MarinTrust Standard V2

By-product Fishery Assessment

Pacific Thread Herring, FAO 77 & 87

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Table 1 Application details and summary of the assessment outcome

Fishery Under Assessment	Species:	Pacific Thread Herring, *Opisthonema liberate*
	Geographical area:	FAO 77 & 87
	Country of origin of the product:	Ecuador
	Stock:	Pacific Eastern Central & Pacific Southeast (Ecuadorian waters)
Date	Jan 2023	
Report Code	ECU03	
Assessor	Vineetha Aravind	
Country of origin of the product - PASS	Ecuador	
Country of origin of the product - FAIL	NA	

Application details and summary of the assessment outcome			
Company Name(s): Tadel URISA SA			
Country: Ecuador			
Email address: gerenciajm@tadel.com.ec marco@urisaecuador.com		Applicant Code:	
Certification Body Details			
Name of Certification Body:		LRQA	
Assessor	Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-approval
Vineetha Aravind	Sam Peacock	0.5	Surveillance 2
Assessment Period	Jan 2023-Jan 2024		

Scope Details	
Main Species	Pacific Thread Herring, *Opisthonema liberate*
Stock	Pacific Eastern Central & Pacific Southeast (Ecuadorian waters)
Fishery Location	FAO 77 & 87
Management Authority (Country/ State)	Ecuador
Gear Type(s)	Purse seine
Outcome of Assessment	
Peer Review Evaluation	
Recommendation	

Table 2. Assessment Determination

Assessment Determination
Pacific thread herring has been categorised by the IUCN Red List as Least Concern and does not appear in the CITES appendices Pacific thread herring (Opisthonema spp.; locally known as "pinchagua") refers to three different species in Ecuador: *Opisthonema bulleri, O. libertate* and *O. medirastre*. There is no information on stock structure of any of the three species in Ecuador; however, for assessment purposes, Opisthonema spp. off Ecuador is considered a single and independent stock. Opistonema spp. is one of the main species groups targeted by the fishery of small pelagics in Ecuador, where it is used for human consumption. The stock is subject to a specific management regime and reference points are defined. Therefore it was assessed under Category C. Fishery removals of the stock are considered in the various stock assessment processes so the stock PASSES Clause C1.1. For Pinchagua in the assessment area, the most recent estimated spawning stock biomass (SSB) is above Blim therefore, the stock PASSES Clause C1.2. In order to be approved, the stock assessed must achieve a pass in both clauses C1.1 and C1.2. Therefore, Pacific Thread Herring, *Opisthonema spp* is APPROVED by the assessor for the production of fishmeal and fish oil under the current Marin Trust v 2.0 by-products standard.
Fishery Assessment Peer Review Comments
PR agrees that the species meets the MT pre-requisites and has been correctly assessed under Category C. The reference provided supports the conclusions of the Section C assessment and PR agrees with the assessor's conclusion that the byproduct should be approved for use as a raw material.
Notes for On-site Auditor

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 an 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]
Pacific Thread herring	*Opisthonema liberate*	Pacific Eastern Central & Pacific Southeast (Ecuadorian waters)	Ecuador	C	Least Concern (LC) https://www.iucnredlist.org/species/183662/8154151	No

[1] https://www.iucnredlist.org/
[2] https://cites.org/eng/app/appendices.php

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			
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.	Pass
		Clause outcome:	Pass

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.

The most recent stock assessment for Pacific thread herring in Ecuador was conducted in 2021 by Canales et. al., 2021 using three methods/models: Length Based pseudo-cohort analysis (LBPA), Schaefer dynamic biomass (MBD) and an age-based statistical model (MESTOCKL).

In this assessment of 2021, catch data (landings from 1975-2020), landing site information (e.g. number of hauls proportion of small pelagic species), biological information such as weight, sex and size, catch per unit effort, acoustic survey information until 2020, as well as available life history information has been used.

Therefore, fishery removals are considered in the stock assessment and it PASSES clauses C1.1.

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.

