

3.2.3.1 Norway and Russia request to ICES for revised advice for Haddock in Subareas I and II

Request

Norway and Russia agreed in a meeting in Moscow on June 10th, to increase the TAC for Northeast Arctic haddock for 2015 from 178 500 tonnes to 223 000 tonnes. The background for the decision was the new and considerably more optimistic perception of the haddock stock following the benchmark process in January 2015.

Due to the increased TAC for 2015, Norway and Russia ask ICES for a revised advice on Northeast Arctic haddock for 2016.

ICES stock advice - updated

ICES advises that when the Joint Russian–Norwegian Fisheries Commission management plan is applied, landings in 2016 should be no more than 244 000 tonnes. Discards are known to have taken place but cannot be quantified; therefore, total catches cannot be calculated¹.

Stock development over time

The spawning-stock biomass (SSB) has been above MSY $B_{trigger}$ since 1990, increasing since 2000, and reaching the series maximum in 2014. Fishing mortality (F) was around F_{MSY} from the mid-1990s to 2011 but has declined substantially since then. Recruitment-at-age 3 has been at or above the long-term average since 2000. The year classes 2004–2006 are estimated to be very strong and are still dominating the spawning stock. The year classes after 2006 have been about average.

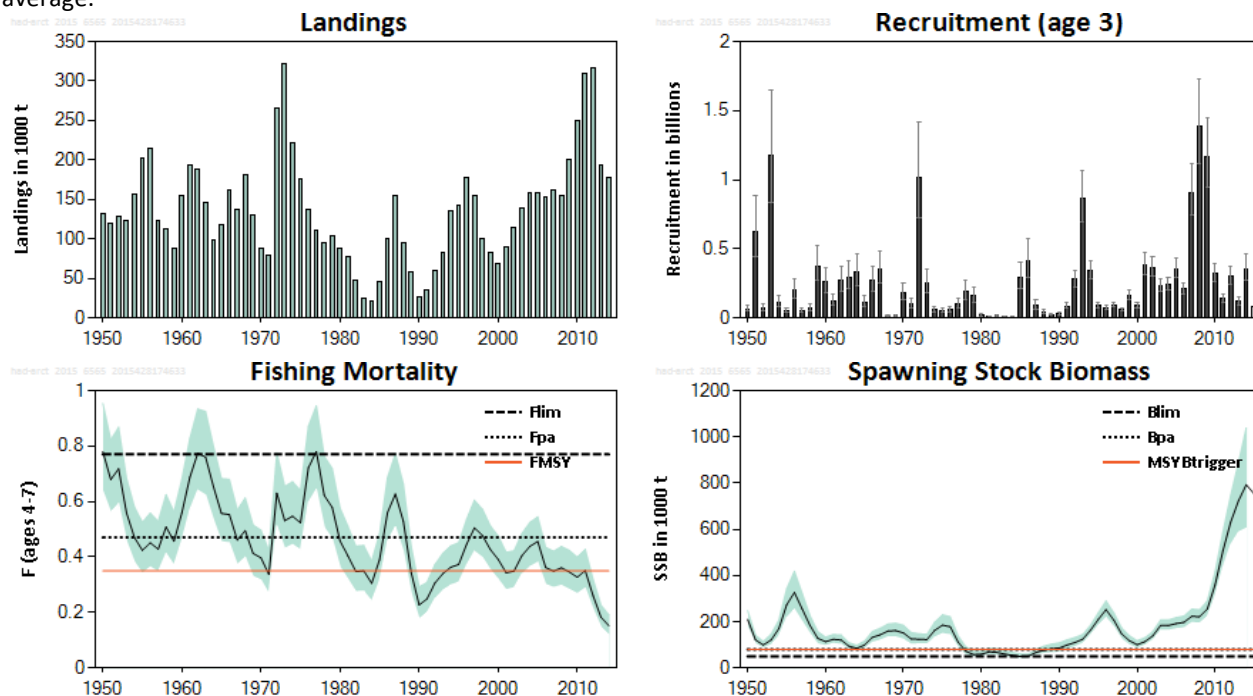


Figure 3.3.8.1 Haddock in Subareas I and II. Summary of stock assessment (weights in thousand tonnes). Recruitment estimates are not shaded.

