



RESPONSIBLE
SUPPLY

IFFO RS
Global Standard for Responsible Supply
of Marine Ingredients

IFFO RS Limited

T: +44 (0) 2030 539 195
E: Standards@iffors.com
W: www.iffors.com

Unit C, Printworks | 22 Amelia Street
London, SE17 3BZ | United Kingdom



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



RESPONSIBLE
SUPPLY

IFFO RS

Global Standard for Responsible Supply
of Marine Ingredients



Fishery Under Assessment	Denmark Cod (<i>Gadus morhua</i>)
Date	October 2019
Assessor	Jim Daly

Application details and summary of the assessment outcome				
Name: FF Skagen				
Address:				
Country: Denmark		Zip:		
Tel. No.:		Fax. No.:		
Email address:		Applicant Code:		
Key Contact:		Title:		
Certification Body Details				
Name of Certification Body:		SAI Global		
Assessor	Peer Reviewer	Assessment Days	Initial/Surveillance/Re-approval	Whole fish/ By-product
Jim Daly	Sam Dignan	0.5	Re-approval	By-product
Assessment Period	2019			

Scope Details			
Management (Country/State)		Authority	
		Denmark	
Main Species		Atlantic cod (<i>Gadus morhua</i>)	
Stocks:	1	Cod (<i>Gadus morhua</i>) in ICES Subdivisions 22–24, western Baltic stock (western Baltic Sea)	
	2	Cod (<i>Gadus morhua</i>) in ICES Subdivision 21 (Kattegat)	
	3	Cod (<i>Gadus morhua</i>) in ICES Subarea 4, Division 7.d, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak)	
Fishery Location		North east Atlantic, FAO 27	
Gear Type(s)		Demersal trawls, seines, beam and otter trawls	
Outcome of Assessment			
Overall Outcomes:		Outcome	Clause(s) failed
1	Cod in Subdivisions 22–24:	PASS	n/a
2	Cod in Subdivision 21	FAIL	C1.2
3	Cod in Subarea 4, Division 7.d, and Subdivision 20	FAIL	C1.2
Peer Review Evaluation		Agree with above findings based on evidence presented.	
Recommendations		<p>APPROVE</p> <ul style="list-style-type: none"> Cod (<i>Gadus morhua</i>) in ICES Subdivisions 22–24, western Baltic stock (western Baltic Sea) <p>DO NOT APPROVE</p> <ul style="list-style-type: none"> Cod (<i>Gadus morhua</i>) in ICES Subdivision 21 (Kattegat) Cod (<i>Gadus morhua</i>) in ICES Subarea 4, Division 7.d, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak) 	

Assessment Determination

Cod is managed as many distinct stocks in EU waters, each of which are subject to an annual TAC and a variety of other management measures. It is beyond the scope of this assessment to examine all listed cod stocks in the assessment area listed (FAO 27). Three stocks form part of this assessment:

- 1) Cod (*Gadus morhua*) in Subdivisions 22–24, Western Baltic stock (Western Baltic Sea);
- 2) Cod in Subdivision 21 (Kattegat), and;
- 3) Cod in Subarea 4, Division 7.d, and Subdivision 20 (North Sea, Eastern English Channel, Skagerrak, Figure 1).

Fishery removals of the species in the fishery under assessment are included in the stock assessment process.

For the Western Baltic stock ICES assesses that fishing pressure on the stock is above FMSY and below F_{pa} and F_{lim} ; while spawning stock size is below MSY trigger (21,876t) and between B_{pa} (21,876t) and B_{lim} (14,500t) The stock passes Clause C1.2 as the species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy).

For cod in Subdivision 21 ICES advises that spawning-stock biomass (SSB) has decreased since 2015 and is at a historically low level in 2019. Mortality F has increased since 2015. ICES cannot assess the stock and exploitation status relative to maximum sustainable yield (MSY) and precautionary approach (PA) reference points, because reference points are un-defined. ICES advise that, when the precautionary approach is applied, there should be zero catch in 2020. This stock fails Clause C1.2

For cod in Subarea 4, Division 7.d, and Subdivision 20 spawning-stock biomass (SSB) has decreased since 2015 and is now below B_{lim} . This stock also fails Clause C1.2

Each stock assessed must pass both Clause C1.1 and C1.2 of the fisheries assessments. Cod from Subdivision 21 and Subarea 4, Division 7.d, and Subdivision 20 are not approved for use under the IFFO-RS Standard (v 2.0) for by-product material.

