

6.4.3 Haddock in Subarea IV (North Sea) and Division IIIa West (Skagerrak) Corrected November 2009

State of the stock

Spawning biomass in relation to precautionary limits	Fishing mortality in relation to precautionary limits	Fishing mortality in relation to high long-term yield	Fishing mortality in relation to management target	Comment
Full reproductive capacity	Harvested sustainably	Appropriate	Below target	

Based on the most recent estimate of SSB (in 2009) and fishing mortality (in 2008), ICES classifies the stock as having full reproductive capacity and being harvested sustainably. SSB in 2009 is estimated to be above B_{pa} , although SSB has been declining since 2002. Fishing mortality in 2008 is estimated to be below F_{pa} , and below the target F_{HCR} (0.3) specified in the EU–Norway management plan. Recruitment is characterized by occasional large yield classes, the last of which was the strong 1999 year class. Apart from the 2005 year class which is about average, recent recruitment has been poor.

Management objectives

In 1999 the EU and Norway agreed to implement a long-term management plan for the haddock stock, which is consistent with the precautionary approach and which is intended to constrain harvesting within safe biological limits ($SSB > B_{lim}$) and is designed to provide for sustainable fisheries and high potential yield ($F_{HCR} = 0.3$). A revised management plan was implemented in January 2009 (Annex 6.4.3). The main elements of the plan are a target F of 0.3 with a limit of 15% change in TAC provided SSB is maintained above 140 000 t. If SSB is between 140 000 t and 100 000 t, F is reduced in line with SSB to reach $F = 0.1$ at $SSB = 100\ 000$ t. If SSB is at 100 000 t or below, F is 0.1. Interannual quota flexibility is permitted, with a maximum of $\pm 10\%$ transfer of quota between years.

ICES has evaluated this EU–Norway management plan and concluded that the target $F_{HCR} = 0.3$ with TAC constraint $\pm 15\%$ leads on average to a $< 5\%$ risk of $B < B_{lim}$ within the next 20 years. Increasing the target F_{HCR} increases the risk. Although the management plan has not been fully tested (e.g. at lower fishing mortalities), ICES concludes that the management plan can provisionally be accepted as precautionary and be used as the basis for advice. Interannual quota flexibility has also been evaluated and it is concluded that this has no significant impact on sustainability.

Reference points

	Type	Value	Technical basis
Precautionary approach	B_{lim}	100 000 t	Smoothed B_{loss} .
	B_{pa}	140 000 t	$B_{pa} = 1.4 * B_{lim}$.
	F_{lim}	1.0	$F_{lim} = 1.4 * F_{pa}$.
	F_{pa}	0.7	10% probability that $SSB_{MT} < B_{pa}$.
Targets	F_{HCR}	0.3	Based on HCR simulations and agreed in the management plan

(unchanged since 2007)

Yield and spawning biomass per Recruit F -reference points

Yield-per-recruit and SSB-per-recruit analyses are unstable between recent years due to variation in the selection pattern; therefore, no values are presented here. An HCR evaluation has shown that candidates for reference points consistent with high long-term yields and a low risk of depleting the productive potential of the stock can be found at $F = 0.3$.

Single-stock exploitation boundaries*

Considering the options below, ICES advises on the basis of the management plan that implies landings in 2010 of 38 000 t, including industrial bycatch.

Exploitation boundaries in relation to existing management plans

Following the agreed management plan implies landings in 2010 of 38 000 t, which is expected to lead to an SSB of **185 000 t** in 2011. The constraint on interannual TAC variability ($\pm 15\%$) is invoked in this case: the suggested 2010 landings represent a 15% decrease from the 2009 quota. The management plan can be provisionally accepted as precautionary.

Exploitation boundaries in relation to high long-term yield, low risk of depletion of production potential, and considering ecosystem effects

The current fishing mortality is estimated at **0.23**, which is below the target rate expected to lead to high long-term yields ($F = 0.3$).

Exploitation boundaries in relation to precautionary reference points

Catches of **93 000 t** implying landings of less than **76 000 t** in 2010 would reduce SSB in 2011 to B_{pa} corresponding to a **threefold increase** of fishing mortality.

* Corrections made in November are presented in bold.

