

Haddock (*Melanogrammus aeglefinus*) in Subarea 4, Division 6.a, and Subdivision 20 (North Sea, West of Scotland, Skagerrak).

ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, total catches in 2024 should be no more than 149 024 tonnes.

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

ICES advice on conservation aspects

ICES has not identified any conservation aspects.

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} .

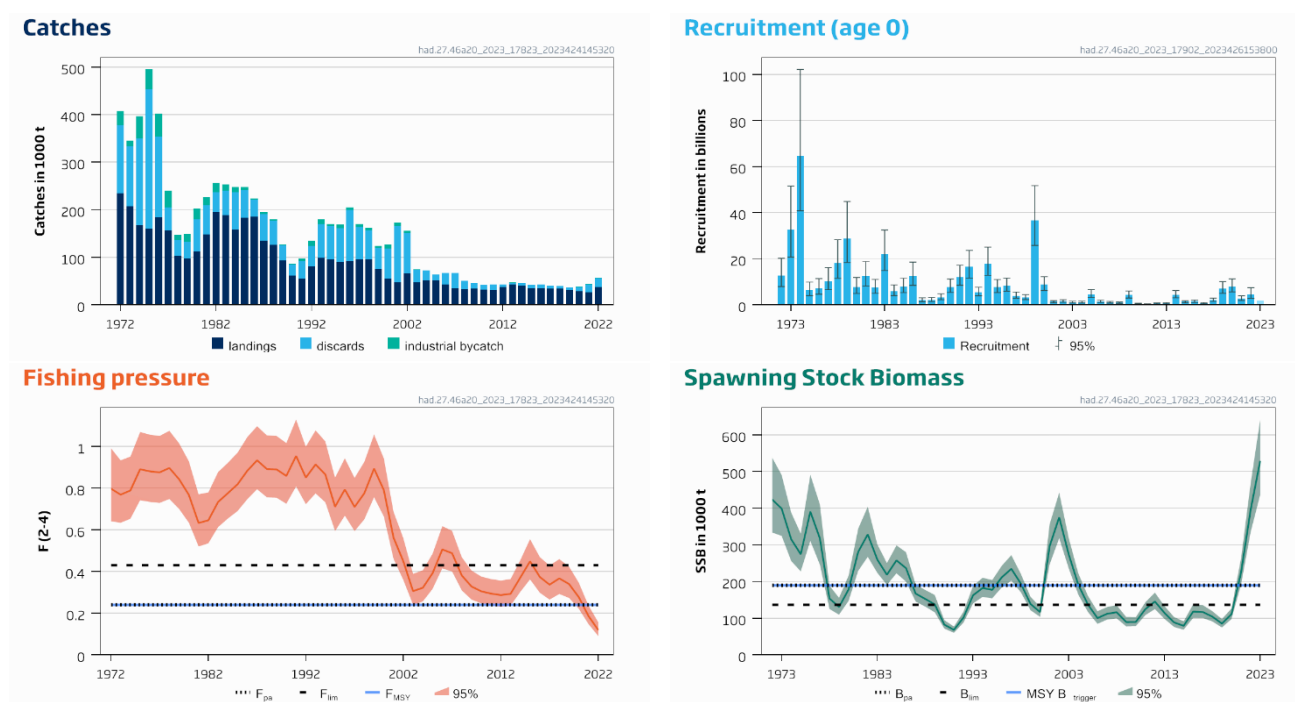


Figure 1 Haddock in Subarea 4, Division 6.a, and Subdivision 20. Summary of the stock assessment. The assumed recruitment value for 2023 is shaded in a lighter colour. Discards include below minimum size (BMS) landings.

Conservation status

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

Catch scenarios

Table 1 Haddock in Subarea 4, Division 6.a, and Subdivision 20. Values in the forecast and for the interim year.

Variable	Value	Notes
$F_{ages\ 2-4}$ (2023)	0.111	Based on a catch constraint for 2023. Average exploitation pattern (2020–2022).
SSB (2024)	533910	Short-term forecast (STF); tonnes.

Variable	Value	Notes
R _{age 0} (2023, 2024)	1746116	Resampled recruitments from the years 2000–2022 (geometric mean shown); thousands
Total catch (2023)	68499	TAC for 2023; tonnes
Projected landings (2023)	56011	STF, assuming average landings ratio by age, 2020–2022; tonnes
Projected discards and industrial bycatch (IBC) (2023)	12488	STF, assuming average discards (including IBC) ratio by age, 2020–2022; tonnes

Table 2 Haddock in Subarea 4, Division 6.a, and Subdivision 20. Annual catch scenarios. Weights are in tonnes.

