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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



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



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Fishery Under Assessment	Yellowfin tuna (<i>Thunnus albacares</i>) FAO 51 (Western Indian Ocean)
Date	January 2019
Assessor	Jim Daly

Application details and summary of the assessment outcome				
Name: Marine Biotechnology Products (MBP) Mauritius				
Address:				
Country: Mauritius		Zip:		
Tel. No.:		Fax. No.:		
Email address:		Applicant Code		
Key Contact:		Title:		
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	Conor Donnelly	0.5	Surveillance YR 2	By-product
Assessment Period	2018			

Scope Details	
Management Authority (Country/State)	IOTC
Main Species	Yellowfin tuna (<i>Thunnus albacares</i>)
Fishery Location	FAO 51 (Indian Ocean)
Gear Type(s)	Purse seine, longline, artisanal (hand line, gillnet, pole-and-line)
Outcome of Assessment	
Overall Outcome	Pass
Clauses Failed	None
Peer Review Evaluation	Pass
Recommendation	Approve

Assessment Determination

EU Sustainable Fisheries Partnership Agreements (SFPA's):

Financial and technical support is given in exchange for fishing rights, generally with the EU's Southern partner countries. SFPA's are intended to allow EU vessels fish for surplus stocks in that country's exclusive economic zone (EEZ), in a legally regulated environment. These agreements also focus on resource conservation and environmental sustainability, ensuring that all EU vessels are subject to the same rules of control and transparency. From 2012-2016 the EU Purse seiner fleet averaged 21% of all catches of yellowfin tuna in the assessment area. In 2018 an EU Quota (Purse Seiners) of 77,698t was allocated to EU vessels fishing in the IOTC area of competence.

Indian Ocean Tuna Commission:

The Indian Ocean Tuna Commission (IOTC) is an intergovernmental organisation responsible for the management of tuna and tuna-like species in the Indian Ocean. The Commission has four key functions and responsibilities which enable it to achieve its objectives. They are drawn from the United Nations Convention on the Law of the Sea (UNCLOS), and include adopting, on the basis of scientific evidence, Conservation and Management Measures (CMMs) to ensure the conservation of stocks and to promote their 'optimum utilisation' throughout the IOTC Area of Competence.

Stock status:

The stock status is driven by unsustainable catches of yellowfin tuna taken over the last five years, and the relatively low recruitment levels estimated by the model in recent years. The Commission has an interim plan for the rebuilding of this stock (Resolution 17/01) which is yet to be evaluated. On the weight-of-evidence available in 2017, the yellowfin tuna stock is determined to remain overfished and subject to overfishing. Advice did indicate there is a risk of continuing to exceed the biomass reference point if catches increase or remained at 2015 levels.

In 2017 the IOTC adopted precautionary management, which includes the use of interim target and limit reference points and calls for the use of harvest control rules and management strategy evaluation. A Fishery Improvement Plan (Purse seiners, includes skipjack and bigeye) is in place in the Western Indian Ocean.

IUCN has categorised yellowfin tuna as a near-threatened species. The species does not appear in the current CITES appendices (both sites accessed 22.01.19).

As a by-product species with a species-specific fishery management regime in place it has been assessed under clause C of the IFFO-RS v 2.0 standard. Fishery removals of the species in the fishery under assessment are included in the stock assessment process. Current spawning biomass is considered to be below the interim target reference point SB_{MSY} however, the stock is considered to be above its interim limit reference point. Consequently it passes clause C.

This fishery by-product is recommended for approval against the IFFO RS standard v 2.0

Peer Review Comments

Notes for On-site Auditor

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)
Category A			A1
			A2
			A3
			A4
Category B			
Category C	Yellowfin tuna (<i>Thunnus albacares</i>)	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]

