

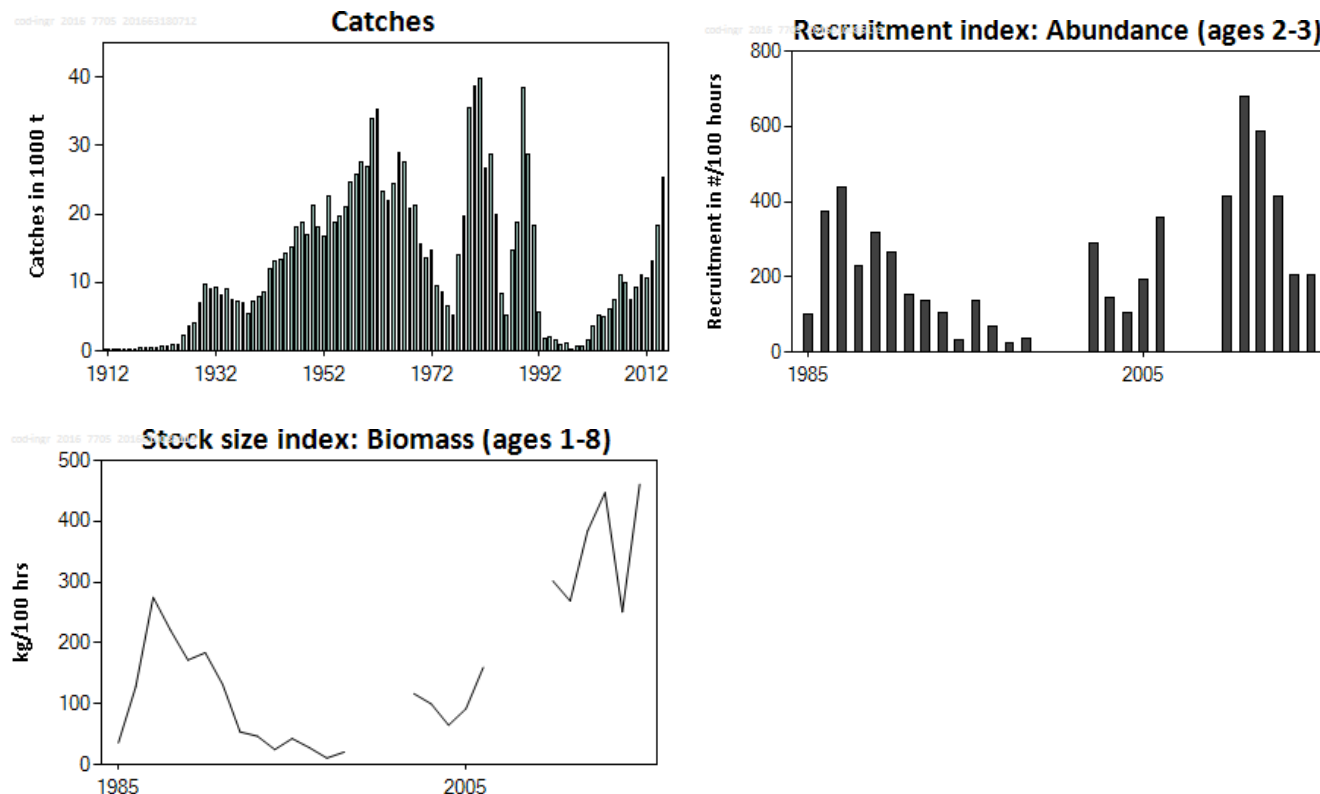
### 2.3.4 Cod (*Gadus morhua*) in NAFO Subarea 1, inshore (West Greenland cod)

#### ICES stock advice

ICES advises that when the precautionary approach is applied, catches in 2017 should be no more than 12 379 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 below average for the past two years following record-high values in 2011 and 2012.



**Figure 2.3.4.1** Cod in NAFO Subarea 1, inshore. Catches, recruitment index from the gillnet survey (abundance in numbers/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 status

**Table 2.3.4.1** Cod in NAFO Subarea 1, inshore. State of the stock and fishery relative to reference points.

		Fishing pressure				Stock size				
		2013	2014	2015		2013	2014	2015		
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		$SSB_{MGT}$	-	-	Not applicable	
Qualitative evaluation	-	?	?	?	Unknown	-	↗	↘	↗	Fluctuating without trend

### Catch options

The ICES framework for category 3 stocks was applied (ICES, 2012). The commercial catches and survey indices were used as indicators of stock development. New survey and catch data available do not change the perception of the stock (ICES, 2016a). Therefore, the advice for 2017 is the same advice as for 2014, 2015, and 2016.

Discarding is considered to be negligible.

### Basis of the advice

**Table 2.3.4.2** 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 incomplete survey coverage of the adult stock. Furthermore, the stock and the fishery appear to be expanding to the northern part of the area.

### Issues relevant for the advice

Catches have risen since 2000 and are in 2015 at their highest level in 25 years.