Short-term implications[§]

Outlook for 2010

Basis: F(2009) = TAC constraint = **0.23**; SSB (2010) = **204**; HC landings (2009) = 45; Discards (2009) = **8**; Industrial bycatch (2009) = 0.2

Rationale	Human consumption (2010)	Basis	F (2010)	F HC (2010)	F disc (2010)	F ind. Bycatch (2010)	Discards (2010)	Ind. Bycatch (2010)	Catch (2010)	SSB (2011)	%SSB change ¹⁾	%TAC change ²⁾
Zero catch	0	F = 0	0.00	0.00	0.00	0.001	0	0	0	230	13%	-100%
Status quo	30	Fsq	0.25	0.16	0.09	0.001	6	0	37	194	-5%	-33%
Target reference point	35	F(target) (Fsq*1.19)	0.30	0.19	0.11	0.001	8	0	43	188	-8%	-21%
Agreed management plan	38	Management plan (15% quota cut) (Fsq * 1.3)	0.33	0.20	0.12	0.001	8	0	46	185	-9%	-15%
Status quo	9	Fsq * 0.28	0.07	0.04	0.03	0.001	2	0	11	219	8%	-80%
	22	Fsq * 0.70	0.18	0.11	0.07	0.001	5	0	26	204	0%	-52%
	40	Fsq * 1.39	0.35	0.22	0.13	0.001	9	0	49	182	-11%	-10%
	49	Fsq* 1.79	0.44	0.27	0.16	0.001	11	0	60	171	-16%	10%
	55	Fsq * 2	0.50	0.31	0.19	0.001	12	0	67	165	-19%	23%
	57	Fsq * 2.09	0.52	0.33	0.20	0.001	12	0	70	162	-21%	28%
	66	Fsq * 2.51	0.63	0.39	0.24	0.001	14	0	81	151	-26%	48%
	72	Fpa (Fsq * 2.8)	0.70	0.44	0.26	0.001	16	0	88	145	-29%	61%
	76	Bpa (Fsq * 3.0)	0.75	0.47	0.28	0.001	17	0	93	140	-31%	70%
	77	Fsq * 3.06	0.77	0.48	0.29	0.001	17	0	94	139	-32%	72%
85	Fsq * 3.48	0.87	0.54	0.33	0.001	19	0	104	130	-36%	89%	

Units: 000 tonnes.

Shaded scenarios are not considered consistent with the precautionary approach.

Under the assumption that effort is linearly related to fishing mortality

¹⁾ SSB 2011 relative to SSB 2010.

²⁾ Human Consumption 2010 relative to TAC 2009

The landings in Division IIIa are calculated as 6% of the combined area total. The figure 6% has been used as the basis of the TAC split for the past 3 years

[§] Corrections made in November are presented in bold.

Management considerations

Adherence to the EU–Norway management plan has contributed to lower fishing mortality levels, increased yield and greatly improved stability of yield.

As the 2005 year class entered the fishery, discards were fairly substantial in 2006 and 2007, although they were considerably lower in 2008. Further improvements to gear selectivity measures, allowing for the release of small fish, would be highly beneficial not only for the haddock stock, but also for the survival of juveniles of other species that occur in mixed fisheries along with haddock.

Haddock is a specific target for some fleets, but is also caught as part of a mixed fishery catching cod, whiting and Nephrops. For management to be effective, both species-specific assessments and the latest developments in mixed fisheries approaches need to be considered. A reduction in direct effort on one stock may lead to a reduction or an increase in effort on another and, hence, the implications of any changes need to be identified and carefully evaluated.

Estimates of haddock bycatch in the industrial fishery are provided in the catch option table. These are low values based on the assumption of a similar bycatch rate to that observed in previous years, when the industrial fisheries were at a low level. A larger catch allocation for bycatch may be required if industrial effort increases (see Norway pout advice section 6.4.20).

The advice for this stock is given for Subarea IV (North Sea) and Division IIIaN (Skagerrak), while the TACs for this stock are set for Division IIa and Subarea IV, and the whole of Subarea III, respectively.

ICES has developed a generic approach to evaluate whether new survey information that becomes available in September forms a basis to update the advice. If this is the case, ICES will publish new advice in November 2009.