Basis	Total catch (2024)	Projected landings (2024)	Projected discards and IBC* (2024)	F _{total} (ages 2–4) (2024)	F _{projected landings} (ages 2–4) (2024)	F _{projected discards and IBC} (ages 2–4) (2024)	SSB (2025)	% SSB change [^]	% TAC change ^{^^}	% advice change ^{^^^}
ICES advice basis										
MSY approach: F _{MSY}	149024	126601	22423	0.24	0.184	0.056	473483	-11.3	118	17.8
Other scenarios										
F _{MSY lower}	118955	101191	17764	0.186	0.142	0.044	499800	-6.4	74	-6.0
F _{MSY upper} [#]	149024	126601	22423	0.24	0.184	0.056	473483	-11.3	118	17.8
F = 0	0	0	0	0	0	0	604551	13.2	-100	-100
F _{pa}	149024	126601	22423	0.24	0.184	0.056	473483	-11.3	118	17.8
F _{lim}	241162	204166	36996	0.43	0.33	0.101	393776	-26	252	91
SSB (2025) = B _{lim}	555289	454909	100380	1.73	1.32	0.41	136541	-74	711	339
SSB (2025) = B _{pa} = MSY B _{trigger}	487066	403012	84054	1.28	0.98	0.30	189734	-64	611	285
F = F ₂₀₂₃	74057	63075	10982	0.111	0.085	0.026	538888	0.93	8.1	-41
Rollover TAC	68498	58366	10132	0.102	0.078	0.024	543651	1.82	0	-46

* Including below minimum size (BMS) landings. Assuming recent discard rate.

[^] SSB 2025 relative to SSB 2024.

^{^^} Human consumption fishery (HCF) catch in 2024 relative to TAC in 2023: Subdivision 20 (3589 t) + Subarea 4 (58402 t) + Division 6.a (6507 t) = 68498 t.

^{^^^} Total catch 2024 relative to the advice value 2023 (126511 t).

[#] For this stock, F_{MSY upper} = F_{MSY}.

The change in advice (17.8%) is due to the increase in stock size and a larger recruitment estimated for 2022 than was assumed last year, as well as an upward revision in the size of other age classes in 2022.

Basis of the advice

Table 3 Haddock in Subarea 4, Division 6.a, and Subdivision 20. The basis of the advice.

Advice basis	MSY approach.
Management plan	An EU multiannual management plan (MAP) has been agreed by the EU for this stock (EU, 2018). There is no agreement with Norway and UK regarding this plan, and it is not used as the basis of the advice for this shared stock. ICES was requested by the EC and UK to provide advice based on the MSY approach, and to include F_{MSY} ranges in the catch scenarios.

Quality of the assessment

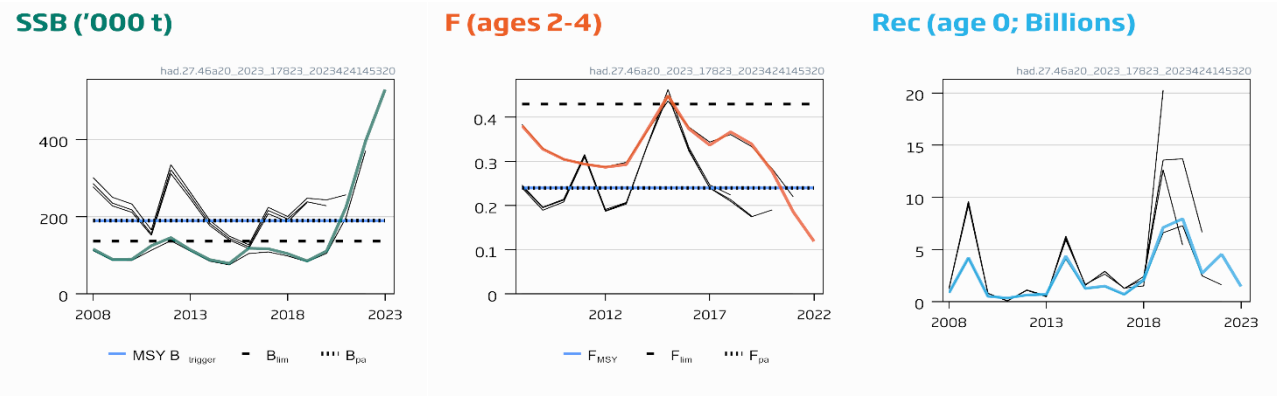


Figure 2 Haddock in Subarea 4, Division 6.a, and Subdivision 20. Historical assessment results (final-year SSB and recruitment included for each line, corresponding respectively to the estimated survivors at the start of the interim year, and the forecast recruitment in the interim year). The reference points were revised in 2022 following a benchmark, and only assessment results from the last two years should be compared to the reference points indicated.

