

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 2023 should be no more than 11 853 tonnes. ICES is not in a position to advise on the corresponding level of fishing effort.

Stock development over time

Fishing pressure on the stock is above F_{MSY} but below F_{pa} and F_{lim} ; spawning-stock size is above MSY $B_{trigger}$, B_{pa} , and B_{lim} .

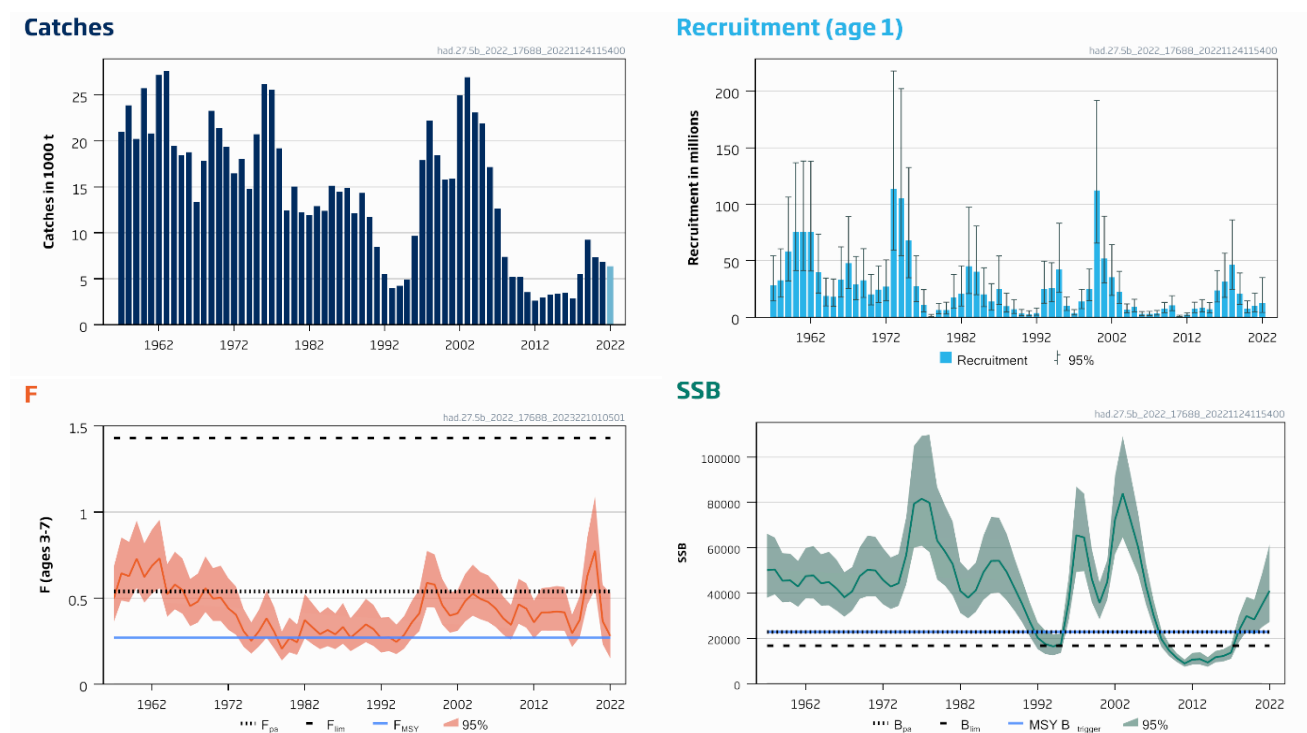


Figure 1* Haddock in Division 5.b (Faroes grounds). Summary of the stock assessment. The assessment produces an estimate of F in 2022. Catches in 2022 are assumed.

Catch scenarios

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

Variable	Value	Notes
$F_{ages\ 3-7}$ (2022)	0.28	Based on catch at age estimate of 6 358 tonnes in 2022.
SSB (2023)	51 002	Based on $F = 0.281$; in tonnes
$R_{age\ 1}$ (2023)	8 858	Median of resampled estimates from 2000–2021; in thousands
Landings (2022)	6 358	Catch estimate for 2022 based on catch statistics to the end of September extrapolated to the entire year; in tonnes
Discards (2022)	0	Discard is considered negligible; in tonnes

* Version 2: Reference points in the F Figure updated.

