

Haddock (*Melanogrammus aeglefinus*) in Division 5.b (Faroes grounds)

ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2022 should be no more than 8639 tonnes. ICES is not in a position to advise on the corresponding level of fishing effort.

Stock development over time

ICES assesses that fishing pressure on the stock is above F_{MSY} and between F_{pa} and F_{lim} ; spawning-stock size is above MSY $B_{trigger}$, B_{pa} , and B_{lim} .

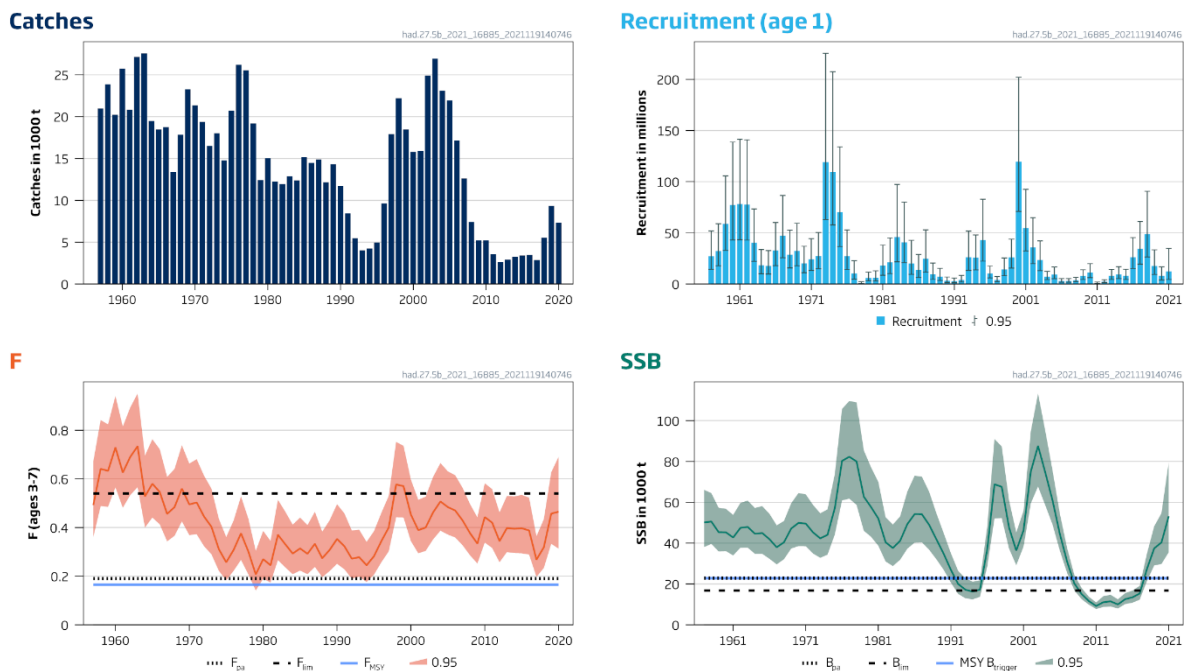


Figure 1 Haddock in Division 5.b (Faroes grounds). Summary of the stock assessment. Catches, recruitment, fishing mortality (F), and spawning-stock biomass (SSB).

Catch scenarios

Table 1 Haddock in Division 5.b (Faroes grounds). Assumptions made for the interim year and in the forecast.

Variable	Value	Notes
$F_{ages\ 3-7}$ (2021)	0.216	Based on catch estimate of 6 634 tonnes in 2021; tonnes
SSB (2022)	68 037	Based on $F = 0.216$; tonnes
$R_{age\ 1}$ (2022)	9297	Median of resampled estimates from 2000–2020; thousands
Landings (2021)	6634	Catch estimate for 2021 based on catch statistics to the end of September adjusted for the entire year; tonnes
Discards (2021)	0	Discard is considered negligible; tonnes

Table 2 Haddock in Division 5.b (Faroes grounds). Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2022)	F _{total} (2022)	SSB (2023)	% SSB change*	% advice change**
ICES advice basis					
MSY approach: F _{MSY}	8639	0.165	70 117	+3	-24
Other scenarios					
F = 0	0	0	82 255	+21	-100
F = F ₂₀₂₁	10 928	0.216	67 143	-1	-5
F = F _{pa}	9761	0.19	68 674	+1	-15
F = F _{lim}	22 946	0.54	53 762	-21	+101

* SSB (2023) relative to SSB (2022) (68 037 tonnes).