Management plan evaluations

The evaluations of the management plan that were carried out during 2007 used a recruitment model which is thought to capture the sporadic nature of haddock recruitment. On this basis, a target $F = 0.3$ with TAC constraint $\pm 15\%$ leads to a low risk of $< 12\%$ in any year, and a mean risk of 5% over all years of $B < B_{lim}$ over the next 20 years. Lower F s lead to lower risks. Interannual quota flexibility has also been evaluated and it is concluded that this has no significant impact on sustainability.

Although the management plan has not been fully tested (e.g. the effect of the new rule for low biomass is not well known), ICES concludes that the management plan can be provisionally accepted as precautionary and can be used as the basis for advice.

Factors affecting the fisheries and the stock

Regulation and their effects

EU technical regulations in force are contained in Council Regulation (EC) 850/98 and its amendments. The regulation prescribes the minimum target species composition for different mesh size ranges. In 2001, haddock in the whole of NEAFC region 2 were a legitimate target species for towed gears with a minimum codend mesh size of 100 mm. As part of the cod recovery measures, the EU and Norway introduced additional technical measures from 1 January 2002 (EC 2056/2001). The basic minimum mesh size for towed gears for cod from 2002 was 120 mm, although in a transitional arrangement running until 31 December 2002 vessels were allowed to exploit cod with 110 mm codends, provided that the trawl was fitted with a 90 mm square-mesh panel and the catch composition of cod retained on-board was not greater than 30% by weight of the total catch. From 1 January 2003, the basic minimum mesh size for towed gears for cod was 120 mm. The minimum mesh size for vessels targeting haddock in Norwegian waters is also 120 mm. The effect of the measures has been to reduce fishing mortality on haddock to sustainable levels and to maintain the spawning biomass above B_{pa} despite a prolonged series of poor recruitments.

Effort restrictions in the EC were introduced in 2003 (annual annexes to the TAC regulations) for the protection of the North Sea (?) cod stock. In 2009, the management program switched from a days at sea to a kW/day system (2009 Council Regulation (EC) N°43/2009), in which different amounts of kW/days are allocated within each area by Member State to different groups of vessels depending on gear and mesh size. In 2008, STECF indicated that overall effort (kW/days) by demersal trawls, seines and beam trawls had been substantially reduced since 2002. Fishing mortality declined between 2003 and 2007 concomitant with this effort reduction, but F increased again in 2008 despite a further nominal reduction in effort. Marked changes have also occurred in the use of the different mesh size categories by demersal trawlers. A sharp reduction has occurred in the use of mesh sizes between 100mm and 119mm, while a

pronounced increase is apparent in the use of mesh sizes of 120mm and greater. As well, a general increase in effort has been observed in vessels using mesh sizes of 70-89mm and 90-99mm.

Scotland implemented in February 2008 a national scheme known as the 'Conservation Credits Scheme'. The principle of this two-part scheme involves additional time at sea in return for the adoption of measures which aims to reduce mortality on cod and lead to a reduction in discard numbers. ICES has not yet been able to evaluate the consequences of these measures. Despite their introduction, ICES notes that during the initial year of operation (2008) cod discarding rates increased substantially.

Changes in fishing technology and fishing patterns

The change in mesh size (to 120 mm) might be expected to shift exploitation patterns to older ages and increase the weight-at-age for retained fish from younger age classes. While reduced exploitation on more abundant cohorts can be seen, overall improvements in the exploitation pattern have not been observed. It was not possible to determine if this is due to confounding effects from other fleet segments. The effort in the UK large-mesh demersal trawl fleet category (>100 mm, 4A) has been reduced by decommissioning and days-at-sea regulations to 40% of the levels recorded in the EU reference year of 2001. There was a movement of effort into the 70–90 mm sector to increase days-at-sea in 2002 and 2003, but the level of effort in this sector stabilized in 2004.

Scientific basis

Data and methods

The age-based assessment model (XSA) is calibrated with three survey indices. Discards and industrial bycatch data were included in the assessment. Discards were estimated from the discards sampling programme from several countries, with most observations coming from Scotland. The samples were then raised to the total international fleet.

