4.2	There is no substantial evidence that the fishery has a significant negative impact on the species.	
		Outcome:	

Evidence

D4.1: The potential impacts of the fishery on this species are considered during the management process, and reasonable measures are taken to minimise these impacts.

D4.2 There is no substantial evidence that the fishery has a significant negative impact on the species.

References

Links	
MarinTrust Standard clause	1.3.2.2, 4.1.4
FAO CCRF	7.5.1
GSSI	D.5.01