

Haddock (*Melanogrammus aeglefinus*) in divisions 7.b–k (southern Celtic Seas and English Channel)

ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2022 should be no more than 15 946 tonnes.

ICES notes the existence of a precautionary management plan, developed and adopted by some of the relevant management authorities for this stock.

Stock development over time

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

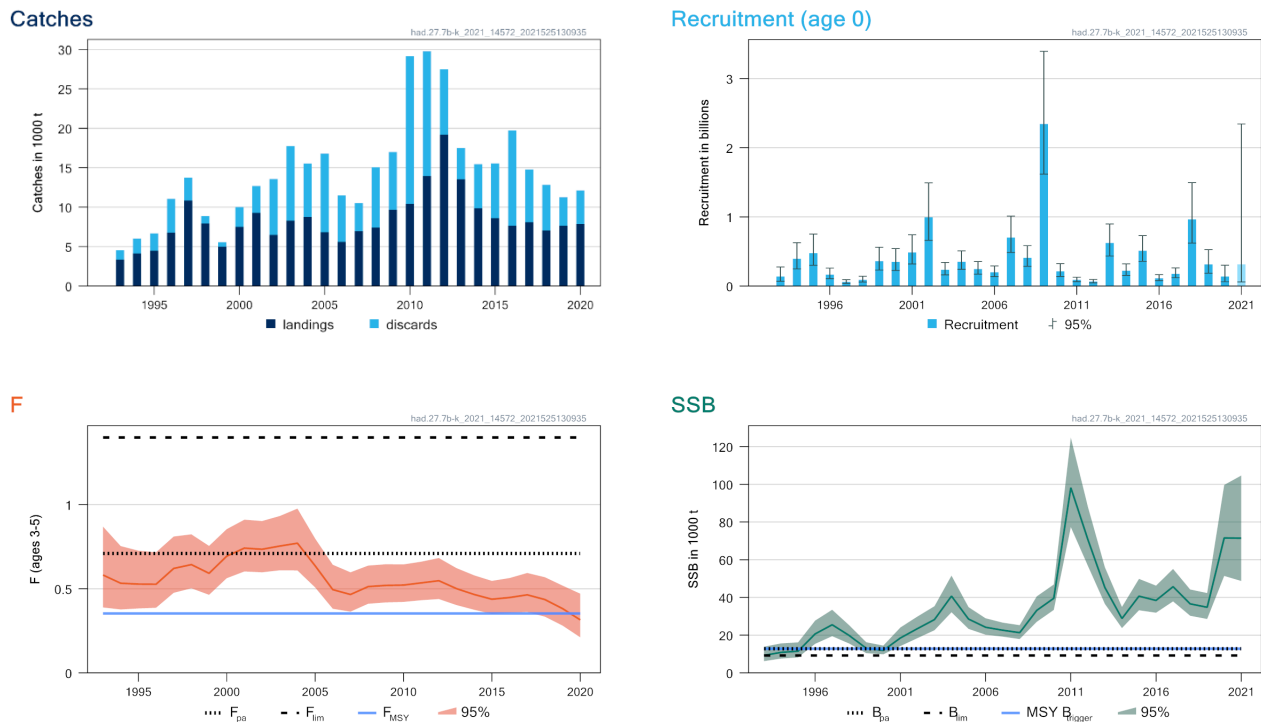


Figure 1 Haddock in divisions 7.b–k. Summary of the stock assessment. The assumed recruitment value for 2021 is shaded in a lighter colour.

Catch scenarios

Table 2 Haddock in divisions 7.b–k. Assumptions made for the interim year and in the forecast.

Variable	Value	Notes
$F_{ages\ 3-5}$ (2021)	0.315	Average $F = (2018-2020)$ scaled to $F_{ages\ 3-5}$ in 2020
SSB (2022)	62 437	Short-term forecast; in tonnes
$R_{age\ 0}$ (2021)	312 600	Median resampled (1993–2020); in thousands*
$R_{age\ 0}$ (2022)	245 785	Median resampled (1993–2020); in thousands*
Total catch (2021)	15 291	Short-term forecast; in tonnes
Projected landings (2021)	10 616	Short-term forecast, assuming average 2018–2020 landing pattern; in tonnes
Projected discards (2021)	4675	Short-term forecast, assuming average 2018–2020 discard pattern; in tonnes

* Random resampling of historical recruitment estimates leads to different values.