Information from the fishing industry

The report of the North Sea Fishers' Survey (Laurensen 2008) shows that the industry perception of haddock abundance in the main haddock fishing areas (1 and 2) is of stabilization, which concurs with the indications from the assessment of a temporary slowing of the rate of decline in SSB with the growth of the 2005 year class. The previous decline in haddock abundance estimated by the assessment is not apparent in the Survey. This suggests that demersal vessels may be able to maintain good catch rates of haddock in spite of declining abundance.

Uncertainties in assessment and forecast

The trends indicated by the assessment are in agreement with the surveys. The assessment and forecast are largely influenced by the moderate 2005 year class.

Comparison with previous assessment and advice

The basis of the assessment and advice is the same as last year. The assessment is sensitive to the estimation of a few large cohorts, so the variability in estimates among assessment years is to be expected. There are no indications of assessment bias.

Source of information

Report of the Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak, 6-12 May 2009 (ICES CM 2009/ACOM:10).

STECF – PLEN-08-03 – EUR 23624 EN, ISBN 978-79-10940-9, ISSN 1018-5593, DOI 10.2788/3484, 2008

Table 6.4.3.1 Haddock in **Subarea IV (North Sea)** Single stock exploitation boundaries (advice), management and catch.

Year	ICES Advice	Single-stock exploitation boundaries	Predicted landings corresp. to advice ¹	Predicted landings corresp. to single-stock exploitation boundaries ²	Agreed TAC	Off. Indgs.	ICES catches			Total
							Hum. Cons.	Disc. Slip.	Indust. bycatch	
1987	80% of F(85)		105		140	109	108	59	4	172
1988	77% of F(86); TAC		185		185	105	105	62	4	171
1989	Reduce decline in SSB; TAC; protect juveniles		68		68	64	76	26	2	104
1990	80% of F(88); TAC		50		50	43	51	33	3	87
1991	70% of effort (89)				50	45	45	40	5	90
1992	70% of effort (89)				60	51	70	48	11	129
1993	70% of effort (89)				133	80	80	80	11	170
1994	Significant reduction in effort; mixed fishery				160	87	81	65	4	150
1995	Significant reduction in effort; mixed fishery				120	75	75	57	8	140
1996	Mixed fishery to be taken into account				120	75	76	73	5	154
1997	Mixed fishery to be taken into account				114	73	79	52	7	138
1998	No increase in F		100.3		115	72	77	45	5	128
1999	Reduction of 10% F(95–97)		72		88.6	64	64	43	4	111
2000	F less than F_{pn}		<51.7		73.0	47	45	47	8	100
2001	F less than F_{pn}		<58.0		61	40	39	118	8	165
2002	F less than F_{pn}		<94.0		104.0	54	53	45	4	101
2003	No cod catches		-		52	42	42	23	1	76
2004	Mixed fisheries consideration	F should be below F_{pn}	*	No forecast	85	47	47	17	1	65
2005	Mixed fisheries consideration	F should be below F_{pn}	*	92	66	47	48	10	0	57
2006	Mixed fisheries consideration	F should be below 0.3	*	39	52	36	36	17	0	55
2007	Mixed fisheries consideration	F should be below 0.3	*	55.4	55	30	31	30	0	61
2008	Mixed fisheries consideration	15% TAC reduction TA	*	49.3 ³	46	30	29	13	0	42
2009	Mixed fisheries consideration	Apply management plan	*	44.7 ³	42					
2010	Mixed fisheries consideration	Apply management plan	*	38 ³						

Weights in '000 t.

¹ Only pertaining to the North Sea.

² For the whole stock (Division IIIaN and Subarea IV).

³ Including industrial bycatch.

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

Table 64.3.1 Haddock in **Division IIIaW (Skagerrak)** Single stock exploitation boundaries (advice), management and landings.

