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	Bullet tuna (*Auxix rochei*), FAO fishing areas 57 (Indian Ocean, Eastern)
Date	June 2020
Report Code	2020-102
Assessor	Virginia Polonio
Stock Pass	**PASS**
Stock Fail	

Application details and summary of the assessment outcome				
Name:				
Address				
Country:		Zip:		
Tel. No.:		Fax. No.:		
Email address:		Applicant Code:		
Key Contact:		Title:		
Certification Body Details				
Name of Certification Body:		SAI Global		
Assessor	Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-approval	Whole fish/ By-product
Virginia Polonio	Geraldine Criquet	0.5	Re-approval	By-product
Assessment Period	To June 2020			

Scope Details	
Management Authority (Country/State)	Indian Ocean Tuna Commission (IOTC) and relevant National authorities of Thailand
Main Species	Bullet tuna (*Auxis rochei*)
Stock:	Bullet tuna in the Indian Ocean
Fishery Location	FAO fishing areas 57 (Indian Ocean, Eastern)
Gear Type(s)	Purse seine, handline, pole & line, longline
Outcome of Assessment	
Peer Review Evaluation	Agree with determination
Recommendation	**APPROVED**

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. Indian Ocean bullet 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 bullet tuna is recognised in the Indian Ocean; therefore, this assessment covers one stock (i.e. bullet tuna in the Indian Ocean) when fished within FAO fishing areas 57 by Thai vessels. The species is not subject to a species-specific research 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. No quantitative stock assessment is currently available for bullet tuna in the Indian Ocean, and due to a lack of fishery data for several gears, only preliminary stock status indicators can be used. Therefore, the fishery was assessed using the risk-based Productivity, Susceptibility Analysis (PSA) as per IFFO-RS v 2.0 procedures for Category D species. The species has passed this risk-based assessment (Table D3). In order to be approved, stocks assessed must pass table D3; therefore, as this is the case here, by-product covered by this report is **APPROVED** for the production of fishmeal and fish oil under the current IFFO RS v 2.0 by-product standard.
Peer Review Comments
Agree with determination - APPROVED
Notes for On-site Auditor

HOW TO COMPLETE THIS ASSESSMENT REPORT
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
Bullet tuna	*Auxis rochei*	Bullet tuna in the Indian Ocean.	Unk.	IOTC	D

CATEGORY D SPECIES

In a whole fish assessment, 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. In a by-product assessment, Category D species are those which are not subject to a species-specific management regime. In both cases, 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.

The process for assessing Category D species involves the use of a Productivity-Susceptibility Analysis (PSA) to further subdivide the species into 'Critical Risk', 'Major Risk' and 'Minor Risk' groups. If there are no Category D species in the fishery under assessment, this section can be deleted.

Productivity and susceptibility ratings are calculated using a process derived from the APFIC document "Regional Guidelines for the Management of Tropical Trawl Fisheries, which in turn was derived from papers by Patrick *et al* (2009) and Hobday *et al* (2007). Table D1 should be completed for each Category D species as follows:

- Firstly, the best available information should be used to fill in values for each productivity and susceptibility attribute.
- Table D2 should be used to convert each attribute value into a score between 1 and 3.
- The average score for productivity attributes and the average for susceptibility attributes should be calculated.
- Table D3 should be used to determine whether the species is required to meet the requirements of Table D4. A species which does not need to meet the requirements of D4 is automatically awarded a pass.
- Table D4 should be used to assess those species indicated by Table D3 to determine a pass/fail rating.
- Any Category D species which has been categorised by the IUCN Red List as Endangered or Critically Endangered, or which appears in the CITES appendices, automatically results in a fail.

D1	Species Name:	Bullet tuna *Auxis rochei*	
	Productivity Attribute	**Value**	**Score**
	Average age at maturity (years)	2	2
	Average maximum age (years)	6	1
	Fecundity (eggs/spawning)	31,000 and 103,000 eggs	1
	Average maximum size (cm)	50 Fork Length (FL)	1
	Average size at maturity (cm)	35	2
	Reproductive strategy	Open water / substratum egg scatterers	1
	Mean trophic level	4.4	3
	Average Productivity Score		**1.57**
	Susceptibility Attribute	**Value**	**Score**
	Overlap of adult species range with fishery	No information	-
	Distribution (Figure 2)	Throughout region / global distribution	1
	Habitat	Epi-pelagic in neritic waters	Not used
	Depth range Pelagic-Neritic	0-200m	1
	Selectivity	Mesh size 2.5-9cm approx	3
	Post-capture mortality	Retained Short tows	2
	Average Susceptibility Score		**1.75**
	PSA Risk Rating (From Table D3)		**PASS**

