

Haddock (*Melanogrammus aeglefinus*) in Division 5.a (Iceland grounds)

ICES advice on fishing opportunities

ICES advises that when the Icelandic management plan is applied, catches in the fishing year 2023/2024 should be no more than 76 415 tonnes.

ICES advice on conservation aspects

ICES has not identified any conservation aspects.

Stock development over time

Fishing pressure on the stock is above both HR_{MSY} and HR_{pa} and below HR_{lim} . Spawning-stock size is above $MSY B_{trigger}$, B_{pa} , and B_{lim} .

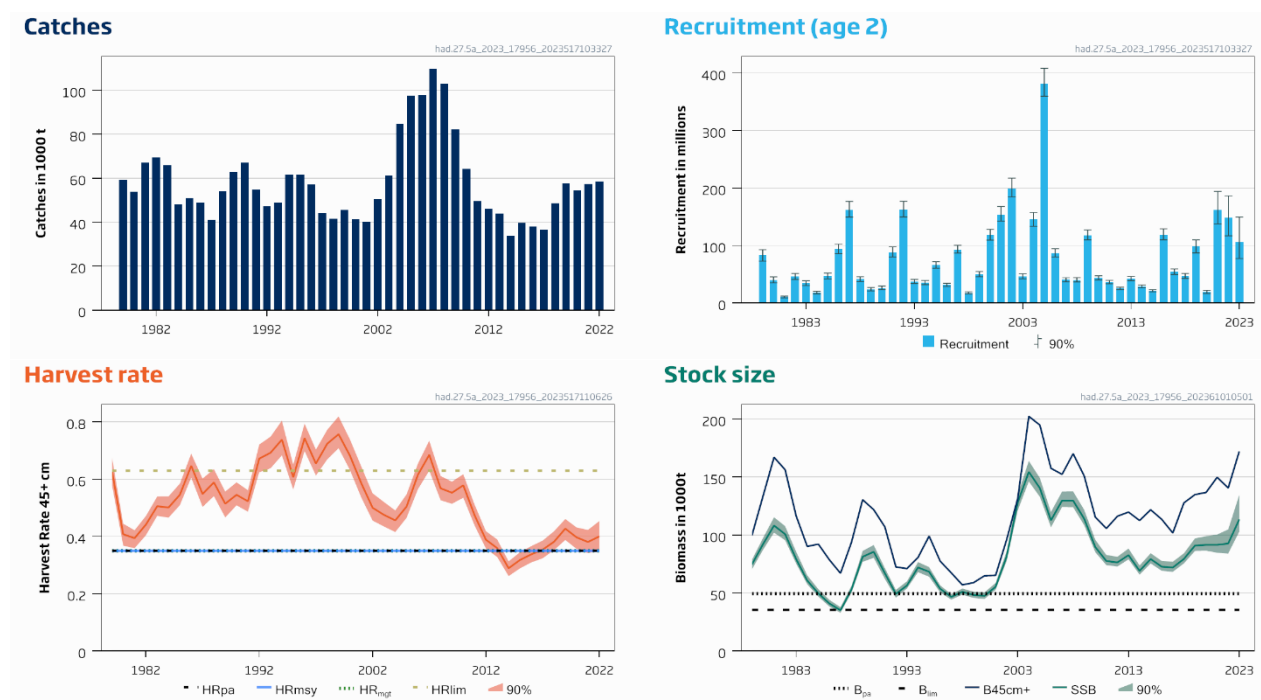


Figure 1 Haddock in Division 5.a. Summary of the stock assessment. Calculation of harvest rates is based on biomass of fish at length 45 cm+ ($MSY B_{trigger} = B_{pa} = MGT B_{trigger}$).

Conservation status

ICES is not aware of any information on stock/species-specific conservation status.

Catch scenarios

Table 1 Haddock in Division 5.a. Values in the forecast and for the interim year.