¹ Advice provided for this stock 12 June 2015 (<http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/had-arct.pdf>)

Stock and exploitation status

Table 3.3.8.1 Haddock in Subareas I and II. State of the stock and fishery, relative to reference points.

		Fishing pressure				Stock size				
		2012	2013	2014		2013	2014	2015		
Maximum Sustainable Yield	F_{MSY}	✓	✓	✓	Below F_{MSY}	MSY	✓	✓	✓	Above trigger
Precautionary approach	F_{pa} , F_{lim}	✓	✓	✓	Harvested sustainably	B_{pa} , B_{lim}	✓	✓	✓	Full reproductive capacity
Management Plan	F_{MGT}	✓	✓	✓	Below target	SSB_{MGT}	✓	✓	✓	Above target

Catch options

Table 3.3.8.2 Haddock in Subareas I and II. The basis for the catch options.

Variable	Value	Source	Notes
F 4–7 (2015)	0.25	ICES (2015b)	TAC constraint
SSB (2016)	637 kt	ICES (2015b)	
R_{age3} (2015)	101 million	ICES (2015b)	
Total catch (2015)	223 kt	ICES (2015b)	New info from Norway/Russia
Commercial landings (2015)	223 kt	ICES (2015b)	New info from Norway/Russia
Discards (2015)	0	ICES (2015b)	Unknown

Table 3.3.8.3 Haddock in Subareas I and II. The catch options. Weights in thousand tonnes.

Rationale	Landings (2016)	Basis	F (2016)	SSB (2017)	%SSB change ^{*)}	%TAC change ^{**}
Management plan/MSY framework	244	F_{MP}	0.35	469	-26	+9
Precautionary approach	310	F_{pa}	0.47	412	-35	+39
Zero catch	0	$F = 0$	0	689	+8	-100
<i>Status quo</i>	185	F_{sq}	0.25	522	-18	-17

* SSB 2017 relative to SSB 2016.

** Landings 2016 relative to TAC 2015.

Basis of the advice

Table 3.3.8.4 Haddock in Subareas I and II. The basis of the advice.

Advice basis	Management plan.
Management plan	<p>Joint Russian–Norwegian Fisheries Commission management plan.</p> <p>The current HCR for haddock is as follows (see details in Protocol of the 40th Session of the Joint Russian–Norwegian Fisheries Commission, 14 October 2011):</p> <ul style="list-style-type: none"> - <i>TAC for the next year will be set at level corresponding to F_{MSY}.</i> - <i>The TAC should not be changed by more than ±25% compared with the previous year TAC.</i> - <i>If the spawning stock falls below B_{pa}, the procedure for establishing TAC should be based on a fishing mortality that is linearly reduced from F_{MSY} at B_{pa} to $F = 0$ at SSB equal to zero. At SSB-levels below B_{pa} in any of the operational years (current year and a year ahead) there should be no limitations on the year-to-year variations in TAC.</i> <p>At the 39th Session of the Joint Russian–Norwegian Fisheries Commission in 2010 it was agreed that the current management plan should be used “for five more years” before it is evaluated.</p>

Quality of the assessment

A new assessment model (State-Space Assessment Model (SAM)) has been through benchmark process (WKARCT; ICES, 2015a) and is adopted. Both the new model and the previous model with revised settings provide substantially higher estimates of the present spawning-stock biomass than those estimated in previous assessments (Figure 3.3.8.2). This is due to new assumptions about catch rates of the older age classes, which is supported by survey data.

Concerns remain about the coverage of age sampling from the fishery.

