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Global Standard for Responsible Supply of Marine Ingredients
Fishery Assessment Methodology and Template Report V2.0

Fishery Under Assessment	**Bigeye Tuna (*Thunnus obesus*)** (FAO 34 Atlantic, Eastern Central)
Date	June 2020
Report Code	2020-99
Assessor	Virginia Polonio
Stock Pass	**PASS**
Stock Fail	

Application details and summary of the assessment outcome				
Name:				
Address:				
Country: Thailand		**Zip:**		
Tel. No.:		**Fax. No.:**		
Email address:		**Applicant Code**		
Key Contact:		**Title:**		
Certification Body Details				
Name of Certification Body:		**SAI Global**		
Assessor Name	**Peer Reviewer**	**Assessment Days**	**Initial/Surveillance/Re-approval**	**Whole fish/ By-product**
Virginia Polonio	Geraldine Criquet	1	Surveillance 1	By-product
Assessment Period	June 2020			

Scope Details	
Management Authority (Country/State)	Domestic level: Thailand International level: ICCAT
Main Species	Bigeye tuna (*Thunnus Obesus*)
Fishery Location	FAO Area 34 Eastern Central Atlantic Ocean
Gear Type(s)	Longline, pole and line and purse seine
Outcome of Assessment	
Peer Review Evaluation	Agree with determination
Recommendation	**APPROVE**

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 IFFO RS raw material. Bigeye tuna tuna does not appear as Endangered or Critically Endangered on IUCN's Red List, nor does it appear in CITES appendices; therefore, product originating from this fishery is eligible for approval for use as IFFO RS by-product raw material. For assessment and management purposes, one discrete stock of bigeye tuna is recognised in the Atlantic Ocean; therefore, this assessment covers one stock (i.e. bigeye tuna in the Atlantic Ocean) when fished within FAO fishing areas 34. Legal and administrative frameworks exist at the national and international level. Sufficient research is conducted on the species to allow informed management of bigeye tuna. Fishery removals of the stock are considered in the ICCAT stock assessment process so the stock **PASSES** Clause C1.1. The 2018 stock assessment was conducted using similar assessment models to those used in 2015 but updating data and new relative abundance indices up to 2017. Stock status evaluations for Atlantic bigeye tuna used several modelling approaches. Different model formulations considered to be plausible representations of the stock dynamics were used to characterize stock status and the uncertainties in stock status evaluations. The models show consistent results and all indicate that, Atlantic bigeye stock is currently overfished (SSB/SSBMSY ranging from 0.59 to 0.82) and undergoing overfishing (F/FMSY = ranging from 1.21 to 1.63) with very high probability (99%). Therefore biomass index is below limit and catches are not negligible. As per the latest assessment of stock report; the stock is overfished such that the stock **FAILS** Clause C1.2. In order to be approved, the stock assessed must pass both Clause C1.1 and C1.2; therefore, as this is the case here, by-product covered by this report is **failed as per guidance the fishery was re-assessed under Category D.** The fishery achieves a **PASS** in clause D therefore it was approved for the production of fishmeal and fish oil under the current IFFO RS v 2.0 by-product standard
Peer Review Comments
Notes for On-site Auditor

Note: This table should be completed for whole fish assessments only.

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C	Bigeye tuna (*Thunnus obesus*)	NA	**FAIL**	
Category D	Bigeye tuna (*Thunnus obesus*)	NA	**PASS**	

[List all Category A and B species. List approximate total %age of landings which are Category C and D species; these do not need to be individually named here]

HOW TO COMPLETE THIS ASSESSMENT REPORT

This assessment template uses a modular approach to assessing fisheries against the IFFO RS standard.

Whole Fish

The process for completing the template for a **whole fish** assessment is as follows:

1. ALL ASSESSMENTS: Complete the Species Characterisation table, to determine which categories of species are present in the fishery.
2. ALL ASSESSMENTS: Complete clauses M1, M2, M3: Management.
3. IF THERE ARE CATEGORY A SPECIES IN THE FISHERY: Complete clauses A1, A2, A3, A4 for **each** Category A species.
4. IF THERE ARE CATEGORY B SPECIES IN THE FISHERY: Complete the Section B risk assessment for **each** Category B species.
5. IF THERE ARE CATEGORY C SPECIES IN THE FISHERY: Complete clause C1 for **each** Category C species.
6. IF THERE ARE CATEGORY D SPECIES IN THE FISHERY: Complete Section D.
7. ALL ASSESSMENTS: Complete clauses F1, F2, F3: Further Impacts.

A fishery must score a pass in **all applicable clauses** before approval may be recommended. To achieve a pass in a clause, the fishery/species must meet **all** of the minimum requirements.

By-products

The process for completing the template for **by-product raw material** is as follows:

1. ALL ASSESSMENTS: Complete the Species Characterisation table with the names of the by-product species and stocks under assessment. The '% landings' column can be left empty; all by-products are considered as Category C and D.
2. IF THERE ARE CATEGORY C BYPRODUCTS UNDER ASSESSMENT: Complete clause C1 for **each** Category C by-product.
3. IF THERE ARE CATEGORY D BYPRODUCTS UNDER ASSESSMENT: Complete Section D.
4. ALL OTHER SECTIONS CAN BE DELETED. Clauses M1 - M3, F1 - F3, and Sections A and B do not need to be completed for a by-product assessment.