Variable	Value	Notes
HR (2023)	0.4	Annual HR, catch constraint based on total catch in 2023.
SSB (2024)	140 576	From the assessment; tonnes.
Reference biomass ($B_{45 cm+}$ 2024)	218 287	Short-term forecast; tonnes.
$R_{age 2}$ (2023)	106 012	From the assessment; thousands.
$R_{age 2}$ (2024)	45 317	From the assessment; thousands.

Variable	Value	Notes
R _{age 2} (2025)	56 262	Geometric mean recruitment based on the whole time-series; thousands
Total catch (2023)	69 185	Based on full uptake of the remaining TAC until 31 August 2023 and management plan from 1 September to 31 December 2023; tonnes

Table 2 Haddock in Division 5.a. Annual catch scenarios. All weights are in tonnes.

ICES advice basis	Total catch (2023/2024)	HR (2023/2024) *	SSB (2025)	% SSB change**	% TAC change***	% advice change
Management plan	76 415	0.35	164 533	17%	23%	23%

* HR (2023/2024) is expressed relative to the B_{45cm+} in 2024.

** SSB 2025 relative to SSB 2024.

*** Advised catches for 2023/2024 relative to TAC for 2022/2023 (62 219 tonnes).

Advised catches have increased as a result of the predicted increase in reference biomass (B_{45cm+}) in 2024 when recent strong recruitments are predicted to enter the fishery.

Basis of the advice

Table 3 Haddock in Division 5.a. The basis of the advice.

Advice basis	Management plan
Management plan	The Icelandic Ministry of Food, Agriculture and Fisheries has adopted a management plan for Icelandic haddock fisheries (MII, 2019). The TAC is set in the following way according to the plan: $TAC_{y/y+1} = 0.35B_{45cm+,y+1} \text{ if } SSB_{y+1} \geq MGT B_{trigger}$ $TAC_{y/y+1} = \frac{SSB_{y+1}}{MGT B_{trigger}} 0.35B_{45cm+,y+1} \text{ if } SSB_{y+1} < MGT B_{trigger}$ where MGT B_{trigger} = 49 400 tonnes of SSB, y is the assessment year, TAC_{y/y+1} is the TAC for the fishing year starting 1 September in the assessment year, and B_{45cm+,y+1} is the estimated biomass of haddock ≥ 45 cm at the beginning of the year following the assessment year. ICES evaluated this HCR in 2019 (ICES, 2019a; 2019b) and concluded that it is precautionary and in accordance with ICES MSY approach. The expected range of realized harvest rate (HR) following the management plan (HR_{mgt}) is between 0.23 and 0.57.

Quality of the assessment

This assessment is considered to be acceptably consistent with previous assessments.

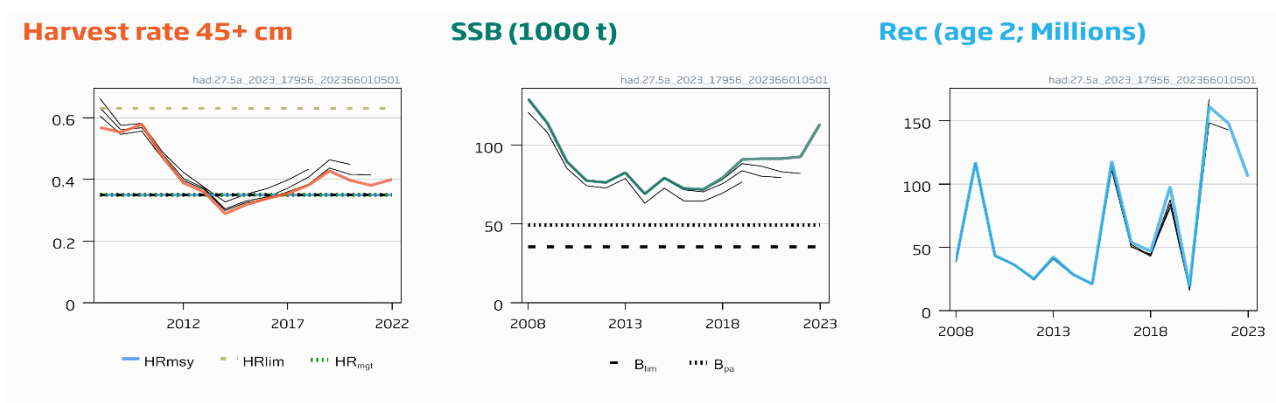


Figure 2 Haddock in Division 5.a. Historical assessment results. There was no ICES assessment in 2020.