Issues relevant to the advice

More abundant year classes were produced prior to 2000; recruitment since then has tended to be consistently lower. However, the last four year classes have all been above the recent mean, which – in combination with recent low F – produced a sharp increase in SSB and continues to impact the catch advice.

Haddock on the Northern Shelf is under the EU landing obligation as well as Norway and UK national legislation regulating discards. Landings of fish below the minimum size (BMS) reported to ICES are very low, and discarding still takes place. The estimated discards in 2022 were 33% of the total catch by weight, based on observer data.

Reference points

Table 4 Haddock in Subarea 4, Division 6.a, and Subdivision 20. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	189734	B_{pa} ; in tonnes.	ICES (2023a)
	F_{MSY}	0.24	Stochastic simulations (EqSim) based on the recruitment period 2000–2020 with segmented regression fixed at B_{lim} .	ICES (2023a)
Precautionary approach	B_{lim}	136541	Lowest estimated SSB that resulted in high recruitment (1999); in tonnes.	ICES (2023a)
	B_{pa}	189734	$B_{lim} \times \exp(1.645 \times \sigma)$, $\sigma = 0.20$; in tonnes.	ICES (2023a)
	F_{lim}	0.43	The F that on average leads to B_{lim} from EqSim.	ICES (2023a)
	F_{pa}	0.24	The F that provides a 95% probability for SSB to be above B_{lim} ($F_{P.05}$ with advice rule [AR]).	ICES (2023a)

EU Management Plan*	MAP M_{SY} $B_{trigger}$	189734	MSY $B_{trigger}$, in tonnes.	ICES (2023a)
	MAP B_{lim}	136541	B_{lim} , in tonnes.	ICES (2023a)
	MAP F_{MSY}	0.24	F_{MSY}	ICES (2023a)
	MAP range F_{lower}	0.186–0.24	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY .	ICES (2023a)
	MAP range F_{upper}^{**}	0.24–0.24	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY .	ICES (2023a)

* EU multiannual plan (MAP) for the North Sea (EU, 2018).

** For this stock, $F_{MSY upper} = F_{MSY}$.

Basis of the assessment

Table 5 Haddock in Subarea 4, Division 6.a, and Subdivision 20. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2023b)
Assessment type	Age-based analytical assessment (SAM; Nielsen and Berg, 2014; ICES, 2023c) that uses catches and surveys in the model and in the forecast.
Input data	Commercial catches (international catches, ages from catch sampling), two survey indices derived through a delta-GAM approach: “Q1” (combining NS-IBTS [G1022], SWC-IBTS [G1179], SCOWCGFS [G4748]), “Q3+Q4” (combining NS-IBTS Q3 [G2829], Q4 SWC-IBTS [G4299], Q4 SCOWCGFS [G4815], and Q4 IGFS [G7212]). Annually varying maturity data from Q1 NS-IBTS [G1022], Q1 SWC-IBTS [G1179], and Q1 SCOWCGFS [G4748] (1991–2023). Annually varying natural mortalities from the North Sea multispecies model (1974–2020)(ICES, 2021).
Discards, BMS landings, and bycatch	Included in the assessment; data from the main fleets (covering around 87% of the landings in 2022). BMS landings, where reported, are included with discards and industrial bycatch in the assessment from 2016 onwards.
Indicators	None
Other information	Last benchmarked in 2022 during ICES Benchmark Meeting on North Sea and Celtic Sea Stocks (WKNSSC; ICES, 2023a), where several updates were made to biological parameters and a new assessment model was selected
Working group	Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK)

History of the advice, catch, and management

Table 6a Haddock in Subarea 4, Division 6.a, and Subdivision 20. **North Sea (Subarea 4)**. ICES advice, TAC, official landings, and ICES catch estimates. Weights are in tonnes. Values of landings, discards, and catches for the period 1987–2014 are presented to the nearest thousand tonnes.

Year	ICES advice	Landings corresp. to advice	Total catch corresp. to advice [^]	Agreed TAC	Official landings	ICES landings ^{^^^}	ICES discards ^{^^,^^^}	ICES industrial bycatch ^{^^^}	ICES total ^{^^^}
1987	80% of $F(85)$	105000		140000	109000	108000	59000	4000	172000
1988	77% of $F(86)$; TAC	185000		185000	105000	105000	62000	4000	171000
1989	Reduce decline in SSB; TAC; protect juveniles	68000		68000	64000	76000	26000	2000	104000
1990	80% of $F(88)$; TAC	50000		50000	43000	51000	33000	3000	87000
1991	70% of effort (89)			50000	45000	45000	40000	5000	90000
1992	70% of effort (89)			60000	51000	70000	48000	11000	129000
1993	70% of effort (89)			133000	80000	80000	80000	11000	170000
1994	Significant reduction in effort; mixed fishery			160000	87000	81000	65000	4000	150000
1995	Significant reduction in effort; mixed fishery			120000	75000	75000	57000	8000	140000
1996	Mixed fishery to be taken into account			120000	75000	76000	73000	5000	154000
1997	Mixed fishery to be taken into account			114000	73000	79000	52000	7000	138000
1998	No increase in F	100300		115000	72000	77000	45000	5000	128000