Table 3 Haddock in divisions 7.b–k. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2022)	Projected landings (2022)	Projected discards (2022)	F _{total} (2022)	F _{projected} landings (2022)	F _{projected} discards (2022)	SSB (2023)	% SSB change *	% advice change [^]
ICES advice basis									
MSY approach: F _{MSY}	15946	11885	4061	0.35	0.28	0.074	56747	-9.1	-13.3
Other scenarios									
EU MAP ^{^^} : F _{MSY}	15946	11885	4061	0.35	0.28	0.074	56747	-9.1	-13.3
F = MAP ^{^^} F _{MSY} lower	10570	7919	2651	0.22	0.174	0.047	62704	0.43	-43
F = MAP ^{^^} F _{MSY} upper	21988	16253	5735	0.52	0.41	0.110	50276	-19.5	19.6
F = 0	0	0	0	0	0	0	74566	19	-100
F _{pa}	27740	20328	7412	0.71	0.56	0.149	44324	-29	51
F _{lim}	42885	30770	12115	1.400	1.11	0.30	28835	-54	133
SSB ₂₀₂₃ = B _{lim}	65099	43929	21170	4.03	3.18	0.85	9227**	-85	254
SSB ₂₀₂₃ = B _{pa} = MSY B _{trigger}	60370	41496	18874	3.10	2.45	0.65	12822**	-80	228
F = F ₂₀₂₁	14464	10797	3667	0.32	0.25	0.07	58367	-6.5	-21
SSB ₂₀₂₃ = SSB ₂₀₂₂	10818	8105	2713	0.227	0.179	0.048	62437	0.00	-41

* SSB₂₀₂₃ forecast relative to SSB₂₀₂₂.

** Numbers presented are estimations of the reference values.

[^] Advice values for 2022 relative to the MSY value for 2021 (18 382 tonnes).

^{^^} EU multiannual plan (MAP) for the Western Waters (EU, 2019).

The advised catch for 2022 is lower than that for 2021 owing to lower recruitment in 2019 and 2020 and the associated reduction in the forecast stock size.

Basis of the advice

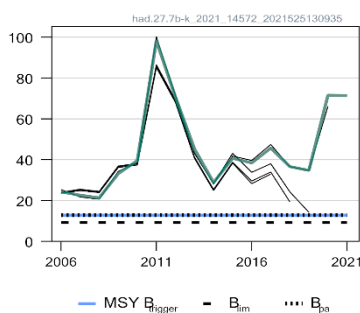
Table 4 Haddock in divisions 7.b–k. The basis of the advice.

Advice basis	MSY approach
Management plan	ICES is aware of the multiannual management plan (MAP) which has been adopted by the EU for this stock (EU, 2019) and which ICES considers to be precautionary. There is no agreed shared management plan with UK for this stock, and ICES provides advice according to ICES MSY approach. Catch scenarios consistent with the MAP F _{MSY} ranges are provided.

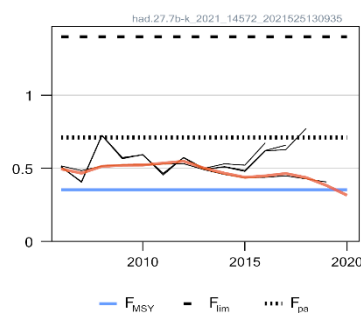
Quality of the assessment

Catch sampling of the fisheries was reduced in 2020 owing to the COVID-19 disruption, which resulted in a higher uncertainty associated with weights-at-age and the age structure of the catch. Estimated weights-at-age for 2020 were unrepresentatively low and so were replaced with averages from 2017 to 2019. Sensitivity analyses show that these have had minimal impact on the perception of the stock status.

SSB (1000 t)



F (ages 3-5)



Rec (age 0; Billions)

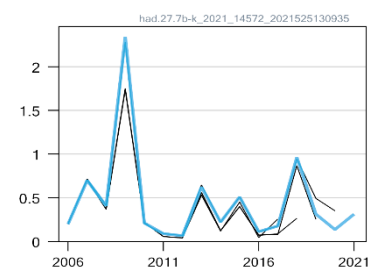


Figure 2 Haddock in divisions 7.b–k. Historical assessment results (final-year recruitment assumption and SSB estimate included). The assessment was benchmarked in 2020, prior to which a different method was applied.

