



RESPONSIBLE  
SUPPLY

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>	Frigate tuna <i>Auxis thazard</i> FAO 71
<b>Date</b>	January 2020
<b>Assessor</b>	Jim Daly

Application details and summary of the assessment outcome				
<b>Name:</b> Southeast Asian Packaging and Canning Ltd and others				
<b>Address:</b>				
<b>Country:</b> Thailand		<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>		
Certification Body Details				
<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-approval	By-product
<b>Assessment Period</b>	2020			

Scope Details	
<b>Management Authority (Country/State)</b>	Western and Central Pacific Fisheries Commission (WCPFC) and signatory countries
<b>Main Species</b>	Frigate tuna <i>Auxis thazard</i>
<b>Stocks:</b>	Pacific Western Central
<b>Fishery Location</b>	FAO 71
<b>Gear Type(s)</b>	Purse Seine, gillnet and lines
Outcome of Assessment	
<b>Overall Outcomes:</b>	<b>Outcome</b>   <b>Clause(s) failed</b>
Frigate tuna <i>Auxis thazard</i>	PASS   NONE
<b>Peer Review Evaluation</b>	PASS
<b>Recommendation</b>	APPROVE

Assessment Determination
<p>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. Frigate tuna <i>Auxis thazard</i> does not appear as Endangered or Critically Endangered on the IUCN Red List, nor does it appear in the CITES appendices; therefore, Frigate tuna <i>Auxis thazard</i> is eligible for approval for use as IFFO- RS raw material.</p> <p>The species is not subject to a species-specific research and management regime sufficient to pass a Category C assessment (WCPFC website accessed Jan 2020).</p> <p>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. 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).</p> <p>Frigate tuna <i>Auxis thazard</i> is approved by the SAI Global assessment team for the production of fishmeal and fish oil under the IFFO-RS v 2.0 by-products standard.</p>
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
Frigate tuna	<i>Auxis thazard</i>	Pacific Western Central	N/A	WCPFC	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:

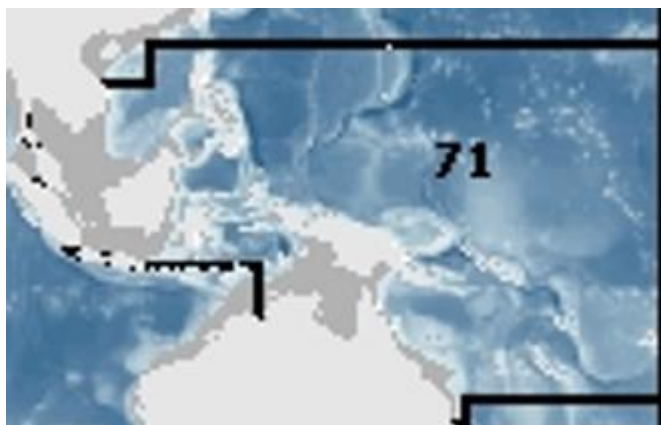
- Firstly, the best available information should be used to fill in values for each productivity and susceptibility attribute.
- Table D2 should be used to convert each attribute value into a score between 1 and 3.
- The average score for productivity attributes and the average for susceptibility attributes 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>Frigate tuna <i>Auxis thazard</i></b>	
	<b>Productivity Attribute</b>	<b>Value</b>	<b>Score</b>
	Average age at maturity (years)	2 – 3 years* <b>R4</b>	2
	Average maximum age (years)	5	1
	Fecundity (eggs/spawning)	78,000 - 1.37 million*	1
	Average maximum size (cm)	62 Fork Length	2
	Average size at maturity (cm)	34-37 Fork Length*	2
	Reproductive strategy	Open water / substratum egg scatterers	1
	Mean trophic level	4.4	3
	<b>Average Productivity Score</b>		<b>1.71</b>
	<b>Susceptibility Attribute</b>	<b>Value</b>	<b>Score</b>
	Overlap of adult species range with fishery	No information	-
	Distribution	Throughout region / global distribution	1
	Habitat	Epi-pelagic in neritic waters	1
	Depth range	Unknown	-
	Selectivity	Mesh size 2.5-9cm (purse seine)	3
	Post-capture mortality	Retained short tows	2
	<b>Average Susceptibility Score</b>		<b>1.75</b>
	<b>PSA Risk Rating (From Table D3)</b>		<b>PASS</b>