Year	ICES advice	Landings corresp. to advice	Total catch corresp. to advice [^]	Agreed TAC	Official landings	ICES landings ^{^^}	ICES discards ^{^^ ,^{^^^}}	ICES industrial bycatch ^{^^ ^}	ICES total ^{^^^}
1999	Reduction of 10% F (95–97)	72000		88600	64000	64000	43000	4000	111000
2000	F less than F_{pa}	< 51700		73000	47000	45000	47000	8000	100000
2001	F less than F_{pa}	< 58000		61000	40000	39000	118000	8000	165000
2002	F less than F_{pa}	< 94000		104000	54000	53000	45000	4000	101000
2003	No cod catches	-		52000	42000	42000	23000	1000	76000
2004	Mixed-fisheries considerations; F should be below F_{pa}	No forecast*		85000	48000	47000	17000	1000	65000
2005	Mixed-fisheries considerations/F should be below F_{pa}	92000*		66000	31000	48000	10000	0	57000
2006	Mixed-fisheries considerations/F < 0.3	39000*		52000	36000	36000	17000	0	55000
2007	Mixed-fisheries considerations/F < 0.3	55400*		55000	31000	31000	30000	0	61000
2008	Mixed-fisheries considerations/15% TAC reduction	49300*,**		46000	30000	29000	15000	0	45000
2009	Mixed-fisheries considerations/apply management plan	44700*,**		42000	31000	30000	10000	0	40000
2010	Mixed-fisheries considerations/apply management plan	38000*,**		36000	28000	28000	7000	0	35000
2011	See scenarios	-		34000	26000	27000	10000	0	37000
2012	Apply management plan	41575*,**		39000	30000	30000	4000	0	34000
2013	Apply management plan	47811*,**		45041	37000***	39000***	2000***	0	39000***
2014	Apply management plan	38201*		38284	35000	35000	4000	65	39000
2015	(November update) MSY approach		68 690	40711	30276	30013	4676	18	34707
2016	MSY approach		≤59945	61933	30162	29713	6106	29	35848
2017	MSY approach		≤39461	33643	30051	29318	5322	8	34648
2018	MSY approach		≤48990	41767	29417	29333	3767	30	33130
2019	MSY approach		≤33956	28950	25542	26583	3570	183	30337
2020	MSY approach		≤41818	35653	26485	26023	8106	930	35060
2021	MSY approach		≤69280	42785	22401#	21019	11450	1266	33735
2022	MSY approach		≤128708	44924	31802#	30893	16513	389	47795
2023	MSY approach		≤126511	58402					
2024	MSY approach		≤149024						

* The exploitation of this stock should be conducted in the context of mixed fisheries, protecting stocks outside safe biological limits.

** Including industrial bycatch.

*** Subarea 4 and Subdivision 20 combined.

[^] Catch advice since 2015 is provided for Subarea 4, Division 6.a, and Subdivision 20.

^{^^} Since 2016, discards estimated by ICES include BMS landings.

^{^^^} Due to an InterCatch issue when generating area-specific catch estimates, these values do not sum to the catch-component totals in Tables 7, 8, and 9 when added across areas. The latter are used in the assessment.

Preliminary.

Table 6b Haddock in Subarea 4, Division 6.a, and Subdivision 20. **Skagerrak (Subdivision 20)**. ICES advice, TAC, official landings, and ICES catch estimates. Weights are in tonnes. Values of landings, discards, and catches for the period 1987–2014 are presented to the nearest hundred tonnes.