By-product approval is awarded on a species-by-species basis. Each by-product species scoring a pass under the appropriate section may be approved against the IFFO RS Standard.

SPECIES CATEGORISATION

The following table should be completed as fully as the available information permits. Any species representing more than 0.1% of the annual catch should be listed, along with an estimate of the proportion of the catch each species represents. The species should then be divided into Type 1 and Type 2 as follows:

- **Type 1 Species** can be considered the 'target' or 'main' species in the fishery. They make up the bulk of annual landings and are subjected to a detailed assessment.
- **Type 2 Species** can be considered the 'bycatch' or 'minor' species in the fishery. They make up a small proportion of the annual landings and are subjected to relatively high-level assessment.

Type 1 Species must represent 95% of the total annual catch. Type 2 Species may represent a maximum of 5% of the annual catch (see Appendix B).

Species which make up less than 0.1% of landings do not need to be listed (NOTE: ETP species are considered separately). The table should be extended if more space is needed. Discarded species should be included when known.

The 'stock' column should be used to differentiate when there are multiple biological or management stocks of one species captured by the fishery. The 'management' column should be used to indicate whether there is an adequate management regime specifically aimed at the individual species/stock. In some cases it will be immediately clear whether there is a species-specific management regime in place (for example, if there is an annual TAC). In less clear circumstances, the rule of thumb should be that if the species meets the minimum requirements of clauses A1-A4, an adequate species-specific management regime is in place.

NOTE: If any species is categorised as Endangered or Critically Endangered on the IUCN Red List, or if it appears in the CITES appendices, it **cannot** be approved for use as an IFFO RS raw material. This applied to whole fish as well as by-products.

TYPE 1 SPECIES (Representing 95% of the catch or more)
Category A: Species-specific management regime in place.
Category B: No species-specific management regime in place.

TYPE 2 SPECIES (Representing 5% OF THE CATCH OR LESS)
Category C: Species-specific management regime in place.
Category D: No species-specific management regime in place.

Common name	Latin name	Stock	% of landings	Management	Category
Bigeye tuna	*Thunnus obesus*	FAO 34	NA	Yes	C and reassesses as D

CATEGORY C SPECIES

In a whole fish assessment, Category C species are those which make up less than 5% of landings, but which are subject to a species-specific management regime. In most cases this will be because they are a commercial target in a fishery other than the one under assessment. 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. A Category C species does not meet the minimum requirements of clause C1 should be re-assessed as a Category D species.

Species Name		Big eye 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- Re-assess as category D as guidance**

Evidence

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 in the fishery under assessment are included in the ICCAT stock assessment process.

Specifically, scientific sampling at landing ports for purse seine vessels from the EU and other fleets has been conducted since 1980 to estimate bigeye tuna catches. However, catches are included in the stock assessment it was a recommendation from ICCAT to control catches from countries that are not included in the allocation of the TAC and can result in unreported catches of the species.

Given the inclusion of removals from the fishery under assessment in the ICCAT stock assessment process, the fishery achieves a **PASS** against 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 2018 stock assessment was conducted using similar assessment models to those used in 2015 but updating data and new relative abundance indices up to 2017. Stock status evaluations for Atlantic bigeye tuna used several modeling approaches: two production models and the Stock Synthesis (SS3).

The models show consistent results and all indicate that, Atlantic bigeye stock is currently overfished (SSB/SSBMSY ranging from 0.59 to 0.82) and undergoing overfishing (F/FMSY = ranging from 1.21 to 1.63) with very high probability (99%).

It was agreed that the uncertainty grid developed from the SS3-Reference Case be used for management advice. The results show trajectories of increasing F decreasing B towards the red area of the Kobe plot (F> FMSY and SSB) overfishing starting in around 1994 and an overfished stock at around 1996- 1997, and being in the red quadrant of the Kobe plot since then (Figure 1).
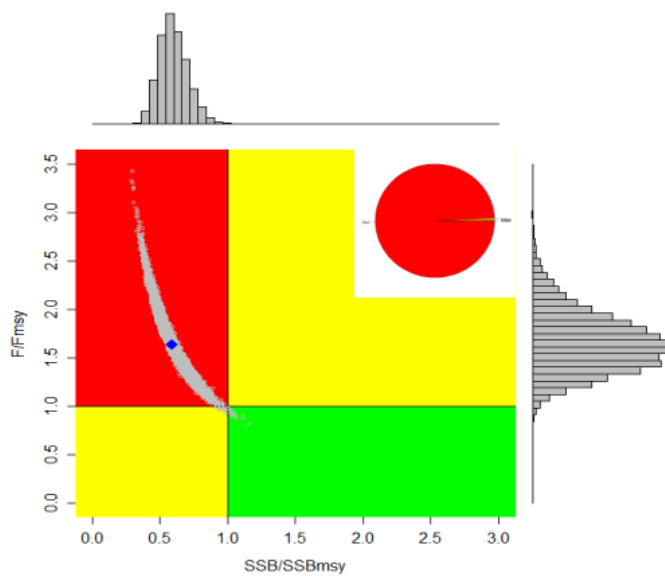
Figure 1. Kobe plot of SSB/SSBMSY and F/FMSY for stock status of Atlantic bigeye tuna in 2017 based on the log multivariate normal approximation across the 18 uncertainty grid model runs of Stock Synthesis with an insert pie chart showing the probability of being in the red quadrant (99.5 %), green quadrant (0.2 %), and in yellow (0.3 %). Blue square is the median and marginal histograms represent distribution of either SSB/SSBMSY or F/FMSY. (Source: ICCAT 2019).