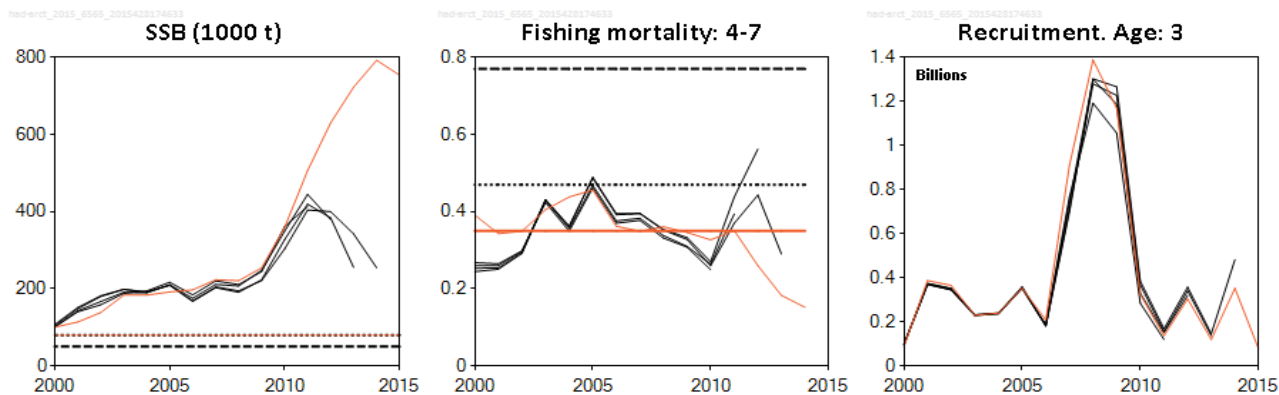


Figure 3.3.8.2 Haddock in Subareas I and II. Historical assessment results (final-year recruitment estimates included).

Issues relevant for the advice

The current situation with a large fraction of the fishable biomass being of age 10 and older has not previously been observed in the time period described by this assessment. Relatively large revisions in SSB may occur in stock assessments in the coming years as new information becomes available, but it is expected that the stock status is unlikely to be affected.

Due to the uncertainty in catch-at-age estimation from poor sampling coverage, it is recommended to increase Russian sampling to pre-2012 levels. There remains a lack of samples from several Norwegian gear/area/season combinations. ICES recommends a redistribution of port sampling effort for Norway.

Reference points

Table 3.3.8.5 Haddock in Subareas I and II. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	80 000 t	B_{pa} .	ICES (2011)
	F_{MSY}	0.35	Stochastic long-term simulations.	ICES (2011)
Precautionary approach	B_{lim}	50 000 t	B_{loss} .	ICES (2011)
	B_{pa}	80 000 t	$B_{lim} \times \exp(1.645 \times 0.3)$.	ICES (2011)
	F_{lim}	0.77	Corresponds to SPR value of slope of line from origin at SSB = 0 to geometric mean recruitment at SSB = B_{lim} .	ICES (2011)
	F_{pa}	0.47	$F_{lim} \times \exp(-1.645 \times 0.3)$.	ICES (2011)
Management plan	SSB _{MGT}	80 000 t	B_{pa} . TAC is linearly reduced from F_{pa} at SSB = B_{pa} to zero at SSB = 0.	ICES (2011)
	F_{MGT}	0.35	Previous F_{pa} estimated prior to the revision of the historical time-series for this stock.	ICES (2011)

Basis of the assessment

Table 3.3.8.6 Haddock in Subareas I and II. The basis of the assessment.

ICES stock data category	1.0 (ICES, 2015C).
Assessment type	Age-based analytical assessment (SAM; ICES, 2015a) that uses landings in the model and in the forecast.
Input data	Commercial landings (international landings, ages and length frequencies from catch sampling); four survey indices (RU-BTr-Q4, BS-NoRU-Q1(Aco), BS-NoRu-Q1 (BTr), and Eco-NoRu-Q3 (Btr)); annual maturity data from surveys; natural mortalities from cod consumption of ages 1–6 haddock are available from 1984.
Discards and bycatch	Discards not included.
Indicators	None.
Other information	Last benchmark in January 2015 (WKARCT; ICES, 2015a).
Working group	Arctic Fisheries Working Group (AFWG).

Information from stakeholders

The Norwegian reference fleets provide information on catch composition.