** The advice value for 2022 relative to the advice value for 2021 as issued in 2020 (11 440 tonnes).

The catch advice for 2022 has decreased compared to the advice for 2021; this is due to the downward revision of the spawning stock biomass in recent years.

Basis of the advice

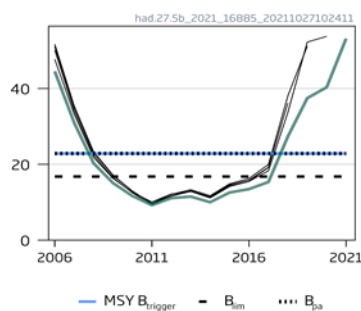
Table 3 Haddock in Division 5.b (Faroes grounds). The basis of the advice.

Advice basis	MSY approach
Management plan	A management plan (Anon., 2019) was implemented in 2021, but ICES has not been requested to evaluate it

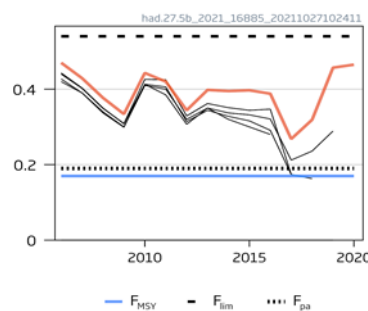
Quality of the assessment

The estimates of F in recent years have been revised upwards, and the estimates of SSB have been revised downwards compared to the assessment conducted in 2020.

SSB (1000 t)



F (ages 3-7)



Rec (age 1; Millions)

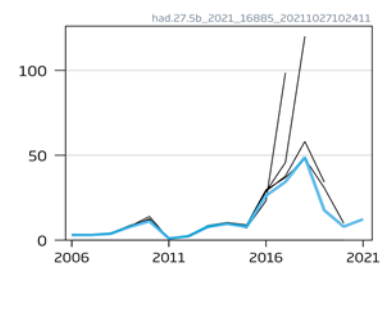


Figure 2 Haddock in Division 5.b (Faroes grounds). Historical assessment results. Results of the last five assessments are plotted, with the solid coloured line representing the current assessment.

Issues relevant for the advice

Faroe Plateau cod and Faroe haddock are caught in a mixed fishery. The application of the MSY approach implies reductions in fishing effort for both stocks in 2022 relative to recent years. However, Faroe Plateau cod is assessed to be in poorer state (below B_{lim} in 2021), and the MSY approach implies a much larger reduction in fishing effort for cod than for haddock.

In 2021 the Faroese authorities implemented a management plan (Anon., 2019) with a control rule that regulates the number of fishing days for cod, haddock and saithe in the Faroe Plateau fishery. The management plan has not been evaluated by ICES and therefore ICES bases its advice on the MSY approach.

ICES cannot quantify the relationship between effort and F for this stock.

Reference points

Table 4 Haddock in Division 5.b (Faroes grounds). Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	22 843 t	B_{pa}	ICES (2017)
	F_{MSY}	0.165	Stochastic simulations based on a segmented regression stock–recruitment relationship	ICES (2017)
Precautionary approach	B_{lim}	16 780 t	The lowest biomass that has led to good recruitment	ICES (2017)
	B_{pa}	22 843 t	$B_{lim} \times \exp(1.645 \times \sigma)$, where $\sigma = 0.19$.	ICES (2017)
	F_{lim}	0.54	Stochastic simulations (ICES, 2017) that give a 50% probability of $SSB > B_{lim}$	ICES (2017)
	F_{pa}	0.19	F_{P05} ; the F that leads to $SSB \geq B_{lim}$ with 95% probability	ICES (2017, 2021a)*
Management plan	SSB_{mgt}	Not applicable		
	F_{mgt}	Not applicable		

* In 2021 both the technical basis and the value of F_{pa} were revised.