Issues relevant for the advice

The assessment and advice are for divisions 7.b–k, including rectangles 33E2 and 33E3 in Division 7.a, as they are considered part of this stock. The 2020 reallocation (554 tonnes) accounts for 7% of ICES estimated division 7.b–k landings and 43% of the Irish Sea (Division 7.a) landings. This should be considered when setting TACs, as a portion of the catch taken under the Division 7.a TAC is considered to be part of the division 7.b–k stock.

The assumed recruitment in 2022 and 2023 used in the forecast would constitute a minor part of the projected catches in 2022 (7%) and approximately 28% of the SSB in 2023.

Mixed-fisheries considerations

Haddock in divisions 7.b–k is caught as part of a mixed fishery with cod and whiting. Mixed-fisheries advice will be provided in the Celtic Seas fisheries overview later in the year.

Reference points

Table 5 Haddock in divisions 7.b–k. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	12822	B_{pa} ; in tonnes	ICES (2020)
	F_{MSY}	0.353	Based on simulation using a segmented regression stock–recruitment relationship (EqSim)	ICES (2020)
Precautionary approach	B_{lim}	9227	Lowest observed SSB; in tonnes	ICES (2020)
	B_{pa}	12822	B_{lim} combined with the assessment error; $B_{lim} \times \exp(1.645 \times \sigma)$; $\sigma = 0.20$ (default setting); in tonnes	ICES (2020)
	F_{lim}	1.40	F with 50% probability of $SSB < B_{lim}$	ICES (2020)
	F_{pa}	0.71	F_{POS} ; the F that leads to $SSB \geq B_{lim}$ with 95% probability	ICES (2020)
EU MAP	MAP MSY $B_{trigger}$	12822	MSY B_{pa} ; in tonnes	EU (2019), ICES (2020)
	MAP B_{lim}	9227	Lowest observed SSB; in tonnes	EU (2019), ICES (2020)
	MAP F_{MSY}	0.353	F_{MSY}	EU (2019), ICES (2020)
	MAP range F_{lower}	0.221	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY	EU (2019), ICES (2020)
	MAP range F_{upper}	0.521	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY	EU (2019), ICES (2020)

Basis of the assessment

Table 6 Haddock in divisions 7.b–k. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2021a)
Assessment type	Age-based stochastic analytical assessment (SAM; ICES, 2021b)
Input data	Commercial catches (age composition of landings and discards); vector autoregressive spatio-temporal (VAST) standardized survey index (combined IGFS-WIBTS-Q4 [G7212] and EVHOE-WIBTS-Q4 [G9527]); maturity data (surveys and observer data; constant for all years); age-dependent natural mortality (Lorenzen, 1996)
Discards and bycatch	Included in the assessment for the full time-series. Full observer-based estimates from 2005, partial observer-based estimates from 1993 to 2004.
Indicators	None
Other information	This stock was benchmarked in 2020 (ICES, 2020)
Working groups	Working Group for the Celtic Seas Ecoregion (WGCSE)

