

## Cod (*Gadus morhua*) in Subdivision 5.b.1 (Faroe Plateau)

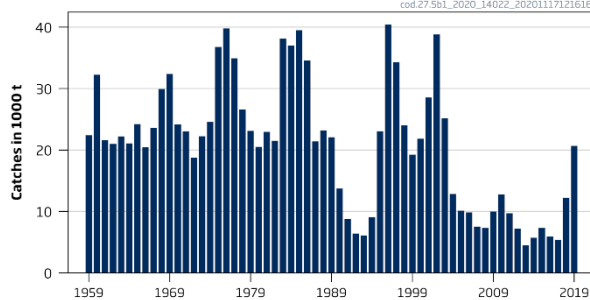
### ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2021 should be no more than 6247 tonnes. ICES is not in a position to advise on the corresponding level of fishing effort.

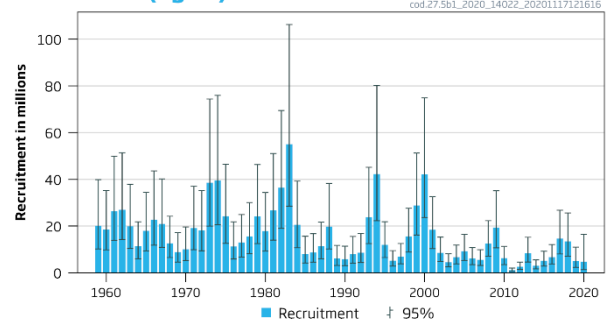
Note: This advice sheet is abbreviated due to the COVID-19 disruption. The previous advice issued for 2020 is attached as Annex 1.

### Stock development over time

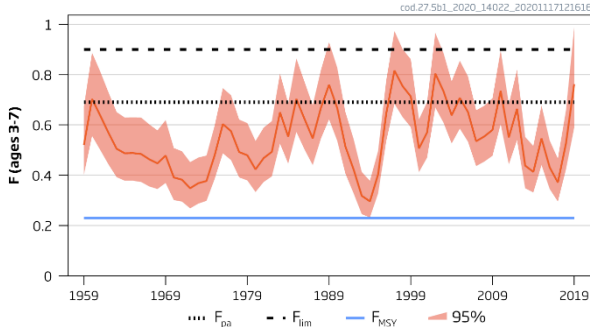
#### Catches



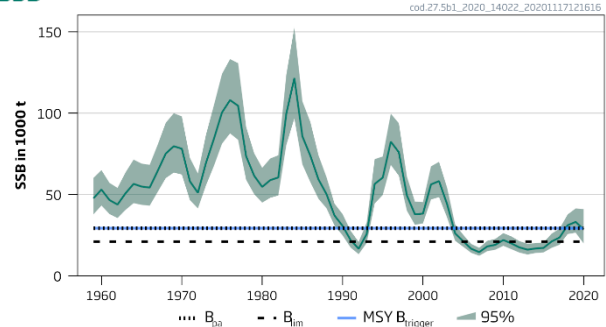
#### Recruitment (age 1)



#### F



#### SSB



**Figure 1** Cod in Subdivision 5.b.1. Summary of the stock assessment with 95% confidence intervals. Catches, recruitment (R), fishing mortality (F), and spawning-stock biomass (SSB).

### Stock and exploitation status

**Table 1** Cod in Subdivision 5.b.1. State of the stock and fishery relative to reference points.

		Fishing pressure			Stock size					
		2017	2018	2019	2018	2019	2020			
Maximum sustainable yield	$F_{MSY}$	✘	✘	✘	Above	$MSY B_{trigger}$	✔	✔	✘	Below trigger
Precautionary approach	$F_{pa}, F_{lim}$	✔	✔	⚠	Increased risk	$B_{pa}, B_{lim}$	✔	✔	⚠	Increased risk
Management plan	$F_{MGT}$	—	—	—	Not applicable	$B_{MGT}$	—	—	—	Not applicable

**Catch scenarios**

**Table 2** Cod in Subdivision 5.b.1. Assumptions made for the interim year and in the forecast. All weights are in tonnes.

