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Global Standard for Responsible Supply of Marine Ingredients

Fishery Assessment Methodology and Template Report V2.0

R1

Fishery Under Assessment	**European Pilchard (*Sardina pilchardus*) North East Atlantic-Northern Stock**
Date	**July 2019**
Assessor	**Jim Daly**

Application details and summary of the assessment outcome				
Name: Bioceval				
Address:				
Country: France		**Zip:**		
Tel. No.:		**Fax. No.:**		
Email address:		**Applicant Code**		
Key Contact:		**Title:**		
Certification Body Details				
Name of Certification Body:		**SAI GLOBAL LTD**		
Assessor Name	**Peer Reviewer**	**Assessment Days**	**Initial/Surveillance/Re-approval**	**Whole fish/ By-product**
Jim Daly	Virginia Polonio	0.5	Initial	By-product
Assessment Period	2018			

Scope Details	
Management Authority (Country/State)	EU/Common Fisheries Policy
Main Species	European pilchard (*Sardina pilchardus*)
Fishery Location	North East Atlantic: Northern Stock
Gear Type(s)	Mixed pelagic trawl and purse seine
Outcome of Assessment	
Overall Outcome: Iberian Peninsula (Divisions VIIIc and IXa)	**FAIL**
Clauses Failed	**C1.2**
Overall Outcome: Bay of Biscay, Southern Celtic Seas and English Channel	**PASS**
Clauses Failed	**NONE**
Recommendation	FAIL Iberian Stock; PASS Bay of Biscay Stock

Assessment Determination

There are no international quotas in place for pilchards. No EU-wide species-specific management measures are in place. In some areas exploitation is limited by bycatch restrictions when targeting other fisheries e.g. herring. The gradual (2015-2019) introduction on a fishery-by-fishery basis of a landing obligation in EU waters will effectively ban discarding.

Stock assessments within the assessment area are undertaken by the International Council for the Exploration of the Sea (ICES) in the Iberian Peninsula (Divisions VIIIc and IXa) and in the Bay of Biscay, Southern Celtic Seas and English Channel (ICES Divisions VIIIa,b,d; Subarea VII).

The sardine management plan (Iberian Stock) of 2013 was re-evaluated in 2017 and found to be not precautionary (ICES, 2017). A new management and recovery plan for the Iberian Peninsula fishery is under development by Spain and Portugal. ICES (May 2019) have received a special request advice from Spain and Portugal to assess the new plan.

For the Cantabrian Sea and Atlantic Iberian waters stock (Divisions VIIIc and IXa) ICES assesses (2018) that fishing pressure on the stock is above FMSY, just below Fpa and below Flim. Biomass 1+ is well below MSY Btrigger, Bpa, and Blim. **The stock fails Clause C1.2.**

For the Bay of Biscay stock ICES (2018) assesses that fishing pressure on the stock is above FMSY and between Fpa and Flim; and spawning‑stock size is above MSY Btrigger, Bpa and Blim. **The stock passes Clause C1.2.**

IUCN has categorised pilchards as a species of least concern. The species does not appear in CITES appendices (both sites accessed 01.07.19).

With the exception of the Cantabrian Sea and Atlantic Iberian waters stock Pilchard (*Sardina pilchardus*) is approved by the assessment team for the production of fishmeal and fish oil under the IFFO-RS v 2.0 by-products standard.

Peer Review Comments
PR agrees with the conclusions raised in the report however some formatting and procedures changes are needed.
Notes for On-site Auditor
Ensure no fish from the Cantabrian Sea and Atlantic Iberian waters stock is processed and labelled with other IFFO-RS approved material.

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C	Pilchard (*Sardina pilchardus)* Iberian Stock	N/A	**FAIL** Clause C1.2	
Category C	Pilchard (*Sardina pilchardus)* Bay of Biscay Stock	N/A	**PASS**	
Category D		N/A		

[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]

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
Pilchard	*Sardina pilchardus*	North East Atlantic		Species specific management regime	C

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		**Pilchard (*Sardina pilchardus*)**	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Iberian Stock: 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	Iberian Stock: 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**
	C1.1	Bay of Biscay Stock: 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	Iberian Stock: 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 for Iberian stock:	**FAIL**
		Clause outcome for Bay of Biscay Stock:	**PASS**

Evidence:

Sardine (*Sardina pilchardus*) in Divisions VIIIc and IX a (Cantabrian Sea and Atlantic Iberian waters):

C1.1: Data input is from commercial catches (international landings, ages from catch sampling); annual acoustic spring survey indices (ages from PELAGO and PELACUS), triennial spawning-stock biomass (SSB) indices (PT-DEPM and SP-DEPM); triennial stock weights and maturity data from DEPM (PT-DEPM and SP-DEPM), interpolated for other years and natural mortalities based on the Gislason formula (Gislason et al., 2010). This stock was benchmarked in February 2017. Fishery removals of the species in the fishery under assessment are included in the stock assessment process. The stock passes Clause C1.1

