

Cod (*Gadus morhua*) in NAFO Subarea 1, inshore (West Greenland cod)

ICES stock advice

Please note: This advice was updated in June 2018 ([ICES, 2018](#))

ICES advises that when the precautionary approach is applied, catches in 2018 should be no more than 13 952 tonnes.

Stock development over time

The stock biomass index suggests that the overall stock has fluctuated without trend at a high level in recent years. Recruitment has been around average for the past three years following record-high values in 2011-2013.

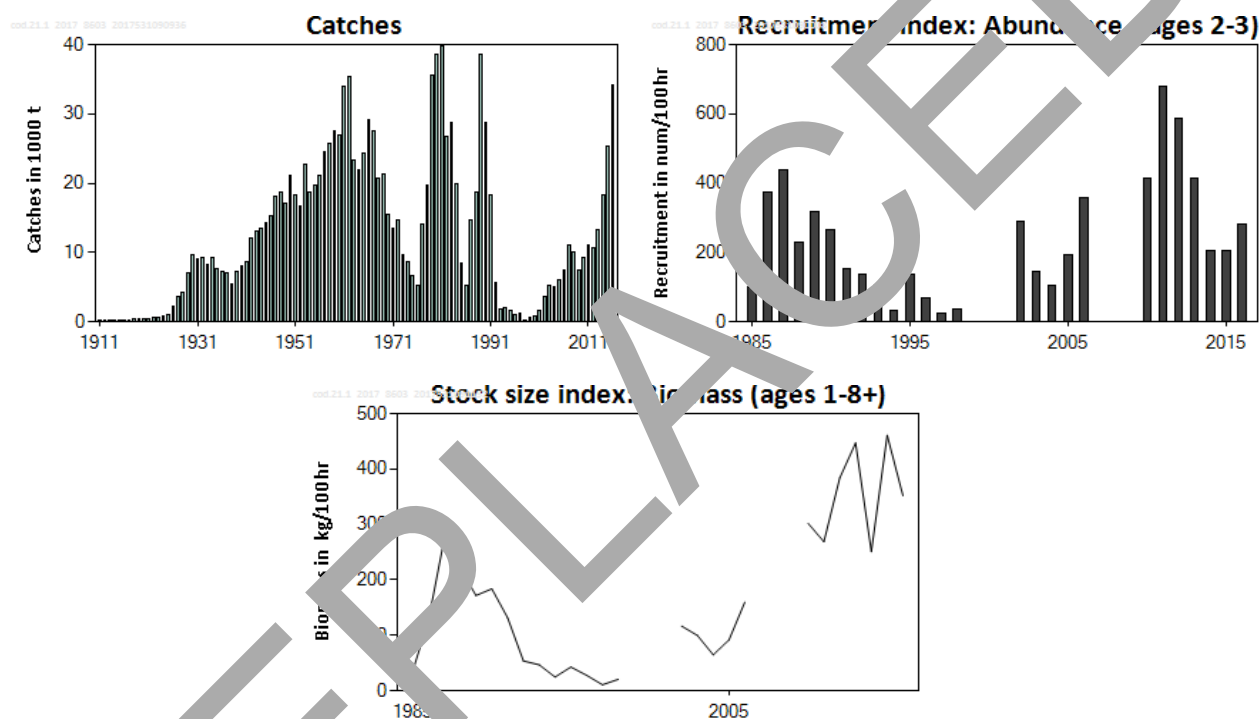





Figure 1 Cod in NAFO Subarea 1, inshore. Summary of the stock assessment. Catch, recruitment index from the gillnet survey (abundance, number/100 hours, ages 2 and 3), and the stock size index from the gillnet survey (kg/100 hours, for ages 1-8+).

Stock and exploitation

Table 1 Cod in NAFO Subarea 1, inshore. State of the stock and fishery relative to reference points.

		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	-	?	?	?	Unknown	-				Stagnating without trend

Catch options

The ICES framework for category 3 stocks was applied (ICES, 2012). The commercial catches and survey indices (biomass) were used as indicators of stock development. The advice is based on a comparison of the two latest biomass index values (index A) with the three preceding biomass index values (index B), multiplied by the last year's catch advice.

The index has shown a four-fold increase over the last decade and remains at a high level. Therefore, the precautionary buffer was not applied.

Discarding is considered to be negligible.

Table 2 Cod in NAFO Subarea 1, inshore. The basis for the catch options.

Index A (2015, 2016)		407
Index B (2012, 2013, 2014)		361
Index ratio (A/B)		1.13
Uncertainty cap	Not applied	
Advised catch for 2017		12 379 t
Discard rate		Negligible
Precautionary buffer	Not Applied	
Catch advice 2018 (= Advised catch for 2017 × Index ratio)		13 952 t

* Note: The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

Basis of the advice

Table 3 Cod in NAFO Subarea 1, inshore. The basis of the advice.

Advice basis	Precautionary approach
Management plan	There is no management plan for this stock.

Quality of the assessment

The assessment is uncertain due to gear selectivity resulting in incomplete survey coverage of the adult stock. Furthermore, the stock and the fishery appear to be expanding to the northern part of the area.