Variable	Value	Notes
F <sub>ages 3-7</sub> (2020)	0.48	Based on catch estimate of 10600 tonnes in 2020.
SSB <sub>2021</sub>	33111	Based on F = 0.48; in tonnes.
R <sub>age 1</sub> (2021)	6279	Median of resampled estimates from 2010 to 2019; in thousands.
Landings (2020)	10600	Catch estimate for 2020 based on catch statistics to the end of September adjusted for the entire year; in tonnes.
Discards (2020)	0	Discarding is considered negligible; in tonnes.

**Table 3** Cod in Subdivision 5.b.1. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2021)	F <sub>total</sub> (2021)	SSB <sub>2022</sub>	% SSB change *	% Advice change **
ICES advice basis					
MSY approach: F <sub>MSY</sub>	6247	0.23	37415	+13	-47
Other scenarios					
F = 0	0	0	49910	+51	-100
F = F <sub>2020</sub>	11366	0.48	31479	-5	-3
F = F <sub>pa</sub>	15162	0.69	26798	-19	+30
F = F <sub>lim</sub>	18099	0.90	23354	-29	+55

\* SSB<sub>2022</sub> relative to SSB<sub>2021</sub> (33 111 tonnes).

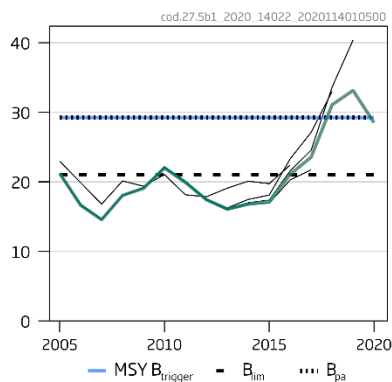
\*\*The advice value for 2021 relative to the advice value for 2020 as issued in 2019 (11 679 tonnes).

The catch advice for 2021 has decreased compared to the advice for 2020; this is due to a substantial downward revision of the spawning-stock biomass (SSB).

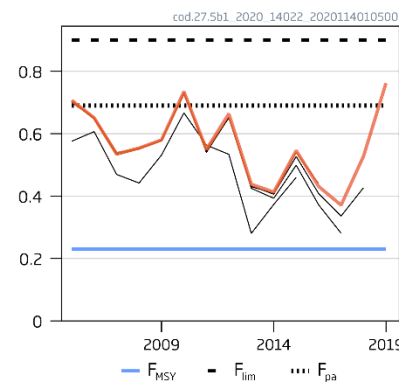
**Quality of the assessment**

With the addition of the 2020 survey information, the 2018 and 2019 recruitment estimates have been revised downwards contributing to the downward revision of SSB.

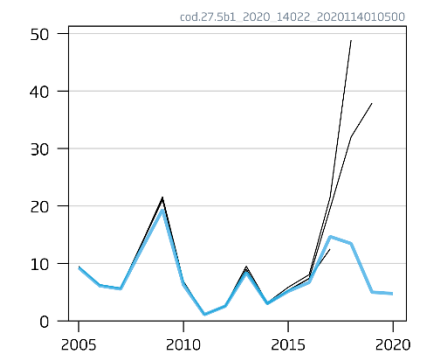
**SSB (1000 t)**



**F (ages 3-7)**



**Rec (age 1; Millions)**



**Figure 2** Cod in Subdivision 5.b.1. Historical assessment results. Results of the last five assessments are plotted, with the solid coloured line representing the current assessment.

