



RESPONSIBLE
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IFFO RS
Global Standard for Responsible Supply
of Marine Ingredients

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



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Fishery Under Assessment	Atlantic halibut <i>Hippoglossus hippoglossus</i> Subarea 1, 2 Northeast Artic
Date	March 2020
Assessor	Jim Daly
Stock Pass	Subarea 1, 2 Northeast Artic
Stock Fail	

Application details and summary of the assessment outcome				
Name: Norway Seafood Federation (NSF)				
Address:				
Country: Norway		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	Conor Donnelly	0.5	Initial	By-product
Assessment Period	2020			

Scope Details	
Management Authority (Country/State)	Norway/EU
Main Species	Atlantic halibut <i>Hippoglossus hippoglossus</i>
Stock:	Subarea 1,2
Fishery Location	Northeast Artic
Gear Type(s)	Demersal trawl
Outcome of Assessment	
Peer Review Evaluation	AGREE
Recommendation	PASS

Assessment Determination

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 IFFO RS raw material. Atlantic halibut (European stock) does not appear as Endangered or Critically Endangered on the IUCN Red List, nor does it appear in the CITES appendices; therefore, Atlantic halibut (European stock) is eligible for approval for use as IFFO- RS raw material.

The species is not subject to a species-specific research and management regime sufficient to pass a Category C assessment.

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 D4 Clause D4.1; D4.2).

Atlantic halibut is approved in the assessment area by SAI Global assessors for the production of fishmeal and fish oil under the IFFO-RS v 2.0 by-products standard.

Peer Review Comments

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
Atlantic halibut	<i>Hippoglossus hippoglossus</i>	Subarea 1,2	N/A	EU/Norway	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:	Atlantic halibut <i>Hippoglossus hippoglossus</i>	
	Productivity Attribute	Value	Score
	Average age at maturity (years)	9	3
	Average maximum age (years)	50	3
	Fecundity (eggs/spawning) *	>10,000	1
	Average maximum size (cm)	470	3
	Average size at maturity (cm)	122	2
	Reproductive strategy*	Egg scatterers	1
	Mean trophic level	4.0	3
	Average Productivity Score		2.29
	Susceptibility Attribute	Value	Score
	Overlap of adult species range with fishery Figure 2	25%-50%	2
	Distribution	Not used	-
	Habitat	Not used	-
	Depth range	50-2000	1
	Selectivity	4-5m	2
	Post-capture mortality	Dead	3
	Average Susceptibility Score		2
	PSA Risk Rating (From Table D3)		Table D4

***Life history tool (Figure 3).**

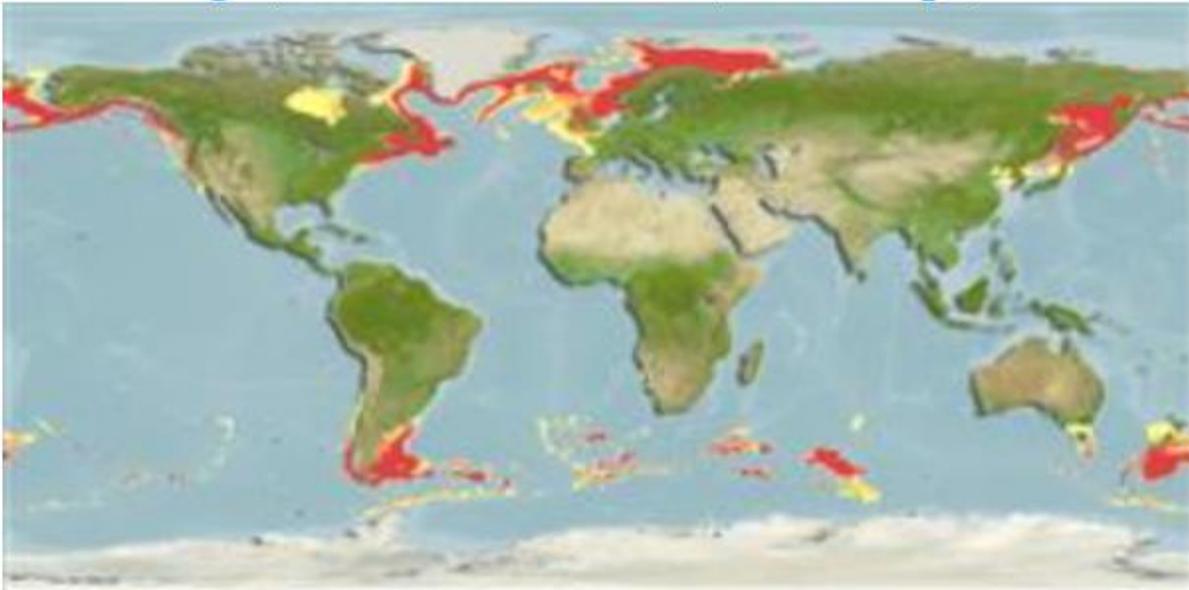
Evidence:

This assessment covers ICES Subareas I, II (Northeast Arctic) (**Figure 1**):



