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Global Standard for Responsible Supply of Marine Ingredients

Fishery Assessment Methodology and Template Report V2.0

Fishery Under Assessment	**Cod (*Gadus morhua*) North East Atlantic (ICES IVa-c,VIa,VIIa,b,d-h,j)**
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/France
Main Species	Cod (*Gadus morhua*)
Fishery Location	North East Atlantic: various stocks.
Gear Type(s)	All
Outcome of Assessment	
Overall Outcome	Pass 1 stocks, Fail 3 stocks
Clauses Failed	C1.2 – Stock VI a; Stock VII e-k
Peer Review Evaluation	Agree
Recommendation	Pass 1 stocks, Fail 3 stocks

Assessment Determination

An EU long-term management plan for cod stocks and the fisheries exploiting those stocks (2008) was amended (Council Regulation (EU) 2016/2094) to cover the transitional period in which preparations are ongoing towards new multiannual plans for multispecies fisheries. It is beyond the scope of this assessment to consider all cod stocks managed in the NE Atlantic; four stocks were considered: **1)** Subarea IV, Division VII d and Subdivision 20; **2)** Division VI a; **3)** Division VII a and **4)** Division VII e-k (**Figure 1**).

Cod is managed as a large number of distinct stocks in EU waters, each of which is subject to an annual TAC and a variety of other management measures. The specific nature of management mechanisms in place and the nature (and effectiveness) of management plans varies between management units.

Stock areas (quota purposes) are not identical to ICES advice areas. ICES assesses and provides management advice for a total of 14 stocks in the Northeast Atlantic of which four are considered in this report due to their reflecting the assessment area and client operations.

The EU landing obligation was implemented from 1 January 2017 for several gears, including bottom trawl and fixed gears. From 2018, cod is fully under the EU landing obligation in Subarea IV and Subdivision 20 this obligation does not apply in 2019 (Division VII d only).

Three stocks in the assessment area (Division VIa (West of Scotland); Division VIIe-k (Western English Channel and Southern Celtic Sea) and Subarea IV, Division VIId, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak) fail the by-product assessment (Category C stocks).

Stocks failing Clause C1.1 or C1.2 are normally assessed under Category D (Risk assessment approach). However this is usually undertaken when there is a comparative lack of scientific information on the status of the population in the assessment area. In this case the information is available and a risk-based assessment was not deemed appropriate. These stocks are not approved for use under the IFFO-RS by-product standard.

ICES has been requested by the European Commission to provide a description of the main mixed fisheries technical and biological interactions known in the Baltic Sea, the North Sea and the Atlantic. ICES is requested to describe species caught together in mixed fisheries taking account of spatial, gear, fleet and temporal dimensions as appropriate. When provided this information will be used to support and add to existing stock assessment models and contribute to future management plan objectives.

Cod is not currently on the CITES endangered species list. IUCN have classified Atlantic cod (including North West stocks) as vulnerable (websites accessed 09.07.19). However in the assessment area there is a fishery management plan that evaluates stocks relative to fishing and adjusts/controls harvests according to changes in the status of the stock, and is compliant with the FAO Code of Conduct for Responsible Fisheries (CCRF).

The assessment team **does not recommend** approval of stocks in Subarea IV, Division VII d, 20 ; Division VI a and Division VII e-k but **does recommend** approval of the Division VIIa stock as by-product material against the IFFO RS Standard v 2.0 (by-products).

Peer Review Comments

PR does not agree that the stock **"Cod (Gadus morhua) in Subarea IV, Division VIId, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak"** should pass. ICES assesses that fishing pressure on

the stock is above FMSY and between Fpa and Flim, and that spawning stock size is below MSY Btrigger and between Bpa and Blim. PR agrees with the conclusions raised for the other stocks evaluated herein and minimal changes are required to approve this report.
Notes for On-site Auditor
The assessment team does not recommend approval of stocks in Subarea IV, Division VIId, and Subdivision Division 20; Division VIa and VII.e-k; but does recommend approval of the Division VIIa stock. as by-product material against the IFFO RS Standard v 2.0. Ensure cod from the IFFO-RS un-approved areas is not processed.

