



MarinTrust Standard V2

By-product Fishery Assessment *Pacific Saury (Cololabis saira) FAO 61* *Pacific Northwest*

MarinTrust Programme

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Table 1 Application details and summary of the assessment outcome

Fishery Under Assessment	Species:	Pacific saury, <i>Cololabis saira</i>
	Geographical area:	FAO 61 Pacific Northwest
	Country of origin of the product:	Japan
	Stock:	North Pacific Ocean
Date	February 2022	
Report Code	BP018	
Assessor	Ivan Mateo, Ph.D.	
Country of origin of the product - PASS	JAPAN	
Country of origin of the product - FAIL		

Application details and summary of the assessment outcome			
Company Name(s): T.C. UNION AGROTECH CO., LTD			
Country:			
Email address:		Applicant Code:	
Certification Body Details			
Name of Certification Body:		Global Trust Certification	
Assessor	Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-approval
Ivan Mateo	Conor Donnelly	0.5	Reapproval
Assessment Period	2022		

Scope Details	
Main Species	Pacific saury, <i>Cololabis Saira</i>
Stock	North Pacific Ocean
Fishery Location	Pacific, northwest (FAO Major Fishing Area 61)
Management Authority (Country/ State)	North Pacific Fisheries Commission
Gear Type(s)	Stick-held dip net as per NPFC SSCPS06 report
Outcome of Assessment	
Peer Review Evaluation	Agree with recommendation
Recommendation	APPROVE

Table 2. Assessment Determination

Assessment Determination
<p>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 MarinTrust raw material. Pacific saury (<i>Cololabis saira</i>) does not appear as Endangered or Critically Endangered on IUCN's Red List, nor does it appear in CITES appendices; therefore, Pacific saury (<i>Cololabis saira</i>) is eligible for approval for use as MarinTrust by-product raw material.</p> <p>Pacific saury (<i>Cololabis saira</i>) 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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>As per guidance the stock has been assessed under category D. With an Average Productivity Score of 1.28 and an Average Susceptibility Score of 3, the stock has passed the PSA analysis.</p> <p>In order to approve the stock needs to achieve a pass in Table D3; as it is the case, Pacific saury (<i>Cololabis saira</i>) in FAO area 61 is APPROVED by the assessor for the production of fishmeal and fish oil under the current Marin Trust v.2.0 by-product Standard.</p>
Fishery Assessment Peer Review Comments
<p>The stock was correctly identified as a Category C stock. As the stock is likely to be below its limit point and therefore fails clause C1.2 it needed to be assessed under category D. The stock passed the PSA and therefore can be approved.</p>
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 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
Pacific saury	<i>Cololabis saira</i>	North Pacific Ocean Pacific, northwest (FAO Major Fishing Area 61)	NPFC	C, D	Not listed	Not listed

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		Pacific saury	
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 figure below shows the catches presented in the last stock assessment of 2021.

