



MarinTrust Standard V2

By-product Fishery Assessment

Frigate tuna (Auxis thazard)

FAO 87- Southeast Pacific, Ecuador EEZ

MarinTrust Programme

Unit C, Printworks

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Table 1 Application details and summary of the assessment outcome

Fishery Under Assessment	Species:	Frigate tuna (<i>Auxis thazard</i>)
	Geographical area:	FAO 87
	Country of origin of the product:	Ecuador
	Stock:	Southeast Pacific - Ecuador EEZ
Date	February 2024	
Report Code	ECU25	
Assessor	Blanca Gonzalez	
Country of origin of the product - PASS	Ecuador	
Country of origin of the product - FAIL	None	

Application details and summary of the assessment outcome			
Company Name(s): Marine Protein S.A			
Country: Ecuador			
Email address:		Applicant Code:	
Certification Body Details			
Name of Certification Body:		LRQA	
Assessor	Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-approval
Blanca Gonzalez	Sam Peacock	0.5	Initial
Assessment Period	February 2024 – February 2025		

Scope Details	
Main Species	Frigate tuna (<i>Auxis thazard</i>)
Stock	Southeast Pacific - Ecuador EEZ
Fishery Location	FAO 87
Management Authority (Country/ State)	Ecuador
Gear Type(s)	Purse seine
Outcome of Assessment	
Peer Review Evaluation	Agree with recommendation
Recommendation	PASS

Table 2. Assessment Determination

Assessment Determination
<p>Frigate tuna (<i>Auxis thazard</i>) was assessed as a category C species considering that it is a Least Concern species by the IUCN, it is not included in any CITES Appendixes, and the Instituto Nacional de Pesca, in collaboration with the Instituto Público de Investigación de Acuicultura y Pesca (IPIAP) in Ecuador assess the stock regularly using established reference points.</p> <p>Frigate tuna is a target species in the Small Pelagic Fish (SPF) fishery. The stock assessment is carried out for <i>Auxis spp.</i>, which includes two species: <i>Auxis thazard</i> and <i>Auxis rochei</i>, and removals of the species are included in the stock assessment process. However, in its most recent stock assessment, <i>Auxis spp.</i> have a biomass below the limit reference point, and there is evidence of overfishing and overexploitation. As the frigate tuna didn't meet the Category C requirements, the species was evaluated under Category D as indicated by the Marin Trust By-product assessment guidance.</p> <p>In the Productivity-Susceptibility Analysis (PSA) frigate tuna was awarded an average productivity score of 1.28 and an average susceptibility score of 2.5, passing against Table D3.</p> <p>The frigate tuna meets the Marin Trust requirements to be approved for use as a raw material.</p>
Fishery Assessment Peer Review Comments
<p>The assessor has correctly identified frigate tuna as eligible for MT byproduct assessment as a Category C species. The peer reviewer agrees that the stock assessment process is robust, and therefore C1.1. is met. The reviewer also agrees that C1.2 is not met due to the biomass being below the limit reference point level in the most recent stock assessment. As per the MT byproduct assessment guidance, the assessor has correctly subsequently assessed the species under Category D.</p> <p>The PSA has been carried out correctly and sufficient supporting evidence has been provided. The outcome of the PSA is that the byproduct Passes the assessment, and therefore it should be approved for use as a raw material.</p>
Notes for On-site Auditor
Empty space for notes

Species Categorisation

NB: If any species is categorised as Endangered or Critically Endangered on the IUCN Red List, or if it appears in CITES Appendix 1, it **cannot** be approved for use as a MarinTrust raw material.

IUCN Red list Category

By-product material from a species listed by IUCN (the International Union for Conservation of Nature) under the Red List for the following categories shall immediately fail the assessment;

- EXTINCT (E) AND EXTINCT IN THE WILD (EW)
- CRITICALLY ENDANGERED (CR) facing an extremely high risk of extinction in the wild.
- ENDANGERED (EN) facing a very high risk of extinction in the wild.

By-product material may be used from the following categories provided that all clauses in the MarinTrust standard are passed.

