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Global Standard for Responsible Supply of Marine Ingredients
Fishery Assessment Methodology and Template Report V2.0

IFFO RS
Global Standard for Responsible Supply
of Marine Ingredients

Fishery Under Assessment	Horse mackerel *Trachurus trachurus* North East Atlantic
Date	April 2019
Assessor	Jim Daly

Application details and summary of the assessment outcome		
Name: Pelagia Killybegs & Grimsby		
Address:		
Country: UK & Ireland	Zip:	
Tel. No.:	Fax. No.:	
Email address:	Applicant Code	
Key Contact: Geraldine Fox	Title: Quality Manager Killybegs	
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	Vito Romito	0.5	Surveillance 1	By-product
Assessment Period	2018			

Scope Details	
Management Authority (Country/State)	EU
Main Species	Horse mackerel *Trachurus trachurus*
Fishery Location	North East Atlantic, North Sea
Gear Type(s)	Pelagic trawl
Outcome of Assessment	
Overall Outcome	Pass
Clauses Failed	None
Peer Review Evaluation	Approve
Recommendation	Pass

Assessment Determination

Species-specific management regimes with associated biological reference points are in place for one stock in the assessment area. In some parts of the assessment area exploitation is limited by bycatch restrictions when targeting other, more valuable fisheries e.g. mackerel. The gradual (2015-2019) introduction on a fishery-by-fishery basis of a landing obligation in EU waters has effectively banned discarding.

North Eastern Atlantic stock:
Fishery removals of this stock are included in the stock assessment process and the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point. The Irish, Dutch, and Danish fishing industry reported good horse mackerel catches west of Scotland (VIa) and southwest of Ireland (Division VIIj) during the first months of 2018, also including bigger sizes of horse mackerel. The Irish demersal fleet had encountered increased numbers of juvenile (ages 1 and 2) horse mackerel to the south and west of Ireland from 2016-2018.

The development of a management strategy is at an advanced stage, and it is hoped a draft would be made available in 2019 (North Eastern Atlantic stock).

North Sea stock:
This is a data limited stock with no biomass reference points set. For this reason this stock was assessed under Category D using a Productivity – Susceptibility Analysis (PSA) approach. This stock passed with a medium compliance rating as ICES noted that the stock continues to be at a low level although there are some signs of recovery. TACs for this stock have also frequently been set higher than ICES catch advice in recent years.

Horse mackerel *Trachurus trachurus* is a species of least concern on the IUCN Red List and is not listed on CITES (accessed 29.04.19).

The assessor recommends these fisheries for approval under the IFFO RS by-product standard.

Peer Review Comments

Member States of the European Union implement the Common Fisheries Policy (CFP) in their waters.
The CFP also provides for the introduction of measures to rebuild, over a period of several years, stocks that are threatened in terms of sustainable harvesting, and for recourse to effort-related management rules to supplement TACs and quotas. Horse mackerel stocks in the North East Atlantic are managed under the CFP.

North East Atlantic horse mackerel stock: (Subarea VIII Divisions IIa, IV a, Vb, VI.a,VII.a–c, and VII e–k):

ICES stock assessment and catch advice for this stock/area is based on an analytical assessment. The stock has been recently benchmarked (2017) and a new 'Stock Synthesis' model applied based on length and age data.

Biomass reference points (Blim and Bpa) were derived from Bloss that corresponded to SSB in 2015. The subsequent updated assessments in 2017 and 2018 rescaled upwards biomass. SSB has been declining since 2007 and has been around MSY Btrigger since 2014. Fishing mortality has decreased since 2013 and is currently below FMSY. Fishery removals of the North Eastern stock of horse mackerel are included in the stock assessment process and the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point.

North Sea horse mackerel stock (Central, Southern North Sea, Eastern English Channel):
Due to relative absence of data, 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 passed this risk-based assessment.

The peer reviewer agrees that these two stocks should be recommended for approval under the IFFO RS by-product standard.