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
Yellowfin tuna	<i>Thunnus albacares</i>	Indian Ocean	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		Yellowfin Tuna <i>Thunnus albacares</i>	
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
<p>C1.1-C1.2:</p> <p>Scientific evidence shows large movements of yellowfin tuna, thus supporting the assumption of a single stock for the Indian Ocean. Spawning occurs mainly from December to March in the equatorial area with the main spawning grounds West of 75°E. Newly recruited fish are primarily caught by the purse seine fishery on floating objects. Sizes exploited in the Indian Ocean range from 30cm to 180cm fork length. Smaller fish (juveniles) form mixed schools with skipjack tuna and juvenile bigeye tuna and are mainly limited to surface tropical waters, while larger fish are found in surface and sub-surface waters.</p> <p>Purse seiners (free and associated schools) and longline fisheries still account for around 50% of total catches, while catches from artisanal gears have steadily increased since the 1980s. The main industrial fisheries (Purse seine, longline) are in the Western Indian Ocean (Seychelles, waters off Somalia) and the Mozambique Channel.</p> <p>Species-Specific Stock Assessments:</p> <p>Model:</p> <p>Stock status is determined on the basis of the 2016 assessment and other indicators presented in 2017. Stock status and management advice was based on the Stock Synthesis (SS3) model formulation. Stock Synthesis provides a statistical framework for calibration of a population dynamics model using a diversity of fishery and survey data. It is designed to accommodate both age and size structure in the population, with multiple stock sub-areas. Selectivity can be cast as age specific only, size-specific in the observations only, or size-specific with the ability to capture the major effect of size-specific survivorship.</p> <p>SB/SB_{MSY} ratio and F/F_{MSY} ratio (1950-2015, Figure 1):</p>			

- Maximum Sustainable Yield (MSY): estimate for the Indian Ocean stock is estimated at 422,000t with a range between 406,000-444,000t (2016 assessment). The 2012-2016 average catches (407,985t) were below the estimated MSY level.
- Fishing mortality: Current fishing mortality (2016 assessment) is considered to be 11% above the interim target reference point of F_{MSY} , and below the interim limit reference point of $1.4 * F_{MSY}$.
- Biomass: Current spawning biomass (2016 assessment) is considered to be 11% below the interim target reference point of SB_{MSY} , however above the interim limit reference point of $0.4 * SB_{MSY}$

Conclusions:

Spawning stock biomass in 2015 was estimated to be 28.9% of unfished levels and 89% of the level which can support MSY. The assessment is somewhat more optimistic than the stock assessment undertaken in 2015 mainly due to the use of a new composite longline CPUE series, which results in a lower estimate of fishing mortality in the NE Indian Ocean. Total catch has remained relatively stable at levels somewhat lower than the estimated MSY since 2012 (412,659t in 2016, 402,384t in 2015, 408,097t in 2014, 405,048t in 2013 and 400,502t in 2012). The updated assessment estimates SB_{2015}/SB_{MSY} at 0.89 (0.79-0.99) and F_{2015}/F_{MSY} at 1.11 (0.86-1.36):

