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IFFO RS  
Global Standard for Responsible Supply  
of Marine Ingredients

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



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<b>Fishery Under Assessment</b>	<b>Indian mackerel (<i>Rastrelliger Kanagurta</i>) Indian Ocean FAO 51,57</b>
<b>Date</b>	<b>December 2019</b>
<b>Assessor</b>	<b>Jim Daly</b>

<b>Application details and summary of the assessment outcome</b>				
<b>Name: South East Asian Packaging and Canning (SEAPC) and others</b>				
<b>Address:</b>				
<b>Country: Thailand</b>		<b>Zip:</b>		
<b>Tel. No.:</b>		<b>Fax. No.:</b>		
<b>Email address:</b>		<b>Applicant Code:</b>		
<b>Key Contact:</b>		<b>Title:</b>		
<b>Certification Body Details</b>				
<b>Name of Certification Body:</b>		SAI Global Ltd		
<b>Assessor</b>	<b>Peer Reviewer</b>	<b>Assessment Days</b>	<b>Initial/Surveillance/Re-approval</b>	<b>Whole fish/ By-product</b>
Jim Daly	Conor Donnelly	0.5	Re-assessment	By-product
<b>Assessment Period</b>	2018- 2019			

<b>Scope Details</b>		
<b>Management Authority (Country/State)</b>	International	
<b>Main Species</b>	Indian mackerel ( <i>Rastrelliger Kanagurta</i> )	
<b>Stock</b>	FAO 51,57	
<b>Fishery Location</b>	Indian Ocean	
<b>Gear Type(s)</b>	Pelagic Gears	
<b>Outcome of Assessment</b>		
<b>Overall Outcome:</b>	<b>Outcome</b>	<b>Clause(s) failed</b>
PASS	PASS	NONE
<b>Peer Review Evaluation</b>	Agree	
<b>Recommendations</b>	PASS	

### Assessment Determination

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 IFFO-RS raw material. Indian mackerel (*Rastrelliger Kanagurta*) does not appear as Endangered or Critically Endangered on the IUCN Red List and is currently described as a data deficient stock. The species does not appear on current CITES appendices (accessed 20.11.19) therefore, Indian mackerel (*Rastrelliger Kanagurta*) is eligible for approval for use as IFFO-RS raw by-product material.

There is a fishery management framework at the national level, which is however not applied to Indian mackerel. Given the absence of an international management body, further monitoring of this species is needed at national level, in addition to species-specific data on landings, effort and population status. There is no up-to-date stock status information available. Indian mackerel is not managed through quotas or total allowable catches.

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 fishery is assessed using the risk-based Productivity, Susceptibility Analysis (PSA) as per IFFO-RS v 2.0 procedures for Category D species and has passed this analysis (Table D3).

The SAI Global assessment team recommends the approval of this by-product material against the IFFO-RS by-product standard v 2.0 for the production of fishmeal and fish oil.

### Peer Review Comments

### 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
Indian mackerel	<i>Rastrelliger Kanagurta</i>	Indian Ocean	n/a	International	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.

<b>D1</b>	<b>Species Name</b>	<b>Indian mackerel <i>Rastrelliger Kanagurta</i></b>	
	<b>Productivity Attribute</b>	<b>Value</b>	<b>Score</b>
	Average age at maturity (years)	0.5	1
	Average maximum age (years)	4	2
	Fecundity (eggs/spawning)	in excess of 37,000	1
	Average maximum size (cm)	25cm	1
	Average size at maturity (cm)	15.3	1
	Reproductive strategy	Broadcast spawner	1
	Mean trophic level	3.2	2
	<b>Average Productivity Score</b>		<b>1.29</b>
	<b>Susceptibility Attribute</b>	<b>Value</b>	<b>Score</b>
	Overlap of adult species range with fishery	50% of stock in area fished	2
	Distribution	Throughout region	1
	Habitat	Moderately likely to encounter gear	2
	Depth range	20-90m	3
	Selectivity	Species 1 -2 times mesh size	2
	Post-capture mortality	Most dead or retained	3
	<b>Average Susceptibility Score</b>		<b>2.17</b>
	<b>PSA Risk Rating (From Table D3)</b>		<b>Pass</b>
	<b>Compliance rating</b>		<b>Pass</b>

#### References R1-R6

**R1** Fishbase: Indian mackerel

<https://www.fishbase.de/Summary/SpeciesSummary.php?ID=111&AT=indian+mackerel>

**R2** Fishsource Indian Mackerel [https://www.fishsource.org/stock\\_page/1070](https://www.fishsource.org/stock_page/1070)

**R3** IUCN Redlist: <http://oldredlist.iucnredlist.org/search>

**R4** CITES Appendices: <http://checklist.cites.org/#/en>

**R5** Akib, N. A. M., B. M. Tam, P. Phumee, M. Z. Abidin, S. Tamadoni, P. B. Mather, and S. A. M. Nor. 2015. High Connectivity in *Rastrelliger kanagurta*: Influence of Historical Signatures and Migratory Behaviour Inferred from mtDNA Cytochrome b. PLOS ONE 10(3): e0119749.

**R6** FAO. 2016. Species Fact Sheets - *Rastrelliger kanagurta* (Cuvier, 1817), Fisheries and Aquaculture. <http://www.fao.org/fishery/species/2478/en>.

Distribution Attribute:

Add your observation in [Fish Watcher](#)

[Native range](#) | [All suitable habitat](#) | [Point map](#) | [Year 2100](#)



Reviewed map

*Rastrelliger kanagurta* AquaMaps Data sources: GBIF OBIS

**Figure 1** Indian mackerel global distribution **R1**

Standard clauses 1.3.2.1 - 1.3.2.4

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.



<b>D3</b>		<b>Average Susceptibility Score</b>		
		<b>1 - 1.75</b>	<b>1.76 - 2.24</b>	<b>2.25 - 3</b>
<b>Average Productivity Score</b>	<b>1 - 1.75</b>	PASS	PASS	PASS
	<b>1.76 - 2.24</b>	PASS	PASS	TABLE D4
	<b>2.25 - 3</b>	PASS	TABLE D4	TABLE D4