



## MarinTrust Standard V2

### By-product Fishery Assessment California pilchard (*Sardinops sagax caeruleus*) in FAO 77 Pacific Eastern Central, Central and Southern Baja California and the Gulf of California

**MarinTrust Programme**

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**Table 1 Application details and summary of the assessment outcome**

Fishery Under Assessment	Species:	California pilchard, <i>Sardinops sagax caeruleus</i>
	Geographical area:	FAO 77 Pacific Eastern Central
	Country of origin of the product:	Thailand
	Stock:	California pilchard in FAO 77 Pacific Eastern Central, Central and Southern Baja California and the Gulf of California
Date	13 September 2022	
Report Code	THA22	
Assessor	Léa Lebechnech	
Country of origin of the product - PASS	Flag country: NA	
Country of origin of the product - FAIL	NA	

Application details and summary of the assessment outcome			
Company Name(s): T.C. Union Agrotech Co, Ltd; Thai Union Frozen Product PLC; Thai Union manufacturing CO., Ltd; UNICORD Public Company Limited Plant 1, Plant 2; SEA VALUE Public Company Limited; DIAMOND Food Product Company Limited			
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 days	Re-approval
Assessment Period	To September 2022		

Scope Details	
Main Species	California pilchard, <i>Sardinops sagax caeruleus</i>
Stock	FAO 77 Pacific Eastern Central, Central and Southern Baja California and the Gulf of California
Fishery Location	California pilchard in FAO 77 Pacific Eastern Central, Central and Southern Baja California and the Gulf of California
Management Authority (Country/ State)	Mexican Secretary of Agriculture and Rural Development (SADER), Mexico National Commission of Aquaculture and Fisheries (CONAPESCA) National Marine Fisheries Services, NOAA Fisheries, Pacific Fisheries Management Council,
Gear Type(s)	Purse seine
Outcome of Assessment	
Peer Review Evaluation	Agree with recommendation
Recommendation	APPROVED

## 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 Marin Trust raw material.</p> <p>California Pilchard <i>Sardinops sagax caeruleus</i> is neither listed as Endangered or Critically Endangered on IUCN’s Red List (“least concern”), nor listed in CITES appendices; therefore, California Pilchard is eligible for approval for use as Marin Trust by-product raw material.</p> <p>There are two subpopulations of this stock: A northern (“cold”) subpopulation (northern Baja California to Alaska) and a southern subpopulation (central and southern Baja California &amp; Gulf of California). As the fishery of the northern population is closed, this assessment only covers the southern subpopulation of this stock. This fishery is regulated under the <i>Norma Oficial Mexicana</i> (NOM) 003PESC-1993, and a management plan in place.</p> <p>The stock is subject to a specific research and management regime, therefore it is classified as Category C. Fisheries removals are considered in the stock assessment and the stock has been above proxy biomass reference points, so clauses C1.1 and C1.2 are met.</p> <p>Therefore, California pilchard in FAO 77 Pacific Eastern Central, Central and Southern Baja California and the Gulf of California, is <b>APPROVED</b> for the production of fishmeal and fish oil under the current MarinTrust v 2.0 by-products.</p>
Fishery Assessment Peer Review Comments
<p>The internal peer reviewer agrees with the assessor’s determination, who correctly classified California Pilchard (<i>Sardinops sagax caeruleus</i>) in FAO Area 77 under Category C, as reference points are defined to assess status of stock relative to, and there is a specific management regime in place.</p> <p>Fishery removals are included in the stock assessment and it PASSES Clause C1.1. The stock is considered, in its most recent assessment, to have biomass above the proxy biomass reference point, it PASSES Clause C1.2.</p> <p>Therefore, California pilchard (<i>Sardinops sagax caeruleus</i>) in FAO Area 77 is <b>APPROVED</b>.</p>
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 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 <sup>1</sup>	CITES Appendix 1 <sup>2</sup>
California Pilchard	<i>Sardinops sagax caeruleus</i>	FAO 77 Pacific Eastern Central, Central and Southern Baja California and the Gulf of California	Mexican Secretary of Agriculture and Rural Development (SADER), Mexico National Commission of Aquaculture and Fisheries (CONAPESCA), Pacific Fisheries Management Council, NOAA Fisheries	C	LC	No