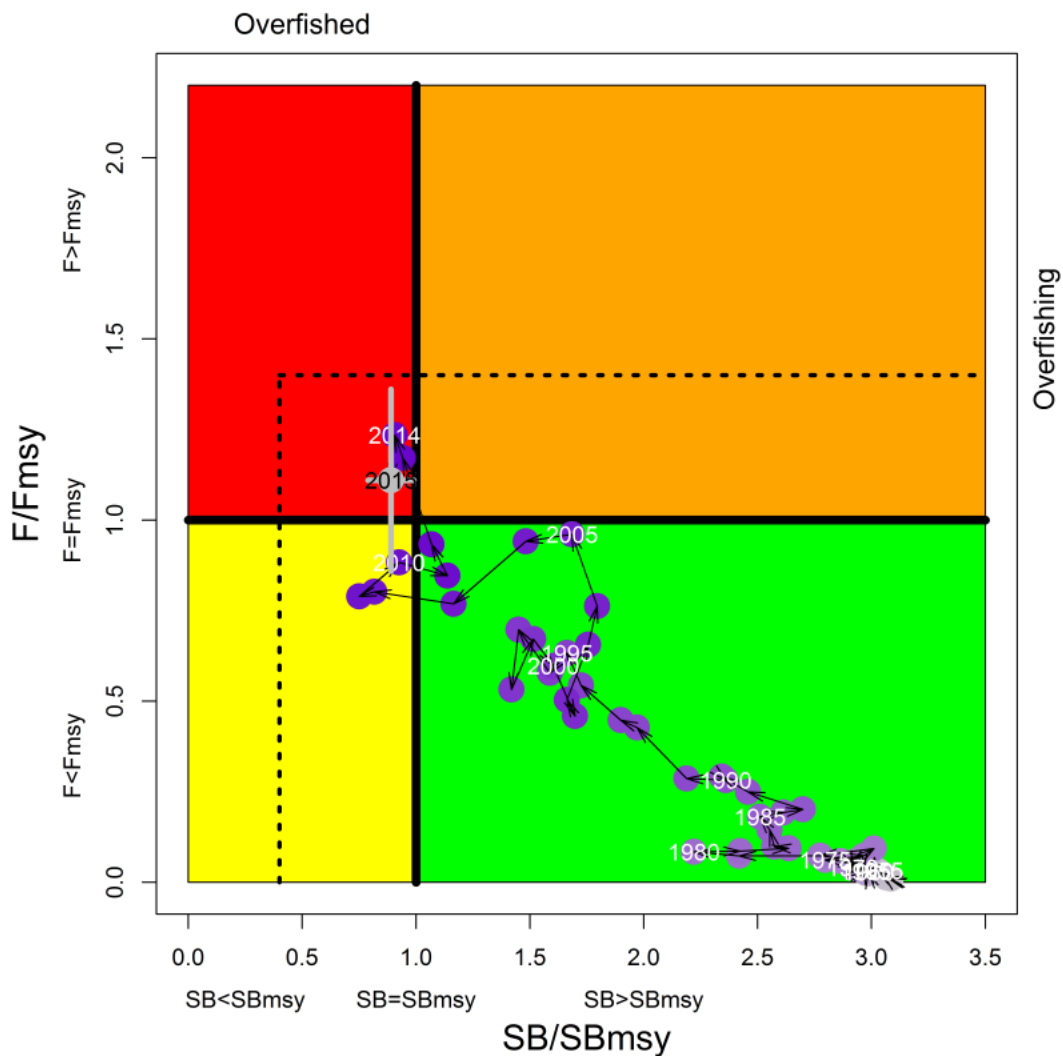


Figure 1: Blue dots indicate the trajectory of the point estimates for the SB/SB_{MSY} ratio and F/F_{MSY} ratio for each year 1950-2015. The grey line represents the 80% confidence interval associated with the 2015 stock status. Dotted black lines are the interim limit reference points adopted by the Commission via Resolution 15/10 R4

On the weight-of-evidence available in 2017, the yellowfin tuna stock is determined to remain overfished and subject to overfishing.

Management advice:

The stock status is driven by unsustainable catches of yellowfin tuna taken over the last five (5) years, and the relatively low recruitment levels estimated by the model in recent years. The Commission has an interim plan for the rebuilding of this stock which is yet to be evaluated. The projections produced to advise on future catches are, in the short term, driven by the below average recruitment estimated for in recent years since these year classes have yet to reach maturity and contribute to the spawning biomass.

In 2017 the IOTC adopted precautionary management, which includes the use of interim target and limit reference points and calls for the use of harvest control rules and management strategy evaluation.

References:

R1 Sustainable Fishing Partnership Agreements (SFPA's):

<https://publications.europa.eu/en/publication-detail/-/publication/c8b5d962-0d38-11e7-8a35-01aa75ed71a1/language-en/format-PDF/source-37907030>

R2 EU Fishing Quotas (2018):

Council Regulation (EU) No. 2018/120 fixing for 2018 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters: Annex I D pp 112-116

<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0120>

R3 FAO Species Fact Sheets (Yellowfin tuna)

<http://www.fao.org/fishery/species>

R4 ANON (Dec 2016) IOTC Report Yellowfin Tuna (Supporting information): pp1-17

http://www.iotc.org/sites/default/files/documents/science/species_summaries/english/Yellowfin%20una%20Supporting%20Information.pdf

R5 ANON (updated Dec 2017) IOTC Report: Status of the Indian Ocean Yellowfin tuna resource: Executive summary pp 1-4

http://www.iotc.org/sites/default/files/documents/science/species_summaries/english/Yellowfin_tuna_Executive_Summary.pdf

R6 CITES Species Endangered list:

<http://checklist.cites.org/#/en> (accessed 26.03.18)

R7 IUCN Red list:

<http://www.iucnredlist.org/search> (accessed 26.03.18)