Figure 1 Map Sub-areas of FAO fishing areas 27 showing Subareas I and II R1

Distribution and Native Range:



Reviewed map

Hippoglossus hippoglossus AquaMaps Data sources: GBIF OBIS

Figure 2 Atlantic halibut distribution **R2**

Life history tool:

Life History Data on *Hippoglossus hippoglossus*
Atlantic halibut

Family:	Pleuronectidae Righteye flounders	
Max. length (Lmax):	470.0 cm TL	
L infinity (Linf):	= 303.0 cm TL	<input type="button" value="Recalculate"/>
K:	0.03 /year \emptyset' = 3.44 Median \emptyset' value with related Linf. and K.	<input type="button" value="Recalculate"/> Growth & mortality data
to:	-3.20 years Estimated from Linf and K.	
Natural mortality (M):	0.04 s.e. 0.03 - 0.08 /year Estimated from Linf., K and annual mean temp. = 2.0 °C	<input type="button" value="Recalculate"/>
Life span (approx.):	98.8 years Estimated from Linf., K and to. Max. age & size data	
Generation time:	38.1 years Estimated from Lopt, Linf., K and to.	
Age at first maturity (tm):	17.7 years Estimated from Lm, Linf., K and to.	
L maturity (Lm):	141.3 s.e. 105.5 - 189.3 cm TL Estimated from Linf. Maturity data	
L max. yield (Lopt):	209.8 s.e. n.a. - n.a. cm TL Estimated from Linf., K and M.	
Length-weight:	303.0 cm TL => 1,500.2 kg (wet weight) W = 0.0130 * L ^ 3.24900	<input type="button" value="Recalculate"/> Length-weight data
Nitrogen & protein:	Weight 1500205 => whole-body nitrogen (N) 51455.9 (g) => whole-body crude protein 321599.2 (g)	<input type="button" value="Recalculate"/>
Reproductive guild:	nonguarders: open water/substratum egg scatterers Reproduction	
Fecundity:	2,133,073 [1,300,000-3,500,000] Estimated as geometric mean. Fecundity	
Relative Yield per Recruit (Y'/R):	0.0522 Estimate Y'/R from M/K, Lc/Linf and E. Lc=121.2 cm TL E=0.50 /year Emsy 0.59 /year Eopt 0.54 /year Fmsy 0.08 /year Fopt 0.05 /year	<input type="button" value="Recalculate"/>
Exploitation:	Z= F= E= Estimate Z, F, E from Lc, Lmean, Linf, K, M Lc = 121.2 cm TL Lmean = cm TL	<input type="button" value="Recalculate"/>
Resilience / productivity:	Very low; decline threshold 0.70 Vulnerable to extinction if decline in biomass or numbers exceeds threshold over the longer of 10 years or 3 generations.	
Intrinsic rate of increase (rm):	0.12 /year Lr = 121.2 cm TL Estimated from Fmsy at Lc = length of recruitment (Lr).	<input type="button" value="Recalculate"/>
Main food:	mainly animals (troph. 2.8 and up)	
Trophic level:	4.0 +/- s.e. 0.45 Estimated from diet data. Diet	

Figure 3 Life history tool Atlantic halibut R2

References:

R1 Map Sub-areas of FAO fishing areas 27 showing Subareas I and II

https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/fishing_areas_en.pdf

R2 Fishbase Atlantic halibut:

<https://www.fishbase.in/Summary/SpeciesSummary.php?ID=1371&AT=halibut>

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
	1.76 – 2.24	PASS	TABLE D4
	2.25 – 3.00	PASS	TABLE D4

D4	Species Name	Atlantic halibut <i>Hippoglossus hippoglossus</i>	
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.	PASS	
D4.2	There is no substantial evidence that the fishery has a significant negative impact on the species.	PASS	
Outcome:			PASS
Evidence:			
D4.1:			
Under the latest agreed record of consultations between Norway and the European Union fisheries arrangements for 2020 were outlined (R3):			
Section 5 Paragraph 5.1 (Jointly managed stocks) of this agreed record referred to the wish of both Delegations to continue to work to avoid unwanted catches and discards through technical measures that improve selectivity, closed seasons and areas and other measures including a ban on high grading and Real Time Closure (RTC) systems. These measures, they conclude, would support both the EU landing obligation and discard ban in Norway.			
Technical measures in force designed to reduce potential impacts of the fishery on this species include a minimum mesh size (130mm) for quota species, sorting grids that minimize catches of juveniles and move-on rules that protect juvenile target species (demersal stocks). Marine Protected Areas (MPAs) are also designed to protect vulnerable benthic habitats and species.			
D4.2:			
The fishery for Atlantic halibut is regulated in Norway, with restrictions on mesh size (gillnets), number of nets, and catching periods. All commercial species caught in Norwegian and Russian waters must be retained, recorded in the electronic logbook and landed with the exception of juvenile Atlantic halibut (<80 cm) which shall be released alive in order to assist stock recovery.			
References			
R3 Agreed record of consultations between Norway and the European Union https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/2020-norway-fisheries-consultations-north-sea_en.pdf			
Standard clause 1.3.2.2			