

Cod (*Gadus morhua*) in NAFO divisions 1.A–E, offshore (West Greenland)

ICES stock advice

ICES advises that when the precautionary approach is applied, there should be zero catch in each of the years 2018 and 2019.

Stock development over time

After being historically high in the 1960s, catches decreased sharply in 1969–1970 and the fishery ceased in 1991. Since then, no fishery took place until 2015. Survey indices have increased in the last decade, but the Greenland survey declined sharply in 2016. The increase was partly driven by juveniles from other cod stocks using the area as nursery grounds.

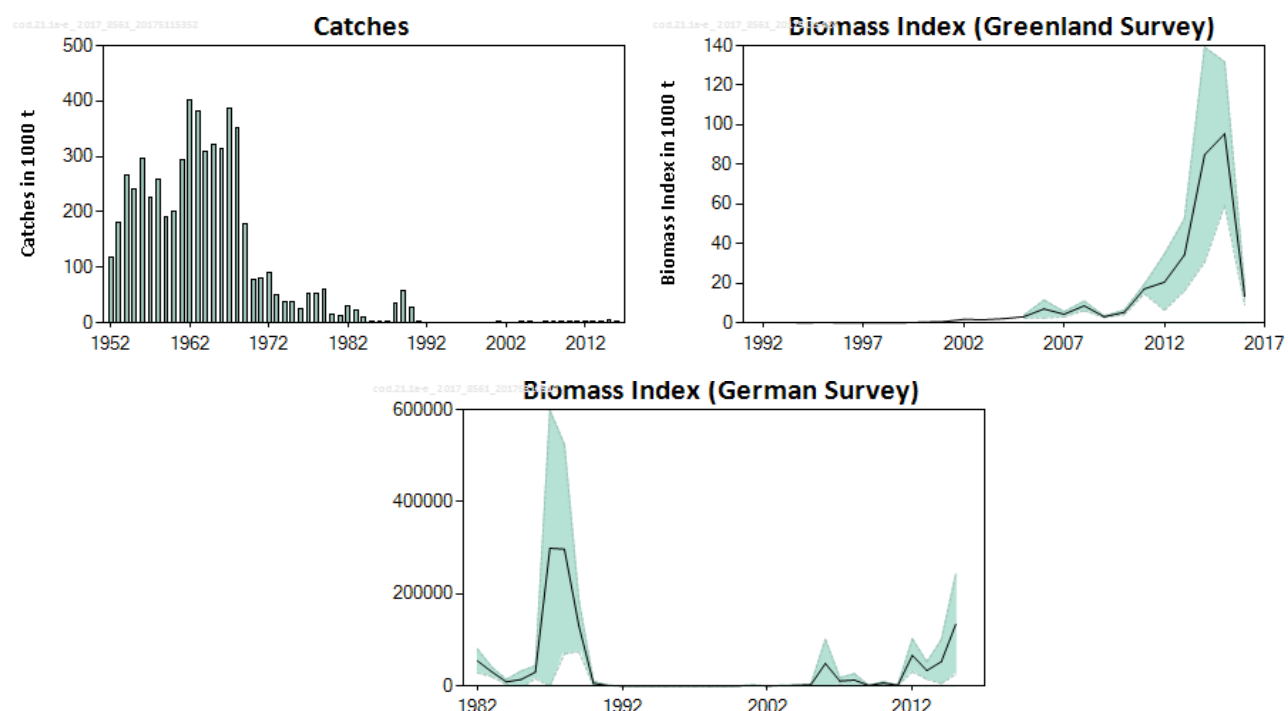


Figure 1 Cod in NAFO divisions 1.A–E, offshore. Upper left: Catches in thousand tonnes. Upper right: Greenland survey biomass index with one standard deviation. Bottom left: German survey biomass index with one standard deviation. There was no German survey of offshore west Greenland in 2016.

Stock and exploitation status

Table 1 Cod in NAFO divisions 1.A–E, offshore. State of the stock and fishery relative to reference points (ICES, 2017).

		Fishing pressure				Stock size				
		2014	2015	2016		2014	2015	2016		
Maximum sustainable yield	F _{MSY}	?	?	?	Undefined	MSY B _{trigger}	?	?	?	Undefined
Precautionary approach	F _{pa} ,F _{lim}	?	?	?	Undefined	B _{pa} ,B _{lim}	?	?	?	Undefined
Management plan	F _{MGT}	—	—	—	Not applicable	B _{MGT}	—	—	—	Not applicable
Qualitative evaluation	-	?	?	?	Undefined	-	↗	↗	↘	Decreasing

Catch options

New survey data reinforce the previous perception that the stock biomass is currently very low compared to historic levels. ICES is not able to identify catch levels other than zero that are likely to correspond to rebuilding of cod in this area. Therefore, ICES advises that when the precautionary approach is applied, there should be zero catch in each of the years 2018 and 2019.