Basis of the assessment

Table 5 Haddock in Division 5.b (Faroes grounds). Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2021b)
Assessment type	SAM with catch-at-age data and age-disaggregated indices, using catches in the model and in the forecast (ICES, 2021a)
Input data	Commercial catches (mainly Faroese catches, ages and length frequencies from catch sampling); survey indices (FO-GFS-Q1 [G1264], and FO-GFS-Q3 [G3284]); annual maturity data from FO-GFS-Q1 (G1264); natural mortality set at 0.2
Discards and bycatch	Discarding is considered negligible
Indicators	Co-occurrence of high recruitment of haddock with sandeel abundance
Other information	Benchmarked in 2017 (ICES, 2018b)
Working group report	North-Western Working Group (NWWG)

History of the advice, catch, and management

Table 6 Haddock in Division 5.b (Faroes grounds). ICES advice and catch. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice	Agreed TAC*	ICES catch
1987	No increase in F	17000		14882
1988	No increase in F	18000		12178
1989	No increase in F	11000		14325
1990	No increase in F	11000		11726
1991	TAC	11000		8429
1992	TAC	13000–15000		5476
1993	Reduction in F	8000		4026
1994	No fishing	0	6200	4252
1995	No fishing	0	6200	4948
1996	TAC	8300	12600	9642
1997	$F = F(95)$	9300		17924
1998	$F = F(96)$	16000		22210
1999	$F < \text{proposed } F_{pa} (0.25)$	9000		18482
2000	$F < \text{proposed } F_{pa} (0.25)$	22000		15799
2001	$F < \text{proposed } F_{pa} (0.25)$	20000		15891
2002	No fishing	0		24929
2003	$F < \text{proposed } F_{pa} (0.25)$	12000		26942
2004	$F < \text{proposed } F_{pa} (0.25)$	21000		23100
2005	$F < \text{proposed } F_{pa} (0.25)$	19000		21944
2006	$F < \text{proposed } F_{pa} (0.25)$	18000		17154
2007	$F < 0.20$	16000		12630

Year	ICES advice	Catch corresponding to advice	Agreed TAC*	ICES catch
2008	F _{pa}	14000		7388
2009	No fishing and recovery plan	0		5196
2010	No fishing and recovery plan	0		5202
2011	No direct fishing; minimize bycatch, implement recovery plan	0		3546
2012	No direct fishing; minimize bycatch, implement recovery plan	0		2634
2013	No direct fishing; minimize bycatch, implement recovery plan	0		2924
2014	No direct fishing; minimize bycatch, implement recovery plan	0		3252
2015	No direct fishing; minimize bycatch, implement recovery plan	0		3421
2016	No direct fishing; minimize bycatch, implement recovery plan	0		3470
2017	MSY approach (F ≤ 0.17)	≤ 3500		2863
2018	MSY approach (F ≤ 0.165)	≤ 4570		5549
2019	MSY approach	≤ 7366		9334
2020	MSY approach	≤ 11590		7329**
2021	MSY approach	≤ 11440		
2022	MSY approach	≤ 8639		

* Not applicable since 1997.

** Preliminary.

History of the catch and landings

Table 7 Haddock in Division 5.b (Faroes grounds). Catch distribution by fleet as estimated by ICES. All weights are in tonnes.

Catch (2020)	Landings		Discards
	Longlines 88%	Trawls 12%	
7329			Negligible
	7329		

Table 8 Haddock in Division 5.b (Faroes grounds). History of commercial catch and landings in subdivisions 5.b.1. and 5.b.2; the ICES estimated catches are presented for each country participating in the fishery. All weights are in tonnes. Faroese catches used in the assessment (first column) are obtained by adding the Faroe Bank (Subdivision 5.b.2) and the Faroe Plateau (Subdivision 5.b.1) catches, with corrections by applying conversion factors for round/gutted weight.

