MarinTrust Standard V2

By-product Fishery Assessment
Pacific saury (*Cololabis saira*) in FAO 61, Pacific northwest

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Table 1 Application details and summary of the assessment outcome

Fishery Under Assessment	Species:	Pacific saury (*Cololabis saira*)
	Geographical area:	FAO 61 Pacific Northwest
	Country of origin of the product:	Thailand (Flag country: Japan)
	Stock:	Pacific saury in northwest Pacific Ocean
Date	3 February 2023	
Report Code	THA02	
Assessor	Léa Lebechnech	
Country of origin of the product - PASS	Thailand (Flag country: Japan)	
Country of origin of the product - FAIL	NA	

Application details and summary of the assessment outcome			
Company Name(s): T.C Union Argotech Co Ltd			
Country: Thailand			
Email address:		Applicant Code:	
Certification Body Details			
Name of Certification Body:		Global Trust Certification	
Assessor	Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-approval
Léa Lebechnech	Matthew Jew	0.5	Surveillance 1
Assessment Period	To February 2023		

Scope Details	
Main Species	Pacific saury (*Cololabis saira*)
Stock	Pacific saury in northwest Pacific Ocean
Fishery Location	FAO 61 Pacific northwest
Management Authority (Country/ State)	North Pacific Fisheries Commission (NPFC)
Gear Type(s)	Stick-held dip net as per NPFC SSC PS10 report
Outcome of Assessment	
Peer Review Evaluation	Agree with assessor's determination
Recommendation	**APPROVED**

Table 2. Assessment Determination

Assessment Determination
If any species is categorised as Endangered or Critically Endangered on IUCN's Red List, or if it appears in the CITES appendices, it cannot be approved for use as Marin trust raw material. Pacific saury (*Cololabis saira*) does not appear as Endangered or Critically Endangered on IUCN's Red List, nor do they appear in CITES appendices; therefore, Pacific saury is eligible for approval for use as Marin Trust RS by-product raw material.   Pacific saury (*Cololabis saira*) has been harvested by China, Japan, Korea, Russia, and Chinese Taipei. These vessels mainly use stick-held dip nets or lift nets to catch Pacific saury. While Japanese and Russian vessels operate mainly within their EEZs, Chinese, Korean, and Chinese Taipei vessels operate mainly in the high seas of the north Pacific.   There is a fishery management framework at national levels, applied specifically to Pacific Saury. Fisheries management in general is supported by data collection and stock assessment, and species-specific research is carried out by the Small Scientific Committee of the North Pacific Fisheries Commission (NPFC). An assessment was undertaken in December 2021. Therefore, the species has a species-specific management plan and it has been assessed under category C.   Catches are reported by each country member and the CPUE are also included in the stock assessment models. Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and the stock PASSES Clause C 1.1.   The B-ratio (=B/B_{MSY}) has shown that the species is below limits and biomass is decreasing in recent years. The species is considered, in its most recent stock assessment, to have a biomass below the limit reference point (or proxy). Thus, the stock FAILS Clause C1.2.   As per guidance, the stock has been assessed under category D.   With an average productivity score of 1.29 and an average susceptibility score of 3, the stock PASSES the PSA analysis.   Therefore, Pacific saury in FAO 61 (Pacific northwest), is APPROVED for the production of fishmeal and fish-oil under the current Marin Trust v 2.0 by-products.
Fishery Assessment Peer Review Comments
The assessor correctly classified Pacific saury in FAO 61 (Pacific northwest) as Category C, the stock is subject to a specific management regime and reference points are defined.   Fishery removals are considered in the stock assessment process and so the stock passes Clause1.1. The most recent stock assessment shows that the stock is overfished with approximately 21% chance that it is experiencing overfishing. Therefore, the stock is considered to have biomass below the limit reference point and fails Clause1.2. Per guidelines, the stock was correctly assessed under category D.   The assessor correctly applied attribute scores for the PSA and the productivity total of 1.29 and susceptibility total of 3 were correctly calculated. The stock passes category D per Table D4.   Pacific saury in FAO 61 (Pacific northwest) passes the PSA and therefore should be approved under the MarinTrust Standard v.2.
Notes for On-site Auditor
N/A

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 saury	*Cololabis saira*	North Pacific Ocean Pacific saury	NPFC	D (fails category C)	Not listed	No

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

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	Pacific saury (*Cololabis saira*)	
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.	Yes
	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.	No
	Clause outcome:	FAIL

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.

Catches for each member country are included in the stock assessment and reported periodically.