The stock is evaluated in the FAO area 57; figure 1 & 2 below show the fishing area and the global distribution of the species.
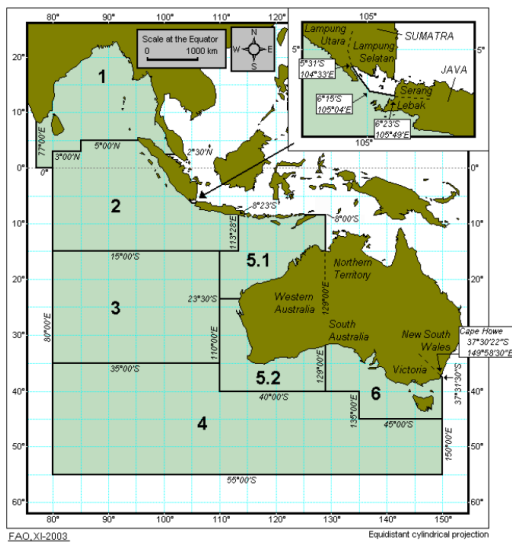

Figure 1. Major Fishing Area 57 (Source: fao.org)

Note: Distribution range colours indicate degree of suitability of habitat which can be interpreted as probabilities of occurrence.
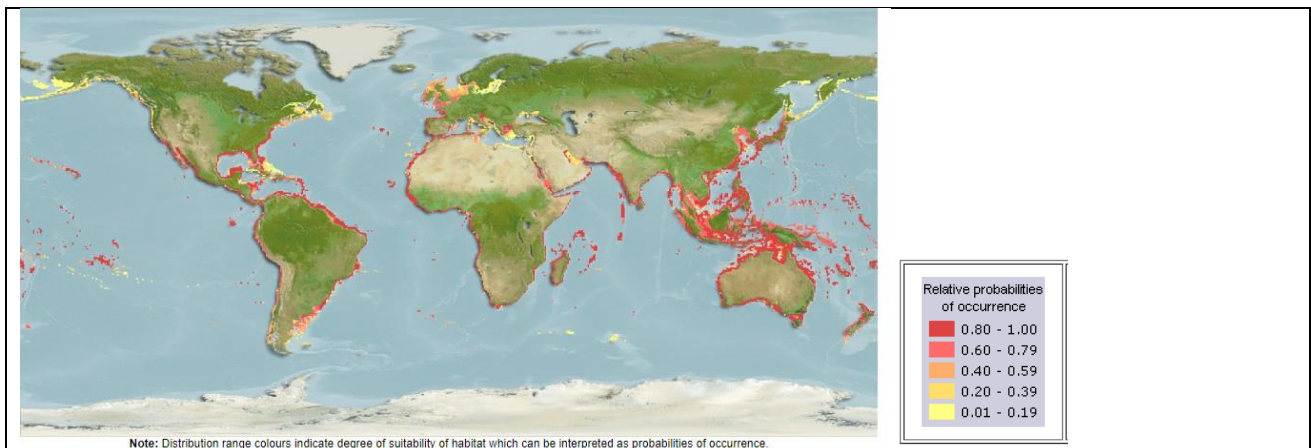
Figure 2. Computer Generated Native Distribution Map for *Auxis rochei* (Bullet tuna), with modelled year 2050 native range map based on IPCC RCP8.5 emissions scenario. (Source: fishbase)

References:

R1. Collette, B., Acero, A., Amorim, A.F., Boustany, A., Canales Ramirez, C., Cardenas, G., Carpenter, K.E., de Oliveira Leite Jr., N., Di Natale, A., Fox, W., Fredou, F.L., Graves, J., Guzman-Mora, A., Viera Hazin, F.H., Juan Jorda, M., Kada, O., Minte Vera, C., Miyabe, N., Montano Cruz, R., Nelson, R., Oxenford, H., Salas, E., Schaefer, K., Serra, R., Sun, C., Teixeira Lessa, R.P., Pires Ferreira Travassos, P.E., Uozumi, Y. & Yanez, E. 2011. Auxis rochei. The IUCN Red List of Threatened Species 2011: e.T170355A6765188. https://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T170355A6765188.en. Downloaded on 30 June 2020

R2. Fishbase: Bullet tuna *Auxis rochei* : https://www.fishbase.se/summary/Auxis-rochei

R3. Status summary for species of tuna and tuna-like species under the IOTC mandate, as well as other species impacted by IOTC fisheries. 2018. https://www.iotc.org/node/3379

Standard clauses 1.3.2.2

Table D2 - Productivity / Susceptibility attributes and scores.

Productivity attributes	Low productivity/ High risk Score 3	Medium productivity/ Medium risk Score 2	High productivity/ Low risk 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 Score 3	Medium susceptibility/ Medium risk Score 2	Low susceptibility/ Low risk 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.

D3		Average Susceptibility Score		
		1.00 – 1.75	**1.76 – 2.24**	**2.25 – 3.00**
Average Productivity Score	**1.00 – 1.75**	PASS	PASS	PASS
	1.76 – 2.24	PASS	PASS	TABLE D4
	2.25 – 3.00	PASS	TABLE D4	TABLE D4