Year	ICES advice	Landings corresp. To advice	Catch corresp. To advice**	Agreed TAC	Official landings	ICES landings^^	ICES discards ^,^^	ICES industrial bycatch^^	ICES total catch^^
1987	Precautionary TAC	-		11500		3800		1400	5300
1988	Precautionary TAC	-		10000		2900		1500	4300
1989	Precautionary TAC	-		10000		4100		400	4500
1990	Precautionary TAC	-		10000		4100		2000	6100
1991	Precautionary TAC	4600		4600		4100		2600	6700
1992	TAC	4600		4600		4400		4600	9000
1993	Precautionary TAC	-		4600		2000		2400	4400
1994	Precautionary TAC	-		10000		1800		2200	4000
1995	If required, precautionary TAC; link to North Sea	-		10000		2200		2200	4400
1996	If required, precautionary TAC; link to North Sea	-		10000		3100		2900	6100
1997	Combined advice with North Sea	-		7000		3400		600	4000
1998	Combined advice with North Sea	4700		7000		3800		300	4000
1999	Combined advice with North Sea	3400		5400		1400		300	1700
2000	Combined advice with North Sea	< 1800		4500		1500		600	2100
2001	Combined advice with North Sea	< 2000		4000		1900		200	2100
2002	Combined advice with North Sea	< 3000		6300		4100		60	4100
2003	Combined advice with North Sea	-		3200		1800	200	n/a	1800
2004	Combined advice with North Sea/ F should be below F_{pa}	No forecast		4900		1400	100	n/a	1400
2005	Combined advice with North Sea/F should be below F_{pa}	-		4000		800	200	0	800
2006	Combined advice with North Sea/F < 0.3	-		3200		1500	1000	0	1500
2007	Combined advice with North Sea/F < 0.3	-		3400		1600	800	0	2500
2008	Combined advice with North Sea/15% TAC reduction	2900		2900		1300	400	0	1800
2009	Combined advice with North Sea/apply management plan	-		2600		1500	400	0	1900
2010	Combined advice with North Sea/apply management plan	-		2200		1400	600	0	2000
2011	See scenarios	-		2100		2100	1300	0	3400
2012	Apply North Sea management plan	-		2095	2500	2600	800	0	3400
2013	Apply North Sea management plan	-		2770	2000	*	*	*	*
2014	Apply North Sea management plan	2438		2355	2200	2300	200	0	2400
2015	(November update) MSY approach		68690	2504	1432	1421	163	3	1586
2016	MSY approach		≤ 59945	3926	1215	1221	93	7	1321
2017	MSY approach		≤ 39461	2069	1032	1111	134	0	1245
2018	(November update) MSY approach		≤ 48990	2569	717	797	68	0	865

Year	ICES advice	Landings corresp. To advice	Catch corresp. To advice**	Agreed TAC	Official landings	ICES landings^^	ICES discards ^,^^	ICES industrial bycatch^^	ICES total catch^^
2019	MSY approach		≤ 33956	1780	584	625	75	3	703
2020	MSY approach		≤ 41818	2193	519	402	247	147	796
2021	MSY approach		≤ 69280	2630	2005#	1988	614	93	2695
2022	MSY approach		≤ 128708	2761	3232#	3365	909	42	4316
2023	MSY approach		≤ 126511	3589					
2024	MSY approach		≤ 149024						

* Subarea 4 and Subdivision 20 combined (see Table 6a).

** Catch advice since 2015 is given for Subarea 4, Division 6.a, and Subdivision 20.

^ Since 2016, discards estimated by ICES include BMS landings.

^^ Due to an InterCatch issue when generating area-specific catch estimates, these values do not sum to the catch-component totals in Tables 7, 8, and 9 when added across areas. The latter are used in the assessment.

Preliminary.

Table 6c Haddock in Subarea 4, Division 6.a, and Subdivision 20. **West of Scotland (Division 6.a).** ICES advice, TAC, official landings, and ICES catch estimates. All weights are in tonnes. Values for the period 1987–2014 are presented to the nearest thousand (official landings) or nearest hundred (ICES landings, discards, and total) tonnes.

