

IFFO RS V2.0



FISHERY ASSESSMENT METHODOLOGY AND TEMPLATE REPORT

Fishery Under Assessment	Indian mackerel (<i>Rastrelliger Kanagurta</i>), Indian Ocean Major fishing areas FAO 51,57
Date	November 2018
Assessor	Virginia Polonio

Application details and summary of the assessment outcome				
Name: T. C Union				
Address:				
Country: Thailand		Zip:		
Tel. No.		Fax. No.		
Email address:		Applicant Code		
Key Contact:		Title:		
Certification Body Details				
Name of Certification Body:		SAI Global Ireland		
Assessor Name	Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-approval	Whole fish / By-product
Virginia Polonio	Jim Daly	1	Surveillance	By-product
Assessment Period	2017-2018			
Scope Details				
Management Authority (Country/State)		Thailand		
Main Species		Indian mackerel (<i>Rastrelliger Kanagurta</i>)		
Fishery Location		Indian Ocean Major fishing area FAO 51,57		
Gear Type(s)		Pelagic gears		
Outcome of Assessment				
Overall Outcome		Pass		
Clauses Failed		None		
Peer Review Evaluation		Maintain approval		
Recommendation		Maintain approval		

Assessment Determination
<p>There is a fishery management framework at the national level, which is not applied to Indian mackerel. Given the absence of an international management body, further monitoring of this species is needed on the national level, in addition to species-specific data on landings, effort and population status.</p> <p>This species is widespread in South Eastern Asia. There is no information on population or general abundance. This species is targeted in commercial and artisanal fisheries throughout its range, but landings are primarily reported in combination with mixed <i>Rastrelliger spp.</i> Reported worldwide landings for <i>Rastrelliger</i> species have steadily increased since 1950 to over 800,000 tonnes, but no effort information is available. Given that effort is assumed to be increasing, and that there is some evidence of localised declines, it is not known how this species population is affected by current and historical fishing pressure.</p> <p>More recently it was concluded that a SE Asia population surrounding the Indonesian-Malaysian archipelagos (South China Sea, Strait of Malacca, Sulu Sea, Celebes Sea, Andaman Sea) and an Iranian population (Western Indian Ocean) exist but more samples should be gathered in the Western Indian Ocean (FAO 51) to have a clear evidence of stock structure in the region. There is no up-to-date stock status information available. Indian mackerel is not managed through quotas or total allowable catches.</p> <p>Although there is not any recent information on illegal, unreported, and unregulated (IUU) fishing related to the Indian mackerel fishery in India, IUU fishing was flagged as a major issue in the past including a range of illicit activities: fishing without permission or out of season; using outlawed types of fishing gear; non-reporting or underreporting of catch.</p> <p>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.</p> <p><i>Rastrelliger Kanagurta</i> is currently not on the CITES appendices of endangered species and is listed as data deficient in the current IUCN Red List (accessed Nov 2018).</p> <p>The assessment team recommends the approval of this byproduct material against the IFFO RS standard v 2.0 for the production of fishmeal and fish oil.</p>
Peer Review Comments
<p>Agree with assessment.</p>
Notes for On-site Auditor

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C				
Category D	Indian mackerel	N/A	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.

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. All species regularly* caught in the fishery 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. **Type 1 species must represent 95% of the total catch. Type 2 species may represent a maximum of 5% of the 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</i> <i>Kanagurta</i>	Indian ocean	N/A	Thailand	D

Category A species are assessed through an examination of the data collection, stock assessment, management measures, and stock status relating to the species. Category B species are assessed using a risk-based assessment covering similar areas. Category C species are assessed on stock status only. Category D species are assessed using a PSA analysis as described in the relevant section of this document.

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	Indian mackerel	
	Productivity Attribute	Value	Score
	Average age at maturity (years)	0.5	1
	Average maximum age (years)	2	1
	Fecundity (eggs/spawning)	Not known	-
	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
	Average Productivity Score		1.16
	Susceptibility Attribute	Value	Score
	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
	Average Susceptibility Score		2.1
	PSA Risk Rating (From Table D3)		Pass
	Compliance rating		Pass

References R1-R9

R1 Fishbase: Indian mackerel

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

R2 Fishsource Indian Mackerel 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>.

R7 Remya, R., G. Vivekanandan, G. B. Sreekanth, T. V. A. P. G. Nair, U. Manjusha, S. Thomas, and K. S. Mohamed. 2014. Stock structure analysis of Indian mackerel *Rastrelliger kanagurta* (Cuvier, 1817) from south-east and south-west coasts of India using truss network system 61(3):16-19.

http://eprints.cmfri.org.in/10251/1/Remya_IJF_61_3.pdf

R8 BOBLME. 2012. Management advisory for the Bay of Bengal Indian mackerel fishery, The Bay of Bengal Large Marine Ecosystem Project - Regional Fisheries Management Advisory

Committee:6. <http://www.boblme.org/documentRepository/BOBLME-2012-Brochure-03.pdf>

R9 Hannan, T. M., and M. Sivadas. (n.d.). Indian Mackerel, Status of exploited marine fishery resources of India, Central Marine Fisheries Research Institute:

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.