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

Basis	Total catch (2023)	F_{total} (2023)	SSB (2024)	% SSB change*	% advice change**
ICES advice basis					
MSY approach: F_{MSY}	11 853	0.27	49 960	-2	37
Other scenarios					
$F = 0$	0	0	64 625	27	-100
$F = F_{2022}$	12 597	0.29	49 070	-4	46
$F = F_{pa}$	20 115	0.54	40 027	-22	133
$F = F_{lim}$	34 596	1.43	9 928	-81	301

* SSB (2024) relative to SSB (2023) (51 002 tonnes).

** The advice value for 2023 relative to the advice value for 2022 as issued in 2021 (8639 tonnes).

The catch advice for 2023 has increased compared to the advice for 2022; mainly due to the new reference points.

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

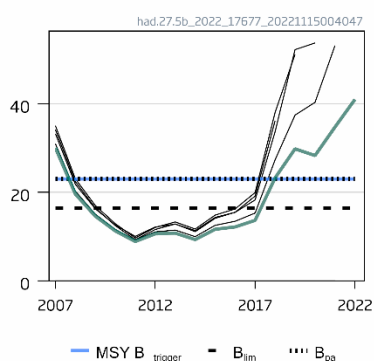
Quality of the assessment

The estimates of F in recent years have been revised upwards, and the estimates of SSB have been revised downwards.

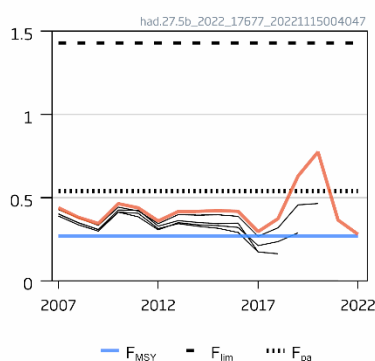
The plot does not show the line for fishing mortality that ends in 2021 because this year's assessment estimated fishing mortality in the current year (year y), while the last year in previous assessments was the last full calendar year (year $y-1$) (Figure 2).

There was major revision downwards in recruitment from 2018 to 2019 but since then revisions have been relatively minor.

SSB (1000 t)



F (ages 3-7)



Rec (age 1; Millions)

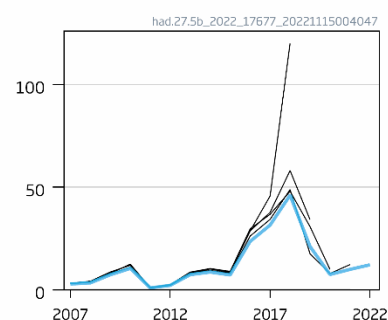


Figure 2 Haddock in Division 5.b (Faroes grounds). Historical assessment results. Results of the last five assessments are plotted, with the solid coloured line representing the current assessment.

Issues relevant for the advice

Faroe Plateau cod and Faroe haddock are caught in a mixed fishery.

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 $B_{trigger}$	23 030 t	B_{pa}	ICES (2022c)
	F_{MSY}	0.27	Stochastic simulations based on a segmented regression stock–recruitment relationship	ICES (2022c)
Precautionary approach	B_{lim}	16 458 t	The lowest biomass that has led to good recruitment	ICES (2022c)
	B_{pa}	23 030 t	$B_{lim} \times \exp(1.645 \times \sigma)$, where $\sigma = 0.204$	ICES (2022c)
	F_{lim}	1.43	Stochastic simulations (ICES, 2022) that give a 50% probability of $SSB > B_{lim}$	ICES (2022c)
	F_{pa}	0.54	F_{P05} ; the F that leads to $SSB \geq B_{lim}$ with 95% probability	ICES (2022c)
Management plan	SSB_{mgt}	Not applicable		
	F_{mgt}	Not applicable		