Issues relevant for the advice

Landings of haddock in Icelandic Waters have consistently exceeded the advised catch, resulting in a harvest rate higher than HR_{pa} .

Reference points

Table 4 Haddock in Division 5.a. Reference points, values, and their technical basis. All weights are in tonnes.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	49 400	B_{pa}	ICES (2019b).
	HR_{MSY}	0.35	The harvest rate that maximizes the median long-term catch in stochastic simulations, limited by HR_{p05}	ICES (2019b).
Precautionary approach	B_{lim}	35 500	B_{loss}	ICES (2019b).
	B_{pa}	49 400	$B_{lim} \times e^{1.645 \times 0.2}$	ICES (2019b).
	HR_{lim}	0.63	HR leading to median SSB at B_{lim}	ICES (2019b).
	HR_{pa}	0.35	HR leading to $P(SSB > B_{lim}) > 95\%$ with $B_{trigger}$	ICES (2021).
Management plan	MGT $B_{trigger}$	49 400	Stochastic simulations	ICES (2019b).
	F_{mgt}	Not defined		
	HR_{mgt}	0.35	Management plan. Realized harvest rates can range from 0.23 to 0.57	ICES (2019b).

Basis of the assessment

Table 5 Haddock in Division 5.a. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2023a).
Assessment type	Statistical catch-at-age model, that uses catches in the model and in the forecast (ICES, 2023b).
Input data	Catch-at-age and two survey indices (Icelandic bottom-trawl surveys: Spring (IS-SMB [G3239]), and Autumn (IS-SMH [G4493])).
Discards and bycatch	Discarding is considered negligible.
Indicators	None.
Other information	The stock was benchmarked and harvest control rules evaluated in 2019 (ICES, 2019a; 2019b).
Working group	Northwestern Working Group (NWVG).

History of the advice, catch, and management

Table 6 Haddock in Division 5.a. ICES advice, TAC, and landings estimates. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice	Agreed TAC	ICES landings for the fishing year	ICES landings for the calendar year
1987 *	National advice	< 50 000	60 000		40 760
1988 *	National advice	< 60 000	65 000		54 204
1989 *	National advice	< 60 000	65 000		62 885
1990 *	National advice	< 60 000	65 000		67 198
1991 **	National advice	< 38 000	48 000		54 692
1991/1992	National advice	< 50 000	50 000	48 123	47 121
1992/1993	National advice	< 60 000	65 000	47 255	48 123
1993/1994	National advice	< 65 000	65 000	58 443	59 502
1994/1995	National advice	< 65 000	65 000	60 829	60 884
1995/1996	National advice	< 55 000	60 000	53 972	56 890
1996/1997	National advice	< 40 000	45 000	49 764	43 764
1997/1998	National advice	< 40 000	45 000	37 811	41 192
1998/1999	National advice	< 35 000	35 000	45 146	45 411
1999/2000	F reduced below F_{med}	< 35 000	35 000	41 150	42 105
2000/2001	F reduced below provisional F_{pa}	< 31 000	30 000	39 143	39 654
2001/2002	F reduced below provisional F_{pa}	< 30 000	41 000	41 069	50 498
2002/2003	F reduced below provisional F_{pa}	< 55 000	55 000	55 269	60 883
2003/2004	F reduced below provisional F_{pa}	< 75 000	75 000	77 916	84 828