Exploratory analytical assessments (SAM) showed promise and should be developed as a basis for the advice following a benchmark process.

Issues relevant for the advice

Catches have risen since 2000 and are in 2016 at their highest level in 25 years.

The fishery in this region is a mixed-stock fishery which includes other Greenland cod stocks (south and east Greenland cod, as well as offshore west Greenland cod) and Iceland cod. No operational procedure exists to evaluate the proportional contribution in the catches. In addition, a number of stocks are distributed over this inshore area and some components of the stock complex may be susceptible to local depletion. There may be a requirement for tailored local spatial management. To provide local management an operational monitoring procedure for the stock complex is required.

Reference points

No reference points are defined for this stock.

Basis of the assessment

Table 5 Cod in NAFO Subarea 1, inshore. Basis of assessment and advice.

ICES stock data category	3 (ICES, 2016)
Assessment type	Survey trends-based assessment (ICES, 2017)
Input data	Commercial catches and survey indices from WGRL-Gill (NAFO 1, D, weight-at-age, catch-at-age)
Discards and bycatch	Not included, considered negligible
Indicators	Commercial fishery catch curves, groundfish trawl survey and gillnet survey for Greenland halibut
Other information	Benchmarked in 2015 (WKICE; ICES, 2015)
Working group	North-Western Working Group (NWWG)

Information from stakeholders

The industry supports the expansion of an operational monitoring procedure for the stock complex.

History of the advice, catch, and management

Table 6 Cod in NAFO Subarea 1, inshore. ICES advice and catch. All weights are in tonnes.

Year	ICES advice for NAFO Subarea 1	Predicted catch corresponding to advice (t)	TAC (t)	ICES catch (t)
2012			15000	10672
2013	Mean catch recent 10 years	8000	13500	13202
2014	20% increase in catch (relative to 10 year average)	< 12379	18500	18331
2015	Same basis as 2014	< 12379	27500	25272
2016	Same advice as 2014	< 12379	35400	34204
2017	Precautionary approach (same advice value as for 2014-2016)	< 12379	36500	
2018	Precautionary approach	< 13952		

History of the catch and landings

Table 7 Cod in NAFO Subarea 1, inshore. Catch distribution by fleet in 2016 as estimated by ICES.

Catch (2016)	Landings				Discards
34 204 tonnes	Poundnet 62%	Jig 14%	Gillnets 13%	Longline 11%	Negligible
	34 204 tonnes				

Table 8 Cod in NAFO Subarea 1, inshore. Total catch as estimated by ICES.

Year	Catch (t)	Year	Catch (t)	Year	Catch (t)	Year	Catch (t)	Year	Catch (t)	Year	Catch (t)
1911	19	1931	9054	1951	18200	1971	13506	1991	18312	2011	11007
1912	5	1932	9232	1952	16726	1972	14648	1992	5727	2012	10672
1913	66	1933	8238	1953	22651	1973	9622	1993	1926	2013	13202
1914	60	1934	9168	1954	18698	1974	8638	1994	2117	2014	18331
1915	98	1935	7576	1955	19787	1975	6557	1995	1701	2015	25272
1916	193	1936	7174	1956	21028	1976	5174	1996	944	2016	34204
1917	154	1937	6961	1957	24593	1977	13999	1997	1186		
1918	441	1938	5492	1958	25802	1978	19679	1998	322		
1919	501	1939	7161	1959	27577	1979	35590	1999	613		
1920	454	1940	8026	1960	27009	1980	38571	2000	764		
1921	508	1941	8622	1961	33965	1981	39703	2001	1680		
1922	602	1942	12027	1962	35380	1982	26664	2002	322		
1923	690	1943	13026	1963	23269	1983	28742	2003	521		
1924	843	1944	13385	1964	21986	1984	1995	2004	4948		
1925	1024	1945	14289	1965	24322	1985	8441	2005	603		
1926	2224	1946	15262	1966	29046	1986	302	2006	388		
1927	3570	1947	18029	1967	27524	1987	14604	2007	11050		
1928	4163	1948	18675	1968	20716	1988	18791	2008	10005		
1929	7080	1949	17050	1969	21236	1989	38529	2009	7534		
1930	9658	1950	21173	1970	15563	1990	28799	2010	9268		

Summary of the assessment

Table 9 Cod in NAFO Subarea 1, inshore. Assessment summary.

Year	Biomass Index (ages 1-8+)	Recruitment index (gillnet survey ages 2+3)
	Kg/1000	No./100hr
1985	36	100
1986	128	372
1987	275	439
1988	221	231
1989	172	318
1990	184	266
1991	132	154
1992	54	136
1993	47	105
1994	25	33
1995	43	139
1996	28	70
1997	11	26
1998	21	38
1999		
2000		
2001		
2002	117	290
2003	100	147
2004	65	106
2005	92	192
2006	160	359
2007		

Year	Biomass Index (ages 1-8+)	Recruitment index (gillnet survey ages 2+3)
	Kg/100hr	No./100hr
2008		
2009		
2010	302	415
2011	269	680
2012	384	586
2013	447	415
2014	251	206
2015	461	204
2016	352	280

Sources and references

- ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM:68. 42 pp.
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