**\*References R4**

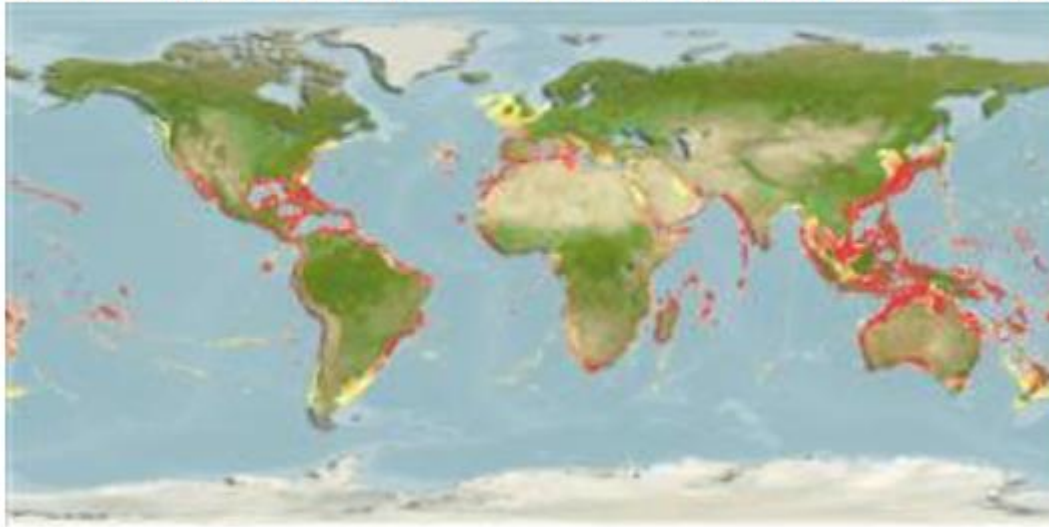
The assessment area covers the Pacific Western Central (**Figure 1**):



**Figure 1** Map of the assessment area **R1**

**Distribution:**

Add your observation in **Fish Watcher**  
Native range | All suitable habitat | Point map | Year 2100