The fishery in this region is a mixed-stock fishery including 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, this inshore area comprises a stock complex which may also be susceptible to local depletion.

The TACs have historically exceeded the ICES advice.

### Reference points

No reference points are defined for this stock.

### Basis of the assessment

**Table 2.3.4.3** Cod in NAFO Subarea 1, inshore. The basis of the assessment.

ICES stock data category	3 ( <a href="#">ICES, 2016b</a> )
Assessment type	Survey trends-based assessment (ICES, 2016a)
Input data	Commercial catches and survey indices from WGRL-Gill (NAFO 1B+1D, 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 ( <a href="#">NWWG</a> )

### Information from stakeholders

There is no available information.

### History of the advice, catch, and management

**Table 2.3.4.4** Cod in NAFO Subarea 1, inshore. History of ICES advice, the agreed TAC, and ICES estimates of catches.

Year	ICES advice for NAFO Subarea 1	Predicted catch corresponding to advice (kt)	TAC (kt)	Catch (kt)
2012			15	10.6
2013	Mean catch recent 10 years	8.000	13.5	13.2
2014	20% increase in catch (relative to 3-year average)	≤ 12.379	18.5	18.3
2015	Same basis as 2014*	≤ 12.379	27.5	25.3
2016	Same advice as in 2014	≤ 12.379	26	
2017	Precautionary approach (same advice value as for 2014–2016)	≤ 12.379		

\* Predicted catch of 12.063 kt was revised to 12.379 kt.

### History of catch and landings

**Table 2.3.4.5** Cod in NAFO Subarea 1, inshore. Catch distribution by fleet in 2015 as estimated by ICES.

Total catch (2015)						Commercial landings				Commercial discards	
25272 t		50% poundnets		22% handlines/jigs		15% gillnets		13% longlines		Negligible	
		25272 t									

**Table 2.3.4.6** Cod in NAFO Subarea 1, inshore. History of commercial catch. Weights in tonnes.

Year	Total catch
1924	843
1925	1024
1926	2224
1927	3570
1928	4163
1929	7080
1930	9658
1931	9054
1932	9232
1933	8238
1934	9468
1935	7526
1936	7174
1937	6961
1938	5492
1939	7161
1940	8026
1941	8622
1942	12027
1943	13026
1944	13385
1945	14289
1946	15262
1947	18029
1948	18675
1949	17050
1950	21173
1951	18200
1952	16726

Year	Total catch
1953	22651
1954	18698
1955	19787
1956	21028
1957	24593
1958	25802
1959	27577
1960	27099
1961	33965
1962	35380
1963	23269
1964	21986
1965	24322
1966	29076
1967	27524
1968	20587
1969	21492
1970	15613
1971	13506
1972	14645
1973	9622
1974	8638
1975	6557
1976	5174
1977	13999
1978	19679
1979	35590
1980	38571
1981	39703
1982	26664
1983	28652
1984	19958
1985	8441
1986	5302
1987	18486
1988	18791
1989	38529
1990	28799
1991	18311
1992	5723
1993	1924
1994	2115
1995	1710
1996	948
1997	1186
1998	323
1999	622
2000	764
2001	1680
2002	3662

Year	Total catch
2003	5215
2004	4948
2005	6043
2006	7388
2007	11693
2008	12270
2009	7672
2010	9270
2011	11007
2012	10673
2013	13202
2014	18331
2015	25272

### Summary of the assessment

**Table 2.3.4.7** Cod in NAFO Subarea 1, inshore. Summary of the assessment. Recruitment index from the survey (ages 2–3) and stock biomass index from the survey (ages 1–8+).

Year	Recruitment index: abundance from survey ages 2–3 (numbers caught/100 hrs)	Stock size index: biomass from survey ages 1–8+ (kg/100 hrs)
1985	100	36
1986	372	128
1987	439	275
1988	231	221
1989	318	172
1990	266	184
1991	154	132
1992	136	54
1993	105	47
1994	33	25
1995	139	43
1996	70	28
1997	26	11
1998	38	21
1999*		
2000*		
2001*		
2002	290	117
2003	147	100
2004	106	65
2005	192	92
2006	359	160
2007		
2008		
2009		
2010	415	302
2011	680	269
2012	586	384

Year	Recruitment index: abundance from survey ages 2–3 (numbers caught/100 hrs)	Stock size index: biomass from survey ages 1–8+ (kg/100 hrs)
2013	415	447
2014	206	251
2015	204	461

\* Data are not available.

### 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.
- ICES. 2015. Report of the Benchmark Workshop on Icelandic Stocks (WKICE), 26–30 January 2015, Copenhagen, Denmark. ICES CM 2015/ACOM:31. 325 pp.
- ICES. 2016a. Report of the North-Western Working Group (NWWG), 27 April–4 May, 2016, ICES Headquarters, Copenhagen. ICES CM 2016/ACOM:08.
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