Year	Faroe Islands	England	France	Germany	Iceland	Norway	Scotland	Spain	Greenland	Russia	Total
2000	15185	19	6	1	0	403	185	0	0	0	15799
2001	15406	4	8	2	0	323	148	0	0	0	15891
2002	24474	11	2	6	4	255	177	0	0	0	24929
2003	26419	14	4	1	0	319	185	0	0	0	26942
2004	22589	8	0	6	0	246	186	49	0	16	23100
2005	20616	1	0	0	0	257	1070	0	0	0	21944
2006	16975	1	12	1	0	58	106	0	1	0	17154
2007	12499	0	4	0	0	69	50	0	9	0	12631
2008	7284	0	3	0	0	31	65	0	0	10	7393
2009	5087	0	2	0	0	11	91	0	6	0	5197
2010	5110	0	1	0	0	6	73	0	12	0	5202
2011	3544	0	2	0	0	0	0	0	0	0	3546
2012	2631	0	1	0	2	0	0	0	0	0	2634
2013	2924	0	0	0	0	0	0	0	0	0	2924
2014	2827	350	0	0	0	2	74	0	0	0	3252
2015	2966	428	1	0	0	5	21	0	0	0	3421
2016	3201	252	5	0	0	11	0	0	0	0	3470
2017	2771	86	1	0	0	6	0	0	0	0	2863

Year	Faroe Islands	England	France	Germany	Iceland	Norway	Scotland	Spain	Greenland	Russia	Total
2018	5383	143	0	0	0	23	0	0	0	0	5549
2019	9010	283	0	0	0	42	0	0	0	0	9334
2020*	7095	183	1	0	0	50	0	0	0	0	7329

* Preliminary.

Summary of the assessment

Table 9 Haddock in Division 5.b (Faroes grounds). Assessment summary.

Year	Recruitment			SSB			Total	F		
	Age 1	97.5 percentile	2.5 percentile	SSB	97.5 percentile	2.5 percentile	Catch	Mean F (ages 3–7)	97.5 percentile	2.5 percentile
	thousands			tonnes			tonnes			
1957	27174	51861	14239	50178	66116	38083	20995	0.49	0.67	0.36
1958	32279	58859	17702	50561	64505	39631	23871	0.64	0.84	0.49
1959	58842	105643	32774	45408	57354	35950	20239	0.63	0.82	0.49
1960	77199	138673	42977	45306	56831	36118	25727	0.73	0.94	0.56
1961	78120	141371	43168	42764	53823	33977	20831	0.63	0.82	0.48
1962	77730	140898	42882	47465	59683	37748	27151	0.69	0.89	0.53
1963	40281	73342	22124	47968	60870	37801	27571	0.73	0.95	0.57
1964	18343	33635	10003	44608	57225	34773	19490	0.53	0.70	0.40
1965	17748	32617	9658	44968	58133	34784	18479	0.58	0.76	0.44
1966	32740	60070	17844	41937	54381	32341	18766	0.55	0.72	0.41
1967	47072	86435	25635	37987	48742	29606	13381	0.46	0.61	0.34
1968	28708	52589	15671	40423	50866	32124	17852	0.48	0.64	0.37
1969	32460	59356	17751	47170	59549	37365	23272	0.56	0.74	0.43
1970	20126	36894	10979	49895	64545	38570	21361	0.50	0.66	0.37
1971	24173	44273	13199	49604	63918	38496	19393	0.50	0.68	0.37
1972	27389	50319	14908	45299	58757	34923	16485	0.45	0.61	0.32
1973	119111	225416	62939	42339	54620	32818	18035	0.40	0.56	0.29
1974	109345	207403	57648	44081	56553	34359	14773	0.31	0.44	0.22
1975	70056	133991	36628	57097	73782	44185	20715	0.26	0.36	0.183
1976	27258	52820	14066	80267	105735	60933	26211	0.31	0.43	0.22
1977	10248	22794	4607	82309	109632	61796	25555	0.38	0.53	0.27
1978	993	2244	439	79992	108957	58728	19200	0.30	0.44	0.21
1979	5908	11644	2997	62737	85442	46066	12424	0.21	0.30	0.141
1980	6140	12926	2917	57653	77130	43094	15016	0.27	0.39	0.189
1981	18045	38013	8566	52061	70010	38714	12233	0.25	0.35	0.174
1982	21351	45045	10120	40441	52698	31035	11937	0.37	0.51	0.27
1983	45886	97280	21644	37594	49125	28770	12894	0.33	0.47	0.24
1984	40814	80036	20813	41135	53112	31859	12378	0.29	0.41	0.21
1985	20070	42661	9442	49355	65278	37316	15143	0.31	0.44	0.22
1986	13519	28834	6339	54218	73052	40239	14477	0.29	0.41	0.21
1987	24628	52883	11469	54152	72552	40419	14882	0.33	0.47	0.24
1988	9587	20522	4478	48956	65190	36765	12178	0.27	0.38	0.196
1989	7179	15232	3383	41868	54632	32087	14325	0.31	0.43	0.22
1990	3239	6846	1532	34805	44958	26945	11726	0.35	0.50	0.25
1991	2752	5798	1307	26865	35003	20619	8429	0.32	0.46	0.23
1992	3971	8410	1875	19977	26385	15125	5476	0.27	0.39	0.190
1993	26187	51687	13268	17197	22762	12992	4026	0.28	0.39	0.198
1994	25691	47904	13778	16252	21143	12492	4252	0.25	0.34	0.176
1995	42977	82815	22303	17282	21818	13688	4948	0.28	0.39	0.21
1996	10231	17567	5959	36959	47959	28481	9642	0.34	0.46	0.26
1997	3972	7227	2183	68838	91008	52069	17924	0.40	0.53	0.30
1998	14285	25487	8006	67586	87351	52294	22210	0.58	0.75	0.44
1999	26062	43826	15498	47742	61022	37352	18482	0.57	0.74	0.44
2000	119639	202066	70835	36352	45257	29199	15799	0.45	0.60	0.34