History of advice, catch, and management

Table 3.3.8.7 Haddock in Subareas I and II. History of ICES advice, the agreed TAC, and ICES estimates of landings. Weights in thousand tonnes.

Year	ICES advice	Predicted catch corresp. to advice	Agreed TAC	Official landings*	Unreported landings (included in ICES landings)	ICES landings**
1987	No increase in F; TAC	160	250	155		155
1988	No increase in F	< 240	240	95		95
1989	Large reduction in F	69	83	59		59
1990	No directed fishery	-	25	27		27
1991	No directed fishery	-	28	36		36
1992	Within safe biological limits	35	63	60		60
1993	No long-term gains in increasing F	56	72	82		82
1994	No long-term gains in $F > F_{med}$	97 [#]	120	135		135
1995	No long-term gains in $F > F_{med}$	122 [#]	130	142		142
1996	No long-term gains in $F > F_{med}$	169 [#]	170	178		178
1997	Well below F_{med}	< 242	210	154		154
1998	Below F_{med}	< 120	130	101		101
1999	Reduce F below F_{pa}	< 74	78	83		83
2000	Reduce F below F_{pa}	< 37	62	69		69
2001	Reduce F below F_{pa}	< 66	85	90		90
2002	Reduce F below F_{pa}	< 64	85	96	19	115
2003	Reduce F below F_{pa}	< 101	101	106	33	139
2004	Reduce F below F_{pa}	< 120	130	125	34	158
2005	Reduce F below F_{pa}	< 106	117	118	40	158
2006	Reduce F below F_{pa}	< 112	120	132	21	153
2007	Limit catches	< 130	150	147	15	162
2008	Limit catches to 2001–2004 average	< 130	155	150	6	156
2009	Apply management plan	< 194	194	200	0	200
2010	Apply management plan	< 243	243	249	0	249
2011	Apply management plan	< 303	303	310	0	310
2012	Apply management plan	< 318	318	315	0	315
2013	Apply management plan	< 238	200	194	0	194
2014	Apply management plan	< 150	178.5	178	0	178
2015	Apply management plan	< 165	223 ^{###}			
2016	Apply management plan	< 244				

* Haddock in Norwegian statistical areas 06 and 07 are included.

** Unreported landings in 2002–2008 are included.

Predicted landings at F_{med} .

TAC revised upwards June 2015 from 178 500 tonnes to 223 000 tonnes

History of catch and landings

Table 3.3.8.8 Haddock in Subareas I and II. Catch distribution by fleet in 2014 as estimated by ICES.

Total catch (2014)	Commercial landings			Commercial discards
	67% trawl	14% longline	19% other gear types	
178 kt	178 kt			Unknown

Table 3.3.8.9 Haddock in Subareas I and II. History of commercial catch and landings; both the official and ICES estimated values are presented by area for each country participating in the fishery.