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	Cod (*Gadus morhua*) Subarea IV, Division VIId, and Subdivision 20	N/A	**FAIL**	
Category C	Cod (*Gadus morhua*) Division VIa	N/A	**FAIL**	
Category C	Cod (*Gadus morhua*) Division VIIa	N/A	**PASS**	
Category C	Cod (*Gadus morhua*) Divisions VIIe-k	N/A	**FAIL**	
Category D				

[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
Cod	*Gadus morhua*	NE Atlantic	N/A	EU/Common Fisheries Policy	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		**Cod** *Gadus morhua*	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	**Subarea IV, Division VIId, and Subdivision 20:** 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**
	C1.1	**Division VIa:** 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.	**FAIL**
	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**
	C1.1	**Division VIIa:** 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
	C1.1	**Division VIIe-k:** 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 Subarea IV, Division VIId, and Subdivision 20:	**FAIL**
		Clause outcome Division VIa:	**FAIL**
		Clause outcome Division VIIa:	**PASS**
		Clause outcome Division VIIe-k:	**FAIL**

Evidence:
Member States of the European Union implement the Common Fisheries Policy (CFP) in their waters. The most recent CFP reform process was completed in 2013 and came into effect from the 1st January 2014, key changes include:

- The introduction of an objective to 'ensure high long-term fishing yields for all stocks at the latest by 2020' (i.e. movement towards an MSY-based approach).
- The gradual (2015-2019) introduction on a fishery-by-fishery basis of a 'landing obligation', which effectively now bans discarding in all EU waters, with some exceptions.
- An overhaul of the management structure, including increased regionalisation and more extensive stakeholder consultation.

Cod is managed as a large number of distinct stocks in EU waters, each of which is subject to an annual TAC and a variety of other management measures. Managed stocks within the assessment area include: **Subarea IV, Division VIId, and Subdivision 20; Divisions VIa; VIIa and VIIe-k.** The specific nature of management mechanisms in place and the nature (and effectiveness) of management plans varies between management units.

Management stocks are not identical to the ICES advice areas. ICES assesses and provides management advice for a total of 14 cod stocks in the Northeast Atlantic. Only those stocks in the fishery currently under assessment are considered in this report (**Figure 1**):

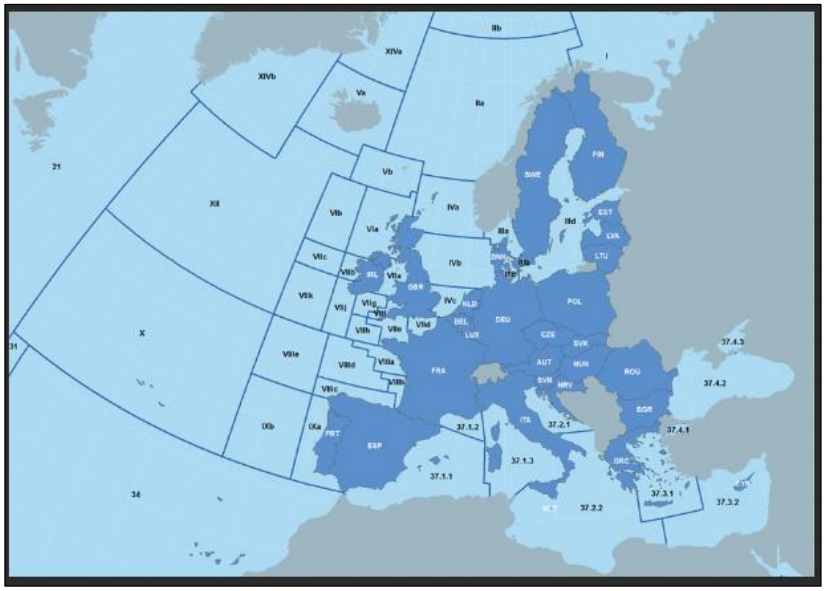

Figure 1. Northeast Atlantic ICES Areas (adapted from Collinsseafoods.co.uk) **R1**

ICES Advice: Cod (*Gadus morhua*) in Subarea IV, Division VIId, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak:

Clause C1.1:
Input data included in stock assessments are derived from commercial catches (international landings and ages from catch sampling by métier), two survey indices (IBTS Q1, IBTS Q3) derived by a Delta-GAM approach, assuming a stationary spatial model with ship effect. Smoothed annually varying maturity data from IBTS Q1 (1978-2018). Annually varying natural mortalities from multispecies model (1974-2016). Fishery removals are included in the stock assessment process; the species passes Clause C1.1**.**

Clause C1.2:

Fishing mortality (F) has declined since 2000, but remains above FMSY. Spawning-stock biomass (SSB) has increased from the historical low in 2006, but is still below MSY Btrigger. Recruitment since 1998 remains poor:

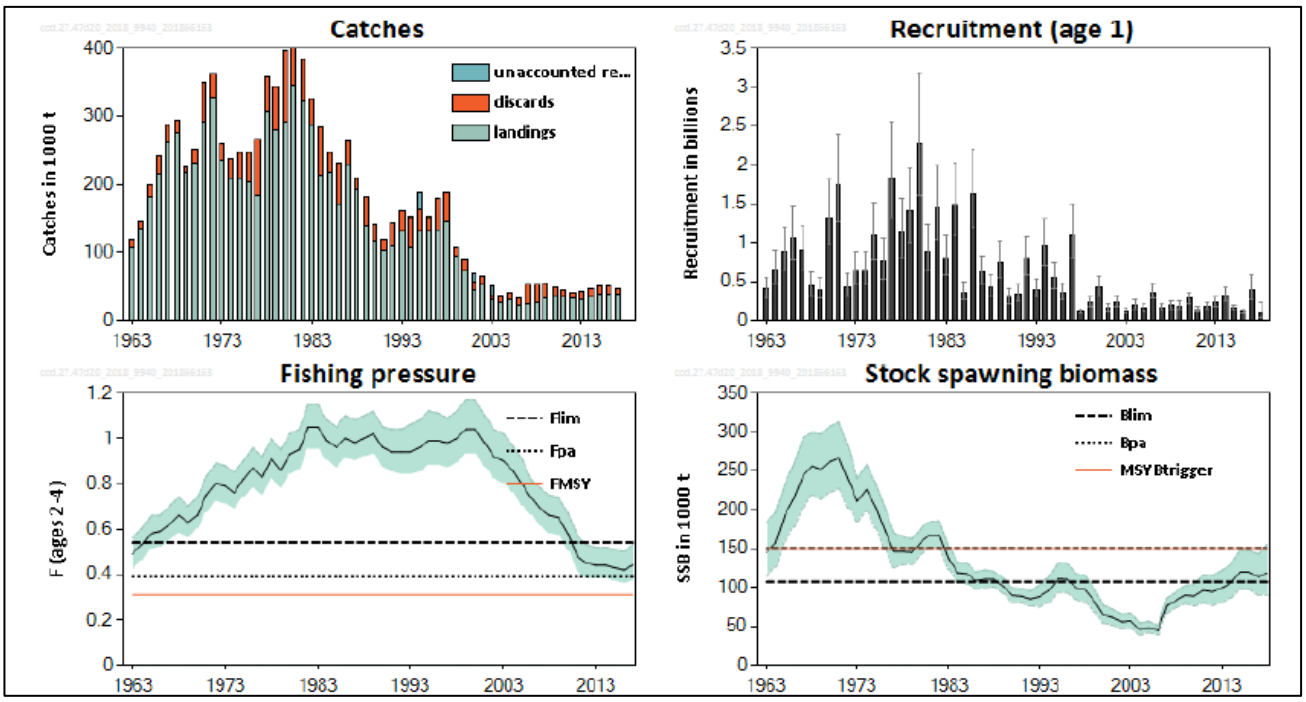

Figure 2: Cod in Subarea 4, Division 7.d, and Subdivision 20. Summary of the stock assessment. Catches are assessment estimates. Shaded areas (F, SSB) and error bars (R) indicate 95% confidence intervals. **R2**

Further, the table 1 below show the stock status relative to the references points. It can be shown that the stock is not in a good shape and is not fluctuating around reference points.

Table 1: Cod in Subarea 4, Division 7.d, and Subdivision 20 relative to the references points. Source: ICES 2018

	Fishing pressure				Stock size			
		2015	2016	2017		2016	2017	2018
Maximum sustainable yield	F_{MSY}	✗	✗	✗ Above	MSY $B_{trigger}$	✗	✗	✗ Below trigger
Precautionary approach	F_{pa},F_{lim}	○	○	○ Increased risk	B_{pa},B_{lim}	○	○	○ Increased risk
Management plan	F_{MGT}	—	—	— Not applicable	B_{MGT}	—	—	— Not applicable