Year	ICES advice	Catch corresponding to advice	Agreed TAC	ICES landings for the fishing year	ICES landings for the calendar year
2004/2005	F reduced below provisional F_{pa}	< 97 000	90 000	96 617	97 225
2005/2006	F reduced below provisional F_{pa}	< 110 000	105 000	99 926	97 614
2006/2007	F reduced below provisional F_{pa}	< 112 000	105 000	99 763	109 966
2007/2008	F reduced below provisional F_{pa}	< 120 000	100 000	109 810	102 872
2008/2009	F reduced below 0.35	< 83 000	93 000	88 617	82 045
2009/2010	F reduced below 0.35	< 57 000	63 000	67 579	64 169
2010/2011	F reduced below 0.35	< 51 000	50 000	50 042	49 433
2011/2012	F reduced below 0.35	< 42 000	45 000	49 179	46 208
2012/2013	F reduced below 0.35	< 32 000	36 000	40 512	44 097
2013/2014	TAC $0.4 \times B_{45+cm}$, 2014	< 38 000	38 000	39 628	33 900
2014/2015	TAC $0.4 \times B_{45+cm}$, 2015	< 30 400	30 400	36 656	39 646
2015/2016	TAC $0.4 \times B_{45+cm}$, 2016	< 36 400	36 400	40 117	38 109
2016/2017	TAC $0.4 \times B_{45+cm}$, 2017	< 34 600	34 600	36 399	37 058
2017/2018	TAC $0.4 \times B_{45+cm}$, 2018	< 41 390	41 390	43 700	48 864
2018/2019	Management plan	< 57 982	57 982	59 382	58 044
2019/2020	Management plan	$\leq 41 823$	41 823	48 991	54 781
2020/2021	No advice requested***	-	53 389 [^]	59 143	57 599
2021/2022	Management plan	$\leq 50 429$	42 429 [^]	51 986	58 770
2022/2023	Management plan	$\leq 62 219$	62 219		
2023/2024	Management plan	$\leq 76 415$			

* Calendar year.

** January to August.

*** No advice was requested for 2020/2021. Advice for 2020/2021 was issued the Icelandic Marine and Freshwater Research Institute (MFRI) based on the same method agreed by ICES (45 389 tonnes).

[^] 8000 tonnes moved from the fishing year 2021/2022 to 2020/2021.

History of the catch and landings

Table 7 Haddock in Division 5.a. Catch distribution by fleet in 2022 as estimated by ICES. All weights are in tonnes.

Table 7. Haddock in Division 51A: Catch distribution by fleet in 2022 as estimated by ICES. All weights are in tonnes.					
Catch (2022)	Landings				Discard
58 770	66% Bottom trawl	27% Longline	7% Demersal seine	<1% Other gears	Considered negligible
	58 770				

Summary of the assessment

Table 8 Haddock in Division 5.a. Assessment summary. Weights are in tonnes. Recruitment in thousands. 'High' and 'Low' correspond to 90% confidence intervals.

Year	Recruitment			Stock size			Total catch	Harvest rate			B45cm+		
	Low	Age 2	High	Low	SSB	High		Low	HR	High	Low	B45+	High
1979	72890	83168	92814	70260	74593	78686	59327	0.58	0.63	0.68	92618	99532	106640
1980	35179	39694	45426	87034	92031	97387	53870	0.37	0.41	0.45	125180	133368	141608
1981	8950	10579	12134	102035	108184	115383	67126	0.36	0.39	0.42	157056	167087	178344
1982	40934	45963	51326	95450	100781	107771	69378	0.40	0.44	0.47	147702	156353	167500
1983	30301	34049	38678	75219	79235	85631	65869	0.47	0.51	0.54	109837	116397	126248
1984	15931	17973	20312	57457	60730	65272	48236	0.47	0.50	0.54	85380	90203	96717
1985	41852	46878	52099	46903	49712	53414	50953	0.51	0.55	0.59	86527	92168	98887
1986	85971	94001	102327	38271	40935	44169	48862	0.61	0.65	0.69	74251	78604	83865
1987	149381	162210	176850	32931	35169	37884	40983	0.50	0.55	0.60	62960	67014	72268
1988	37144	41589	45718	50407	53206	56449	54126	0.54	0.59	0.64	88514	94059	100781
1989	20972	23711	26899	76891	81268	86354	62732	0.47	0.51	0.56	123486	130469	139084
1990	23275	25775	29511	80299	85581	91450	67075	0.51	0.55	0.59	114127	121849	130569
1991	80041	87468	97746	62210	67153	71673	54715	0.49	0.52	0.56	99192	107129	115009
1992	149599	163142	176989	45944	49220	52768	47199	0.62	0.67	0.72	67115	72487	77697
1993	33870	37205	41048	53904	56528	60163	48894	0.64	0.69	0.75	66977	71102	76744

