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Global Standard for Responsible Supply of Marine Ingredients

Fishery Assessment Methodology and Template Report V2.0

Fishery Under Assessment	European Squid *Loligo vulgaris* Northeast Atlantic
Date	December 2019
Assessor	Jim Daly

Application details and summary of the assessment outcome	
Name: Pelagia	
Address:	
Country: Ireland	Zip:
Tel. No.:	Fax. No.:
Email address:	Applicant Code:
Key Contact:	Title:

Certification Body Details				
Name of Certification Body:	SAI Global Ltd			
Assessor	Peer Reviewer	Assessment Days	Initial/Surveillance/Re-approval	Whole fish/ By-product
Jim Daly	Vito Romito	0.5	Surveillance 1	By-product
Assessment Period	2019			

Scope Details	
Management Authority (Country/State)	EU/Common Fisheries Policy
Main Species	Squid (*Loligo vulgaris*)
Stocks:	North-East Atlantic
Fishery Location	North-East Atlantic
Gear Type(s)	Bycatch in trawls, some small-scale directed fisheries
Outcome of Assessment	

Overall Outcomes:	Outcome	Clause(s) failed
North-East Atlantic Stock	PASS	NONE
Peer Review Evaluation	AGREE	
Recommendations	APPROVE	

Assessment Determination
If any species is categorised as Endangered or Critically Endangered on the IUCN Red List, or if it appears in CITES appendices, it cannot be approved for use as IFFO RS raw material. Squid (*Loligo vulgaris*) does not appear as Endangered or Critically Endangered on the IUCN Red List (is listed as Data Deficient) nor does it appear in CITES appendices; therefore, Squid (*Loligo vulgaris*) is eligible for approval for use as IFFO RS raw material (by-product). The species is not subject to a species-specific research and management regime sufficient to pass a Category C assessment. There are no TAC constraints. New data requirements have been launched to specific countries exploiting cephalopods in ICES areas. An ICES Workshop on Data-Limited Stocks of Short-Lived Species (WKDLSSLS, Spain 2019) tested different assessment methods for data-limited short-lived species (seasonal SPiCT, two-stage Biomass model, others) including members of the family Loliginidae. Further research is need before a robust stock assessment model can be proposed for the European squid *Loligo vulgaris*. 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. The species has passed this risk-based assessment (**Table D3**). European Squid (*Loligo vulgaris*) is approved by the SAI Global assessment team for the production of fishmeal and fish oil under the IFFO RS v 2.0 by-products standard.
Peer Review Comments
The fishery was assessed using the risk-based PSA as per IFFO RS v 2.0 procedures for Category D species and passed. The peer reviewer agrees that European Squid (*Loligo vulgaris*) should be approved for the production of fishmeal and fish oil under the IFFO RS v 2.0 by-products standard.
Notes for On-site Auditor

HOW TO COMPLETE THIS ASSESSMENT REPORT
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
European Squid	*Loligo vulgaris*	Northeast Atlantic	N/A	EU/CFP	D

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:	Squid *Loligo vulgaris*		
	Productivity Attribute		**Value**	**Score**
	Average age at maturity (years)		<1	1
	Average maximum age (years)		1 - 1.5	1
	Fecundity (eggs/spawning)		1,000 - 10,000	1
	Average maximum size (cm)		42	1
	Average size at maturity (cm)		28	1
	Reproductive strategy		Demersal	2
	Mean trophic level		Large range of trophic levels**	2
		Average Productivity Score		**1.28**
	Susceptibility Attribute		**Value**	**Score**
	Overlap of adult species range with fishery		Not used	-
	Distribution		Throughout the region	1
	Habitat		Neritic - semi pelagic	2
	Depth range		Benthopelagic, 0-500m	1
	Selectivity		Mesh size 70 - 99 mm	3
	Post-capture mortality		Long trawls	3
		Average Susceptibility Score		**2**
		PSA Risk Rating (From Table D3)		**PASS**

References:

D1 Arkhipkin et al (2015). World Squid Fisheries. Reviews in Fisheries Science & Aquaculture, vol. 23, pp 126 -133. http://www.tandfonline.com/doi/pdf/10.1080/23308249.2015.1026226

D2 Mesh Sizes:|

Council Regulation (EC) 850/98 of 30 March 1998 for the conservation of fishery resources through technical measures for the protection of juveniles of marine organisms:

http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31998R0850&from=EN

D3 Guerra, A. & Rocha, F. (1994). The life history of *Loligo vulgaris* and *Loligo forbesi* (Cephalopoda: Loliginidae) in Galician waters (NW Spain). Fisheries Research, Volume 21, pp 43-69.

https://www.sciencedirect.com/science/article/pii/0165783694900957

D4 Sealifebase: http://www.sealifebase.org/summary/Loligo-vulgaris (accessed 03.01.20)

**Reference notes squids occupy a large range of range of trophic levels in marine food webs and show a large trophic width: Coll et al (2013). Assessing the trophic position and ecological role of squids in marine ecosystems by means of food-web models. Deep Sea Research Part II: Topical Studies in Oceanography. Vol 95, pp 31-66. https://www.sciencedirect.com/science/article/pii/S0967064512001609

Standard clauses 1.3.2.2

Table D2 - Productivity / Susceptibility attributes and scores.

Productivity attributes	Low productivity/ High risk — Score 3	Medium productivity/ Medium risk — Score 2	High productivity/ Low risk — 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 — Score 3	Medium susceptibility/ Medium risk — Score 2	Low susceptibility/ Low risk — 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