C1.2: The biomass of age 1 and older fish has decreased since 2006, has been below Blim since 2009, and has stabilized to a historical low since 2012. Recruitment has been below the long-term average since 2005 and in 2017, it was estimated as the lowest in the time-series. Fishing mortality has been above Flim for most of the time-series but has been decreasing from a peak in 2011. In 2017, it is the lowest in the time-series and around Fpa (**Figure 1**):

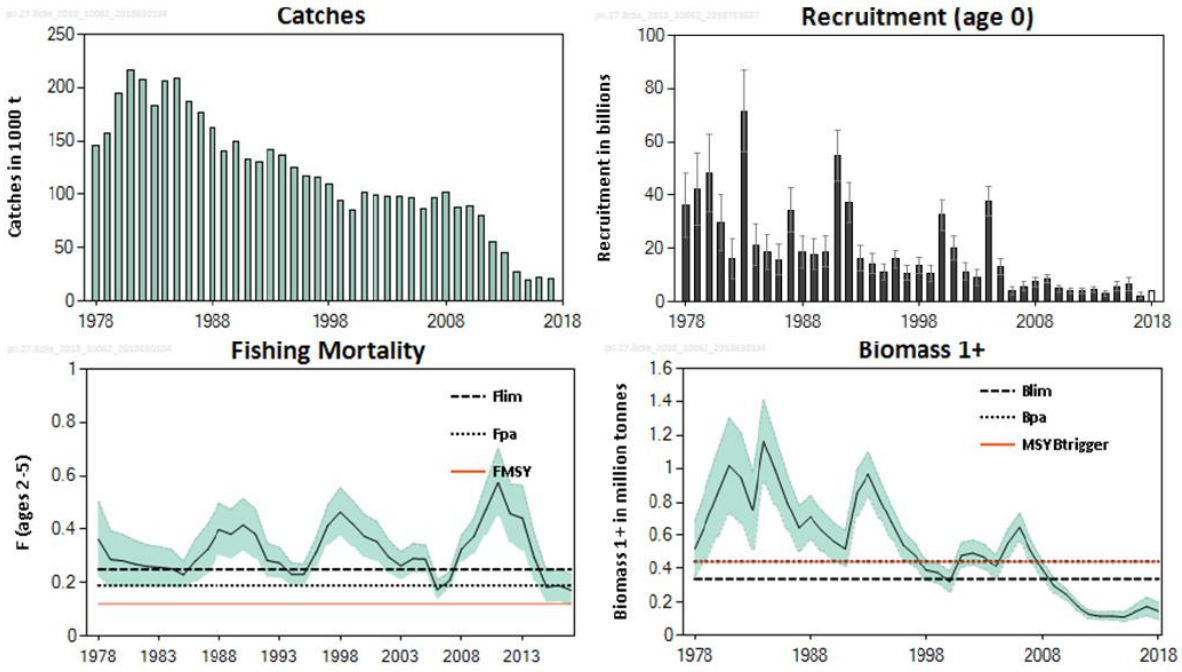

Figure 1: Sardine in divisions 8.c and 9.a. Summary of the stock assessment. Recruitment in 2018 assumed to be equal to the geometric mean of 2013–2017. Recruitment, fishing mortality and biomass have 95% confidence intervals. Reference points are based on the stock–recruitment relationship in the period 1993–2015.

R1

ICES assesses that fishing pressure on the stock is above FMSY, just below Fpa and below Flim. Biomass 1+ is well below MSY Btrigger, Bpa, and Blim. The stock fails Clause C1.2.

Evidence:

Sardine (*Sardina pilchardus*) in Divisions VIIIa–b and VIIId (Bay of Biscay)

C 1.1: The assessment type is an Analytical Assessment (Stock Syntesis Model SS3) using catches in the model and in the forecast (ICES, 2018). Input data is from Commercial catches (international landings; ages and length frequencies from catch sampling); three survey indices (PELGAS (acoustic biomass), BIOMAN (egg counts), DEPM Triennal survey (DEPM)) and age composition in the PELGAS survey. Discards and bycatch

are not included and are considered negligible. Fishery removals of the species in the fishery under assessment are included in the stock assessment process. The stock passes Clause C1.1

C1.2: Spawning-stock biomass (SSB) is above MSY Btrigger. Fishing mortality steeply increased in 2010-2012 and has been above FMSY but below Flim since then. Recruitment has been variable over time. Recruitment in 2016 and 2017 is above the time-series average as shown in the figure 2 below;

