



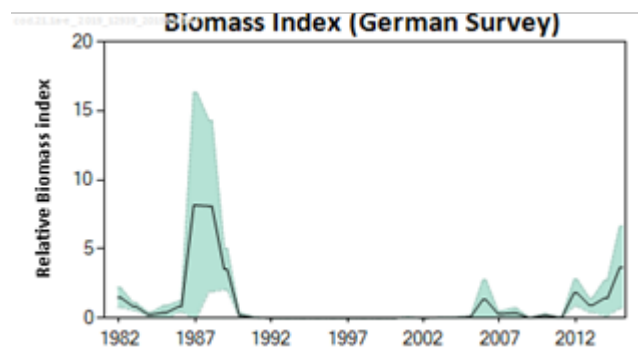
### Quality of the assessment

The assessment is considered uncertain, because of known stock mixing that affects both surveys and commercial catches.

As the biomass index is only available from 1992 and the main fishery took place before this index started, the index cannot be used as reference for biomass when the fishery took place.

Surveys are believed to be indicative of trends of cod abundance in this area. The areas covered in the surveys are partly used as nursery grounds by other cod stocks, which impairs the ability of the surveys to represent the strength of recruiting year classes to the west Greenland stock.

The German survey (Figure 2) has not been updated since 2015. Trends were similar to those observed in the Greenland survey.



**Figure 2** Cod in NAFO divisions 1A–1E, offshore. German survey biomass index (relative to the average of the time-series) with one standard deviation. There was no German survey of offshore west Greenland in 2016, 2017, and 2018.

### Issues relevant for the advice

The age structure observed in survey data indicates that the abundance of adult cod remains low. For the first time in decades, spawning has been observed in 2019 in NAFO division 1C (ICES, 2019). No fishing should take place on this stock until a spawning component is established that is composed of a number of year classes. This is likely to take several years.

The temporary increase in survey abundance in 2014 and 2015 emanated from the appearance of two year classes that did not persist in the area. The causes for this decline are unknown.

### Reference points

No reference points have been defined for this stock.

### Basis of the assessment

**Table 3** Cod in NAFO divisions 1A–1E, offshore. Basis of the assessment and advice.

ICES stock data category	3 ( <a href="#">ICES, 2018</a> ).
Assessment type	Survey-trends based assessment (ICES, 2019).
Input data	Greenland survey (GRL-GFS) indices.
Discards and bycatch	Discarding is considered negligible. Bycatch is included.
Indicators	German survey GER(GRL)-GFS-Q4.
Other information	None.
Working group	North-Western Working Group (NWWG)

### Information from stakeholders

There is no additional available information for this stock.

## History of the advice, catch, and management

**Table 4** Cod in NAFO divisions 1A–1E, offshore. ICES advice and official catch. All weights are in tonnes. Separate advice for this cod stock was provided for the first time in this area for 2016. The advice up to 2011 was included in the advice for inshore cod in NAFO Subarea 1 and offshore cod in NAFO Division 1F and ICES Subarea 14 (ICES, 2011). The advice for 2012–2015 was combined advice and TAC for offshore cod in NAFO Division 1F and ICES Subarea 14 (ICES, 2014).

Year	ICES advice procedure	ICES advice	TAC	ICES estimated catch
2004	Precautionary approach	0	5 000	8
2005	Precautionary approach	0	5 000	1
2006	Precautionary approach	0	5 000	0
2007	Precautionary approach	0	5 000	466
2008	Precautionary approach	0	15 000	549
2009	Precautionary approach	0	0	6
2010	Precautionary approach	0	0	2
2011	Precautionary approach	0	5 000	8
2012	Precautionary approach	0	5 500	332
2013	Precautionary approach	0	6 500	479
2014	Precautionary approach	0	0	116
2015	Precautionary approach	0	5 000	4 860
2016	Precautionary approach	0	5 000	3 740
2017	Precautionary approach	0	5 000	3 025
2018	Precautionary approach	0	5 000	4 187
2019	Precautionary approach	0	0	
2020	Precautionary approach	0		
2021	Precautionary approach	0		

## History of the catch and landings

**Table 5** Cod in NAFO divisions 1A–1E, offshore. Catch distribution by fleet in 2018 as estimated by ICES. All weights are in tonnes.