Maturity-at-age was re-estimated in 2017, which caused the observed downward revision in SSB in the 2017 assessment. Official landings from this stock area in 2017 were 34,198t against an agreed TAC of 39,220t. While ICES assess that fishing pressure on the stock is above FMSY and between Fpa and Flim, and that spawning stock size is below MSY Btrigger and between Bpa and Blim they note an increased risk (Table 1 of the assessment) that SSB will fall below Blim. It cannot be stated with certainty that the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy). The stock fails Clause C1.2

ICES Advice: Cod Division VIa (West of Scotland):

Clause C1.1:

Estimates of misreporting from Marine Scotland Compliance imply ICES landings estimates which are in excess of TACs during the mid-2000s. Misreported landings make a significant contribution to the fishing mortality on this stock. Although the UK 'Buyers and Sellers' and Irish 'Sales Notes' legislation is considered to have reduced underreporting from 2006, discard data show increased discards at-ages one and two, and a change in discard practices such that fish are discarded at older ages. It cannot be stated with certainty that fishery removals of the species in the fishery under assessment are included in the stock assessment process. The stock fails Clause C1.1.

Clause C1.2:

ICES advises that when the MSY approach is applied, there should be zero catches in each of the years 2018 and 2019 from this stock area.

The 2012 year class (recruitment in 2013) is estimated to be the highest since 2006, but given that mean F is still estimated to be high, this results in only minor increases in SSB in recent years. Recruitment in 2018 is also estimated to be above the recent average, but with continued high mean F this will result in only small increases in SSB.

Estimated SSB is well below Blim (14,000 tonnes). Mean F is above Flim (= 0.82) in 2017, an increase on the values for 2014 to 2016 where F was estimated to be below Flim for the first time since 1995. Overall there is a general downward trend (but with significant annual fluctuations) in mean F since 2005, although points estimates are very uncertain. **This species does not pass Clause C1.2.**

Stocks failing Clause C1.1 or C1.2 are normally assessed under Category D (Risk assessment approach). However this is usually undertaken when there is a comparative lack of scientific information on the status of the population in the assessment area. In this case the information is available and a risk-based assessment is not deemed appropriate.

ICES Advice: Cod Division VIIa (Irish Sea):

Clause C1.1:

Input data includes data from four survey indices NIGFS-WIBTS-Q1, NIGFS-WIBTS-Q4, NIMIK, UK-FSP. Maturity-at-age is time varying; fixed natural mortality following Lorenzen (1996). The model uses total catches (i.e. discards + landings). Discard information is available since 2007.

Fishery removals of the species in the fishery under assessment are included in the stock assessment process and the fishery passes clause C1.1.

Clause C1.2:

The spawning‑stock biomass (SSB) is increasing but remains below MSY Btrigger. Recruitment remains low and was estimated at its lowest in 2016. Fishing pressure (F) has declined from very high levels and has been below FMSY since 2013, and is very low in 2016 and 2017:

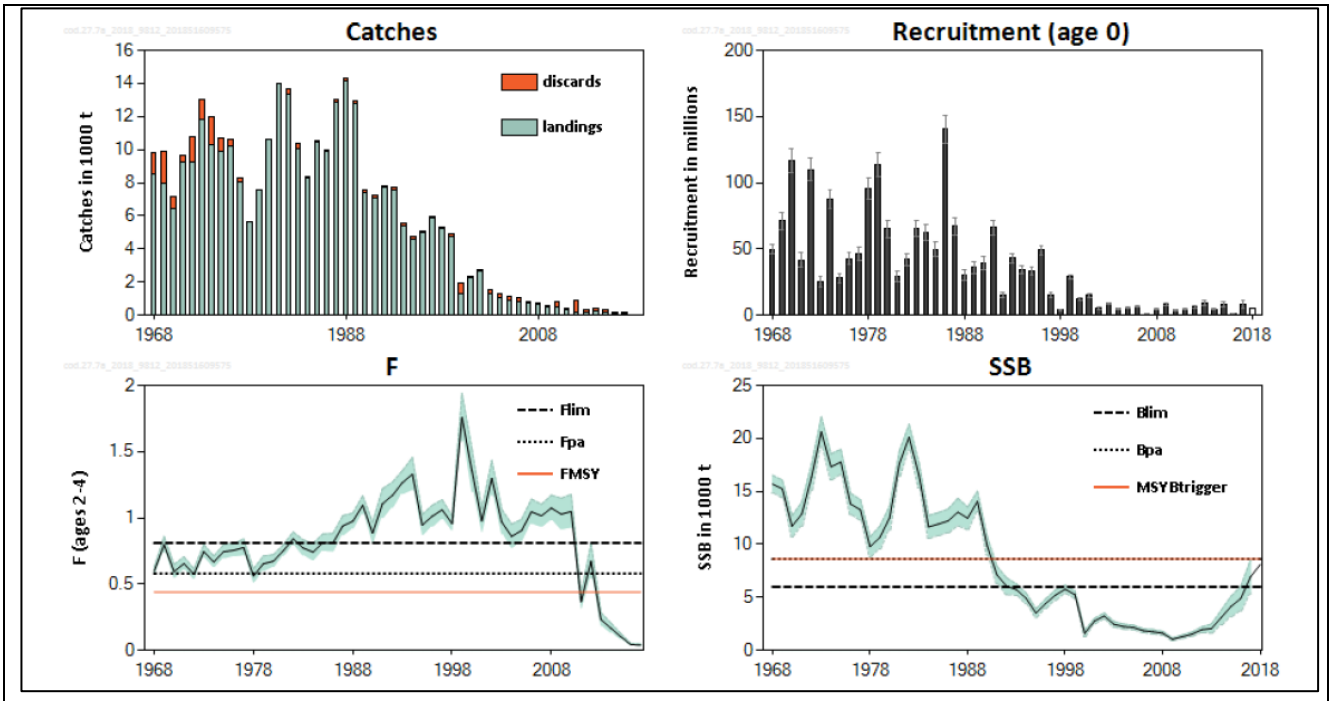

Figure 3: Cod in Division 7.a. Weights in thousand tonnes. Shaded areas in F and SSB plots and error bars in the recruitment plot represent 1 × standard deviation. Uncertainty boundaries not available for 2018. **R2**

ICES assesses that fishing pressure on the stock is below FMSY, Fpa, and Flim, and that the spawning-stock size is below MSY Btrigger and above Bpa and Blim. The precautionary approach is used in this assessment. Official catches from this stock area in 2017 were 103t against an agreed TAC of 146t. Fishing pressure (F) declined from very high levels and has been below FMSY since 2013, and was very low in 2016 and 2017. Removals by the fishery under assessment are considered by scientific authorities to be negligible. **This species passes clause 1.2.**

COD Divisions VIIe-k (Western English Channel and Southern Celtic Sea):
Clause C1.1:
Input data used in the assessment includes Commercial landings, ages, and length frequencies from sampling by métier; one combined survey index (EVHOE-WIBTS-Q4; IGFS-WIBTS-Q4); one commercial index (FR-OTDEF Q2+3+4 trawlers in divisions 7.e-k); fixed maturity ogive derived from data from UK-WCGFS survey-Q1; age-dependent natural mortalities from Lorenzen (1996). Fishery removals of the species in the fishery under assessment are included in the stock assessment process.

Clause C1.2:
Spawning-stock biomass (SSB) has been below Blim since 2004, except from 2011 to 2013. Fishing mortality has been above FMSY for the entire time-series but has been decreasing since 2014. Recruitment has been highly variable over time. Recent recruitment has been very weak with the exception of the 2013 year class, which is above average.