Notes for On-site Auditor

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C	Horse mackerel *Trachurus trachurus* (North Eastern Atlantic stock)	N/A	**Pass**	
Category D	Horse mackerel *Trachurus trachurus* (North Sea stock)	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.

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
Horse mackerel	*Trachurus trachurus*	Northeast Atlantic	n/a	Species-specific management regime (EU-CFP)	C
Horse mackerel	*Trachurus trachurus*	North Sea	n/a	No biological reference points available	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		Horse mackerel *Trachurus trachurus* Northeast Atlantic Stock	
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.	Pass
		Clause outcome:	**Pass**

Evidence: C1.1:

Common Fisheries Policy:

Member States of the European Union implement the Common Fisheries Policy (CFP) in their waters. In force since 1983, the CFP aims to reconcile resource conservation with the preservation of income and jobs in coastal zones that offer few alternatives in terms of production or employment. It therefore covers not just resources but also markets and structures.

With regard to resource management, the CFP regulations comprise:

- A traditional management tool based on Total Allowable Catches (TACs) and quotas;
- Technical measures relating to gear or catch;
- Effort-related management, based on vessel engine power and the number of days at sea.

The CFP also provides for the introduction of measures to rebuild, over a period of several years, stocks that are threatened in terms of sustainable harvesting, and for recourse to effort-related management rules to supplement TACs and quotas. Horse mackerel stocks in the North East Atlantic are managed under the CFP.

Quota Management:
For all stocks in recent years there have been several occasions when the TAC and/or catches (landings and discards) have been higher than scientific advice. This is particularly the case for the North Sea stock where TACs prior to 2014 were not set in line with advice in nearly every year. ICES also note that management of several species under a combined TAC prevents effective control of the single-species exploitation rates and could lead to overexploitation of any of these species.

ICES Advice:

North East Atlantic stock: (Subarea VIII Divisions IIa, IV a, Vb, VI.a,VII.a–c, and VII e–k):
ICES stock assessment and catch advice is based on an analytical assessment. The stock has been recently benchmarked (2017) and a new 'Stock Synthesis' model applied based on length and age data. Input data is international commercial catch information with length and age data from catch sampling. It is also informed by three survey indices – triennial egg survey, IBTS recruitment index and PELACUS acoustic biomass index. ICES note that there is still considerable uncertainty associated with the new assessment. Reference points are available for the stock and these have been evaluated and updated following the benchmark.
The new method used – Stock Synthesis – shows the same trend in the stock development as the previous assessment, but rescales the absolute level of SSB and F. There is a tendency to underestimate SSB and overestimate F in the current assessment model.

While the stock is currently at its historical low, the 2018 advice is for a substantial increase in catches compared to last year. One of the reasons is the revision of biomass estimates. Given the recent higher recruitments, the stock is predicted to increase in 2019 to 8% above the historical low (SSB2017). This increase will continue if this year's advice is followed (SSB2020 being 13% higher than SSB2017).