Catch (2018)	Landings		Discards
4187	Trawl 61%	Longline 39%	Discarding is negligible
	4187		

**Table 6** Cod in NAFO divisions 1A–1E, offshore. History of commercial catch and landings; All weights are in tonnes.

Year	Catches	Year	Catches	Year	Catches
1952	117 126	1979	60 635	2006	0
1953	180 220	1980	14 705	2007	466
1954	266 682	1981	13 498	2008	549
1955	241 499	1982	29 621	2009	6
1956	296 315	1983	23 703	2010	2
1957	225 836	1984	10 374	2011	8
1958	258 062	1985	3 360	2012	332
1959	191 343	1986	982	2013	479
1960	200 522	1987	3 787	2014	116
1961	293 104	1988	35 931	2015	4 860
1962	400 719	1989	59 165	2016	3 740
1963	381 917	1990	27 151	2017	3 025
1964	307 878	1991	104	2018	4 187
1965	321 829	1992	0		
1966	313 044	1993	0		
1967	385 949	1994	0		
1968	350 870	1995	0		
1969	179 055	1996	0		
1970	78 775	1997	0		
1971	80 501	1998	0		
1972	90 410	1999	0		

Year	Catches	Year	Catches	Year	Catches
1973	50 347	2000	0		
1974	37 999	2001	0		
1975	38 188	2002	0		
1976	25 215	2003	0		
1977	53 546	2004	8		
1978	51 760	2005	1		

### Summary of the assessment

**Table 7** Cod in NAFO divisions 1A–1E, offshore. Assessment summary. Weights are in tonnes. Confidence limits are one standard deviation (SD).

Year	Relative Biomass Index (Greenland Survey)	Relative High	Relative Low	Catches	Relative Biomass Index (German Survey)	Relative High	Relative Low
1982				29621	1.483	2.191	0.774
1983				23703	0.835	1.115	0.554
1984				10374	0.241	0.391	0.091
1985				3360	0.384	0.88	-0.112
1986				982	0.817	1.195	0.438
1987				3787	8.149	16.309	-0.01
1988				35931	8.093	14.289	1.896
1989				59165	3.545	5.053	2.037
1990				27151	0.163	0.299	0.027
1991				104	0.029	0.044	0.015
1992	0.021			0	0.006	0.009	0.004
1993	0.0150			0	0.006	0.007	0.004
1994	0.0040			0	0.002	0.002	0.001
1995	0.0120			0	0.001	0.001	0.001
1996	0.0050			0	0.003	0.003	0.002
1997	0.0040			0	0.002	0.003	0.001
1998	0.0080			0	0.001	0.002	0.001
1999	0.0060			0	0.003	0.004	0.001
2000	0.030			0	0.008	0.011	0.005
2001	0.049			0	0.033	0.066	0
2002	0.138			0	0.007	0.01	0.004
2003	0.125			0	0.025	0.037	0.012
2004	0.167			8	0.036	0.045	0.026
2005	0.25	0.31	0.182	1	0.073	0.102	0.044
2006	0.55	0.90	0.198	0	1.329	2.754	-0.096
2007	0.34	0.45	0.23	466	0.296	0.501	0.091
2008	0.67	0.86	0.48	549	0.352	0.725	-0.021
2009	0.24	0.28	0.21	6	0.031	0.038	0.024
2010	0.42	0.51	0.32	2	0.182	0.265	0.099
2011	1.34	1.52	1.15	8	0.042	0.059	0.026
2012	1.60	2.7	0.50	332	1.814	2.786	0.841
2013	2.7	4.1	1.26	479	0.916	1.429	0.404
2014	6.6	10.9	2.4	116	1.441	2.734	0.148
2015	7.9	10.7	5.1	4860	3.655	6.617	0.693
2016	1.04	1.37	0.70	3740			
2017	1.96	2.9	1.00	3025			
2018	0.83	1.00	0.66	4187			

## Sources and references

- ICES. 2011. Cod in ICES Subarea XIV and NAFO Subarea 1 (Greenland cod). *In* Report of the ICES Advisory Committee, 2011. ICES Advice 2011, Book 2, Section 2.4.1. <https://doi.org/10.17895/ices.advice.5260>.
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