Reviewed map

*Auxis thazard* AquaMaps Data sources: GBIF OBIS

**Figure 2:** Global distribution Frigate tuna R3

## Life History Data on *Auxis thazard* Frigate tuna

<b>Family:</b>	Scombridae                      Mackerels, tunas, bonitos	
<b>Max. length (Lmax):</b>	<input type="text" value="65.0"/> cm FL	
<b>L infinity (Linf):</b>	= <input type="text" value="49.0"/> cm <input type="text" value="NG"/> <input type="button" value="▼"/>	<input type="button" value="Recalculate"/>
<b>K:</b>	<input type="text" value="0.95"/> /year $\phi'$ = <input type="text" value="3.38"/>	<input type="button" value="Recalculate"/> <a href="#">Growth &amp; mortality data</a>
<b>to:</b>	<input type="text" value="-0.15"/> years    Estimated from Linf and K.	
<b>Natural mortality (M):</b>	<input type="text"/> s.e. <input type="text"/> - <input type="text"/> /year Estimated from Linf., K and annual mean temp. = <input type="text" value="24.8"/> °C	<input type="button" value="Recalculate"/>
<b>Life span (approx.):</b>	<input type="text" value="3.0"/> years    Estimated from Linf., K and to. <a href="#">Max. age &amp; size data</a>	
<b>Generation time:</b>	<input type="text" value="1.0"/> years    Estimated from Lopt, Linf., K and to.	
<b>Age at first maturity (tm):</b>	<input type="text" value="0.7"/> years    Estimated from Lm, Linf., K and to.	
<b>L maturity (Lm):</b>	<input type="text" value="27.5"/> s.e. <input type="text" value="20.5"/> - <input type="text" value="38.9"/> cm <input type="text" value="NG"/>	<input type="button" value="Recalculate"/> <a href="#">Maturity data</a>
<b>L max. yield (Lopt):</b>	<input type="text" value="32.8"/> s.e. <input type="text" value="n.a."/> - <input type="text" value="n.a."/> cm <input type="text" value="NG"/>	<input type="button" value="Recalculate"/> <a href="#">Length-weight data</a>
<b>Length-weight:</b>	<input type="text" value="49.0"/> cm <input type="text" value="TL"/> <input type="text" value="▼"/> => <input type="text" value="2285.8"/> g (wet weight) W = <input type="text" value="0.0080"/> * L ^ <input type="text" value="3.22800"/>	<input type="button" value="Recalculate"/> <a href="#">Length-weight data</a>
<b>Nitrogen &amp; protein:</b>	Weight <input type="text" value="2288"/> (g) => whole-body nitrogen (N) <input type="text" value="64.5"/> (g) => whole-body crude protein <input type="text" value="403.4"/> (g)	<input type="button" value="Recalculate"/>
<b>Reproductive guild:</b>	nonguarders: open water/substratum egg scatterers <a href="#">Reproduction</a>	
<b>Fecundity:</b>	<input type="text" value="460,435"/> [ <input type="text" value="200,000"/> - <input type="text" value="1,060,000"/> ]    Estimated as geometric mean. <a href="#">Fecundity</a>	
<b>Relative Yield per Recruit (Y/R):</b>	Estimate Y/R from M/K, Lc/Linf and E. Lc = <input type="text" value="19.6"/> cm <input type="text" value="NG"/> E = <input type="text" value="0.50"/> /year Emsy <input type="text" value="0.80"/> /year    Eopt <input type="text" value="0.54"/> /year Fmsy <input type="text" value="2.12"/> /year    Fopt <input type="text" value="1.66"/> /year	<input type="button" value="Recalculate"/>
<b>Exploitation:</b>	Z = <input type="text"/> F = <input type="text"/> E = <input type="text"/> Estimate Z, F, E from Lc, Lmean, Linf, K, M Lc = <input type="text" value="19.6"/> cm <input type="text" value="NG"/> Lmean = <input type="text"/> cm <input type="text" value="NG"/>	<input type="button" value="Recalculate"/>
<b>Resilience / productivity:</b>	High; decline threshold 0.99 Vulnerable to extinction if decline in biomass or numbers exceeds threshold over the longer of 10 years or 3 generations.	
<b>Intrinsic rate of increase (rm):</b>	<input type="text" value="4.24"/> /year Lr = <input type="text" value="19.6"/> cm <input type="text" value="NG"/> Estimated from Fmsy at Lc = length of recruitment (Lr).	<input type="button" value="Recalculate"/>
<b>Main food:</b>	mainly animals (troph. 2.8 and up)	
<b>Trophic level:</b>	<input type="text" value="4.4"/> +/- s.e. <input type="text" value="0.38"/> Estimated from diet data. <a href="#">Diet</a>	

Figure 3: Life history tool Frigate tuna R3

**R1** MAP Pacific Western Central: Coordinating Working Party on Fisheries Statistics (CWP): Fishing Areas for Statistical Purposes <http://www.fao.org/cwp-on-fishery-statistics/handbook/general-concepts/fishing-areas-for-statistical-purposes/en/>

**R2** Western and Central Pacific Fish Commission (WCPFC) Stock status and management advice <https://www.wcpfc.int/current-stock-status-and-advice>

**R3** Fishbase Frigate tuna

<https://www.fishbase.de/Summary/SpeciesSummary.php?ID=94&AT=frigate+tuna>

**R4** \*Based on average estimated length-age relationships in the equatorial Atlantic of 22.9 cm at 1 year, 30.4 cm at 2 years, 36.7 cm at 3 years and 40.4 cm at 4 years from Grudtsev and Korolevich (1986): Studies of frigate tuna *Auxis thazard* (Lacepede) age and growth in the eastern part of the Equatorial Atlantic. Col. Vol. Sci. Pap. ICCAT, 25(2), 269-274

*Standard clauses 1.3.2.2*



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>1.00 – 1.75</b>	<b>1.76 – 2.24</b>	<b>2.25 – 3.00</b>
<b>Average Productivity Score</b>	<b>1.00 – 1.75</b>	PASS	PASS	PASS
	<b>1.76 – 2.24</b>	PASS	PASS	TABLE D4
	<b>2.25 – 3.00</b>	PASS	TABLE D4	TABLE D4

<b>D4</b>	<b>Species Name</b>		
	<b>Impacts On Species Categorised as Vulnerable by D1-D3 - Minimum Requirements</b>		
D4.1	The potential impacts of the fishery on this species are considered during the management process, and reasonable measures are taken to minimise these impacts.		
D4.2	There is no substantial evidence that the fishery has a significant negative impact on the species.		
			<b>Outcome:</b>
<b>Evidence</b>			
<b>References</b>			
<i>Standard clause 1.3.2.2</i>			