Year	ICES Advice	Single-stock exploitation boundaries	Predicted landings corresp. to advice	Predicted landings corresp to single-stock exploitation boundaries	Agreed TAC	ICES landings		
						Hum. Cons.	Indust. bycatch	Total
1987	Precautionary TAC		-		11.5	3.8	1.4	5.3
1988	Precautionary TAC		-		10.0	2.9	1.5	4.3
1989	Precautionary TAC		-		10.0	4.1	0.4	4.5
1990	Precautionary TAC		-		10.0	4.1	2.0	6.1
1991	Precautionary TAC		4.6		4.6	4.1	2.6	6.7
1992	TAC		4.6		4.6	4.4	4.6	9.0
1993	Precautionary TAC		-		4.6	2.0	2.4	4.4
1994	Precautionary TAC		-		10.0	1.8	2.2	4.0
1995	If required, precautionary TAC; link to North Sea		-		10.0	2.2	2.2	4.4
1996	If required, precautionary TAC; link to North Sea		-		10.0	3.1	2.9	6.1
1997	Combined advice with North Sea		-		7.0	3.4	0.6	4.0
1998	Combined advice with North Sea		4.7		7.0	3.8	0.3	4.0
1999	Combined advice with North Sea		3.4		5.4	1.4	0.3	1.7
2000	Combined advice with North Sea		<1.8		4.5	1.5	0.6	2.1
2001	Combined advice with North Sea		<2.0		4.0	1.9	0.2	2.1
2002	Combined advice with North Sea		<3.0		6.3	4.1	0.06	4.1
2003	Combined advice with North Sea		-		3.2	1.8	n/a	1.8
2004	Combined advice with North Sea	F should be below F_{pa}		No forecast	4.9	1.4	n/a	1.4
2005	Combined advice with North Sea	F should be below F_{pa}		-	4.0	0.8	0	0.8
2006	Combined advice with North Sea	F should be below 0.3		-	3.2	1.5	0	1.5
2007	Combined advice with North Sea	F should be below 0.3		-	3.4	1.6	0	2.5
2008	Combined advice with North Sea	15% TAC reduction		2.9	2.9	1.4	0	2.0
2009	Combined advice with North Sea	Apply management plan		-	2.6			
2010	Combined advice with North Sea	Apply management plan		-				

Weights in '000 t.
n/a = not available.