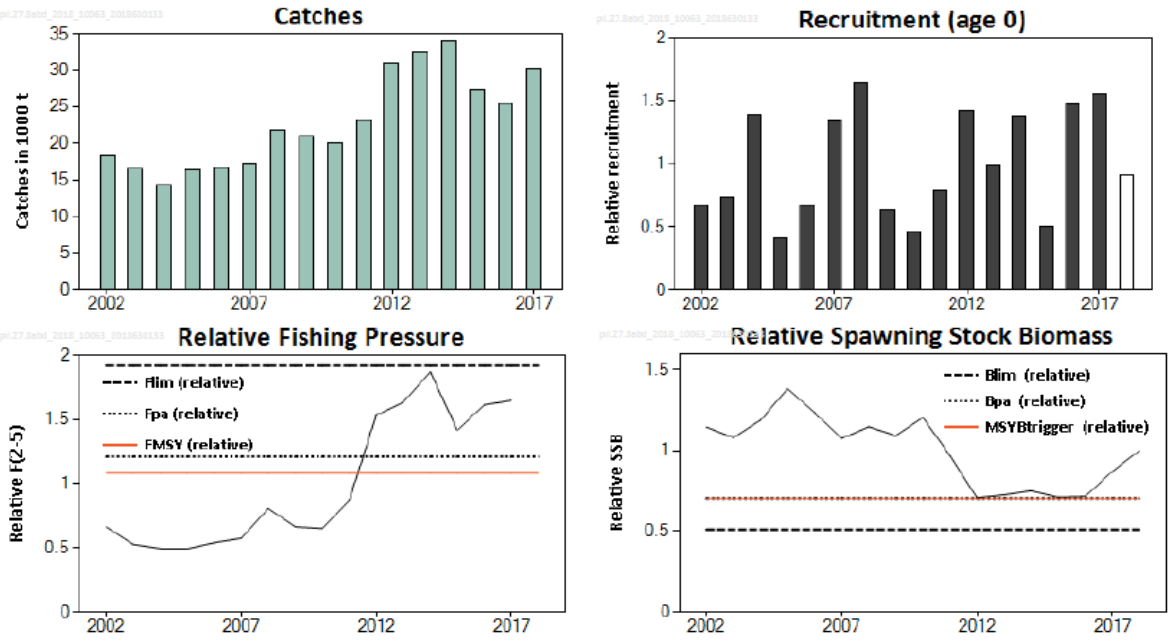

Figure 2: Sardine in Divisions VIIIa–b and VIId. Summary of the stock assessment. Recruitment and SSB are estimated at the beginning of the year. The unshaded value for the 2018 recruitment is the geometric mean (2002–2017). R, F, and SSB are expressed relative to the average of the time-series (2002–2018 for SSB, and 2002–2017 for F and recruitment). **R2**

ICES assesses that fishing pressure on the stock is above FMSY and between Fpa and Flim; and spawning-stock size is above MSY Btrigger, Bpa and Blim. The stock passes Clause C1.2

References:

R1 ICES Advice (2018): Sardine (*Sardina pilchardus*) in Divisions VIIIc and IX a (Cantabrian Sea and Atlantic Iberian waters): http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/pil.27.8c9a.pdf
R2 ICES Advice (2018): Sardine (*Sardina pilchardus*) in Divisions VIIIa–b and VIId (Bay of Biscay) http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/pil.27.8abd.pdf

R3 ICES Special Request Advice: May 2019 (10pp): Request from Portugal and Spain to evaluate a management and recovery plan for the Iberian sardine stock (Divisions VIIIc and IXa) http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2019/Special_Requests/porsp.2019.10.pdf

Standard clauses 1.3.2.2

D1	Species Name:	**European Pilchard** *Sardina pilchardus*	
	Productivity Attribute	**Value**	**Score**
	Average age at maturity (years)	*<2	1
	Average maximum age (years)	*<10	1
	Fecundity (eggs/spawning)	*50,000-60,000	1
	Average maximum size (cm)	*20 cm	1
	Average size at maturity (cm)	*14.8	1
	Reproductive strategy	*Open water batch spawning	1
	Mean trophic level	*3.1	2
	Average Productivity Score		**1.14**
	Susceptibility Attribute	**Value**	**Score**
	Overlap of adult species range with fishery	Full overlap	3
	Distribution	No data	
	Habitat	Neritic-Pelagic	1
	Depth range	10-100m	1
	Selectivity	**Mesh size towed gear 16-31mm	3
	Post-capture mortality	Alive when hauled	2
	Average Susceptibility Score		**2.00**
	PSA Risk Rating (From Table D3)		**PASS**
	Compliance rating		**MEDIUM**

References

R1 Image of *Sardina pilchardus* by Mariano Garc: http://fishbase.org/photos.

R2 About the Common Fisheries Policy: http://ec.europa.eu/fisheries/cfp/index_en.htm

R3 Fishbase http://www.fishbase.org/summary (accessed 01.07.19)

R4 EU Technical Measures (minimum mesh size) http://eur-lex.europa.eu/legal-content/EN/TXT/PDF (accessed 19.04.19)

R5 FAO Species Factsheet: http://www.fao.org/fishery/factsheets/en

R6 IUCN red list: http://www.iucnredlist.org/ (accessed 01.07.19)

R7: CITES Appendices: www.cites.org (accessed 01.07.19)

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			

SOCIAL CRITERION

In addition to the scored criteria listed above, applicants must commit to ensuring that vessels operating in the fishery adhere to internationally recognised guidance on human rights. They must also commit to ensuring there is no use of enforced or unpaid labour in the fleet(s) operating upon the resource.