- VULNERABLE (VU) facing a high risk of extinction in the wild.
- NEAR THREATENED (NT) does not qualify for above now, but is close or is likely to qualify for, a threatened category in the near future.
- LEAST CONCERN (LC) Widespread and abundant.
- DATA DEFICIENT (DD) and NOT EVALUATED (NE)

Table 3 Species Categorisation Table

Common name	Latin name	Stock	Management	Category	IUCN Red List Category ¹	CITES Appendix 1 ²
Frigate tuna	<i>Auxis thazard</i>	Southeast Pacific - Ecuador EEZ	Yes	C	Least Concern ³	No

¹ <https://www.iucnredlist.org/>

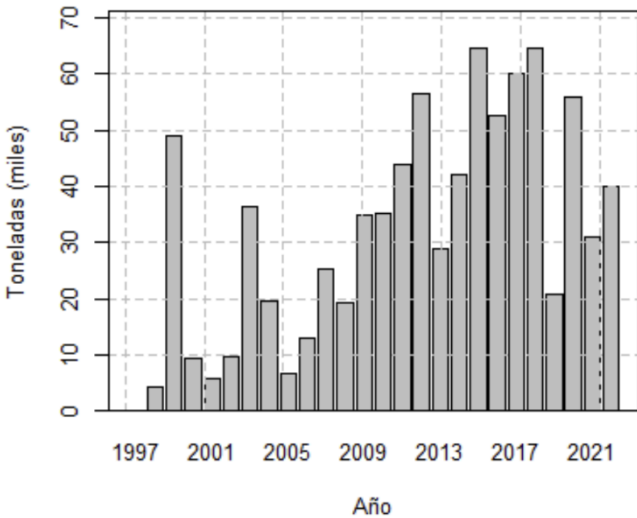
² <https://cites.org/eng/app/appendices.php>

³ <https://www.iucnredlist.org/species/170344/46651210>

CATEGORY C SPECIES

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. Where a species fails this Clause, it should be assessed as a Category D species instead.

Species Name		Frigate tuna (<i>Auxis thazard</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.	FAIL																																																				
Clause outcome:			FAIL																																																				
<p>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.</p> <p>The clause is met considering that:</p> <p>Frigate tuna in the Ecuadorian EEZ is assessed regularly by the Instituto Público de Investigación de Acuicultura y Pesca (IPIAP), since it is a target species in the Small Pelagic Fish (SPF) fishery. The assessment is carried out for <i>Auxis spp.</i>, which includes two species: <i>Auxis thazard</i> and <i>Auxis rochei</i>; and it is carried out through a statistical model of capture at age with size data, which uses data series of biological sampling, size compositions, abundance indices, landings, acoustic cruises and biological parameters (Canales & Jurado 2023). Thus, removals of the species are included in the stock assessment process (figure 1).</p>																																																							
<div style="text-align: center;"> <p>Desembarques</p>  <table border="1"> <caption>Approximate data for Figure 1: Landings of Auxis spp. in Ecuador (Toneladas in thousands)</caption> <thead> <tr> <th>Año</th> <th>Toneladas (miles)</th> </tr> </thead> <tbody> <tr><td>1998</td><td>5</td></tr> <tr><td>1999</td><td>50</td></tr> <tr><td>2000</td><td>10</td></tr> <tr><td>2001</td><td>10</td></tr> <tr><td>2002</td><td>10</td></tr> <tr><td>2003</td><td>38</td></tr> <tr><td>2004</td><td>20</td></tr> <tr><td>2005</td><td>7</td></tr> <tr><td>2006</td><td>14</td></tr> <tr><td>2007</td><td>26</td></tr> <tr><td>2008</td><td>20</td></tr> <tr><td>2009</td><td>35</td></tr> <tr><td>2010</td><td>35</td></tr> <tr><td>2011</td><td>45</td></tr> <tr><td>2012</td><td>58</td></tr> <tr><td>2013</td><td>29</td></tr> <tr><td>2014</td><td>43</td></tr> <tr><td>2015</td><td>65</td></tr> <tr><td>2016</td><td>53</td></tr> <tr><td>2017</td><td>60</td></tr> <tr><td>2018</td><td>65</td></tr> <tr><td>2019</td><td>21</td></tr> <tr><td>2020</td><td>56</td></tr> <tr><td>2021</td><td>31</td></tr> <tr><td>2022</td><td>41</td></tr> </tbody> </table> </div>				Año	Toneladas (miles)	1998	5	1999	50	2000	10	2001	10	2002	10	2003	38	2004	20	2005	7	2006	14	2007	26	2008	20	2009	35	2010	35	2011	45	2012	58	2013	29	2014	43	2015	65	2016	53	2017	60	2018	65	2019	21	2020	56	2021	31	2022	41
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<p>Figure 1. <i>Auxis spp.</i> Landings in Ecuador from 1998-2022. (Canales & Jurado 2023).</p>																																																							

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.