Year	ICES advice/Single-stock exploitation boundaries from 2004 onwards *	Landings corresp. to advice	Catch corresp. to advice^^	Agreed TAC	Official landings	ICES landings^ ^^	ICES discards^^ ^, #	ICES industrial bycatch^ ^^	ICES total catch^^^
1987	Reduce F towards F_{max}	20000		32000	27000	27000	16200		43200
1988	No increase in F; TAC	25000		35000	21000	21200	9500		30700
1989	80% of F (87); TAC	15000		35000	24000	16700	3000		19700
1990	80% of F (88); TAC	14000		24000	13000	10100	5400		15500
1991	70% of effort (89)	-		15200	10000	10600	8700		19200
1992	70% of effort (89)	-		12500	7000	11400**	9300**		20500**
1993	70% of effort (89)	-		17600	13000	19100**	16800**		35900**
1994	30% reduction in effort	-		16000	9000	14200**	11100**		25000**
1995	Significant reduction in effort	-		21000	13000	12400	8600		20900
1996	Significant reduction in effort	-		22900	13000	13500	11400		24800
1997	Significant reduction in effort	-		20000	13000	12900	6500		19300
1998	No increase in F	20800***		25700	14000	14400	5500		19900
1999	F reduced to F_{pa}	14300***		19000	11000	10500	4900		15300
2000	Maintain F below F_{pa}	< 14900***		19000	7000	7000	7900		14900
2001	Reduce F below F_{pa}	< 11200***		13900	7000	6870	6600		13400
2002	Reduce F below F_{pa}	< 14100***		14100	7000	7100	8900		16000
2003	No cod catches	-		8700	4900	5300	4100		9400
2004	F_{pa} *	12200		6500	3000	3900	3700		7600
2005	$0.75 \times F_{pa}$ *	7600		7600	3200	3800	2900		6700
2006	$0.7 \times F_{pa}$ *	8000		7810	5700	6300	4600		10900
2007	$0.87 \times F_{pa}$ *	7200		7200	3700	3800	4000		7700
2008	$SSB > B_{pa}$ *	4200		6120	2800	2800	1600		4400
2009	No fishing and recovery plan*	0		3520	2800	2800	1800		4600
2010	No fishing and recovery plan	0		2670	2900	2900	1600		4500
2011	See scenarios	0		2005	1700	1800	1300		3100
2012	MSY framework	5600		6015	5000	5100	500		5600
2013	MSY framework	3100		4211	4700	4800	1000		5800

Year	ICES advice/Single-stock exploitation boundaries from 2004 onwards *	Landings corresp. to advice	Catch corresp. to advice^^	Agreed TAC	Official landings	ICES landings^^	ICES discards^^, #	ICES industrial bycatch^^	ICES total catch^^^
2014	MSY approach	6432^		3988	4000	4100	800		4900
2015	(November update) MSY approach		68690	4536	3889	39625	1425		5387
2016	MSY approach		≤ 59945	6462	4265	4346	1626		5972
2017	MSY approach		≤ 39461	3697	3251	34564	1615		5071
2018	(November update) MSY approach		≤ 48990	4654	4318	4380	1391		5771
2019	MSY approach		≤ 33956	3226	3511	3587	2090		5677
2020	MSY approach		≤ 41818	3973	2669	2695	619		3314
2021	MSY approach		≤ 69280	4767	3559##	3660	4370		8030
2022	MSY approach		≤ 128708	5006	3484##	3455	1766		5221
2023	MSY approach		≤ 126511	6507					
2024	MSY approach		≤ 149024						

* Single-stock boundary and the exploitation of this stock should be conducted in the context of mixed fisheries, protecting stocks outside safe biological limits.

** Adjusted for misreporting.

*** For Division 6.a only.

^ This value (6432 t) refers to total catch, including discards. Therefore, it is not directly comparable to the value advised for 2013 (3100 t), which referred only to landings.

^^ Catch advice since 2015 is given for Subarea 4, Division 6.a, and Subdivision 20.

^^^ Due to an InterCatch issue when generating area-specific catch estimates, these values do not sum to the catch-component totals in Tables 7, 8, and 9 when added across areas. The latter are used in the assessment.

Since 2016, discards estimated by ICES include BMS landings.

Preliminary.

History of the catch and landings

Table 7 Haddock in Subarea 4, Division 6.a, and Subdivision 20. Catch distribution by fleet in 2022 as used in the assessment model.

Catch	Landings*			Discards**	Industrial bycatch
56849 tonnes	Demersal trawl and seine > 100 mm	Trawl 70–99 mm	Others	19027 tonnes	430 tonnes
	86%	1%	13%		
37392 tonnes					

* Landings include the Norwegian component of BMS landings.

** Discards include BMS landings from EU and UK fleets.

Table 8 Haddock in Subarea 4, Division 6.a, and Subdivision 20. History of official commercial landings for individual areas, along with ICES estimates. Weights are in tonnes.

Subdivision 20															
Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021*	2022*
Germany	87	105	65	102	120	90	114	103	125	56	31	30	13	21	0
Denmark	1052	1263	1139	1661	1916	1456	1764	1059	908	852	542	457	449	1841	2740
Netherlands	0	0	1	0	0	5	6	4	2	20	4	4	1	11	7
Norway	170	121	81	125	303	223	86	63	70	0	0	0	0	8	215
Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sweden	276	166	126	198	210	217	219	203	110	104	140	93	56	124	270
UK	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
BMS landings										< 1	< 1	0	< 1	74	7
Subarea 4															
Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021*	2022*
Belgium	112	108	78	106	78	78	98	47	53	30	29	29	40	150	232
Germany	393	657	634	575	548	677	677	599	554	609	348	313	370	369	562
Denmark	501	552	725	697	947	1283	1079	1442	1244	1185	1117	1174	1680	1892	1738
Spain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Faroese	3	32	5	0	0	0	0	0	0	0	0	1	2	0	0
France	448	135	276	320	175	177	209	100	121	140	201	188	144	219	345
Greenland	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	< 1
Iceland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	130	0	0
Netherlands	29	24	41	71	191	172	99	44	146	75	102	166	218	291	751
Norway	1482	1278	1126	1195	1006	1662	2743	2003	1499	2164	1428	1516	3165	2215	2542
Poland	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sweden	83	141	90	128	103	113	154	136	118	181	100	111	115	142	177
UK	27365	28393	24983	23343	27378	33013	29851	25905	26427	25667	26091	22044	20621	17123	25455
BMS landings										< 1	15	160	287	208	299