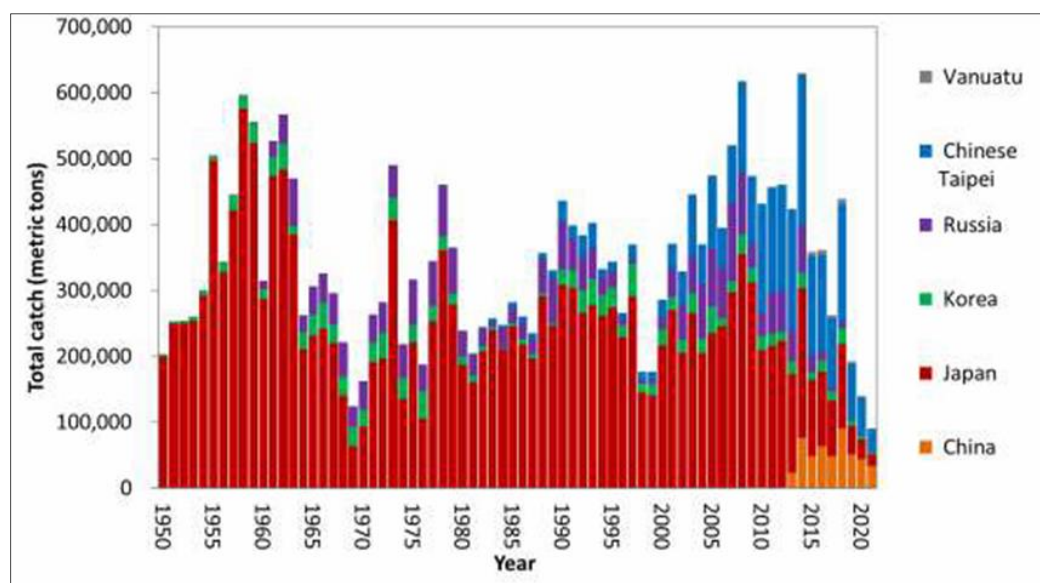


Figure 1. Time series of catch by Member during 1950-2021. The catch data for 1950-1979 are shown but not used in stock assessment modelling 2021 catch data are preliminary (as of 27 November 2021).

Therefore, Fishery removals of the species in the fishery under assessment are included in the stock assessment process and 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 1980-2021. 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 Japanese early CPUE (base case B1) or not (base case B2). Time-varying catchability for Japanese CPUE was assumed in B1 to account for potential increases in catchability between 1980 and 1994. A higher weight was given to the Japanese biomass survey estimates than to Members' CPUEs. 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. Exploitation rates were increasing slowly since 2005 except for 2019. The results also indicated that B was below BMSY (median average B/BMSY during 2019-2021 = 0.427, 80%CI=0.260-0.693) and F was above FMSY (average F/FMSY during 2018-2020 = 1.247, 80%CI= 0.647-1.967). The results further indicated that stock biomass fell to the lowest value since 1980 in 2020 (median B/BMSY = 0.361, 80%CI=0.218-0.587) and has been still at a historically low level in recent years (2019-2021). Information of the nominal CPUE series further indicated that Pacific saury stock biomass has likely been near a record low level in 2021.

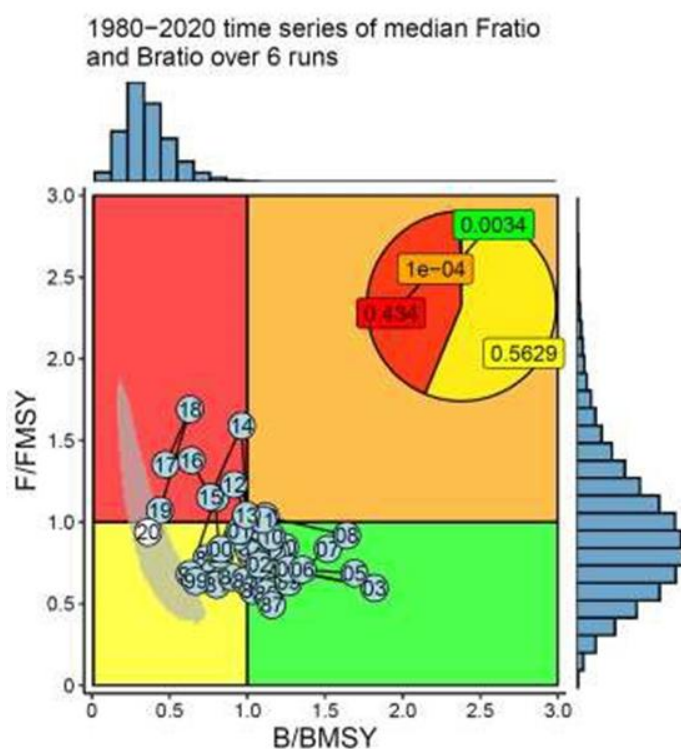


Figure 2. Kobe plot with time trajectory. The data are aggregated across 6 model results (2 base-case models by 3 Members).

Following the results, the biomass for the period 2019-2021 is below limits and with a decreasing trend. Removals are not considered negligible as shown in Figure 1. Therefore, the stock FAILS C1.2. As per guidance, the stock has been assessed under category D.