The Clause is NOT met considering that:

The assessment considered proxies of the Maximum Sustained Performance (MSP) as reference points. The increase in catches generated similar increase in fishing mortality, which exceeds the reference value as of 2009 and it reaches its peak in 2022, exceeding the mortality rate by more than three times of the reference point (Canales & Jurado 2023). With this, the analysis shows that the biomass spawning of *Auxis spp.* would have decreased to a level close to 12 thousand tons by 2022, which is equivalent to 14% of B_0 , being below the reference point which is $B_0=40\%$. (Figure 1). The Kobe diagram indicates that the population shows evidence of overfishing ($F > Frms$) and overexploitation ($B < Brms < 0.4$); with a risk of overexploitation and overfishing by 2022 estimated to be close to 100% (Figure 2). (Canales & Jurado 2023).

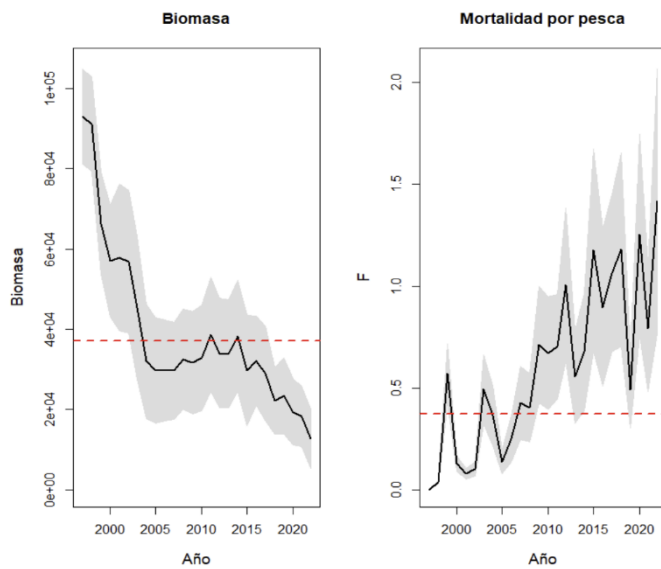


Figure 1. Biomass and fishing mortality from *Auxis spp.*, the red line corresponds to the Maximum Sustained Performance (MSP) reference, and the gray area represents the confidence intervals at 95%. (Canales & Jurado 2023).

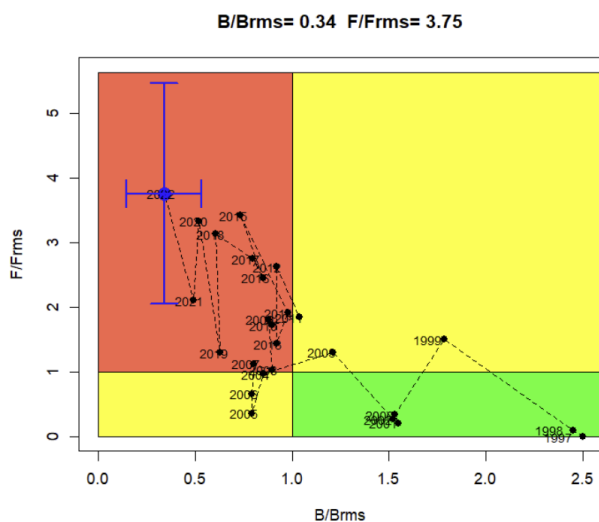


Figure 2. *Auxis spp.* Kobe plot. diagram. The blue circle and error bars represent current condition of the stock in Ecuador. (Canales & Jurado 2023).

References

Canales C. M. & V. Jurado, 2023. Evaluación del stock de recursos pelágicos pequeños del Ecuador 2022. Informe Técnico IPIAP. Guayaquil, marzo 2023. 154p. <https://institutopesca.gob.ec/wp-content/uploads/2023/05/Informe-Evaluacio%CC%81n-2023final.pdf>

Links

MarinTrust Standard clause

1.3.2.2

FAO CCRF	7.5.3
GSSI	D.3.04, D5.01

CATEGORY D SPECIES

Category D species are those which 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. 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.