Basis of the advice

Table 3 Cod in NAFO divisions 1.A–E, offshore. The basis of the advice.

Advice basis	Precautionary approach
Management plan	Greenland has a management plan. It has not been evaluated by ICES.

Quality of the assessment

Surveys are believed to be indicative of stock trends. The areas covered in the surveys are 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.

Issues relevant for the advice

The age structure observed in survey data indicates that the abundance of adult cod remains low. 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 TACs have exceeded the ICES advice.

Reference points

No reference points have been defined for this stock.

Basis of the assessment

Table 5 Cod in NAFO divisions 1.A–E, offshore. Basis of assessment and advice.

ICES stock data category	3 (ICES, 2016).
Assessment type	Survey-trends based assessment (ICES, 2017)
Input data	German and Greenland survey indices and fishery catch
Discards and bycatch	Discarding is considered negligible. Bycatch is included.
Indicators	None
Other information	None
Working group	North-Western Working Group (NWWG)

Information from stakeholders

There is no available information.

History of the advice, catch, and management

Table 6 Cod in NAFO divisions 1.A–E, 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 1.F and ICES Subarea 14 (ICES, 2011). The advice for 2012-2015 was combined advice and TAC for offshore cod in NAFO Division 1.F and ICES Subarea 14 (ICES, 2014).

Year	ICES advice procedure	ICES advice	TAC	ICES estimated catch
2004	Precautionary approach	0	5000	8
2005	Precautionary approach	0	5000	1
2006	Precautionary approach	0	5000	0
2007	Precautionary approach	0	5000	466
2008	Precautionary approach	0	15 000	549
2009	Precautionary approach	0	0	6
2010	Precautionary approach	0	0	2
2011	Precautionary approach	0	5000	8
2012	Precautionary approach	0	5500	332
2013	Precautionary approach	0	6500	479
2014	Precautionary approach	0	0	116
2015	Precautionary approach	0	5000	4860
2016	Precautionary approach	0	5000	3740
2017	Precautionary approach	0	5000	
2018	Precautionary approach	0		
2019	Precautionary approach	0		

History of the catch and landings

Table 7 Cod in NAFO divisions 1.A–E, offshore. Catch distribution by fleet in 2016 as estimated by ICES.

Catch (2016)	Landings		Discards
3740 tonnes	Trawl 39%	Longline 61%	Negligible
	3740 tonnes		

Table 8 Cod in NAFO divisions 1.A–E, 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	3360	2012	332
1959	191 343	1986	982	2013	479
1960	200 522	1987	3787	2014	116
1961	293 104	1988	35 931	2015	4860
1962	400 719	1989	59 165	2016	3740
1963	381 917	1990	27 151		
1964	307 878	1991	104		
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		

Year	Catches	Year	Catches	Year	Catches
1971	80 501	1998	0		
1972	90 410	1999	0		
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 9 Cod in NAFO divisions 1.A–E, offshore. Assessment summary. Weights are in tonnes. Confidence limits are one standard deviation (SD).

Year	Biomass index (Greenland survey)	Greenland survey + 1 SD	Greenland survey - 1 SD	Biomass index (German survey)	German survey + 1 SD	German survey - 1 SD
	tonnes			tonnes		
1982				54 413	80 427	28 399
1983				30 632	40 927	20 337
1984				8839	14 346	3332
1985				14 088	32 297	0
1986				29 967	43 852	16 082
1987				299 075	598 534	0
1988				297 002	524 430	69 574
1989				130 104	185 438	74 770
1990				5975	10 961	989
1991				1070	1599	541
1992	270			234	331	137
1993	195			212	265	159
1994	51			61	78	44
1995	157			34	46	22
1996	65			99	128	70
1997	55			85	128	42
1998	99			47	72	22
1999	76			104	161	47
2000	388			297	414	180
2001	627			1209	2421	0
2002	1767			248	356	140
2003	1602			910	1371	449
2004	2136			1307	1649	965
2005	3155	3975	2335	2671	3728	1614
2006	7046	11 555	2537	48 766	101 064	0
2007	4355	5705	3005	10 874	18 398	3350
2008	8625	11 040	6210	12 925	26 611	0
2009	3092	3525	2659	1146	1401	891
2010	5319	6489	4149	6678	9735	3621
2011	17 140	19 540	14 740	1551	2153	949
2012	20 562	34 750	6374	66 561	102 254	30 868
2013	34 345	52 548	16 142	33 626	52 427	14 825
2014	84 897	139 231	30 563	52 872	100 323	5421
2015	95 487	131 772	59 202	134 136	242 853	25 419
2016	13 290	17 543	9037			

Sources and references

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