Atlantic Cod has been assessed as vulnerable (IUCN Red List); a fishery management plan is in place 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). Cod is not on the current list of CITES endangered species (websites accessed 27.09.19).

Cod from Subdivision 21 and Subarea 4, Division 7.d, and Subdivision 20 are not approved by the SAI Global assessment team for the production of fishmeal and fish oil under the IFFO-RS v 2.0 standard (by-products). Cod from Subdivisions 22–24, Western Baltic stock is approved.

Peer Review Comments

Original Peer Review Comments:

There are 3 stocks included in this assessment:

1. Cod (*Gadus morhua*) in Subdivisions 22-24 (Western Baltic stock, Sept 2019 update).
2. Cod (*Gadus morhua*) in Subdivision 21 (Kattegat).
3. Cod in Subarea 4, Division 7.d, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak).

The Assessor has all 3 stocks passing and recommends they be approved BUT based on the latest information the latter 2 should not pass.

Revised Peer Review Comments:

Following changes to this report, and based on the evidence presented, the Reviewer now agrees with the Assessor's recommendations.

Notes for On-site Auditor

Ensure Cod from un-approved areas is not processed and/or labelled with other IFFO-RS approved material.

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 (<i>Gadus morhua</i>) Subdivisions 22-24	N/A	PASS	
	Cod (<i>Gadus morhua</i>) Subdivision 21	N/A	FAIL	
	Cod (<i>Gadus morhua</i>) Subarea 4, Division 7.d, and Subdivision 20	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	<i>Gadus morhua</i>	Subdivisions 22-24 (Western Baltic stock)	N/A	EU, Denmark	C
Cod	<i>Gadus morhua</i>	Subdivision 21 (Kattegat).	N/A	EU, Denmark	C
Cod	<i>Gadus morhua</i>	Subarea 4, Division 7.d, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak).	N/A	EU, Denmark	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 (<i>Gadus Morhua</i>)		
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.	All stocks 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	SD 22-24: PASS SD 21: FAIL SA 4 Div 7d SD 20: FAIL

assessment are considered by scientific authorities to be negligible.

Clause outcome:

See above

Evidence

C1.1:

This assessment covers Danish vessels landing cod from the areas outlined in Figure 1 below.