History of the advice, catch, and management

Table 7 Haddock in divisions 7.b–k. ICES advice and official landings. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice	Landings corresponding to advice	Agreed TAC	Official landings	ICES landings ^{##}	ICES discards ^{^^^}	ICES catch
1987	Not dealt with				3000 ^{^^}	2600 ^{^^}	n/a	2600 ^{^^}
1988	Not dealt with				4000 ^{^^}	3600 ^{^^}	n/a	3600 ^{^^}
1989	Not dealt with				4200 ^{^^}	3200 ^{^^}	n/a	3200 ^{^^}
1990	Not dealt with				2900 ^{^^}	2000 ^{^^}	n/a	2000 ^{^^}
1991	Not dealt with				2900 ^{^^}	2300 ^{^^}	n/a	2300 ^{^^}
1992	Not dealt with				2900 ^{^^}	2700 ^{^^}	n/a	2700 ^{^^}
1993	Not dealt with				3400 ^{^^}	3348	1208	4556
1994	Not dealt with				4076	4131	1886	6017
1995	Not dealt with			6000*	4468	4470	2218	6688
1996	Not dealt with			7000**	6653	6756	4309	11 065
1997	Not dealt with			14 000	10270	10827	2883	13 710
1998	Not dealt with			20 000	7361	7928	934	8862
1999	Not dealt with			22 000***	5247	4970	586	5556
2000	No expansion of catches			16 600***	6656	7499	2503	10 002
2001	No expansion of catches			12 000***	9702	9278	3418	12 696
2002	No expansion of catches		8000	9300***	7089	6488	7073	13 561
2003	No expansion of catches		7200	8185***	8241	8292	9456	17 748
2004	No increase in F			9600***	8453	8777	6750	15 527
2005	No increase in effort			11 520***	6859	6839	9953	16 792
2006	No increase in effort			11 520***	5647	5592	5899	11 491
2007	No increase in effort			11 520***	6629	6961	3552	10 513
2008	Same advice as last year			11 579***	6234	7392	7660	15 052
2009	Same advice as last year			11 579 [^]	9307	9664	7322	16 986
2010	Same advice as last year			11 579 [^]	9998	10 429	18 701	29 130
2011	See scenarios			13 316 [^]	13 709	13 957	15 807	29 764
2012	No increase in catch and technical measures to reduce discard rates			16 645 [^]	18 221	19 196	8285	27 481
2013	MSY transition		< 9500	14 148 [^]	13099	13 538	3962	17 501
2014	MSY transition	< 5281	< 3602	9479 [^]	9371	9846	5619	15 464
2015	MSY approach	< 10 434	< 5605	8342 [^]	8229	8608	6941	15 549
2016	MSY approach	≤ 8590	≤ 6078	7258 [^]	7024	7648	12 065	19 713
2017	MSY approach	≤ 12 444	≤ 7751	7751 [^]	7374	8099	6691	14 789
2018	MSY approach	≤ 8358	≤ 5911	6910 [^]	6595	7046	5798	12 844
2019	MSY approach	≤ 6317		8329 [^]	8342 [#]	7656	3603	11 259
2020	Management plan	16 671 (range 11 418–23 262)		10 859 [^]	6476 [#]	7859	4260	12 119
2021	Management plan	18 382 (range 12 128–25 454)		15 000				
2022	MSY approach	15 946						

* Applies to subareas 7–10.

** Increased in-year to 14 000 tonnes.

*** Includes separate Division 7.a allocation.

[^] Applies to divisions 7.b–k and subareas 8–10.

^{^^} Values presented to the nearest 100.

^{^^^} Discard estimates are available from 2005; prior to 2005, discard estimates are based on limited sampling.

[#] Preliminary.

^{##} Including landings from rectangles 33E2 and 33E3 since 2003.

History of the catch and landings

Table 8 Haddock in divisions 7.b–k. Catch distribution by fleet in 2020, as estimated by ICES.

Catch	Landings				Discards			
	Otter trawls	Beam trawls	Gillnets	Other	Otter trawls	Beam trawls	Gillnets	Other
12119 tonnes	76%	5%	3%	16%	71%	22%	0.7%	6%
	7859 tonnes				4260 tonnes			

Table 9 Haddock in divisions 7.b–k. History of commercial catch and landings. All weights are in tonnes.

Year	Official landings							ICES estimates		
	Belgium	France	Ireland	UK	Others	Total	Landings taken or reported in rectangles 33E2 and 33E3**	Landings	Discards ***	Catch
1993	51	1839	1262	256	0	3408		3348	1208	4556
1994	123	2788	908	240	17	4076		4131	1886	6017
1995	189	2964	966	266	83	4468		4470	2218	6688
1996	133	4527	1468	439	86	6653		6756	4309	11065
1997	246	6581	2789	569	85	10270		10827	2883	13710
1998	142	3674	2788	444	312	7360		7928	934	8862
1999	51	2725	2034	278	159	5247		4970	586	5556
2000	90	3088	3066	289	123	6656		7499	2503	10002
2001	165	4842	3608	422	665	9702		9278	3418	12696
2002	132	4348	2188	315	106	7089		6488	7073	13561
2003	118	5781	1867	393	82	8241	64	8292	9456	17748
2004	136	6130	1715	313	159	8453	53	8777	6750	15527
2005	167	4174	2037	292	197	6867	35	6839	9953	16792
2006	99	3191	1874	274	183	5621	26	5592	5899	11491
2007	119	4143	1931	385	50	6627	222	6961	3552	10513
2008	109	3638	1800	566	121	6234	194	7392	7660	15052
2009	131	5430	2983	716	48	9307	285	9664	7322	16986
2010	170	6240	2609	852	128	9998	267	10429	18701	29130
2011	211	8389	3323	1657	129	13709	374	13957	15807	29764
2012	232	11793	4129	1901	166	18221	473	19196	8285	27481
2013	174	8747	2699	1455	23	13099	410	13538	3962	17501
2014	99	6375	2092	785	21	9371	444	9846	5619	15464
2015	118	5679	1657	769	6	8229	322	8608	6941	15549
2016	88	4487	1730	692	27	7024	468	7648	12065	19713
2017	110	4885	1677	690	12	7374	715	8099	6691	14789
2018	89	4470	1444	583	9	6595	532	7046	5798	12844
2019*	90	4259	1323	516	74	6262	760	7656	3603	11259
2020*	106	3522	2203	543	102	6475	554	7859	4260	12119

* Preliminary official landings.