Both spawning biomass and fishing mortality were contrasted with respect to values relative to virgin biomass (B0). A Biological Reference Point of 40% of B0 was considered objective, while the maximum fishing mortality level was estimated as that generated in the long term 40% of B0 (F40%). The variation of the spawning biomass was then contrasted based on two indicators of spawning potential; a dynamic one which corresponds to the ratio between biomass and virgin biomass given the value annual private recruitment, and another long term, which is the ratio between the annual biomass and the virgin biomass B0 estimated from recruitments.

Spawning biomass is currently estimated at around 903,98 tons and slightly above of the reference value/point of 40% B0 in most cases analysed. The precision in these estimates is considered high, which is reflected in coefficients of variation below 20% and confidence intervals closely adjusted to the main trendline. The position relative biomass and fishing mortality in the Kobe diagram, shows that the Pinchagua would not show symptoms of overfishing, while the risk of overfishing would reach 10% (Figure 1). Fishing mortality is less than half of the maximum value F40%, reason for which the population recovery should be accentuated with% B0 higher than 40%.

Therefore, the stock is considered, in its most recent stock assessment, to have a biomass above the limit reference point, it PASSES clauses C1.2.

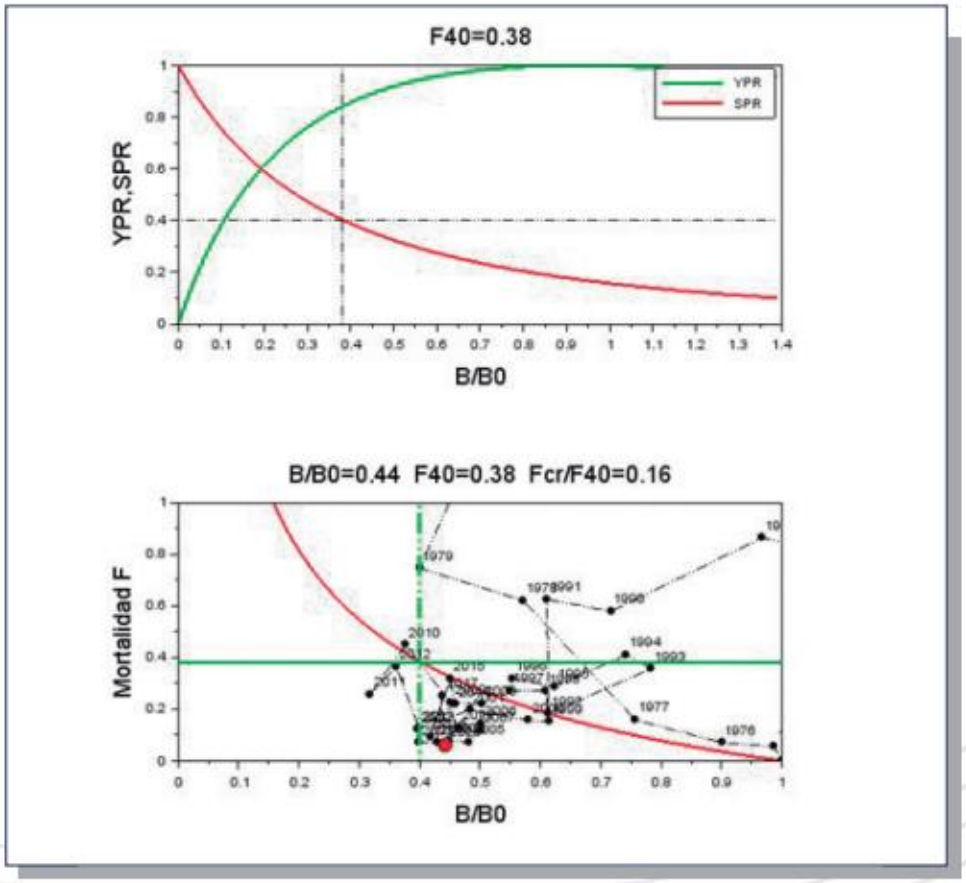

Figure 1. Kobe plot for Pacific Thread Herring, Pinchuagua, in the last stock assessment of 2020. The red circle shows the current situation of the stock. Sources. Canales et al. 2021