Division 6.a															
Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021*	2022*
Germany	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Denmark	0	0	0	0	0	0	0	0	2	2	1	9	4	18	9
Spain	10	21	28	36	15	14	19	9	33	28	28	64	26	24	14
Faroes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
France	151	136	89	73	32	51	67	41	62	68	66	57	86	92	181
Ireland	879	297	396	290	845	746	667	768	1034	641	758	562	448	587	878
Netherlands	0	0	0	0	0	0	0	11	28	31	17	54	23	0	0
Norway	28	18	9	4	0	6	2	7	5	1	7	10	2	< 1	1
UK	1776	2380	2415	1364	4123	3878	3261	3052	3101	2480	3441	2755	2080	2838	2401
BMS landings										0	2	15	26	30	15
Subarea 4, Division 6.a, and Subdivision 20															
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021*	2022*
Official landings	34862	35831	32308	30288	37990	43864	41115	35596	35642	34334	34451	29637	29673	27965	38518
ICES landings	32692	34361	31926	30273	37839	43230	40589	35215	35111	33799	34441	30620	28942	26457	37392
ICES discards and IBC^	17235	12159	9417	12609	5073	3473	5336	6262	7819	7061	5245	5701	9987	17665	19457
ICES total catch	49927	46519	41344	42882	42912	46703	45926	41477	42930	40860	39687	36320	38928	44122	56849
TAC 4	46444	42110	35794	34057	39000	45041	38284	40711	61933	33643	41767	28950	35653	42785	44924
TAC 3.a 20	2856	2590	2201	2100	2095	2770	2355	2504	3926	2069	2569	1780	2193	2630	2761
TAC 6.a	6120	3520	2670	2005	6015	4211	3988	4536	6462	3697	4654	3226	3973	4767	5006
Total TAC	55420	48220	40665	38162	47110	52022	44627	47751	72321	39409	48990	33956	41819	50182	52691

* Official landings are preliminary.

^ ICES discards included since 2016 BMS landings from EU and UK fleets.

Summary of the assessment

Table 9 Haddock in Subarea 4, Division 6.a, and Subdivision 20. Assessment summary. Recruitment is in thousands, weights in tonnes. Low and High refer to 95% confidence intervals.