** Landings in the southern part of Division 7.a (rectangles 33E2 and 33E3) are included in the assessment and are considered part of the stock.

*** Discard estimates are available from 2005; prior to 2005, discard estimates are based on limited sampling.

Summary of the assessment

Table 10 Haddock in divisions 7.b–k. Assessment summary. High and low refer to 95% confidence intervals. All weights are in tonnes and recruitment in thousands.

Year	Recruitment (age 0)			SSB			Landings	Discards**	Fishing mortality ages 3–5		
	Low	Value	High	Low	Value	High			Low	Value	High
1993	67544	136397	275440	6211	9281	13868	3348	1208	0.39	0.58	0.87
1994	247562	393920	626806	7556	10863	15619	4131	1886	0.38	0.53	0.75
1995	299847	475026	752549	8204	11519	16173	4470	2218	0.38	0.53	0.73
1996	105737	165476	258966	15379	20654	27738	6756	4309	0.39	0.53	0.72
1997	37772	59085	92422	19450	25521	33485	10827	2883	0.48	0.62	0.81
1998	57353	89938	141035	15523	19798	25251	7928	934	0.50	0.64	0.82
1999	230623	359475	560318	10447	13028	16246	4970	586	0.46	0.59	0.76
2000	224862	348984	541620	9820	11919	14467	7499	2503	0.56	0.69	0.86
2001	318207	485670	741264	14201	18486	24065	9278	3418	0.60	0.74	0.91
2002	660605	992452	1490998	18411	23448	29864	6488	7073	0.60	0.74	0.90
2003	161008	234321	341014	22590	28255	35342	8292	9456	0.61	0.75	0.93
2004	241554	350287	507964	32126	40708	51581	8777	6750	0.61	0.77	0.98
2005	170790	245785	353710	23317	28512	34865	6839	9953	0.51	0.64	0.80
2006	135778	198128	289111	20215	24196	28961	5592	5899	0.38	0.50	0.64
2007	484583	699699	1010309	19212	22622	26638	6961	3552	0.36	0.47	0.60
2008	284994	407920	583869	17931	21299	25299	7392	7660	0.41	0.51	0.64
2009	1618042	2343490	3394193	27041	33115	40554	9664	7322	0.42	0.52	0.65
2010	138406	211788	324078	33374	39553	46876	10429	18701	0.42	0.52	0.65
2011	62988	89575	127384	77307	98240	124842	13957	15807	0.43	0.54	0.66
2012	45120	65390	94765	56757	70734	88153	19196	8285	0.44	0.55	0.68
2013	433410	623252	896249	36541	45241	56012	13538	3962	0.40	0.50	0.62
2014	152482	221066	320497	23750	28814	34958	9846	5619	0.38	0.47	0.58
2015	356527	509791	728940	33189	40673	49844	8608	6941	0.35	0.44	0.55
2016	77069	112634	164612	31898	38415	46262	7648	12065	0.36	0.45	0.56
2017	119845	176925	261191	37898	45702	55115	8099	6691	0.36	0.46	0.59
2018	620509	963380	1495708	30288	36604	44238	7046	5798	0.33	0.44	0.57
2019	185496	312600	526798	28559	34774	42341	7656	3603	0.28	0.38	0.52
2020	61784	136259	300508	51403	71576	99664	7859	4260	0.21	0.32	0.47
2021	59085	312600*	2343490	48714	71393	104685					

* Median resampled (1993–2020), as estimated by stochastic projection.

** Discard estimates are available from 2005; prior to 2005, discard estimates are based on limited sampling.

Sources and references

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

Recommended citation: ICES. 2021. Haddock (*Melanogrammus aeglefinus*) in Divisions 7.b-k (southern Celtic Seas and English Channel). In Report of the ICES Advisory Committee, 2021. ICES Advice 2021, had.27.7b-k. <https://doi.org/10.17895/ices.advice.7764>.