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, 2022b)
Assessment type	SAM with catch-at-age data and age-disaggregated indices, using catches in the model and in the forecast (ICES, 2022c)
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. Preliminary estimate of catch-at-age in the year (January to September) in which the assessment is carried out.
Discards and bycatch	Discarding is considered negligible
Indicators	Co-occurrence of high recruitment of haddock with sandeel abundance
Other information	Interbenchmark in 2022 (ICES, 2022a)
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

Year	ICES advice	Catch corresponding to advice	Agreed TAC*	ICES catch
1999	F < proposed F_{pa} (0.25)	9000		18482
2000	F < proposed F_{pa} (0.25)	22000		15799
2001	F < proposed F_{pa} (0.25)	20000		15891
2002	No fishing	0		24929
2003	F < proposed F_{pa} (0.25)	12000		26942
2004	F < proposed F_{pa} (0.25)	21000		23100
2005	F < proposed F_{pa} (0.25)	19000		21944
2006	F < proposed F_{pa} (0.25)	18000		17154
2007	F < 0.20	16000		12630
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 ($F \leq 0.17$)	≤ 3500		2863
2018	MSY approach ($F \leq 0.165$)	≤ 4570		5549
2019	MSY approach	≤ 7366		9334
2020	MSY approach	≤ 11590		7329
2021	MSY approach	≤ 11440		6850
2022	MSY approach	≤ 8639		6358**
2023	MSY approach	≤ 11853		

* Not applicable since 1997.

** Assumed catch.

History of the catch and landings

Table 7 Haddock in Division 5.b (Faroes grounds). Catch distribution by fleet in 2021 as estimated by ICES. All weights are in tonnes.

Catch	Landings		Discards
6850 tonnes	Longlines 83%	Trawls 17%	Negligible
	6850 tonnes		

Table 8 Haddock in Division 5.b (Faroes grounds). History of commercial catch by country. All weights are in tonnes.

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

Year	Faroe Islands	England	France	Germany	Iceland	Norway	Scotland	Spain	Greenland	Russia	Total
2016	3201	252	5	0	0	11	0	0	0	0	3470
2017	2771	86	1	0	0	6	0	0	0	0	2863
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
2021*	6826	0	4	0	0	20	0	0	0	0	6850

* 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	28124	54545	14501	50104	66217	37913	20995	0.50	0.68	0.36
1958	32746	60562	17705	50421	64542	39389	23871	0.64	0.85	0.49
1959	58409	106341	32081	45443	57609	35846	20239	0.63	0.83	0.48
1960	75153	136759	41299	45591	57401	36210	25727	0.73	0.95	0.56
1961	75562	138298	41285	42884	54203	33929	20831	0.62	0.82	0.47
1962	75162	137963	40948	47460	59874	37620	27151	0.69	0.90	0.53
1963	39758	73538	21495	47762	60796	37523	27571	0.73	0.96	0.56
1964	18624	34748	9982	44336	57112	34418	19490	0.52	0.70	0.39
1965	18166	33962	9717	44844	58247	34525	18479	0.58	0.77	0.44
1966	33389	62338	17884	41986	54750	32198	18766	0.55	0.73	0.41
1967	47727	89128	25557	38137	49231	29543	13381	0.45	0.61	0.34
1968	28912	53867	15518	40696	51481	32171	17852	0.48	0.64	0.36
1969	32607	60681	17521	47515	60304	37439	23272	0.56	0.74	0.42
1970	20382	38026	10925	50257	65415	38611	21361	0.50	0.68	0.37
1971	24384	45428	13089	50004	64890	38533	19393	0.50	0.69	0.37
1972	27205	50773	14577	45791	59871	35023	16485	0.44	0.62	0.32
1973	113707	217903	59335	42873	55747	32972	18035	0.40	0.57	0.29
1974	105009	202262	54517	44318	57261	34301	14773	0.31	0.44	0.22
1975	67969	132506	34865	56754	73640	43741	20715	0.25	0.36	0.178
1976	27468	54438	13859	79385	105011	60012	26211	0.31	0.43	0.22
1977	10854	24412	4825	81624	109441	60877	25555	0.38	0.55	0.27
1978	1083	2479	473	79901	109942	58069	19200	0.31	0.45	0.21
1979	6196	12429	3089	63178	86888	45937	12424	0.21	0.31	0.138
1980	6229	13332	2910	58398	78799	43278	15016	0.27	0.39	0.185
1981	17748	37996	8290	52808	71668	38911	12233	0.24	0.35	0.171
1982	21209	45488	9889	40945	53759	31185	11937	0.37	0.53	0.27
1983	45166	97415	20941	37961	49995	28824	12894	0.33	0.47	0.23
1984	40205	80794	20007	41177	53481	31704	12378	0.29	0.42	0.20
1985	20210	43739	9338	49262	65574	37008	15143	0.32	0.45	0.22
1986	13732	29843	6318	54209	73646	39902	14477	0.29	0.41	0.20
1987	24753	54188	11307	54264	73294	40174	14882	0.33	0.47	0.24
1988	9785	21328	4489	49256	66119	36693	12178	0.27	0.38	0.192
1989	7198	15550	3332	42221	55476	32133	14325	0.31	0.44	0.22
1990	3214	6911	1495	35147	45766	26992	11726	0.35	0.50	0.24
1991	2681	5740	1252	27207	35795	20680	8429	0.32	0.46	0.22
1992	3813	8177	1778	20275	27084	15177	5476	0.27	0.39	0.184
1993	24940	49701	12515	17455	23400	13020	4026	0.27	0.39	0.193
1994	25636	48277	13613	16458	21686	12491	4252	0.25	0.35	0.175
1995	42676	83207	21888	17292	22084	13540	4948	0.29	0.40	0.21
1996	10288	17859	5927	35915	46873	27518	9642	0.36	0.48	0.27
1997	3703	6827	2009	65518	87060	49306	17924	0.41	0.55	0.31