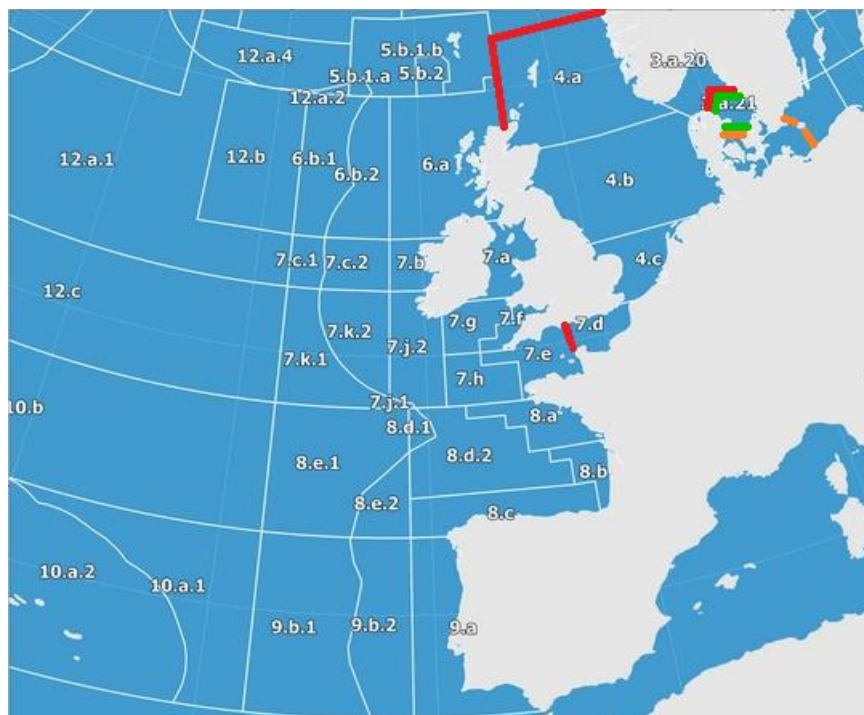


Figure 1: Map of the assessment area. Cod in Subarea 4, Division 7.d, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak) outlined in red; Cod in Subdivision 21 (Kattegat) outlined in green; Cod in subdivisions 22–24, western Baltic stock (western Baltic Sea) outlined in orange (Source: SAI Global 2019).

Cod (*Gadus morhua*) in Subdivisions 22–24 (Western Baltic stock):

Input data has been derived from commercial catches (landings, age distributions from catch sampling) and recreational catch (Germany, Sweden, and Denmark). An annual stock separation key (from commercial catches) splits catches in Subdivision 24 into eastern and western Baltic cod, derived from otolith shape analyses combined with genetics (this key available for 19 of the 34 years in the present time-series). The allocation of catches to stock for the remaining years was performed by interpolation.

Three survey indices are undertaken (FEJUCS (age 0), BITS-Q1, and BITS-Q4); annual maturity data is derived from BITS-Q1 surveys. Natural mortalities for age 1 are derived from multispecies assessment and are unchanged since 1996. Discards and by-catch have been included in the assessment since 1994, data series provided by the main fleets.

Cod (*Gadus morhua*) in Subdivision 21 (Kattegat):

Input data is derived from commercial catches (international landings, age distribution from catch sampling), four bottom trawl survey indices (IBTS-Q1, IBTS-Q3, BITS-Q1, and CODS_Q4), and annual maturity data from survey (IBTS-Q1). Natural mortalities are fixed at 0.2. Discards and bycatch are included in the assessment with the data series from most of the fleets (covering 87% of landings).

The assessment type is an age-based analytical assessment (SAM), considered indicative of trends only (ICES, 2019).

Cod (*Gadus morhua*) in Subarea 4, Division 7.d, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak):

Input data includes 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 (1978–2019). Annually varying natural mortalities from multispecies model (1974–2016). Discard data are included (78% reported, 22% raised), data series from the main fleets (in 2018 covering 76% of the landings). Below minimum size (BMS) landings, where reported, are included with discards as unwanted catch in the assessment from 2016.

Fishery removals of the species in the fishery under assessment are included in the stock assessment process **R3, R5-R6**

C1.2:

Cod (*Gadus morhua*) in Subdivisions 22-24 (Western Baltic stock, Sept 2019 update):

Spawning-stock biomass (SSB) has been fluctuating around the limit reference point (B_{lim}) since 2009 but has increased in the last two years and is presently above B_{lim} and close to MSY Btrigger. Fishing mortality (F) is above F_{MSY}, although a large decrease in F has occurred in later years. Recruitment (R) has been low since 1999; recruitment in 2017 (2016-year class) is estimated to be above average in this period. Recruitments in 2018 and 2019 (age 1) are the lowest in the time series.