References

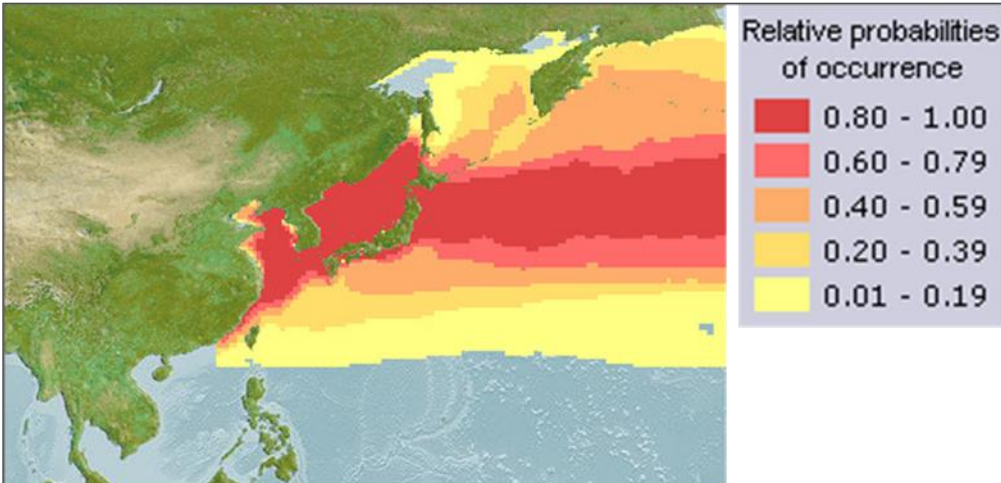
Small Scientific Committee on Pacific Saury. 2021. 8th Meeting Report. NPFC-2021-SSC PS08- Final Report. 56 pp. (Available at www.npfc.int).

Links <https://www.npfc.int/sites/default/files/2022-02/SSC%20PS08%20report.pdf>

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	
	Productivity Attribute	Value	Score
	Average age at maturity (years)	1.2	1
	Average maximum age (years)	4.8	1
	Fecundity (eggs/spawning)	47000-18000	1
	Average maximum size (cm)	40	1
	Average size at maturity (cm)	23.7	1
	Reproductive strategy	Broadcast spawner	1
	Mean trophic level	3.7	3
	Average Productivity Score		1.29
	Susceptibility Attribute	Value	Score
	Availability (area overlap)	>30% overlap with fishery	3
	Encounterability (the position of the stock/species within the water column relative to the fishing gear)	Japanese stick-held dip net	3
	Selectivity of gear type	Individuals < size at maturity are frequently caught. Individuals < half the size at maturity are retained by gear.	3
	Post-capture mortality	Retained species or majority dead when released.	3
	Average Susceptibility Score		3
	PSA Risk Rating (From Table D3)		PASS
	Compliance rating		PASS
<p>Further justification for susceptibility scoring (where relevant)</p> <p>Area Overlap. Since the fishery for Pacific Saury occurs in an area where there is high concentration of these species on the Northwest Pacific [(0.8-1) frequency of occurrence] (Aquamap 2019), 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.</p>			
			

	<p>Figure 3. Habitat Suitability Map of Pacific Saury Distribution on the Northwest Pacific.</p> <p>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 these populations when they are fishing on the sea surface with light attractants or bait.</p> <p>Selectivity: Given that there is no information on length distribution to look at size selectivity of the fishery on Pacific saury, a more conservative score must be given.</p> <p>Post-capture mortality Given that there is no information on post capture mortality of Pacific saury, a more conservative score must be given.</p>
<p>References</p> <p>https://www.fishbase.se/Summary/SpeciesSummary.php?ID=303&AT=Pacific+Saury</p> <p>NPFC-2019-SSC PS05-WP13(Rev 1) Review of Pacific saury biology_Japan. https://www.npfc.int/system/files/2019-11/NPFC-2019-SSC%20PS05-WP13%28Rev%201%29%20Review%20of%20Pacific%20saury%20biology_Japan.pdf</p>	
<p><i>Standard clauses 1.3.2.2</i></p>	

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.

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	