Year	Faroe Islands	France	German Dem. Re.	Fed. Rep. Germ.	Norway [#]	Poland	United Kingdom	Russia**	Others	Unreported catches***	Total***
1960	172	-	-	5 597	46 263	-	45 469	57 025	125	-	154 651
1961	285	220	-	6 304	60 862	-	39 650	85 345	558	-	193 224
1962	83	409	-	2 895	54 567	-	37 486	91 910	58	-	187 408
1963	17	363	-	2 554	59 955	-	19 809	63 526	-	-	146 224
1964	-	208	-	1 482	38 695	-	14 653	43 870	250	-	99 158
1965	-	226	-	1 568	60 447	-	14 345	41 750	242	-	118 578
1966	-	1 072	11	2 098	82 090	-	27 723	48 710	74	-	161 778
1967	-	1 208	3	1 705	51 954	-	24 158	57 346	23	-	136 397
1968	-	-	-	1 867	64 076	-	40 129	75 654	-	-	181 726
1969	2	-	309	1 490	67 549	-	37 234	24 211	25	-	130 820
1970	541	-	656	2 119	37 716	-	20 423	26 802	-	-	88 257
1971	81	-	16	896	45 715	43	16 373	15 778	3	-	78 905
1972	137	-	829	1 433	46 700	1 433	17 166	196 224	2 231	-	266 153
1973	1 212	3 214	22	9 534	86 767	34	32 408	186 534	2 501	-	322 226
1974	925	3 601	454	23 409	66 164	3 045	37 663	78 548	7 348	-	221 157
1975	299	5 191	437	15 930	55 966	1 080	28 677	65 015	3 163	-	175 758
1976	536	4 459	348	16 660	49 492	986	16 940	42 485	5 358	-	137 264
1977	213	1 510	144	4 798	40 118	-	10 878	52 210	287	-	110 158
1978	466	1 411	369	1 521	39 955	1	5 766	45 895	38	-	95 422
1979	343	1 198	10	1 948	66 849	2	6 454	26 365	454	-	103 623
1980	497	226	15	1 365	66 501	-	2 948	20 706	246	-	92 504
1981	381	414	22	2 402	63 435	Spain	1 682	13 400	-	-	81 736
1982	496	53	-	1 258	43 702	-	827	2 900	-	-	49 236
1983	428	-	1	729	22 364	139	259	680	-	-	24 600
1984	297	15	4	400	18 813	37	276	1 103	-	-	20 945
1985	424	21	20	395	21 272	77	153	22 690	-	-	45 052
1986	893	12	75	1 079	52 313	22	431	45 738	-	-	100 563
1987	464	7	83	3 105	72 419	59	563	78 211	5	-	154 916
1988	1 113	116	78	1 323	60 823	72	435	31 293	2	-	95 255
1989	1 217	-	26	171	36 451	1	590	20 062	-	-	58 518
1990	705	-	5	167	20 621	-	494	5 190	-	-	27 182
1991	1 117	-	Greenland	213	22 178	-	514	12 177	17	-	36 216
1992	1 093	151	1 719	387	36 238	38	596	19 699	1	-	59 922
1993	546	1 215	880	1 165	40 978	76	1 802	35 071	646	-	82 379
1994	2 761	678	770	2 412	71 171	22	4 673	51 822	877	-	135 186
1995	2 833	598	1 097	2 675	76 886	14	3 111	54 516	718	-	142 448
1996	3 743	6	1 510	942	94 527	669	2 275	74 239	217	-	178 128
1997	3 327	540	1 877	972	103 407	364	2 340	41 228	304	-	154 359
1998	1 903	241	854	385	75 108	257	1 229	20 559	94	-	100 630
1999	1 913	64	437	641	48 182	652	694	30 520	92	-	83 195
2000	631	178	432	880	42 009	502	747	22 738	827	-	68 944
2001	1 210	324	553	554	49 067	1 497	1 068	34 307	1 060	-	89 640
2002	1 564	297	858	627	52 247	1 505	1 125	37 157	682	18 736/5 310	114 798/101 372
2003	1 959	382	1 363	918	56 485	1 330	1 018	41 142	1 103	33 226/9 417	138 926/115 117
2004	2 484	103	1 680	823	62 192	54	1 250	54 347	1 569	33 777/8 661	158 279/133 163
2005	2 138	333	15	996	60 850	963	1 899	50 012	1 262	40 283/9 949	158 751/128 417
2006	2 390	883	1 830	989	69 272	703	1 164	53 313	1 162	21 451/8 949	1 531 57/140 655
2007	2 307	277	1 464	1 123	71 244	125	1 351	66 569	2 511	14 553/3 102	161 525/150 074
2008	2 687	311	1 659	535	72 779	283	971	68 792	1 759	5 828/-	155 604/149 776
2009	2 820	529	1 410	1 957	104 354	317	1 315	85 514	1 845	0	200 061
2010	3 173	764	1 970	3 539	123 384	379	1 758	111 372	2 862	0	249 200
2011	1 759	268	2 110	1 724	158 202	502	1 379	139 912	4 763	0	309 785
2012	2 055	322	3 984	1 111	159 602	441	833	143 886	3 393	0	315 627

Year	Faroe Islands	France	German Dem.Re.	Fed. Rep. Germ.	Norway [#]	Poland	United Kingdom	Russia ^{**}	Others	Unreported catches ^{***}	Total ^{***}
2013	1 886	342	1 795	500	99 215	439	639	85 668	3 260	0	193 744
2014 [*]	1 732	198	1 201	340	91 331	375	300	78 725	3 415	0	177 617

* Provisional figures.

