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Global Standard for Responsible Supply of Marine Ingredients

Fishery Assessment Methodology and Template Report V2.0

Fishery Under Assessment	**Charrito (*Trachurus symmetricus*) / Pacific Jack Mackerel FAO 77**
Date	**January 2018**
Assessor	**Jim Daly**

Application details and summary of the assessment outcome				
Name: Sardinas de Sonora S.A. de C.V				
Address:				
Country: Mexico		**Zip:**		
Tel. No.:		**Fax. No.:**		
Email address:		**Applicant Code**		
Key Contact:		**Title:**		
Certification Body Details				
Name of Certification Body:		**SAI Global**		
Assessor Name	**Peer Reviewer**	**Assessment Days**	**Initial/Surveillance/Re-approval**	**Whole fish/ By-product**
Jim Daly	Vito Romito	0.5	Surveillance YR 1	By-product
Assessment Period	2018			

Scope Details	
Management Authority (Country/State)	Secretaría de Agricultura, Ganadaría, Desarrollo Rural, Pesca y Alimentación, SAGARPA MEXICO
Main Species	Charrito (*Trachurus symmetricus*) / Pacific Jack Mackerel
Fishery Location	Gulf of California FAO 77
Gear Type(s)	Purse seine
Outcome of Assessment	
Overall Outcome	PASS
Clauses Failed	NONE
Peer Review Evaluation	Approve
Recommendation	Approve

Assessment Determination
Measures specific to the small pelagic purse seine fishery in the federal waters of the Gulf of California are outlined in the Mexican National Standard 003 (Norma Oficial Mexicana Oficial Mexicana 003-PESC-1993). A Fisheries Management Plan (SPFMP) published in 2012 outlines the harvest strategy for the small pelagic fishery. Pacific Jack Mackerel is passively managed in the fishery: the control rule determines that the Biologically Acceptable Catch (BAC) is 25% of the most recent estimate of the SSB. Catch of small pelagics represent around 30% of the total landings in Mexico, with more than 80% of the harvest taking place in the Gulf of California (**Figure 1**). Roughly 25-30% of fish captured is canned and sold for human consumption in the domestic Mexican market. The remaining product is used to make fishmeal and fish oil, which is sold in Mexico or exported. While evidence has shown this species is subject to a management regime current reference points (e.g. BAC) for the species in the assessment area were not available. The comparative lack of scientific information on the status of the population in the assessment area means that a risk-assessment style approach must be taken. The fishery was assessed using the risk-based Productivity, Susceptibility Analysis (PSA) as per IFFO-RS v 2.0 procedures for Category D species (**Table D1**). The species passes this assessment. Charrito/Pacific Jack Mackerel has not yet been assessed for the IUCN Red List and is not on the current list of CITES endangered species (websites accessed 16.01.19) Charitto/Pacific Jack Mackerel is approved by the assessment team for the production of fishmeal and fish oil (by-product) under the IFFO-RS v 2.0 standard. **R1-R3; R6**
Peer Review Comments
Pacific Jack Mackerel is passively managed in the fishery. For passively managed species the control rule determines that the Biologically Acceptable Catch (BAC) is 25% of the most recent estimate of the SSB. As defined in the Management Plan these species '*do not require intensive management and where monitoring of landings and abundance indices are considered sufficient for handling*.' Fisheries independent data is being collected via hydroacoustic surveys which began in 2008. While evidence has shown this species undergoes some form of management, current reference points (e.g. BAC) for the Mexican stock were not available. The fishery was assessed using the risk-based Productivity, Susceptibility Analysis (PSA) as per IFFO-RS v 2.0 procedures for Category D species. The species passes this assessment. The Peer Reviewer agrees with the Assessor's determination to approve Charitto/Pacific Jack Mackerel for the production of fishmeal and fish oil (by-product) under the IFFO-RS v 2.0 standard.
Notes for On-site Auditor

Note: This table should be completed for whole fish assessments only.

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C	Charrito/Pacific Jack Mackerel *Trachurus symmetricus*	N/A	**Fail**	
Category D	Charrito/Pacific Jack Mackerel *Trachurus symmetricus*	N/A	**Pass**	

[List all Category A and B species. List approximate total %age of landings which are Category C and D species; these do not need to be individually named here]

HOW TO COMPLETE THIS ASSESSMENT REPORT

This assessment template uses a modular approach to assessing fisheries against the IFFO RS standard.