Year	Recruitment			SSB			Total	F		
	Age 1	97.5 percentile	2.5 percentile	SSB	97.5 percentile	2.5 percentile	Catch	Mean F (ages 3–7)	97.5 percentile	2.5 percentile
	thousands			tonnes			tonnes			
2001	54635	92494	32272	46237	55831	38292	15891	0.39	0.51	0.29
2002	35862	64729	19869	75018	94655	59455	24929	0.40	0.53	0.30
2003	23410	42046	13034	87604	113294	67740	26942	0.46	0.61	0.35
2004	7234	12352	4236	74544	94933	58533	23100	0.51	0.67	0.39
2005	9297	16593	5209	60910	75558	49102	21944	0.48	0.63	0.37
2006	2940	5253	1645	44543	54570	36358	17154	0.47	0.62	0.36
2007	2985	5325	1673	30993	37708	25474	12631	0.43	0.56	0.33
2008	3774	6537	2179	20277	24411	16842	7393	0.38	0.50	0.29
2009	7819	13921	4392	15064	18051	12571	5197	0.33	0.44	0.25
2010	11040	19852	6140	11646	13766	9852	5203	0.44	0.58	0.34
2011	1014	1886	545	9223	10985	7743	3546	0.42	0.56	0.32
2012	2315	4180	1281	11081	14033	8749	2634	0.34	0.46	0.26
2013	7910	14130	4428	11484	14719	8960	2924	0.40	0.53	0.30
2014	9492	16904	5330	9998	12500	7997	3252	0.40	0.53	0.30
2015	7983	14334	4446	12554	15523	10154	3421	0.40	0.53	0.29
2016	26193	45264	15157	13468	16756	10825	3470	0.39	0.52	0.29
2017	34349	61021	19335	15325	19104	12293	2863	0.27	0.36	0.197
2018	48855	90614	26341	27339	34857	21443	5549	0.32	0.44	0.23
2019	17577	33410	9247	37451	48262	29062	9334	0.46	0.63	0.33
2020	7967	16746	3790	40342	54674	29767	7329*	0.47	0.69	0.31
2021	12325	34727	4374	53186	79601	35537				

* Preliminary.

Sources and references

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