Year	Recruitment (Age 0)			Spawning stock biomass			Landings*	Discards**	Industrial bycatch	Fishing pressure (Ages 2–4)		
	Low	R	High	Low	SSB	High				Low	F	High
1972	7954948	12678426	20206605	333766	424096	538873	234019	144366	29585	0.64	0.80	0.99
1973	20700104	32664977	51545670	324480	399151	491006	207489	126105	11267	0.63	0.77	0.93
1974	40799975	64558023	102150513	256019	315460	388701	167528	181802	47505	0.65	0.79	0.95
1975	3974979	6266450	9878893	227496	274399	330972	160271	293321	41487	0.74	0.89	1.07
1976	4589397	7224863	11373746	310592	390777	491664	184421	169776	48163	0.73	0.88	1.06
1977	6561607	10279637	16104431	245519	317479	410531	156639	48732	35022	0.73	0.88	1.05
1978	11510596	18045759	28291275	125076	153749	188995	102970	32860	10903	0.75	0.90	1.08
1979	18337119	28673787	44837255	109445	130670	156012	97896	35054	16240	0.70	0.84	1.02
1980	4959513	7671036	11865034	147063	178492	216638	111371	68831	22472	0.63	0.77	0.93
1981	8135805	12372128	18814308	228865	280800	344522	147806	61683	17041	0.52	0.63	0.77
1982	5025536	7442905	11023071	267154	328712	404454	195456	41297	19383	0.54	0.65	0.78
1983	14904105	22001542	32478827	223529	259824	302012	188754	51584	12898	0.61	0.73	0.88
1984	3963021	5850387	8636601	190603	218557	250612	158205	79012	10080	0.65	0.78	0.92
1985	5307976	7839522	11578442	222330	257798	298923	182946	58373	5998	0.69	0.82	0.97
1986	8420918	12498894	18551699	199467	236425	280230	185137	36063	2643	0.75	0.88	1.05
1987	1390391	2056670	3042233	145262	167168	192378	135022	55674	4410	0.80	0.93	1.10
1988	1450878	2141987	3162297	131530	152660	177184	126227	49833	4002	0.76	0.89	1.05
1989	2235020	3278597	4809443	115818	137670	163644	92840	32453	2410	0.75	0.89	1.05
1990	5385814	7770771	11211841	71459	82458	95149	61605	22548	2589	0.73	0.86	1.02
1991	8493282	12078886	17178221	60010	68151	77397	55208	36610	5386	0.81	0.96	1.13
1992	11528081	16500340	23617219	87774	101708	117854	81566	42477	10927	0.72	0.85	1.00
1993	3896486	5451967	7628397	140066	162404	188305	98631	70748	10766	0.78	0.91	1.08
1994	12766386	17890793	25072131	158145	182443	210474	95141	70668	3576	0.73	0.87	1.02
1995	5332208	7646288	10964635	154077	177369	204182	89859	71262	7695	0.59	0.71	0.85
1996	5887069	8273892	11628415	183744	211447	243327	92615	107207	5000	0.67	0.79	0.94
1997	2826989	3954799	5532543	202245	234682	272322	95391	67879	6684	0.59	0.71	0.85
1998	2273308	3173464	4430054	170343	194014	220975	95472	61399	5101	0.65	0.78	0.93
1999	25792726	36536706	51756099	121726	138994	158712	76009	43562	3835	0.76	0.89	1.06
2000	6234227	8734831	12238451	103474	116634	131468	54504	64185	8134	0.66	0.79	0.94
2001	924275	1305540	1844077	246176	296282	356586	47592	117882	7879	0.46	0.56	0.69
2002	1121362	1571855	2203328	317941	375280	442960	65405	86051	3717	0.36	0.45	0.56
2003	824764	1159465	1629994	235006	273645	318636	47282	25975	1150	0.24	0.31	0.39
2004	811429	1134740	1586872	163900	190954	222473	51896	20020	554	0.26	0.32	0.41

Year	Recruitment (Age 0)			Spawning stock biomass			Landings*	Discards**	Industrial bycatch	Fishing pressure (Ages 2–4)		
	Low	R	High	Low	SSB	High				Low	F	High
2005	3178885	4584478	6611575	116977	137388	161360	51528	12389	168	0.32	0.39	0.49
2006	1031274	1444493	2023282	84406	100297	119180	43334	23094	535	0.42	0.51	0.62
2007	749035	1053590	1481975	96144	112035	130553	34672	32651	48	0.40	0.49	0.60
2008	592789	840808	1192596	99515	116241	135778	32692	17234	1	0.31	0.38	0.47
2009	2941602	4203720	6007361	77583	89586	103445	34361	12159	0	0.27	0.33	0.41
2010	357860	507468	719621	78304	89799	102982	31926	9417	0	0.25	0.31	0.38
2011	245742	344849	483924	108174	124626	143581	30273	12609	0	0.24	0.29	0.36
2012	447881	631112	889305	124777	145632	169971	37839	5054	19	0.23	0.29	0.36
2013	497822	695931	972880	98107	114401	133402	43230	3305	168	0.24	0.29	0.36
2014	3043861	4349364	6214793	75925	88570	103322	40589	5271	65	0.30	0.37	0.46
2015	905936	1267983	1774720	68432	79159	91568	35215	6241	21	0.36	0.45	0.56
2016	1059894	1487641	2088017	100929	118145	138297	35111	7782	37	0.30	0.37	0.47
2017	495340	693858	971937	100532	116902	135937	33799	7053	8	0.27	0.34	0.43
2018	1491343	2091658	2933620	91039	104240	119355	34441	5215	30	0.29	0.37	0.46
2019	5008521	7099038	10062120	74454	85379	97908	30620	5515	186	0.27	0.34	0.42
2020	5592527	7937453	11265598	97417	111103	126712	28942	8910	1077	0.22	0.28	0.35
2021	1863340	2710758	3943567	191307	224921	264442	26457	16308	1357	0.147	0.186	0.24
2022	2772577	4545487	7452075	334199	395652	468406	37392	19027	430	0.090	0.119	0.157
2023		1746116***		436498	529443	642178						

* ICES estimates, presented as the sum of product (SOP) values from the catch and weight-at-age, as used in the assessment model.

** Since 2016, discards include BMS landings from EU and UK fleets.

*** Recruitment in 2023 is the geometric mean of resampled recruitment estimates from 2000 to 2022.

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