The industry, in conjunction with the Pelagic Advisory Council (PELAC), has been working actively on a number of issues, including a large-scale genetics project on stock identification, development of a management strategy with the scientists, and a number of voluntary industry measures to protect juveniles (**Figure 1**):
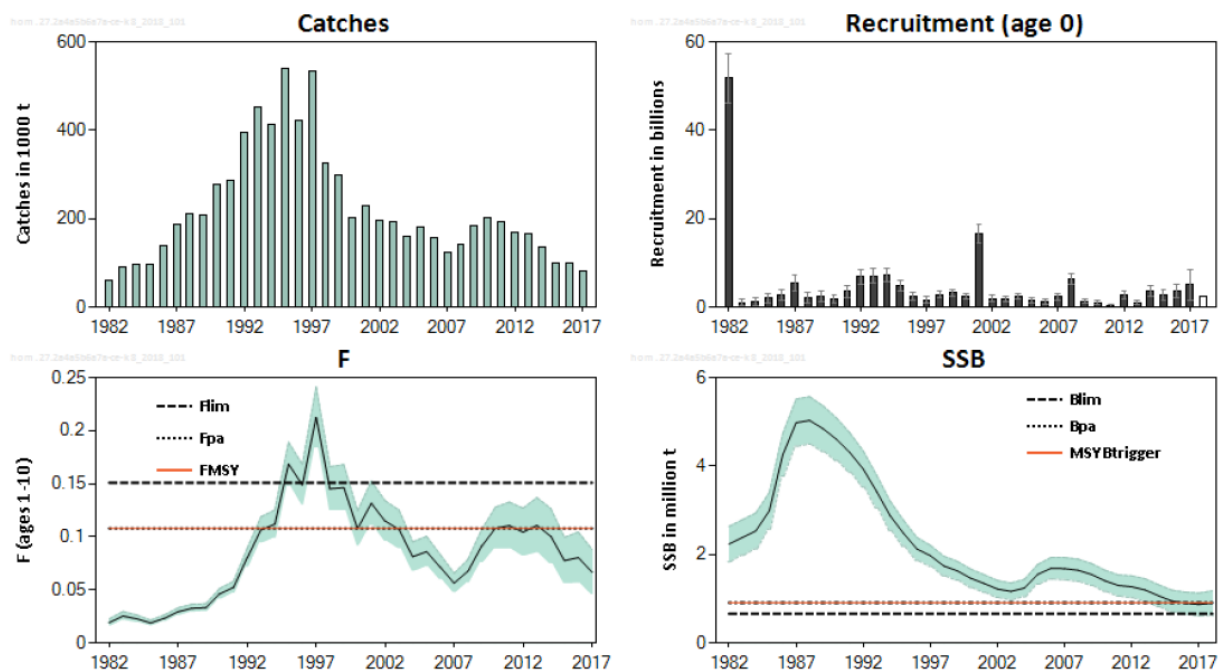

Figure 1. Horse mackerel in Subarea VIII Divisions IIa, IV a, Vb, VI.a,VII.a–c, and VII e–k. Summary of the stock assessment. Plots show 95% confidence intervals (shaded area). Assumed recruitment value for 2018 is unshaded **R1**

Biomass reference points (Blim and Bpa) were derived from Bloss that corresponded to SSB in 2015. The subsequent updated assessments in 2017 and 2018 rescaled upwards biomass. SSB has been declining since 2007 and has been around MSY Btrigger since 2014. Fishing mortality has decreased since 2013 and is currently below FMSY. Fishery removals of the North Eastern stock of horse mackerel are included in the stock assessment process and the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (**Figure 1**):

North Sea stock (Central, Southern North Sea, Eastern English Channel):
The comparative lack of scientific information on the status of the stock 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 D1**).

References

R1 ICES Advice:

- ICES, 2018a. ICES Advice on fishing opportunities, catch, and effort Ecoregions in the Northeast Atlantic. Horse mackerel (*Trachurus trachurus*) in Subarea VIII Divisions IIa, IV a, Vb, VI.a,VII.a–c, and VII e–k):
  http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/hom.27.2a4a5b6a7a-ce-k8.pdf

- ICES, 2017c. ICES Advice on fishing opportunities, catch, and effort Greater North Sea Ecoregion Horse mackerel (*Trachurus trachurus*) in Divisions IIIa, IVb–c, and VIId (Skagerrak and Kattegat, southern and central North Sea, eastern English Channel). Published 29 September 2017
  http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/hom.27.3a4bc7d.pdf

R2: Smith-Vaniz, W.F., Heessen, H., Collette, B., Fernandes, P. & Herrera, J. 2015. *Trachurus trachurus*. The IUCN Red List of Threatened Species 2015: e.T198647A44767022. .
http://www.iucnredlist.org/details/full/198647/1