Whole Fish

The process for completing the template for a **whole fish** assessment is as follows:

1. ALL ASSESSMENTS: Complete the Species Characterisation table, to determine which categories of species are present in the fishery.
2. ALL ASSESSMENTS: Complete clauses M1, M2, M3: Management.
3. IF THERE ARE CATEGORY A SPECIES IN THE FISHERY: Complete clauses A1, A2, A3, A4 for **each** Category A species.
4. IF THERE ARE CATEGORY B SPECIES IN THE FISHERY: Complete the Section B risk assessment for **each** Category B species.
5. IF THERE ARE CATEGORY C SPECIES IN THE FISHERY: Complete clause C1 for **each** Category C species.
6. IF THERE ARE CATEGORY D SPECIES IN THE FISHERY: Complete Section D.
7. ALL ASSESSMENTS: Complete clauses F1, F2, F3: Further Impacts.

A fishery must score a pass in **all applicable clauses** before approval may be recommended. To achieve a pass in a clause, the fishery/species must meet **all** of the minimum requirements.

By-products

The process for completing the template for **by-product raw material** is as follows:

1. ALL ASSESSMENTS: Complete the Species Characterisation table with the names of the by-product species and stocks under assessment. The '% landings' column can be left empty; all by-products are considered as Category C and D.
2. IF THERE ARE CATEGORY C BYPRODUCTS UNDER ASSESSMENT: Complete clause C1 for **each** Category C by-product.
3. IF THERE ARE CATEGORY D BYPRODUCTS UNDER ASSESSMENT: Complete Section D.
4. ALL OTHER SECTIONS CAN BE DELETED. Clauses M1 - M3, F1 - F3, and Sections A and B do not need to be completed for a by-product assessment.

By-product approval is awarded on a species-by-species basis. Each by-product species scoring a pass under the appropriate section may be approved against the IFFO RS Standard.

SPECIES CATEGORISATION

The following table should be completed as fully as the available information permits. Any species representing more than 0.1% of the annual catch should be listed, along with an estimate of the proportion of the catch each species represents. The species should then be divided into Type 1 and Type 2 as follows:

- **Type 1 Species** can be considered the 'target' or 'main' species in the fishery. They make up the bulk of annual landings and are subjected to a detailed assessment.
- **Type 2 Species** can be considered the 'bycatch' or 'minor' species in the fishery. They make up a small proportion of the annual landings and are subjected to relatively high-level assessment.

Type 1 Species must represent 95% of the total annual catch. Type 2 Species may represent a maximum of 5% of the annual catch (see Appendix B).

Species which make up less than 0.1% of landings do not need to be listed (NOTE: ETP species are considered separately). The table should be extended if more space is needed. Discarded species should be included when known.

The 'stock' column should be used to differentiate when there are multiple biological or management stocks of one species captured by the fishery. The 'management' column should be used to indicate whether there is an adequate management regime specifically aimed at the individual species/stock. In some cases it will be immediately clear whether there is a species-specific management regime in place (for example, if there is an annual TAC). In less clear circumstances, the rule of thumb should be that if the species meets the minimum requirements of clauses A1-A4, an adequate species-specific management regime is in place.

NOTE: If any species is categorised as Endangered or Critically Endangered on the IUCN Red List, or if it appears in the CITES appendices, it **cannot** be approved for use as an IFFO RS raw material. This applied to whole fish as well as by-products.

TYPE 1 SPECIES (Representing 95% of the catch or more)
Category A: Species-specific management regime in place.
Category B: No species-specific management regime in place.

TYPE 2 SPECIES (Representing 5% OF THE CATCH OR LESS)
Category C: Species-specific management regime in place.
Category D: No species-specific management regime in place.

Common name	Latin name	Stock	% of landings	Management	Category
Pacific Jack Mackerel	*Trachurus symmetricus*	FAO 77	N/A	SAGARPA	C,D

CATEGORY C SPECIES

In a whole fish assessment, Category C species are those which make up less than 5% of landings, but which are subject to a species-specific management regime. In most cases this will be because they are a commercial target in a fishery other than the one under assessment. 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. A Category C species does not meet the minimum requirements of clause C1 should be re-assessed as a Category D species.

Species Name	**Pacific Jack Mackerel**	
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**

Evidence:

C1.1:

The Government body with responsibility for fisheries management in Mexico including the small pelagics fishery is the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food (Secretaría de Agricultura, Ganadaría, Desarrollo Rural, Pesca y Alimentación, SAGARPA.