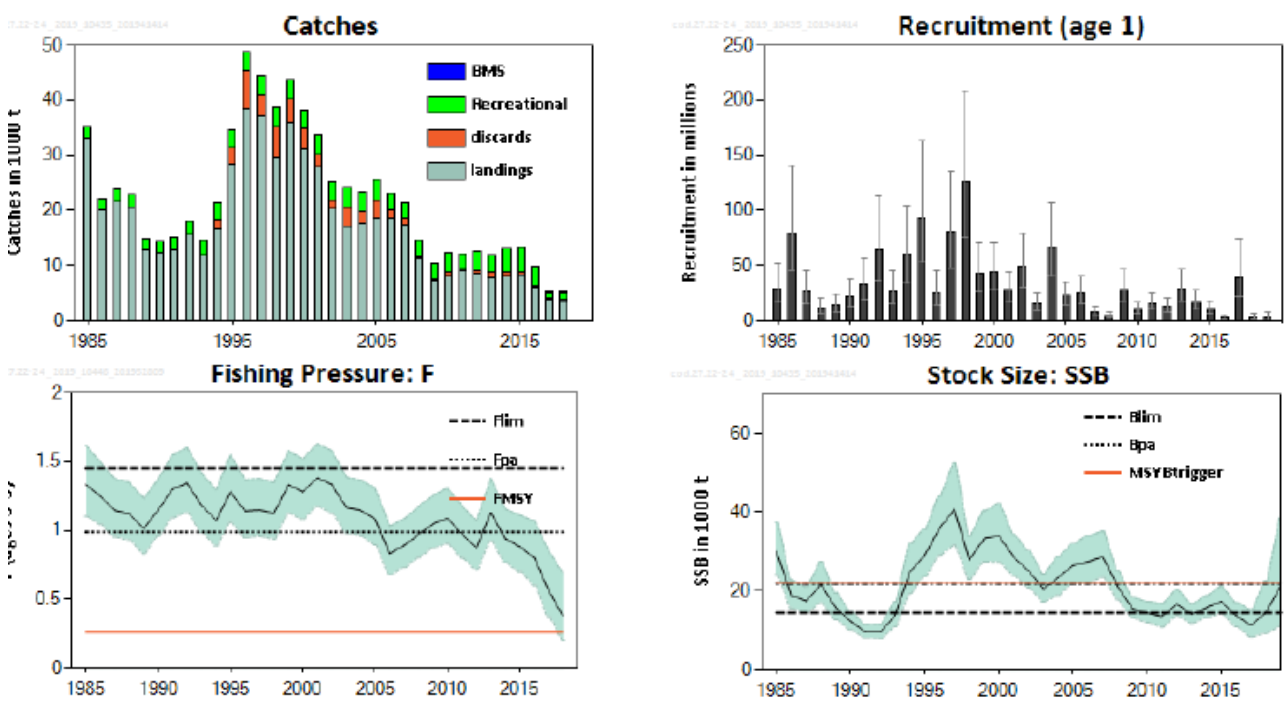


Figure 2: Cod in subdivisions 22–24, western Baltic stock. Summary of the stock assessment. Recruitment, F, and SSB have confidence intervals (95%) in the plot. The EU landing obligation entered into force in 2015; therefore, BMS landings (fish below the minimum conservation reference size [MCRS]) have been included since 2017. **R3**

ICES assess that fishing pressure on the stock is above FMSY and below Fpa and Flim; while spawning stock size is below MSY Btrigger (21,876t) and between Bpa (21,876t) and Blim (14,500t) (Figure 2). The stock passes Clause C1.2.

Cod (*Gadus morhua*) in Subdivision 21 (Kattegat):

Spawning-stock biomass (SSB) has decreased since 2015 and it is at the historically low level in 2019. The mortality F has increased since 2015. Recruitment (R) in the last six years has been below average, and the last two-year classes are the lowest level observed;

