IFFO RS Limited

T: +44 (0) 2030 539 195
E: Standards@iffors.com
W: www.iffors.com

Unit C, Printworks | 22 Amelia Street
London, SE17 3BZ | United Kingdom

Global Standard for Responsible Supply of Marine Ingredients

Fishery Assessment Methodology and Template Report V2.0

Fishery Under Assessment	**Bigeye Tuna (*Thunnus obesus*) Western Indian Ocean**
Date	April 2020
Report Code	2020-66
Assessor	Jim Daly
Stock Pass	FAO 51 Western Indian Ocean
Stock Fail	

Application details and summary of the assessment outcome				
Name: Marine Biotechnology Products (MBP)				
Address:				
Country: Mauritius		**Zip:**		
Tel. No.:		**Fax. No.:**		
Email address:		**Applicant Code**		
Key Contact: Arasen Moodelly		**Title: Quality Manager**		
Certification Body Details				
Name of Certification Body:		**SAI Global Ltd**		
Assessor Name	**Peer Reviewer**	**Assessment Days**	**Initial/Surveillance/ Re-approval**	**Whole fish/ By-product**
Jim Daly	Vito Romito	0.5	SURV 1	By-product
Assessment Period	**2020**			

Scope Details	
Management Authority (Country/State)	IOTC
Main Species	Bigeye tuna (*Thunnus Obesus*)
Fishery Location	FAO Area 51 Western Indian Ocean
Gear Type(s)	Longline, Purse seine, artisanal
Outcome of Assessment	
Peer Review Evaluation	**AGREE**
Recommendation	**PASS**

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 does not appear as Endangered or Critically Endangered on IUCN's Red List, nor does it appear in CITES appendices; therefore, Bigeye tuna is eligible for approval for use as IFFO RS by-product raw material. One stock forms part of this assessment: **1) FAO Area 51 Western Indian Ocean** The 2016 stock assessment was updated and revised in 2019 when a preliminary stock assessment was provided to the IOTC's Working Party on Tropical Tunas (WPTT, Nov 2019). Fishery removals of the stock are considered in the various stock assessment processes so the stock **PASSES** Clause C1.1. For Bigeye tuna in the assessment area the most recent revised catch estimates (2018, 81,413t) are below MSY (87,000t). SB_{2018}/SB_{MSY} was calculated (80% CI) as 1.22 (WPTT 2019) therefore the stock **PASSES** Clause C1.2. In order to be approved, the stock assessed must pass both Clause C1.1 and C1.2; therefore: 1) Bigeye tuna is **APPROVED** by SAI Global assessors in the assessment area for the production of fishmeal and fish oil under the current IFFO RS v 2.0 by-products standard.
Peer Review Comments
The stock in 2018 appears to be above $SB_{MSY,}$ hence the peer reviewer agrees that the stock in the assessment area should be approved for the production of fishmeal and fish oil under the current IFFO RS v 2.0 by-products standard.
Notes for On-site Auditor

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C	Bigeye tuna (*T. obesus*)	N/A	**PASS**	
Category D				

[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 51	N/A	IOTC	C

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		**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.	Yes
		Clause outcome:	**PASS**

Evidence

C1.1

This assessment covers Bigeye tuna harvested from the area (FAO 51) outlined in **Figure 1**:

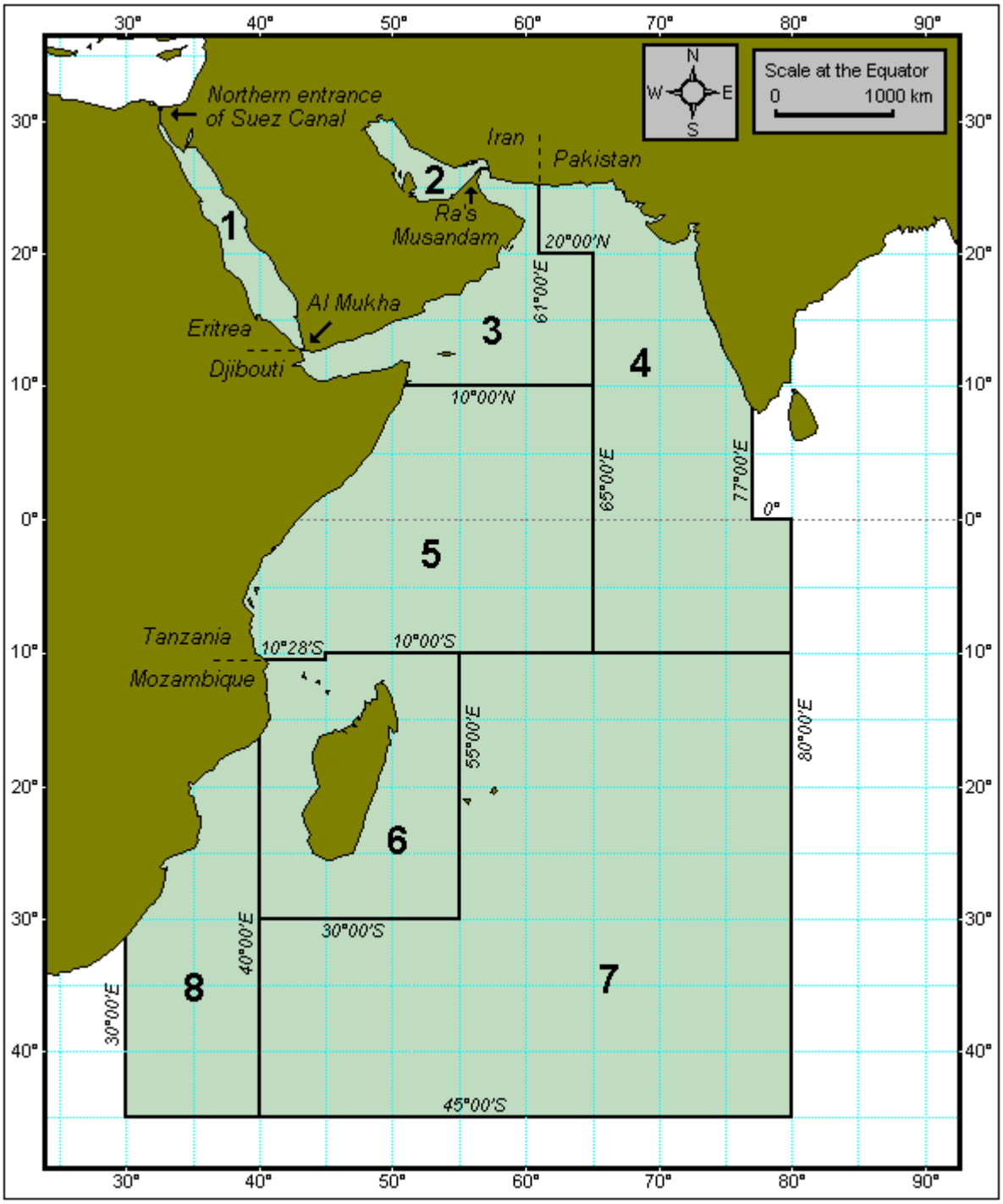

Figure 1: Map of the assessment area (FAO 51 Indian Ocean West) **R1**

The 2016 stock assessment was updated and revised in 2019 when a preliminary stock assessment was provided (Nov 2019, **R3**).

The 2019 assessment uses a spatially structured, age-based model that integrates multiple data sources and covers the period 1975-2018. The 2019 assessment includes revised composite longline CPUE indices, the adoption of a new regional weighting scheme, and a refined procedure to process

tag data that is more consistent with recent practice. A range of exploratory models were also presented to explore the impact of key data sets and model assumptions.

Declines in longline effort since 2007, particularly from the Japanese, Taiwanese and Rep. of Korea longline fleets have lowered pressure on the stock, indicating that current fishing mortality would not reduce the population to an overfished state in the near future (**Figure 2**):

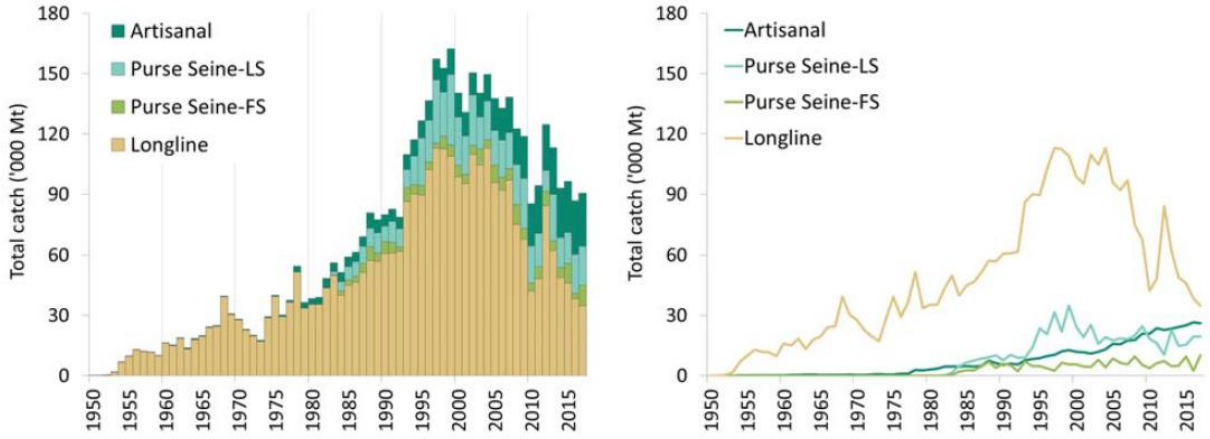

Figure 2 Annual catch of bigeye tuna by gear (1950–2017). Data as of September 2018. **R2**

There have been compliance issues with some countries regarding accurate reporting of catch and effort data. Notably, there is uncertainty surrounding catches from the pole and line fishery in the Maldives, the Iranian and Pakistan gillnet fisheries, gillnet and longline combination fisheries of Sri Lanka and from Indonesian, Comoros and Madagascar artisanal fisheries. These uncertainties are included in the assessment risk analysis.