The regulation of fishery resources in Mexican territory is ruled by the National Fisheries Law (Ley General de Pesca y Acuacultura Sustentables; DOF 2007). The National Fisheries Chart (Carta Nacional Pesquera, CNP) is a document summarizing the state of a large number of fisheries in Mexico, including the small pelagic fishery in the Gulf of California. The CNP also includes general provisions and recommendations that must be observed by the fishing authorities when adopting and implementing instruments and measures to control fishing effort.

The small pelagic fishery operates in the north and central section of the Gulf of California (**Figure 1**). Pacific Jack Mackerel is passively managed in the fishery. For passively managed species the control rule determines that the Biologically Acceptable Catch (BAC) is 25% of the most recent estimate of the SSB. As defined in the Management Plan these species '*do not require intensive management and where monitoring of landings and abundance indices are considered sufficient for handling*.'

Overfishing would occur should total catch exceed BAC or if fishing occurs at a rate that is sufficiently high to jeopardize the stock's ability to produce MSY.

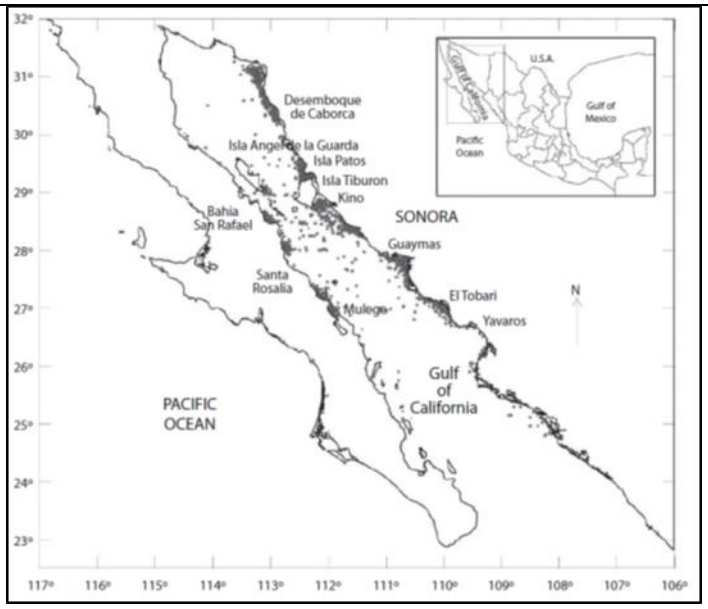

Figure 1. Landing distribution (dark grey points) of small pelagic fishery in the Gulf of California from 2002 to 2007. **R3**

Fisheries independent data is being collected via hydroacoustic surveys which began in 2008:

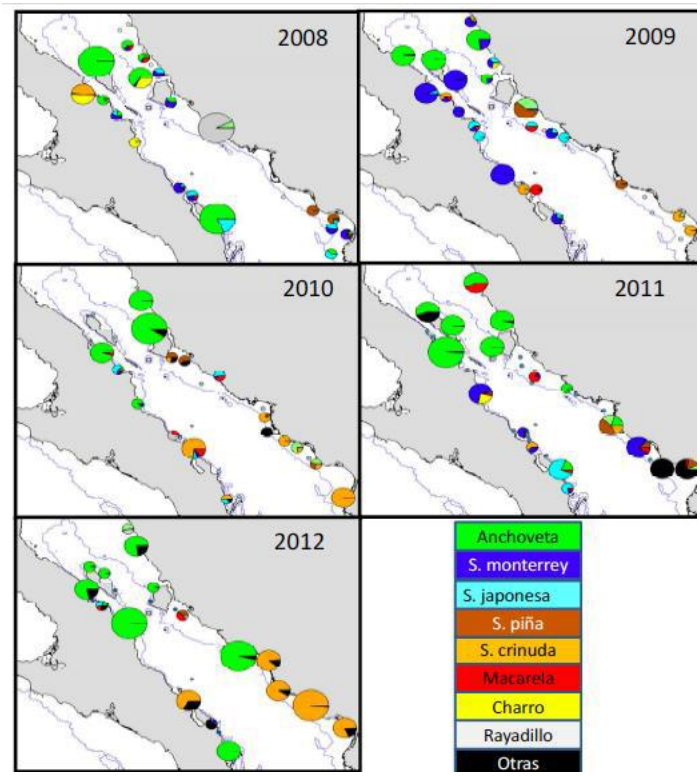

Figure 2 Distribution of small pelagic species captured to ground-truth hydroacoustic surveys, from different locations around the Gulf of California, Mexico, by year **R4**

While evidence has shown this species undergoes some form of management, current reference points (e.g. BAC) for the Mexican stock were not available. The comparative lack of scientific information on the status of the population in the assessment area means that a risk-assessment style approach must be taken. The

fishery was assessed using the risk-based Productivity, Susceptibility Analysis (PSA) as per IFFO-RS v 2.0 procedures for Category D species (**Table D1**). The species passes this assessment.