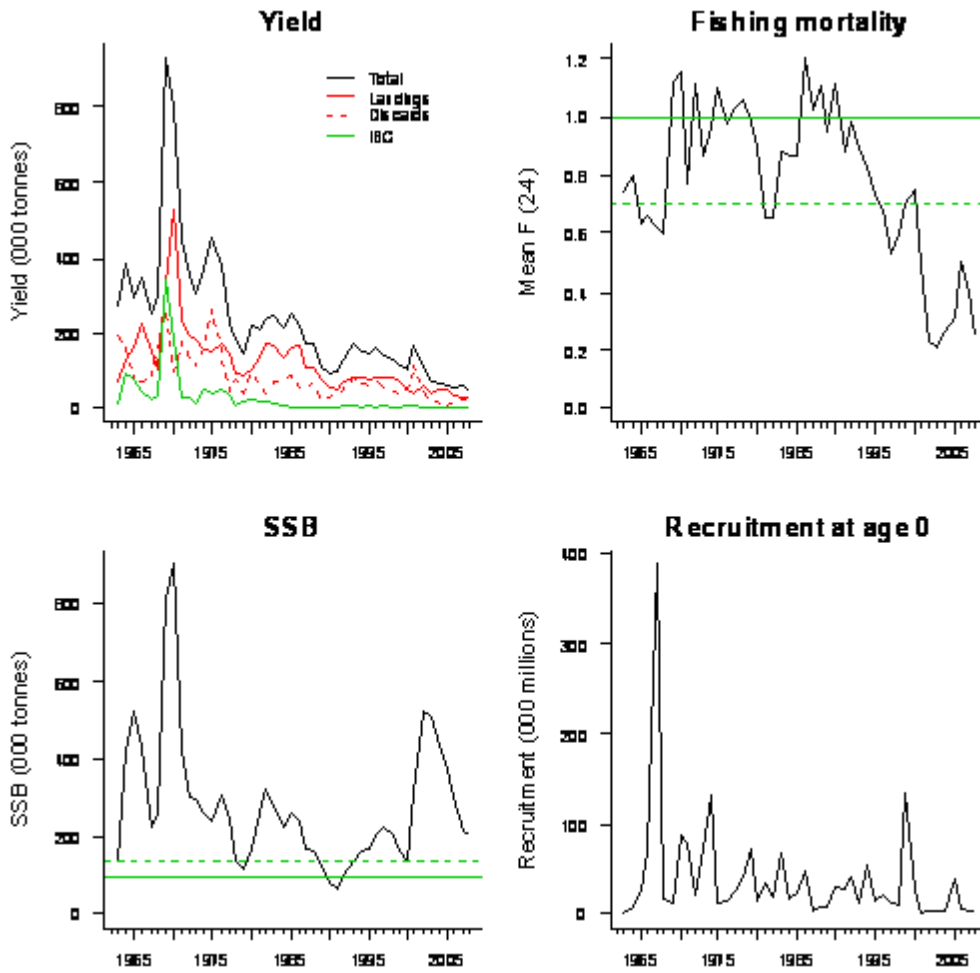


Figure 6.4.3.1. Haddock in Subarea IV (North Sea) and Division IIIaW (Skagerrak). Summary plots. The dotted horizontal lines indicate F_{pa} (top right plot) and B_{pa} (bottom left plot), while the solid ones indicate F_{lim} (top right plot) and B_{lim} (bottom left plot).

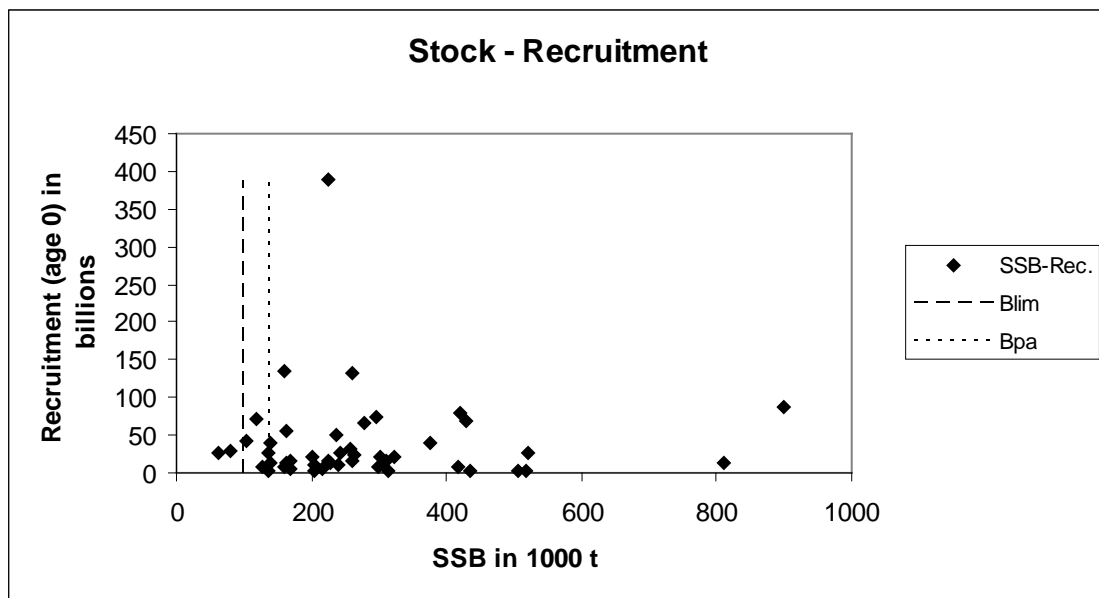


Figure 6.4.3.2. Haddock in Subarea IV (North Sea) and Division IIIaW (Skagerrak). Stock–recruitment plot.