<sup>1</sup> <https://www.iucnredlist.org/>

<sup>2</sup> <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		California Pilchard ( <i>Sardinops sagax caeruleus</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.	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.	Yes
			Clause outcome: PASS
<p><b>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.</b></p> <p>In 2020, Instituto Nacional de Pesca (INAPESCA) carried out a population analysis of California/Pacific sardine (<i>Sardinops sagax</i>) in the Gulf of California considering the period 1971/72 to 2019/20, updated from previous versions and associated analyses. The stock assessment is an assessment of the group of small pelagic fishes in the Gulf of California. INAPESCA shares the results through <i>informes técnicos</i>, where the total catches of California sardine are detailed: during the 2019/2020 fishing season, the total catches until the December occurrence were 95,341 tonnes, from which 6.6% were California sardine. The Age-Structured Assessment Program (ASAP) was used and did not imply a change in the stock assessment methodology in relation to previous years. It is an updated approach and well accepted method to assess populations under commercial exploitation due to the realistic outcome of the dynamic of the population, and allows an interpretation of the stocks' status, producing biological reference points and biomass estimates. The following fishery-independent indices were used:</p> <ul style="list-style-type: none"> <li>- Annual Relative Abundance Index of Evaluation Survey Data (kg of Pacific sardines per haul hour (kg/hour), from the historical series (1990-2019)</li> <li>- Annual relative abundance index of acoustic surveys data (Tons per year (t/year), of the cruise series (2008-2019)</li> <li>- Relative abundance index of ichthyoplankton cruise data (number of Pacific sardine eggs and larvae per 10 m<sup>2</sup>)</li> <li>- Probability index of sardine spawning</li> <li>- Index of the proportion of sardines in the diet of birds.</li> </ul> <p>The ASAP analysis allowed for the estimation of the size of the population by age groups (in number and weight), fishing mortality, as well the generation of some biological reference points. For both populations, the results indicated great interannual variability in the series (recruits, spawners and totals, in numbers and tons): recruitment increased from the early 1970s, reaching a peak in the early 1980s, falling to very low levels between 1990-1991/1993 and again an upward trend with high variability increasing to historic maximum values in the 2006/07 season.</p> <p><b>Therefore, fishery removals of the species in the fishery under assessment are included in the stock assessment process, so it PASSES clause C1.1.</b></p>			
<p><b>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.</b></p> <p>Between 2008/09 and 2013/14, the trend in the abundance series (in number and weight) was downward. However, in recent years there was an upward trend: the spawning biomass (B) increased from around 432,000 t in 2014/15 to almost 1,020 million tons in 2017/18-2018/19, while the exploitable biomass (E) behaves the same way as the spawning biomass, but the values in 2014/15 were almost 409,000 tons, while this value increased, peaking at 924,000 tons in 1918/19.</p>			

Between 2016/17 and 2019/20 the exploitable biomass oscillated between 735,000 and 1,125,000 tons. The annual fishing mortality rate (F) and the exploitation rate ( $E = 1 - \exp(-F)$ ) show values below 0.15/year for almost the entire period, with some seasons where these values were between 0.16 and 0.25, with a maximum peak in 1988/89, the second highest peak in 2008/09, and a third peak in 2018/19.

For the analysis of the stock in 2019/20,  $F_{MSY} = 0.314$  and  $E_{MSY} = 0.269$ , were much higher than the  $F_{current} = 0.116$  year and  $E_{current} = 0.109$  year. On the other hand, the estimate of the spawning biomass in the MSY was  $B_{MSY} = 500,716$  t, lower than that estimated for the last years. When applying the control rule ( $BAC = (B_{exp} - B_{MIN}) * FRACTION$ ) stipulated in the Fisheries Management Plan, considering that  $B_{MIN} = 120,000$  t and  $FRACTION = 1 - \exp(-F_{MSY}) = E_{MSY}$ , it was found that the population of Pacific the sardine has been exploited below the estimated BAC in the analysed time period. Considering the current trend in the biomass of the Pacific sardine, an exploitable biomass of 926,000 tons, as well as an exploitation level of  $0.269 = FRACTION$ , the BAC for the 2020-2021 period would be 206,000 tons.

On the other hand, a Kobe diagram, presented to the SGS audit team during the third MSC surveillance of the small pelagics fishery in Sonora, Gulf of California, showed that the Pacific sardine population is in good condition and the fishing effort has been below the recommended maximum, so there is no overfishing.

**Therefore, the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy) and it PASSES clause C1.2.**

#### References

Iwamoto, T., Eschmeyer, W. 2010. *Sardinops sagax ssp. sagax*. The IUCN Red List of Threatened Species 2010: e.T184056A8229422. <https://dx.doi.org/10.2305/IUCN.UK.2010-3.RLTS.T184056A8229422.en>

Martínez Zavala, M.A., Nevarez Martinez, M.O., López Lagunas, A.E., Reyes Benitez, E.N., Valdez Pelayo, A. 2020. *Pesquería de Pelágicos Menores en el Golfo de California Durante los Oscuros 1 (Octubre) al 3 (Diciembre) de la Temporada 2019/2020. Informe Técnico* : <https://sardinagolfodecalifornia.org/wp-content/uploads/2021/01/Informe-tecnico-GC-osc-1-al-3-temp-2019-2020.pdf>

Andy Bystrom, Dr. Hans Hartmann, Mariano Castro. SGS 2021. Small pelagics fishery in Sonora, Gulf of California. Third Surveillance Audit Report. Certification Code: MSC-F-31348 (F-SCS-0107): <https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=NAohFthSKwTeJnNCw56BwOxschGa32jJSH5e+uWfeB4cJ/UrCZMC7UR/a2WadvOg>

NOAA Fisheries. Stock SMART - Status, Management, Assessments & Resource Trends. Pacific sardine - Northern Subpopulation: <https://www.st.nmfs.noaa.gov/stocksmart?stockname=Pacific%20sardine%20-%20Northern%20Subpopulation&stockid=10573>

#### Links

MarinTrust Standard clause	1.3.2.2
FAO CCRF	7.5.3
GSSI	D.3.04, D5.01