## History of the advice, catch, and management

**Table 4** Cod in Subdivision 5.b.1. ICES advice and catch. All weights are in tonnes.

Fishing year	ICES advice	Catch corresponding to advice	Agreed TAC ***	ICES catch
1987	No increase in F	< 31000		21391
1988	No increase in F (revised estimate)	< 29000 (23000)		23182
1989	No increase in F	< 19000		22068
1990	No increase in F	< 20000		13692
1991	TAC	< 16000		8750
1992	No increase in F	< 20000		6396
1993	No fishing	0		6107
1994	No fishing	0	8500/12500 ***	9046
1995	No fishing	0	12500 *	23045
1996	F at lowest possible level	-	20000 **	40422
1997	80% of F(95)	< 24000		34304
1998	30% reduction in effort from 1996/97	-		24005
1999	F less than proposed $F_{pa}$ (0.35)	< 19000		19245
2000	F less than proposed $F_{pa}$ (0.35)	< 20000		21833
2001	F less than proposed $F_{pa}$ (0.35)	< 16000		28577
2002	75% of F(2000)	< 22000		38834
2003	75% of F(2001)	< 32000		25167
2004	25% reduction in effort	-		12840
2005	Rebuilding plan involving large reduction	-		10119
2006	Rebuilding plan involving large reduction	-		9844
2007	Rebuilding plan involving large reduction in effort	-		7511
2008	No fishing; development of a rebuilding plan	0		7315
2009	No fishing; development of a rebuilding plan	0		9979
2010	No fishing; development of a rebuilding plan	0		12762
2011	Reduce F to below $F_{pa}$	< 16000		9692
2012	MSY framework, reduce F by 30%	< 10000		7204
2013	MSY approach, $F < 0.20$	< 4800		4473
2014	MSY approach, reduce F by 69%	< 3600		5711
2015	MSY approach, reduce F by 23%	< 4500		7329
2016	Lowest possible level (LPL) and develop a mixed-fishery management plan	-		5876
2017	MSY approach ( $F \leq 0.16$ )	$\leq 2800$		5360
2018	MSY approach ( $F \leq 0.22$ )	$\leq 4579$		12214
2019	MSY approach	$\leq 9354$		20670
2020	MSY approach	$\leq 11679$		
2021	MSY approach	$\leq 6247$		

\* From 1 September in the quota year to 31 August the following year.

\*\* The TAC was increased during the quota year.

\*\*\* Not applicable since 1997.

Summary of the assessment

**Table 5** Cod in Subdivision 5.b.1. Assessment summary.

Year	Recruitment			SSB			Catch	F		
	Age 1	97.5 percentile	2.5 percentile	SSB	97.5 percentile	2.5 percentile		Mean F <sub>ages 3-7</sub>	97.5 percentile	2.5 percentile
	Thousands			Tonnes			Tonnes			
1959	20144	39870	10178	47632	60120	37738	22415	0.52	0.67	0.40
1960	18570	35237	9786	52981	64978	43200	32255	0.70	0.89	0.56
1961	26287	49877	13855	46563	57118	37959	21598	0.64	0.81	0.50
1962	26960	51337	14158	43803	54043	35503	20967	0.57	0.73	0.44
1963	19898	37896	10448	50770	63587	40537	22215	0.51	0.65	0.39
1964	11375	21819	5930	56504	71445	44688	21078	0.49	0.63	0.38
1965	17954	34399	9370	54851	68963	43627	24212	0.49	0.63	0.38
1966	22719	43637	11828	54237	68225	43117	20418	0.48	0.63	0.37
1967	20903	40169	10878	64503	80632	51600	23562	0.46	0.60	0.36
1968	12570	24217	6525	75163	94076	60053	29930	0.45	0.58	0.35
1969	8875	17193	4581	79658	99965	63476	32371	0.48	0.62	0.37
1970	10062	19585	5169	78124	98024	62265	24183	0.39	0.51	0.30
1971	19117	37081	9856	58112	72521	46565	23010	0.38	0.50	0.30
1972	18178	35110	9412	51023	62854	41420	18727	0.35	0.45	0.27
1973	38547	74382	19977	69347	86623	55517	22228	0.37	0.47	0.29
1974	39512	75969	20551	84323	105082	67665	24581	0.38	0.48	0.30
1975	24230	46498	12626	100446	124183	81246	36775	0.48	0.60	0.39
1976	11303	21810	5858	108018	133231	87577	39799	0.60	0.75	0.49
1977	12961	24926	6739	104531	130739	83577	34927	0.57	0.72	0.46
1978	15615	30042	8117	73510	91557	59021	26585	0.49	0.62	0.39
1979	24067	46329	12502	61493	75331	50198	23112	0.48	0.61	0.38
1980	17895	34355	9322	54657	66381	45003	20513	0.42	0.54	0.33
1981	26714	51051	13979	58812	72110	47966	22963	0.47	0.59	0.37
1982	36377	69476	19047	60465	74082	49351	21489	0.49	0.62	0.40
1983	55032	106286	28495	99677	123583	80395	38133	0.65	0.80	0.53
1984	20556	39287	10756	121553	152653	96788	36979	0.55	0.69	0.45
1985	8069	15610	4171	85733	107266	68523	39484	0.70	0.86	0.57
1986	8694	16695	4527	73679	94469	57464	34595	0.62	0.77	0.50
1987	11377	21683	5969	59253	74135	47359	21391	0.55	0.68	0.44
1988	19735	38232	10187	50210	60681	41546	23182	0.67	0.82	0.55
1989	6053	11719	3127	36997	44343	30868	22068	0.76	0.93	0.62
1990	5859	11357	3022	30697	37937	24839	13692	0.67	0.83	0.54
1991	7970	15566	4080	21924	27690	17359	8750	0.51	0.65	0.41
1992	8595	16773	4405	16624	20831	13267	6396	0.42	0.54	0.33
1993	23753	45151	12496	25681	32705	20166	6107	0.32	0.41	0.25
1994	42283	80147	22308	56479	71734	44468	9046	0.30	0.38	0.23
1995	11946	21861	6527	60395	73375	49712	23045	0.40	0.50	0.33
1996	5204	9464	2861	82440	99689	68176	40422	0.65	0.78	0.54
1997	6929	12541	3828	75959	93788	61519	34304	0.82	0.97	0.68
1998	15637	27621	8853	49422	61004	40039	24005	0.75	0.90	0.63
1999	28812	51253	16197	37804	45615	31330	19245	0.71	0.86	0.59
2000	42070	74926	23622	38225	45330	32234	21833	0.51	0.62	0.41
2001	18371	32560	10365	56177	67291	46900	28577	0.57	0.69	0.47
2002	8553	15224	4805	58224	70082	48371	38834	0.80	0.97	0.67