D1	Species Name	Frigate tuna (<i>Auxis thazard</i>)	
	Productivity Attribute	Value	Score
	Average age at maturity (years)	0.7 ¹	1
	Average maximum age (years)	3 ¹	1
	Fecundity (eggs/spawning)	460,435 ¹	1
	Average maximum size (cm)	65 ¹	1
	Average size at maturity (cm)	27.5 ¹	1
	Reproductive strategy	Broadcast spawner ¹	1
	Mean trophic level	4.4 ¹	3
	Average Productivity Score		1.28
	Susceptibility Attribute	Value	Score
	Availability (area overlap)	< 10% overlap ²	1
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	High overlap ³	3
	Selectivity of gear type	Individuals < size at maturity are frequently caught ⁴	3
	Post-capture mortality	Retained	3
	Average Susceptibility Score		2.5
	PSA Risk Rating (From Table D3)		PASS
	Compliance rating		PASS
	<p>Further justification for susceptibility scoring (where relevant) <i>For susceptibility attributes, please provide a brief rationale for scoring of parameters where there may be uncertainty affecting your decision</i></p> <p>Area overlap: The fishery occurs in the Exclusive Economic Zone from Ecuador and the frigate tuna in the Eastern Pacific occurs from California to Peru, and around all the oceanic islands of this region except Clipperton². (Figure 1).</p> <p>Encounterability: There is a high overlap with fishing gear, since frigate tuna is one of the most frequently caught species of the small pelagic fish fishery in Ecuador.³</p> <p>Selectivity of gear type: Individuals < size at maturity are frequently caught, since fishing regulations in Ecuador states that small pelagic fish fisheries should use a minimum mesh size of 1 1/8" (2.85 cm).⁴</p>		

Figure 1. Worldwide Frigate tuna distribution.²

<p>References</p> <p>1 Fishbase 2023. https://www.fishbase.se/summary/Auxis-thazard.html</p> <p>2 IUCN 2023. https://www.iucnredlist.org/species/170344/46651210</p> <p>3 Canales C. M. & V. Jurado, 2023. Evaluación del stock de recursos pelágicos pequeños del Ecuador 2022. Informe Técnico IPIAP. Guayaquil, marzo 2023. 154p. https://institutopesca.gob.ec/wp-content/uploads/2023/05/Informe-Evaluacio%CC%81n-2023final.pdf</p> <p>4 Acuerdo N° MRCEIP-SRP-2019-0160-A – Medidas de ordenamiento, regulación y control para las embarcaciones pesqueras industriales provistas de redes de cerco de jareta que capturan peces pelágicos pequeños. https://faolex.fao.org/docs/pdf/ecu196232.pdf</p>	
<p><i>Standard clauses 1.3.2.2</i></p>	

Table D2 - Productivity / Susceptibility attributes and scores.

Productivity attributes	High productivity (Low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)
Average age at maturity	<5 years	5-15 years	>15 years
Average maximum age	<10 years	10-25 years	>25 years
Fecundity	>20,000 eggs per year	100-20,000 eggs per year	<100 eggs per year
Average maximum size	<100 cm	100-300 cm	>300 cm
Average size at maturity	<40 cm	40-200 cm	>200 cm
Reproductive strategy	Broadcast spawner	Demersal egg layer	Live bearer
Mean Trophic Level	<2.75	2.75-3.25	>3.25

Susceptibility attributes	Low susceptibility (Low risk, score = 1)	Medium susceptibility (medium risk, score = 2)	High susceptibility (high risk, score = 3)
Areal overlap (availability) Overlap of the fishing effort with the species range	<10% overlap	10-30% overlap	>30% overlap
Encounterability The position of the stock/species within the water column relative to the fishing gear, and the position of the stock/species within the habitat relative to the position of the gear	Low overlap with fishing gear (low encounterability).	Medium overlap with fishing gear.	High overlap with fishing gear (high encounterability). Default score for target species
Selectivity of gear type Potential of the gear to retain species	a Individuals < size at maturity are rarely caught	a Individuals < size at maturity are regularly caught.	a Individuals < size at maturity are frequently caught
	b Individuals < size at maturity can escape or avoid gear.	b Individuals < half the size at maturity can escape or avoid gear.	b Individuals < half the size at maturity are retained by gear.
Post-capture mortality (PCM) The chance that, if captured, a species would be released and that it would be in a condition permitting subsequent survival	Evidence of majority released post-capture and survival.	Evidence of some released post-capture and survival.	Retained species or majority dead when released.

D3		Average Susceptibility Score		
		1 - 1.75	1.76 - 2.24	2.25 - 3
Average Productivity Score	1 - 1.75	PASS	PASS	PASS
	1.76 - 2.24	PASS	PASS	TABLE D4
	2.25 - 3	PASS	TABLE D4	TABLE D4

D4 Species Name		N/A	
Impacts On Species Categorised as Vulnerable by D1-D3 - Minimum Requirements			
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.		
Outcome:			
Evidence			
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.			
References			
Links			
MarinTrust Standard clause		1.3.2.2, 4.1.4	
FAO CCRF		7.5.1	
GSSI		D.5.01	