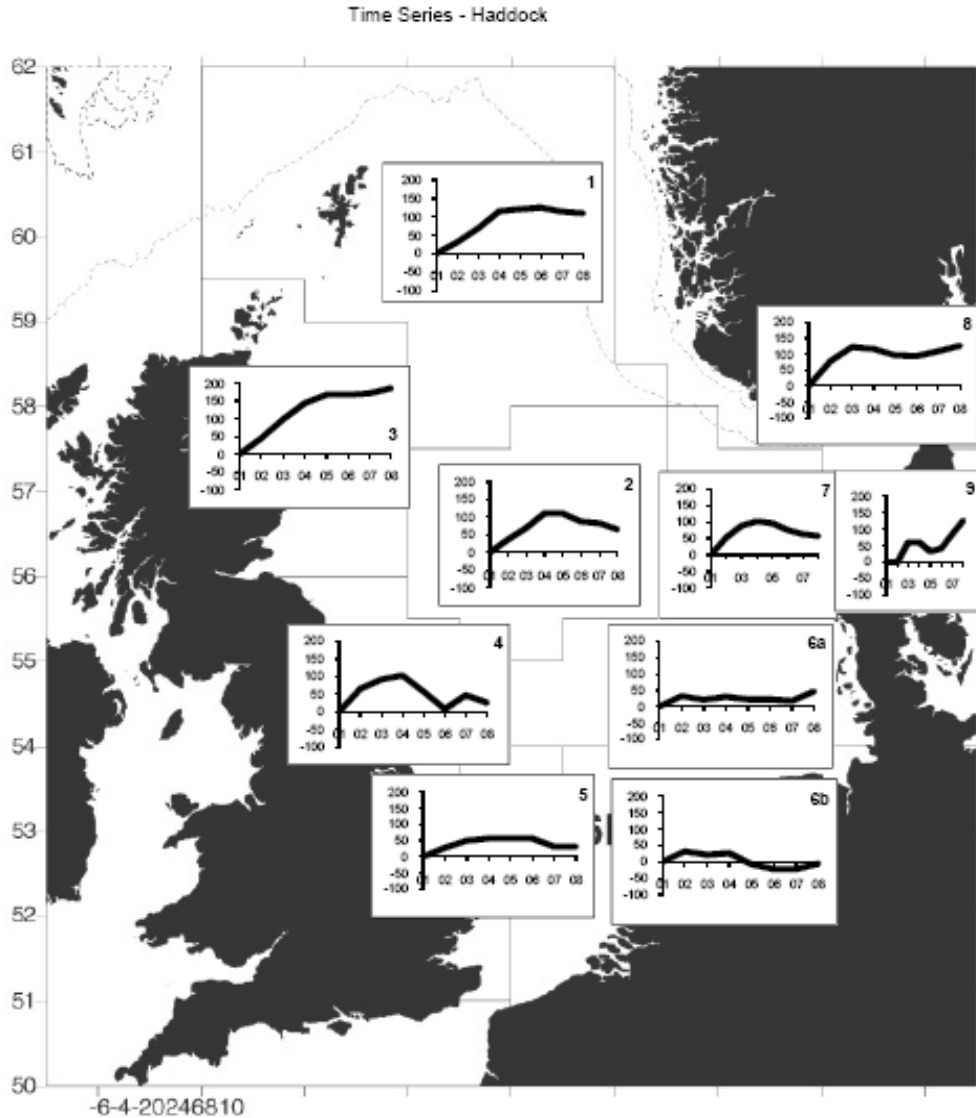


Figure 6.3.3. Haddock in Subarea IV (North Sea) and Division IIIaW (Skagerrak). Results of 2008 North Sea Stock Survey. Each plot presents a summary of the responses by North Sea roundfish reporting area.

Haddock in Subarea IV (North Sea) and Division IIIa West (Skagerrak)