Year	Recruitment			SSB			Catch	F		
	Age 1	97.5 percentile	2.5 percentile	SSB	97.5 percentile	2.5 percentile		Mean F <sub>ages 3-7</sub>	97.5 percentile	2.5 percentile
	Thousands			Tonnes			Tonnes			
2003	4550	8117	2550	44056	54185	35821	25167	0.73	0.89	0.61
2004	6722	11881	3803	26113	31627	21560	12840	0.64	0.77	0.53
2005	9254	16358	5235	21235	25242	17864	10119	0.71	0.86	0.59
2006	6123	10818	3465	16631	19605	14108	9844	0.65	0.79	0.53
2007	5558	9853	3135	14547	17199	12305	7511	0.54	0.66	0.44
2008	12508	22334	7005	18049	21493	15157	7315	0.55	0.68	0.45
2009	19343	35066	10670	19056	22676	16014	9979	0.58	0.71	0.48
2010	6279	11283	3494	21990	26220	18443	12762	0.74	0.90	0.60
2011	1094	2000	599	19899	24210	16356	9692	0.55	0.68	0.44
2012	2575	4589	1444	17444	21319	14273	7205	0.66	0.82	0.54
2013	8390	15205	4629	16074	19723	13100	4473	0.44	0.55	0.35
2014	3019	5509	1655	16776	20075	14019	5711	0.41	0.52	0.33
2015	5150	9217	2878	17138	20419	14384	7329	0.55	0.68	0.44
2016	6695	12055	3718	21070	25855	17170	5876	0.43	0.54	0.35
2017	14667	26759	8040	23539	28979	19120	5360	0.37	0.47	0.30
2018	13455	25622	7066	31071	37669	25629	12214	0.53	0.66	0.42
2019	4999	10942	2284	33134	41417	26507	20670*	0.76	0.99	0.59
2020	4749	16539	1364	28507	41002	19820				

\* Preliminary.

## Sources and references

ICES. 2020. North-Western Working Group (NWWG). ICES Scientific Reports, 2:51. 431 pp. <http://doi.org/10.17895/ices.pub.6051>.

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