Year	Recruitment			Stock size			Total catch	Harvest rate			B45cm+		
	Low	Age 2	High	Low	SSB	High		Low	HR	High	Low	B45+	High
1994	32005	35361	39133	67957	72078	76775	61608	0.68	0.74	0.80	76134	80695	86877
1995	60517	65646	71827	64024	68335	72425	61510	0.56	0.61	0.65	92225	99114	105976
1996	28822	31367	34425	50474	53650	56721	57223	0.70	0.74	0.79	72205	77471	82462
1997	86849	92426	100447	44265	46671	48994	44141	0.61	0.65	0.70	63382	67405	71318
1998	16024	17562	19525	48576	51066	53909	41502	0.67	0.72	0.77	53550	57037	60951
1999	45702	50056	54745	45760	48358	51199	45603	0.71	0.76	0.82	55382	58906	62916
2000	109421	118309	128176	44878	47499	50686	41390	0.63	0.68	0.74	60779	64894	69417
2001	142475	153476	167985	52636	55392	58669	40220	0.54	0.59	0.65	61530	65198	69800
2002	184577	198978	217331	77495	81469	86231	50508	0.46	0.50	0.55	90893	96065	102099
2003	42205	46543	50892	121073	128093	135192	61036	0.43	0.48	0.52	124275	131483	139697
2004	133502	145677	157576	146128	154515	163998	84824	0.42	0.46	0.49	191043	202401	214264
2005	359874	381696	408445	132786	140338	149195	97443	0.46	0.50	0.55	183709	194797	208251
2006	79987	86662	94499	106623	112691	120000	97722	0.56	0.62	0.65	148226	157588	168206
2007	36970	40373	44040	124092	129714	137524	109826	0.63	0.69	0.74	144896	152315	162499
2008	36624	39760	44157	123948	129670	137660	102888	0.53	0.57	0.61	161778	170179	180913
2009	109799	117457	127100	108304	114051	121768	82268	0.51	0.55	0.59	142456	151001	160591
2010	40103	43745	47365	85100	89647	96021	64237	0.54	0.58	0.62	109456	115497	124601
2011	33574	36238	39472	73990	77616	82865	49440	0.44	0.47	0.51	100530	105694	113125
2012	23419	25162	27479	72843	76409	81331	46032	0.36	0.39	0.42	110654	116243	123556
2013	39002	42491	46160	78991	82687	88428	43987	0.33	0.36	0.39	114587	119803	128080
2014	26307	28859	31238	65792	69159	73819	33649	0.26	0.29	0.31	107180	112538	119687
2015	19526	21050	23254	75460	79305	84378	39515	0.29	0.32	0.35	116216	121811	129166
2016	109996	118301	129040	69127	72720	77726	38090	0.31	0.34	0.37	108301	113526	121018
2017	49661	54206	59243	68260	72025	77054	36459	0.32	0.35	0.39	96833	101803	108426
2018	42852	46866	51475	75471	79420	84308	48491	0.35	0.38	0.42	121515	127732	135726
2019	87021	98232	109896	86240	90938	97166	57580	0.39	0.43	0.46	127554	134893	143824
2020	16598	19039	21970	86510	91543	99058	54473	0.36	0.40	0.43	128889	136735	147653
2021	137448	161495	194175	84699	91525	100476	57322	0.34	0.38	0.42	139517	149809	162964
2022	116953	148090	186447	83992	92722	104919	58559	0.35	0.40	0.45	128044	140583	156366
2023	77437	106012	149577	102880	113562	134777					151371	172195	194694

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[Download the stock assessment data and figures](#)

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