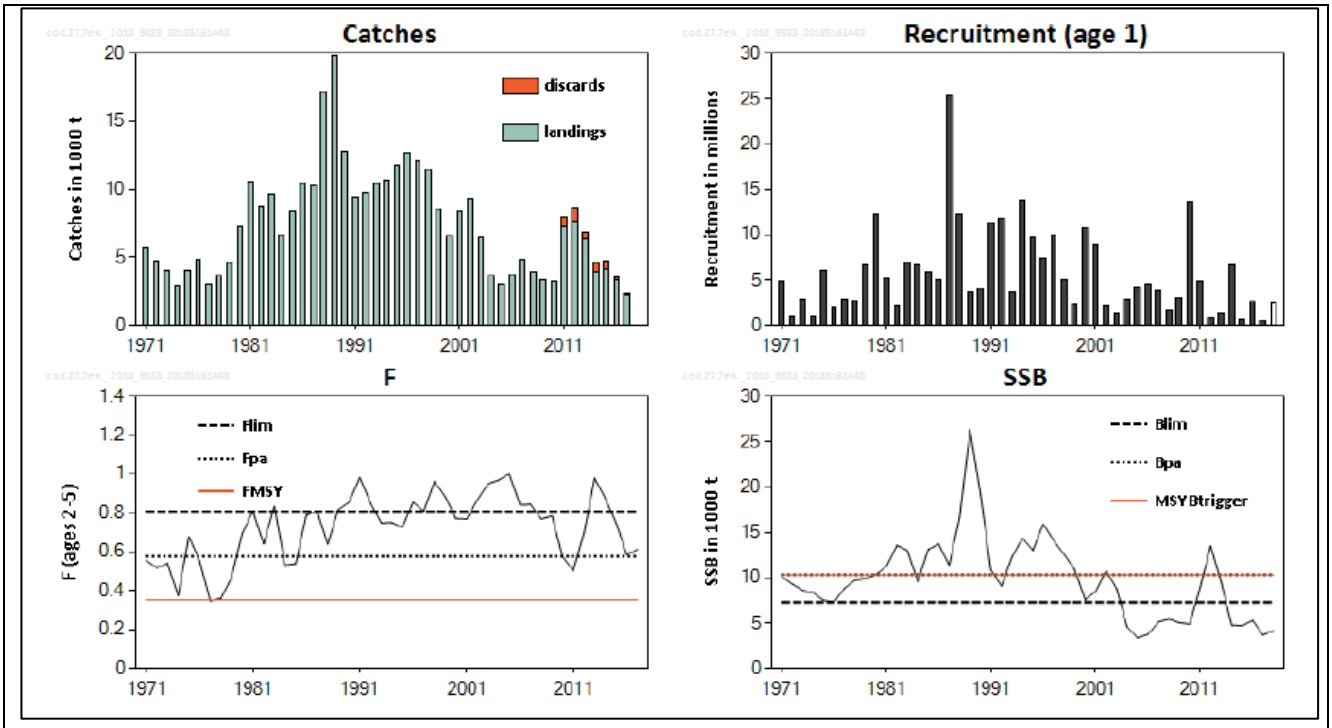

Figure 4: Cod in divisions 7.e–k. Weights in thousand tonnes. The assumed recruitment value is unshaded. Discards resulting from high-grading are included in the assessment as landings in the period 2003–2011; high-grading is considered to be negligible from 2012 onward.**R2**

ICES assesses that fishing pressure on the stock is above FMSY and between Fpa and Flim, and that the spawning-stock size is below MSY Btrigger, Bpa, and Blim. Realized catches in 2017 of 2,354t have been much lower than those anticipated assuming a similar level of effort as in recent years (3,704t in ICES 2017 advice). Data do not indicate a decline in effort in 2017. ICES reported landings in 2017 were 2,354t against an agreed TAC of 2,830t. **This species does not pass Clause 1.2.**

Stocks failing Clause C1.1 or C1.2 are normally assessed under Category D (Risk assessment approach). However this is usually undertaken when there is a comparative lack of scientific information on the status of the population in the assessment area. In this case the information is available and a risk-based assessment is not deemed appropriate.

References

R1 Northeast Atlantic ICES Areas https://www.bing.com/images/search/collinsseafoods.co.uk
R2 ICES Advice Cod (2018):
Subarea 4, Division 7.d, and Subdivision 20 (North Sea, Eastern English Channel, Skagerrak):
http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/cod.27.47d20.pdf
Division VIa (West of Scotland):
http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2018/WGCSE/05_Cod_6a_2018.pdf
Division VIIa (Irish Sea):
http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/cod.27.7a.pdf
Divisions VIIe-k (Western English Channel and Southern Celtic Sea):
http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/cod.27.7e-k.pdf
R3 ICES 2018(a): Mixed-fisheries advice for Subarea 4, Division 7.d, and Subdivision 3.a.20 (North Sea, eastern English Channel, Skagerrak). *In* Report of the ICES Advisory Committee, 2018. ICES Advice 2018.
R4 CITES Species Endangered list: http://checklist.cites.org/#/en
R5 IUCN Red list: http://www.iucnredlist.org/search

R6 EU request on the further development of ICES mixed-fisheries considerations and biological interactions 7pp: http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/Special_requests/eu.2018.34.pdf **R7:** Lorenzen, K. 1996. The relationship between body weight and natural mortality in juvenile and adult fish: a comparison of natural ecosystems and aquaculture. Journal of Fish Biology, 49(4): 627–642: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1095-8649.1996.tb00060.x
Standard clauses 1.3.2.2