The 9th Meeting of the Small Scientific Committee on Pacific Saury took place between 30 August and 2 September 2022. In the published report, catches from Japan (and the other concerned countries) were presented:
In 2022, 113 vessels were registered, a decrease of 12 from the previous year. The annual catch as of November 2022 was 17,868 MT. The final annual catch for 2022 will be the lowest since 1950. The trend in 10-day catches has been similar to that in 2021. Previously, the peak catch was in October or September, but more recently it has been in November. Relative seasonal catch indicates that the high season has been getting shorter in recent years. Nominal CPUE was 0.51 MT/haul, the lowest since 2000. Most of the fishing grounds in 2022 were located on the high seas. In recent years, the fishing grounds in August have moved south, and fishing grounds have moved eastward after 2019. As of the end of September, more than 70% of the fish caught in 2022 were age-1 fish. The figure below shows the catches presented in the last stock assessment of 2022.
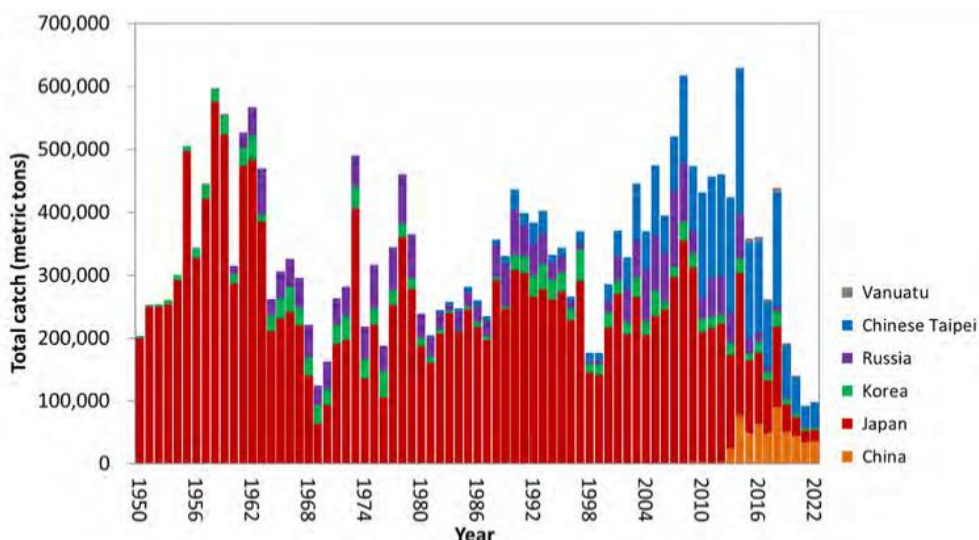

Figure 1. Time series of catch by Member during 1950-2022. The catch data for 1950-1979 are shown but not used in stock assessment modeling. Catch data in 2022 are preliminary (as of 17 December 2022) and not used in the assessment. Source: NPFC 2022.

Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process and therefore the stock PASSES clause 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.

A Bayesian state-space production model (BSSPM) used in previous stock assessments was employed as an agreed provisional stock assessment model for Pacific saury during 1980-2022. Scientists from three Members (China, Japan and Chinese Taipei) each conducted analyses following the agreed specification which called for two base case scenarios and two sensitivity scenarios. The two base case scenarios differ in using each Member's standardized CPUEs (base case B1) or standardized joint CPUEs (base case B2). For the two sensitivity cases with Japanese early CPUE (1980-1994), time-varying catchability was assumed to account for potential increases in catchability. A higher weight was given to the Japanese biomass survey estimates than to Members' CPUEs in B1 while comparable weights were given to the Japanese biomass survey estimates and the joint CPUEs in B2. The CPUE data were modelled as nonlinear indices of biomass. Members used similar approaches with some differences in the assumption of the time-varying catchability and prior distributions for the free parameters in the model.