C1.2

Key management quantities represent the median and confidence intervals estimated from results of 18 model options used (**Table 1**):

Table 1: Bigeye tuna: Key management quantities from the 2019 assessment **R3**

Management Quantity	Aggregate Indian Ocean
Most recent revised catch estimate (t) (2018)	81 413
Mean catch over last 5 years (t) (2014–2018)	89 717
h (steepness)	0.7, 0.8, 0.9
MSY (1,000 t) (80% CI)	87 (75 – 108)
Data period (catch)	1950 – 2018
CPUE series/period	1979 – 2018
F_{MSY} (80% CI)	0.24 (0.18 – 0.36)
SB_{MSY} or B_{MSY} (1,000 t) (80% CI)	503 (370 – 748)
F_{2018}/F_{MSY} (80% CI)	1.20 (0.70 – 2.05)
B_{2018}/B_{MSY} (80% CI)	-
SB_{2018}/SB_{MSY} (80% CI)	1.22 (0.82 – 1.81)
B_{2018}/B_{1950} (80% CI)	-
SB_{2018}/SB_{1950} (80% CI)	0.31 (0.21 – 0.34)
$SB_{2018}/SB_{current,\ F=0}$ (80% CI)	-

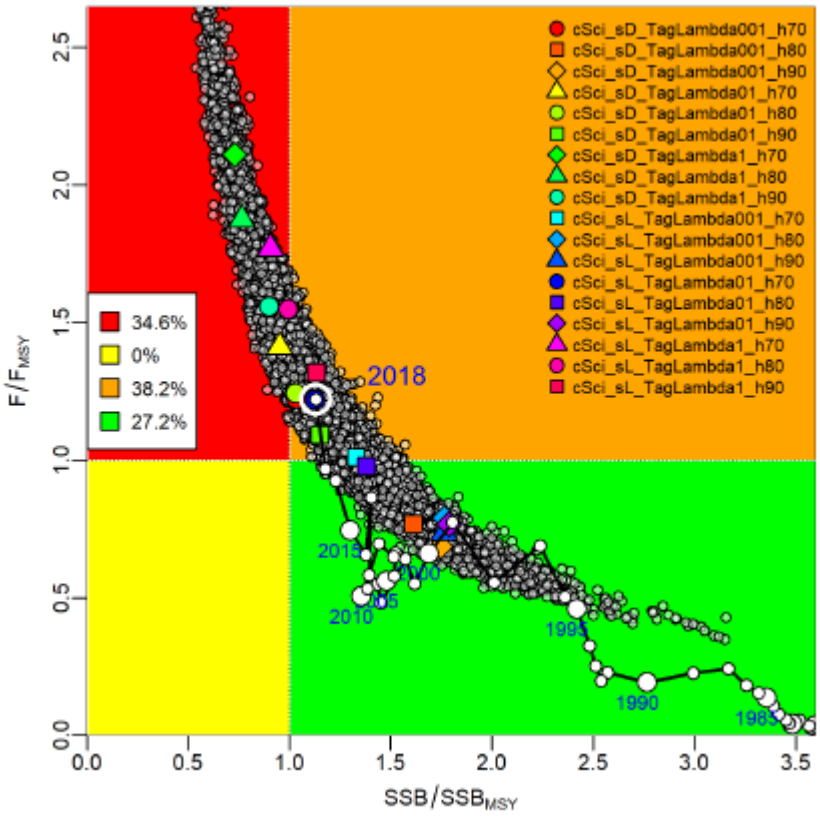

Figure 3: Bigeye tuna. Coloured points represent stock status estimates from 18 model options. Grey points represent 5,000 estimates of 2018 stock status from the multivariate normal approximation from the mean and variance-covariance of 18 model options. Legend indicates estimated probability of stock status being in each of the Kobe quadrant. **R3**

The Working Party on Tropical Tunas (WPTT 2019) adopted management advice developed from the 2018 stock synthesis scenarios agreed (**R2**) which determined that the stock is not overfished and not subject to overfishing.

References

R1 MAP FAO Fishing Area 51 Indian Ocean West http://www.fao.org/fishery/area/Area51/en

R2 IOTC 2018 Executive summary: Status of the Indian Ocean bigeye tuna (BET: *Thunnus obesus*) resource https://www.iotc.org/sites/default/files/documents/science/species_summaries/english/Bigeye2018.pdf

R3 IOTC (2019) Report of the 21st Session of the IOTC Working Party on Tropical Tunas pp 32-48 https://www.iotc.org/sites/default/files/documents/2019/12/IOTC-2019-WPTT21-RE_0.pdf

R4 Fishsource Bigeye Tuna: https://www.fishsource.org/fishery_page/2146

R5 IUCN Red List: https://www.iucnredlist.org/species/21859/9329255

Standard clauses 1.3.2.2