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			
1998	13750	24764	7635	64550	83931	49644	22210	0.59	0.78	0.45
1999	25007	42570	14690	46208	59474	35901	18482	0.58	0.75	0.44
2000	112269	191899	65682	35589	44677	28349	15799	0.46	0.61	0.35
2001	52124	89389	30394	44977	54639	37024	15891	0.40	0.53	0.30
2002	35281	64293	19361	72382	91805	57068	24929	0.41	0.55	0.31
2003	22413	40663	12354	83971	109245	64544	26942	0.48	0.64	0.36
2004	6836	11839	3947	72226	92752	56243	23100	0.53	0.70	0.40
2005	8858	15976	4911	60152	75265	48074	21944	0.50	0.65	0.38
2006	2784	5030	1541	43143	53223	34972	17154	0.48	0.63	0.36
2007	2871	5173	1593	30069	36826	24552	12631	0.44	0.58	0.33
2008	3409	5965	1949	19620	23773	16192	7393	0.38	0.51	0.29
2009	7357	13217	4095	14618	17629	12121	5197	0.35	0.46	0.26
2010	10475	19033	5766	11280	13399	9497	5203	0.46	0.61	0.35
2011	957	1799	509	8901	10645	7442	3546	0.44	0.59	0.33
2012	2204	4017	1209	10637	13555	8347	2634	0.36	0.49	0.27
2013	7408	13325	4119	10801	13903	8391	2924	0.42	0.56	0.31
2014	8677	15580	4832	9333	11708	7441	3252	0.42	0.56	0.31
2015	7269	13171	4011	11659	14463	9398	3421	0.42	0.57	0.31
2016	23612	41401	13466	12190	15208	9772	3470	0.42	0.56	0.31
2017	31563	56708	17567	13675	17114	10927	2863	0.30	0.40	0.22
2018	46133	86162	24701	23260	29821	18142	5549	0.37	0.51	0.27
2019	21117	39166	11386	29837	38368	23203	9218	0.63	0.86	0.46
2020	7488	14526	3860	28322	37076	21635	7329	0.78	1.09	0.55
2021	9992	21257	4696	34760	48521	24902	6850	0.37	0.58	0.23
2022	12211	35133	4244	41005	61694	27254	6358*	0.28	0.53	0.150

* Catch estimate based on catch statistics to the end of September extrapolated to the entire year.

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