References

R1 Norma Oficial Mexicana Oficial Mexicana 003-PESC-1993 http://dof.gob.mx/nota_detalle.php?codigo=5374148&fecha=04/12/2014

R2 Fisheries Management Plan for the minor pelagic species (Plan de manejo pesquero para la pesquería de pelágicos menores) http://dof.gob.mx/nota_detalle_popup.php?codigo=5276945

R3 Lluch-Belda et al (1995). Atlas Pesquero de México. Pesquerías Relevantes. Secretaría de Pesca/Instituto Nacional de Pesca/Universidad de Colima (Cenedic).

R4 Nevárez-Martínez et al. 2013 Nevárez Martínez, M.O., M.A. Martínez Zavala, M.E. González Corona, J.P. Santos Molina y A. Valdez Pelayo. 2013b. Captura, esfuerzo de pesca y flota de la pesquería de pelágicos menores del Golfo de California. INAPESCA-CRIP Guaymas. Informe Técnico. 18p. pdf

R5 Fishsource Pacific Jack Mackerel Central, East Pacific https://www.fishsource.org/stock_page/1526

Standard clauses 1.3.2.2

CATEGORY D SPECIES

In a whole fish assessment, Category D species are those which make up less than 5% of landings and 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. In a by-product assessment, Category D species are those which are not subject to a species-specific management regime. In both cases, 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.

The process for assessing Category D species involves the use of a Productivity-Susceptibility Analysis (PSA) to further subdivide the species into 'Critical Risk', 'Major Risk' and 'Minor Risk' groups. If there are no Category D species in the fishery under assessment, this section can be deleted.

Productivity and susceptibility ratings are calculated using a process derived from the APFIC document "Regional Guidelines for the Management of Tropical Trawl Fisheries, which in turn was derived from papers by Patrick *et al* (2009) and Hobday *et al* (2007). Table D1 should be completed for each Category D species as follows:

- Firstly, the best available information should be used to fill in values for each productivity and susceptibility attribute.
- Table D2 should be used to convert each attribute value into a score between 1 and 3.
- The average score for productivity attributes and the average for susceptibility attributes should be calculated.
- Table D3 should be used to determine whether the species is required to meet the requirements of Table D4. A species which does not need to meet the requirements of D4 is automatically awarded a pass.
- Table D4 should be used to assess those species indicated by Table D3 to determine a pass/fail rating.
- Any Category D species which has been categorised by the IUCN Red List as Endangered or Critically Endangered, or which appears in the CITES appendices, automatically results in a fail.

D1 Species Name:

Productivity Attribute	Value	Score
Average age at maturity (years)	3	2
Average maximum age (years)	30	2
Fecundity (eggs/spawning)	53,000	1
Average maximum size (cm)	81	2
Average size at maturity (cm)	31	2
Reproductive strategy	Spawners	1
Mean trophic level	3.6	3
Average Productivity Score		**1.86**
Susceptibility Attribute	**Value**	**Score**
Overlap of adult species range with fishery	No data	
Distribution	Throughout	1
Habitat	N/A	
Depth range	0-400 m	1
Selectivity	>2 times mesh	3
Post-capture mortality	Short tows	2
Average Susceptibility Score		**1.75**
PSA Risk Rating (From Table D3)		**PASS**
Compliance rating		

References

R6 Fishbase Pacific Jack Mackerel
http://www.fishbase.org/Summary/SpeciesSummary.php?ID=368&AT=Pacific jack makerel

Standard clauses 1.3.2.2

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		
		1.00 – 1.75	1.76 – 2.24	2.25 – 3.00
Average Productivity Score	1.00 – 1.75	PASS	PASS	PASS
	1.76 – 2.24	PASS	PASS	TABLE D4
	2.25 – 3.00	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			
References			
Standard clause 1.3.2.2			