Results of combined model estimates indicate that the stock declined with an interannual variability from near carrying capacity in the mid-2000's after a period of high productivity to current low levels. The results also indicated that B was below B_{MSY} (median average B/B_{MSY} during 2020-2022 = 0.368, 80%CI=0.232-0.564) and F was above F_{MSY} (average F/F_{MSY} during 2019-2021 = 1.192, 80%CI= 0.757-1.883). The results further indicated that recent stock biomass remains at a historically low level in recent years. The biomass trend shows a small increase in recent years through 2021 and a marked increase in the Japanese biomass survey between 2021 and 2022. The harvest rate has also been declining from a peak in 2018 and was less than F_{MSY} during 2021. However, caution is required in interpreting these results, given historically low nominal CPUEs through 2022, relatively high fishing effort in 2021, and variability inherent in fisheries-independent surveys.
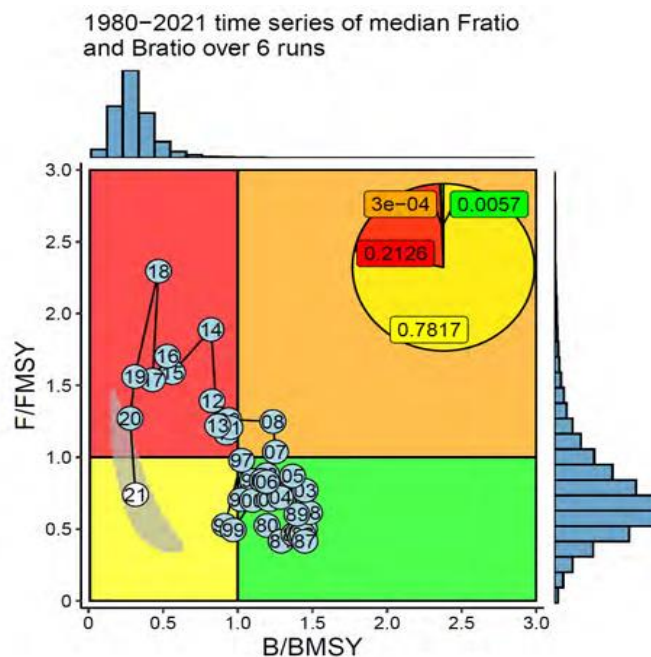

Figure 2. Kobe plot with time trajectory. The data are aggregated across 6 model results (2 base-case models by 3 Members). Source: NPFC 2022.

Therefore, even if the biomass seems to start increasing, the species is still considered, in its most recent stock assessment, to have a biomass below the limit reference point, so it FAILS clause C1.2.
As per guidance, the stock has been assessed under category D.

References

Small scientific committee on Pacific saury, 2022. 10th Meeting report. NPFC-2022-SSC PS10 – Final report: https://www.npfc.int/meetings/meeting-type/23

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**	**Pacific saury (*Cololabis saira*)**	
	Productivity Attribute	**Value**	**Score**
	Average age at maturity (years)	1.2	1
	Average maximum age (years)	4.8	1
	Fecundity (eggs/spawning)	47,000 to 180,000	1
	Average maximum size (cm)	40	1
	Average size at maturity (cm)	17.9	1
	Reproductive strategy	Broadcast spawner, nonguarders	1
	Mean trophic level	3.7	3
		Average Productivity Score	**1.29**
	Susceptibility Attribute	**Value**	**Score**
	Availability (area overlap)	High overlap (>30%)	3
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	Depth range 0 - 230 m, pelagic gear Japanese stick-held dip net	3
	Selectivity of gear type	Individuals < size at maturity are regularly caught and individuals < half the size at maturity can avoid or escape the gear	3
	Post-capture mortality	Retained species or mostly dead when retained	3
		Average Susceptibility Score	**3**
		PSA Risk Rating (From Table D3)	**Pass**
		Compliance rating	**PASS**

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

For area Overlap: Since the fishery for Pacific Saury occurs in an area where there is high concentration of these species on the Northwest Pacific, it can be said that more than 30% of the stock overlap with the fishery. Furthermore, since it is a schooling species the score has to be of higher risk.

Native range | All suitable habitat | Point map | Year 2100

This map was computer-generated and has not yet been reviewed.
Cololabis saira   AquaMaps   Data sources: GBIF OBIS

For encounterability: Pacific saury is usually found near the surface (though they may have a depth range of 0 - 230 m). Adults are generally found offshore, near the surface of the ocean, in schools. Juveniles associate with drifting seaweed. Most pelagic gear (stick held dipnet) commonly reach the se populations when they are fishing on the sea surface with light attractants or bait.

	For Selectivity and post-capture mortality: Given that there is no information on length distribution to look at size selectivity of the fishery on Pacific saury, the most conservative scores (3) must be given.

References
Fishbase. *Cololabis saira* (Brevoort, 1856), Pacific saury: https://www.fishbase.se/Summary/SpeciesSummary.php?ID=303&AT=Pacific+Saury   Fuji et al., 2019. NPFC. A review of the biology for Pacific Saury, *Cololabis saira* in the North Pacific Ocean: https://www.npfc.int/system/files/2019-11/NPFC-2019-SSC%20PS05-WP13%28Rev%201%29%20Review%20of%20Pacific%20saury%20biology_Japan.pdf
Standard clauses 1.3.2.2

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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