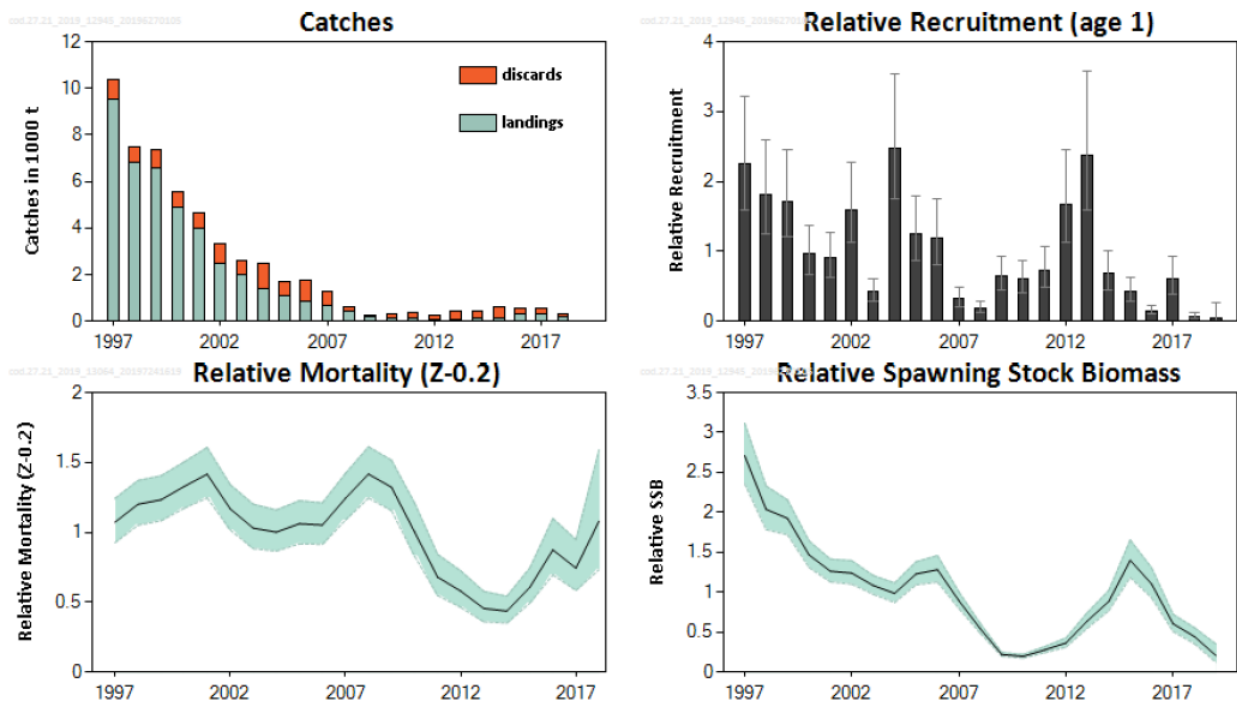


Figure 3: Cod in Subdivision 21. Summary of the stock assessment. Catches (weights in thousand tonnes). Recruitment, mortality, and SSB are relative to the average of the time-series and 95% confidence intervals are shown in the plot R5

ICES cannot assess the stock and exploitation status relative to maximum sustainable yield (MSY) and precautionary approach (PA) reference points, because reference points are undefined. ICES advise that when the precautionary approach is applied, there should be zero catch in 2020. The stock fails Clause C1.2

Cod in Subarea 4, Division 7.d, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak):

Fishing mortality (F) has increased since 2016, is above Flim in 2018. Spawning-stock biomass (SSB) has decreased since 2015 and is now below Blim. Recruitment since 1998 remains poor:

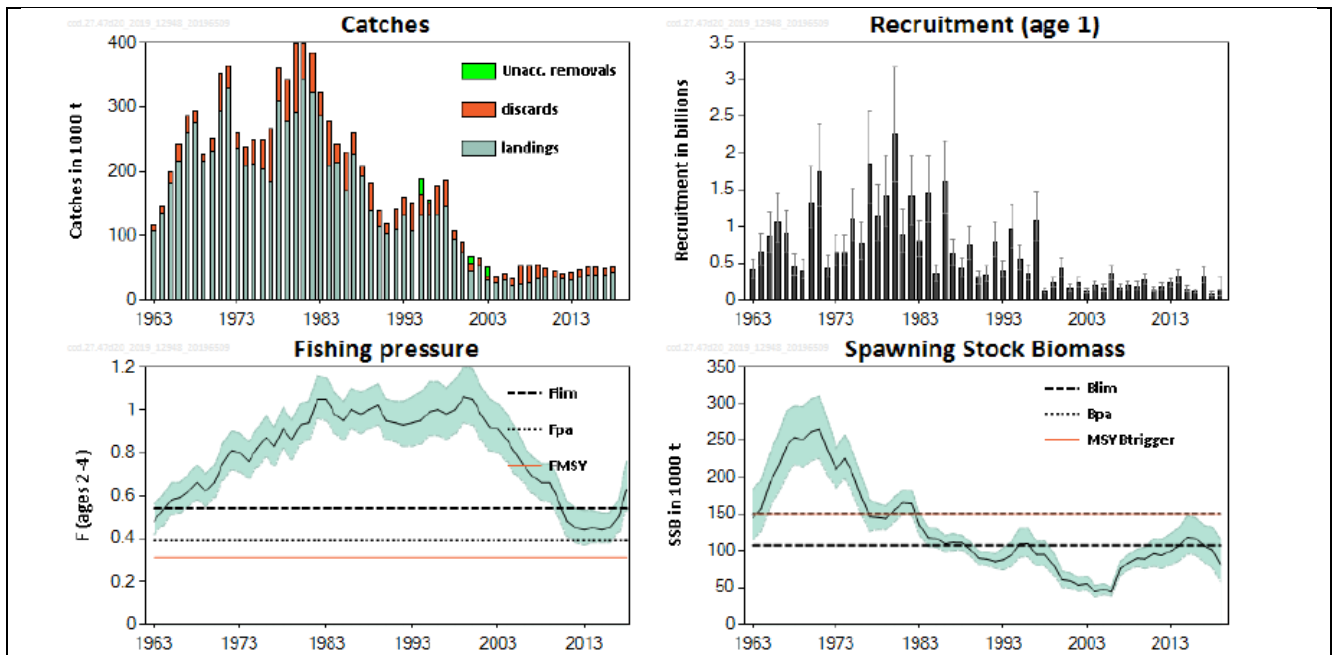


Figure 4: Cod in Subarea 4, Division 7.d, and Subdivision 20. Summary of the stock assessment. Catches are assessment estimates. Only positive unaccounted removals are plotted (see Table 10). Shaded areas (F, SSB) and error bars (R) indicate 95% confidence intervals R6

ICES assess that fishing pressure on the stock is above FMSY, Fpa and Flim; spawning stock size (SSB 2020 forecast 81,224t) is below MSY Btrigger, Bpa, and Blim (107,000t). The stock fails Clause C1. 2..

References

R1 Map of the assessment area Copyright de.academia.ru

https://upload.wikimedia.org/wikipedia/commons/c/c2/Carte_Skagerrak-Kattegat2.png

R2 IFFO-RS Fisheries Assessment Report 2018: Cod NE Atlantic, UK & Ireland Surv 2) 11pp

https://www.iffors.com/sites/iffors/files/approved-raw-materials/Cod_FAO%2027_Denmark_By-product_Re-approval_2018_Final_1.pdf

R3 ICES Advice (2019) Cod (*Gadus morhua*) Subdivisions 22–24, western Baltic stock (western Baltic Sea)

<http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2019/2019/cod.27.22-24.pdf>

R4 Report of the Baltic Fisheries Assessment Working Group (WGBFAS), 1219 April 2016, ICES HQ, Copenhagen, Denmark. ICES CM 2016/ACOM:11. 594 pp

R5 ICES Advice (2019) (Cod (*Gadus morhua*) in Subdivision 21 (Kattegat)

<http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2019/2019/cod.27.21.pdf>

R6 ICES Advice (2019) Cod (*Gadus morhua*) in Subarea 4, Division 7.d, and Subdivision 20 (North Sea, eastern English Channel, Skagerrak):

<http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2019/2019/cod.27.47d20.pdf>

R7 EU. 2016. Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on establishing a multi-annual plan for demersal stocks in the North Sea and the fisheries exploiting those stocks and repealing Council Regulation (EC) 676/2007 and Council Regulation (EC) 1342/2008. COM (2016) 493 final. 23 pp. [https://eur-](https://eur-lex.europa.eu/resource.html?uri=cellar:9aa2aaae-5956-11e6-89bd-01aa75ed71a1.0008.02/DOC_1&format=PDF)

[lex.europa.eu/resource.html?uri=cellar:9aa2aaae-5956-11e6-89bd-01aa75ed71a1.0008.02/DOC_1&format=PDF.](https://eur-lex.europa.eu/resource.html?uri=cellar:9aa2aaae-5956-11e6-89bd-01aa75ed71a1.0008.02/DOC_1&format=PDF)

R8 REGULATION (EU) 2016/2094 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R2094&from=EN>

Standard clauses 1.3.2.2