The species is considered, in its most recent stock assessment, to have a biomass below the limit reference point (or proxy). Further removals by the fishery under assessment are not considered by scientific authorities to be negligible as in the last stock assessment landings from 2018 were reported as 73,366 tones. Also, uncertainties in the results have been confirmed due to the lack of information of the whole stock removals as some countries fishing the species do not report catches.

Therefore, the fishery **FAILS** clause C1.2.

As per guidance, the stock has been re-assessed under clause D. The comparative lack of scientific information on the status of the population in the assessment area means that a risk-assessment style approach must be taken (Table D1). The species **PASSES** this assessment under category D.

References

Report of the 2018 ICCAT. Bigeye tuna stock assessment meeting. (Pasaia, Spain 16-20 July 2018)

Walter J., Hiroki Y., Satoh K., Matsumoto T., Urtizberea, Ijurco A., Ortiz M., and Schirripa M. Atlantic bigeye tuna stock assessment in Stock Synthesis. SCRS/2018/111

Standard clauses 1.3.2

CATEGORY D SPECIES

Category D species are those which make up less than 5% of landings and 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	Big eye tuna (*Thunnus obesus*)	
	Productivity Attribute	**Value**	**Score**
	Average age at maturity (years)	2.3	2
	Average maximum age (years)	11.6	2
	Fecundity (eggs/spawning)	42.6 X 106 (min)	1
	Average maximum size (cm)	250	1
	Average size at maturity (cm)	97,4 cm	2
	Reproductive strategy	Broadcast	1
	Mean trophic level	4.5	3
		Average Productivity Score	**1.71**
	Susceptibility Attribute	**Value**	**Score**
	Overlap of adult species range with fishery	No data	
	Distribution	Global	1
	Habitat	Not used	
	Depth range	0-1500m	1
	Selectivity	2>times mesh	2
	Post-capture mortality	Released alive; short tows	1
		Average Susceptibility Score	**1.5**
		PSA Risk Rating (From Table D3)	
		Compliance rating	**PASS**
References http://www.fishbase.org/Summary/SpeciesSummary.php?ID=146&AT=bigeye+tuna			
Standard clauses 1.3.2.2			

Table D2 - Productivity / Susceptibility attributes and scores.

Productivity attributes	Low productivity/ High risk	Medium productivity/ Medium risk	High productivity/ Low risk
	Score 3	Score 2	Score 1
Average age at maturity (years)	>4	2 to 4	<2
Average maximum age (years)	>30	10 to 30	<10
Fecundity (eggs/spawning)	<1 000	1 000 to 10 000	>10 000
Average maximum size (cm)	>150	60 to 150	<60
Average size at maturity (cm)	>150	30 to 150	<30
Reproductive strategy	Live bearer, mouth brooder or significant parental investment	Demersal spawner "berried"	Broadcast spawner
Mean trophic level	>3.25	2.5–3.25	<2.5

Susceptibility attributes		High susceptibility/ High risk	Medium susceptibility/ Medium risk	Low susceptibility/ Low risk
		Score 3	Score 2	Score 1
Availability	1) Overlap of adult species range with fishery	>50% of stock occurs in the area fished	Between 25% and 50% of the stock occurs in the area fished	<25% of stock occurs in the area fished
	2) Distribution	Only in the country/ fishery	Limited range in the region	Throughout region/ global distribution
Encounterability	1) Habitat	Habitat preference of species make it highly likely to encounter trawl gear (e.g. demersal, muddy/sandy bottom)	Habitat preference of species make it moderately likely to encounter trawl gear (e.g. rocky bottom/reefs)	Depth or distribution of species make it unlikely to encounter trawl gear (e.g. epi-pelagic or meso-pelagic)
	2) Depth range	High overlap with trawl fishing gear (20 to 60 m depth)	Medium overlap with trawl fishing gear (10 to 20 m depth)	Low overlap with trawl fishing gear (0 to 10 m, >70 m depth)
Selectivity		Species >2 times mesh size or up to 4 m length	Species 1 to 2 times mesh size or 4 to 5 m length	Species <mesh size or >5 m length
Post capture mortality		Most dead or retained Trawl tow >3 hours	Alive after net hauled Trawl tow 0.5 to 3 hours	Released alive Trawl tow <0.5 hours

Note: Availability 2 is only used when there is no information for Availability 1; the most conservative score between Encounterability 1 and 2 is used.