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:	Horse mackerel *Trachurus trachurus*		
	Productivity Attribute		**Value**	**Score**
	Average age at maturity (years)		2-4	2
	Average maximum age (years)		11	2
	Fecundity (eggs/spawning)		140,000	1
	Average maximum size (cm)		70	2
	Average size at maturity (cm)		23.9	1
	Reproductive strategy		Batch spawners, pelagic eggs	1
	Mean trophic level		3.7	3
		Average Productivity Score		**1.7**
	Susceptibility Attribute		**Value**	**Score**
	Overlap of adult species range with fishery		Figure 3	3
	Distribution		NA	NA
	Habitat		Pelagic - neritic	1
	Depth range		0-1050m, usually 100-200m	1
	Selectivity		70cm	3
	Post-capture mortality		Discards low	3
		Average Susceptibility Score		**2.5**
		PSA Risk Rating (From Table D3)		**Pass**
References				

R3 Age at maturity:

Smith-Vaniz, W.F., Heessen, H., Collette, B., Fernandes, P. & Herrera, J. 2015. *Trachurus trachurus*. The IUCN Red List of Threatened Species 2015: e.T198647A44767022. Downloaded on **22 March 2018** http://www.iucnredlist.org/details/summary/198647/1

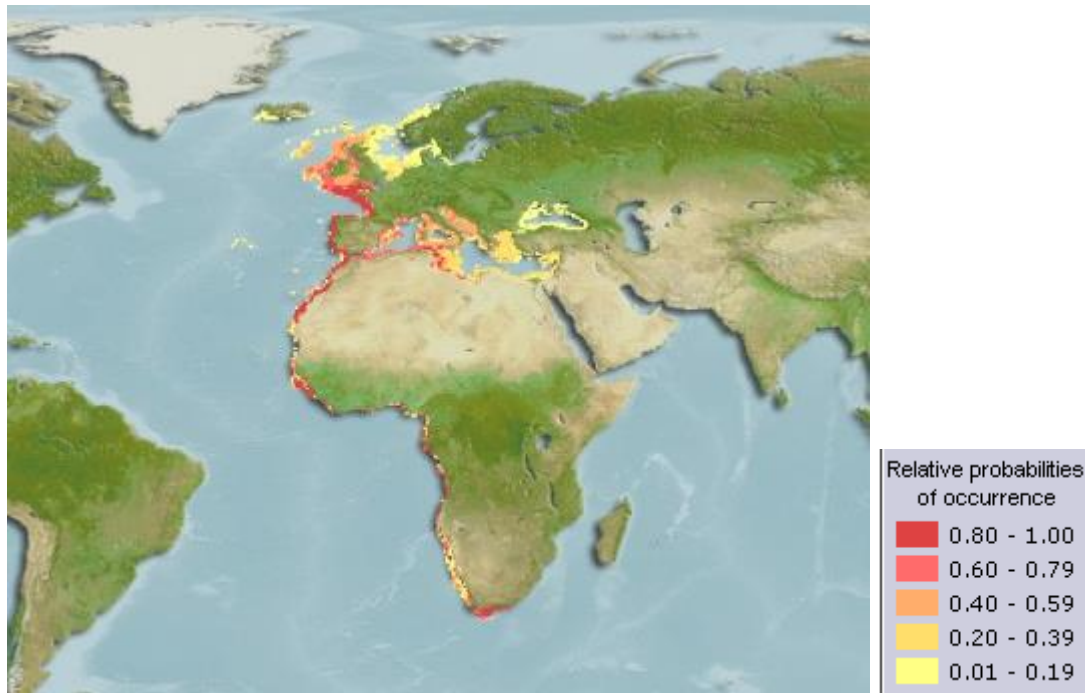Overlap of adult species range with fishery:

Figure 2. Reviewed distribution maps for *Trachurus trachurus* (Atlantic horse mackerel), with modelled year 2100 native range map based on IPCC A2 emissions scenario. www.aquamaps.org, version of Aug. 2016. Web. Accessed April 2019

Note: Distribution range colours indicate degree of suitability of habitat which can be interpreted as probabilities of occurrence.

All other attributes:
R4 Fishbase; http://www.fishbase.org/summary/1365 (accessed April 2019).

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

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.