** USSR prior to 1991.

*** Figures based on Norwegian/Russian IUU estimates.

[#] Landings in Norwegian statistical areas 06 and 07 (from 1983) are included.

Summary of the assessment

Table 3.3.8.10 Haddock in Subareas I and II. Assessment summary (weights in tonnes).

Year	Recruitment Age 3	SSB	Landings	Mean F Ages 4–7
	thousands		tonnes	
1950	66 039	209 400	132 125	0.78
1951	627 814	121 540	120 077	0.679
1952	69 355	99 310	127 660	0.718
1953	1 172 912	120 813	123 920	0.559
1954	111 748	169 397	156 788	0.47
1955	53 745	272 938	202 286	0.424
1956	202 197	326 113	213 924	0.451
1957	52 839	254 231	123 583	0.428
1958	69 355	183 873	112 672	0.508
1959	373 249	127 644	88 211	0.457
1960	258 074	113 550	154 651	0.56
1961	121 662	123 500	193 224	0.687
1962	268 874	120 572	187 408	0.774
1963	295 079	93 807	146 224	0.76
1964	331 705	84 373	99 158	0.653
1965	113 664	99 012	118 578	0.557
1966	271 034	132 058	161 778	0.553
1967	348 363	143 200	136 397	0.461
1968	15 502	159 532	181 726	0.495
1969	16 933	161 135	130 820	0.413
1970	179 872	151 146	88 257	0.397
1971	104 089	124 991	78 905	0.337
1972	1 011 556	123 871	266 153	0.63
1973	255 506	122 639	322 226	0.531
1974	60 840	161 943	221 157	0.547
1975	53 852	184 979	175 758	0.523
1976	57 011	178 260	137 264	0.722
1977	99 111	112 084	110 158	0.78
1978	191 186	71 898	95 422	0.622
1979	159 692	57 699	103 623	0.579
1980	23 156	59 278	87 889	0.458
1981	9 591	69 425	77 153	0.404
1982	17 492	67 104	46 955	0.347
1983	7 577	59 576	24 600	0.35
1984	10 804	54 448	20 945	0.305
1985	290 396	49 119	45 052	0.39
1986	410 857	50 312	100 563	0.56
1987	93 620	66 636	154 916	0.627
1988	40 255	76 115	95 255	0.529
1989	26 056	82 043	58 518	0.343
1990	31 477	85 905	27 182	0.227
1991	86 163	99 012	36 216	0.249
1992	277 340	109 535	59 922	0.306
1993	862 853	123 995	82 379	0.34
1994	342 491	162 755	135 186	0.363
1995	93 714	209 400	142 448	0.373
1996	74 310	251 954	178 128	0.446
1997	94 750	206 489	154 359	0.505

Year	Recruitment Age 3	SSB	Landings	Mean F Ages 4–7
	thousands	tonnes	tonnes	
1998	61 329	147 414	100 630	0.478
1999	161 943	117 595	83 195	0.427
2000	87 204	100 308	68 944	0.391
2001	387 317	113 777	89 640	0.343
2002	365 492	138 275	114 798	0.349
2003	229 120	183 322	138 926	0.405
2004	239 666	183 506	158 279	0.438
2005	351 864	191 760	158 298	0.456
2006	208 564	197 205	153 157	0.362
2007	908 909	223 463	161 525	0.349
2008	1 388 869	221 018	155 604	0.361
2009	1 169 398	254 486	200 061	0.346
2010	324 162	359 331	249 200	0.327
2011	136 762	506 358	309 785	0.351
2012	304 066	630 331	315 627	0.26
2013	119 372	722 881	193 744	0.183
2014	352 216	792 541	177 617	0.152
2015	101 000	769 614		
Average	252 727	183 730	136 413	0.464

Sources and references

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