Año	Recl(#)	Biomasa(t)	F	F/F_{40}	B/B_0	RPRdin
1974	1362	204244	0.000	0.000	1.000	1.000
1975	463	201560	0.056	0.147	0.987	0.993
1976	719	184008	0.070	0.185	0.901	0.962
1977	629	154620	0.159	0.418	0.757	0.918
1978	793	116710	0.621	1.633	0.571	0.797
1979	2269	81689	0.746	1964	0.400	0.615
1980	24247	117363	1.655	4.355	0.575	0.663
1981	1279	403524	2.718	7.153	1.976	0.845
1982	4607	736813	1.182	3.111	3.608	0.858
1983	2326	720370	0.216	0.568	3.527	0.745
1984	5683	644142	0.564	1.485	3.154	0.705
1985	9776	461365	1.706	4.489	2.259	0.550
1986	2203	358258	2.718	7.153	1.754	0.436
1987	4313	327145	2.401	6.320	1.602	0.386
1988	3895	253149	0.731	1.925	1.239	0.315
1989	2350	197440	0.863	2.271	0.967	0.265
1990	1791	146461	0.579	1.524	0.717	0.218
1991	3199	124686	0.625	1.645	0.610	0.217
1992	2042	125318	0.183	0.482	0.614	0.249
1993	1610	160051	0.358	0.941	0.784	0.353
1994	1195	151471	0.410	1.080	0.742	0.374
1995	1026	127396	0.288	0.758	0.624	0.362
1996	2283	113229	0.319	0.838	0.554	0.376
1997	1540	112348	0.272	0.715	0.550	0.417
1998	1237	124284	0.269	0.707	0.609	0.478
1999	416	125414	0.152	0.401	0.614	0.504
2000	565	118530	0.157	0.414	0.580	0.530
2001	569	98695	0.197	0.520	0.483	0.526
2002	1266	80765	0.122	0.322	0.395	0.525
2003	764	81305	0.070	0.184	0.398	0.594
2004	879	91805	0.078	0.205	0.449	0.688
2005	920	98489	0.072	0.190	0.482	0.742
2006	1017	102407	0.145	0.381	0.501	0.769
2007	1047	102167	0.120	0.315	0.500	0.752
2008	552	102616	0221	0.581	0.502	0.738
2009	685	92121	0.226	0.596	0.451	0.670
2010	1107	76861	0.448	1.1180	0.376	0.592
2011	1343	64896	0.256	0.675	0.318	0.511
2012	1204	73650	0.366	0.963	0.361	0.543
2013	867	81453	0.128	0.336	0.399	0.548
2014	1066	93716	0.218	0.573	0.459	0.599
2015	828	91965	0.320	0.841	0.450	0.585
2016	914	85461	0.093	0.244	0.418	0.554
2017	1033	89486	0.253	0.665	0.438	0.603
2018	843	87449	0.074	0.196	0.428	0.603
2019	387	94876	0.129	0.339	0.465	0.665
2020	360	90398	0.062	0.163	0.443	0680

Figure 2: Annual estimates of recruitment (Recl), spawning biomass, fishing mortality, index of overfishing (F/F40), long-term B0 ratio (B/B0), and dynamic B0 ratio (RPRdin) of the resource PINCHAGUA. Sources. Canales et al. 2021

References

Canales C. M., V. Jurado, 2021. Evaluación del stock de recursos pelágicos pequeños del Ecuador. Año 2022. Informe Técnico. Guayaquil, julio 2022. 114 p

https://institutopesca.gob.ec/wp-content/uploads/2022/10/Informe_Eval_Final_2022.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		
	Productivity Attribute	**Value**	**Score**
	Average age at maturity (years)		
	Average maximum age (years)		
	Fecundity (eggs/spawning)		
	Average maximum size (cm)		
	Average size at maturity (cm)		
	Reproductive strategy		
	Mean trophic level		
		Average Productivity Score	
	Susceptibility Attribute	**Value**	**Score**
	Availability (area overlap)		
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)		
	Selectivity of gear type		
	Post-capture mortality		
		Average Susceptibility Score	
		PSA Risk Rating (From Table D3)	
		Compliance rating	
	Further justification for susceptibility scoring (where relevant) *For susceptibility attributes, please provide a brief rationale for scoring of parameters where there may be uncertainty affecting your decision*		
References			
Standard clauses 1.3.2.2			

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		
	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