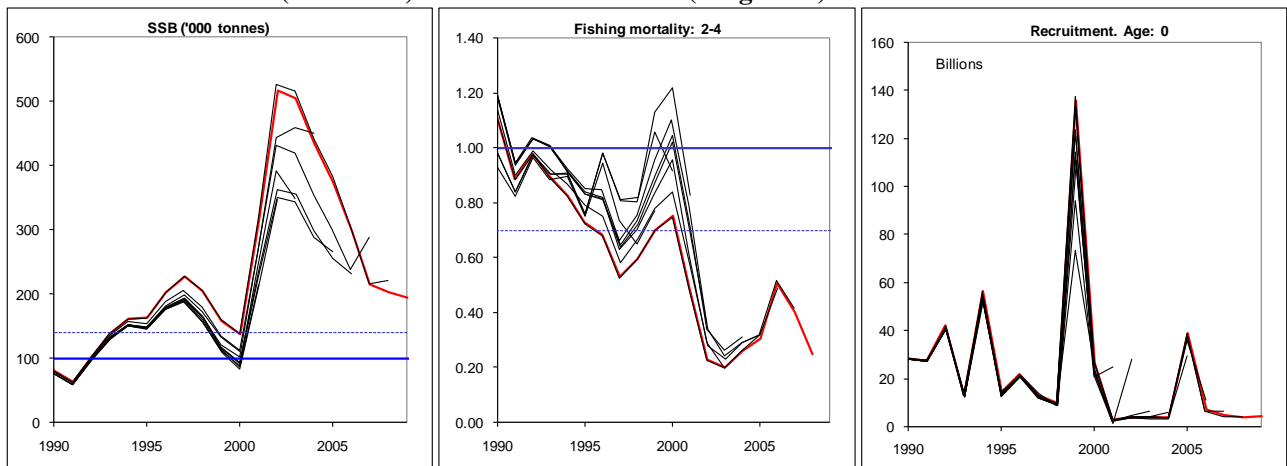


Figure 6.4.3 Haddock in Subarea IV (North Sea) and Division IIIaW (Skagerrak). Comparison of current assessment with previous assessments.

Table 64.33 Haddock in Subarea IV (North Sea) and Division IIIaW (Skagerrak). Catches/landings by country and area.

Sum of Landings		Year								
ICES area	Country	2001	2002	2003	2004	2005	2006	2007	2008	2009
Division IIIa	Belgium	0	0	0	0	0	0	0		
	Denmark	1590	3791	1741	1116	615	1001	1054	1053	
	Faeroe Islands	0	0	0	0	0	0	0		
	Germany	128	239	113	69	69	186	206	87	
	Netherlands	0	0	6	1	0	0	0		
	Norway	149	149	211	154	93	113	152	170	
	Portugal	0	0	0	0	0	30	37		
	Sweden	283	393	165	158	180	246	278	274	
	UK - Eng+Wales+N. Ir.	0	0	0	0	0	0	0		
UK - Scotland	7	0	0	0	0	0	0			
Division IIIa Total		2157	4572	2236	1498	957	1576	1727	1584	
WG Division IIIa	WG estimates of discards	0	0	195	112	217	970	816	646	
	WG estimates of IBC	0	0	0	0	0	0	0	0	
	WG estimates of landings	1903	4137	1808	1443	764	1537	1515	1374	
	WG estimates of total catch	1903	4137	2003	1555	981	2507	2332	2020	
WG Division IIIa Total		3806	8273	4007	3110	1963	5014	4663	4041	
Subarea IV	Belgium	606	559	374	373	190	105	179	112	
	Denmark	2407	5123	3035	2075	1274	759	645	501	
	Faeroe Islands	1	25	12	22	22	4	0	3	
	France	485	914	1108	552	439	444	498	302	
	Germany	681	852	1562	1241	733	725	727	393	
	Greenland	0	0	149	686	18	5	0		
	Ireland	0	0	1	0	0	0	0		
	Netherlands	274	359	187	104	64	33	55	29	
	Norway	1902	2404	2196	2258	2089	1798	1706	1478	
	Poland	12	17	16	0	0	8	8	16	
	Portugal	0	0	0	0	0	76	0		
	Sweden	804	572	477	188	135	100	130	85	
	UK - Eng+Wales+N. Ir.	3334	3647	1561	1159	651	477	1799		
	UK - Scotland	29263	39624	31527	39339	25319	31905	24919		
UK - all								27341		
Subarea IV Total		39769	54096	42205	47997	30934	36439	30666	30260	
WG Subarea IV	WG estimates of discards	118320	45892	23499	15439	8416	16943	27805	12532	
	WG estimates of IBC	7879	3717	1150	554	168	535	48	199	
	WG estimates of landings	38958	54171	40140	47253	47616	36074	29418	28893	
	WG estimates of total catch	167060	107917	66792	64800	57181	56058	59603	43644	
WG Subarea IV Total		332217	211697	131580	128046	113380	109610	116874	85268	
TAC	TAC IIIa	4000	6300	3150	4940	4018	3189	3360	2856	2590
	TAC IV	61000	104000	51735	77000	66000	51850	54640	46444	42110
TAC Total		65000	110300	54885	81940	70018	55039	58000	49300	44700

Table 6.4.3.4 Haddock in Subarea IV (North Sea) and Division IIIaW (Skagerrak). Summary of stock assessment.

	RECRUITMENT	TSB	SSB	CATCH	LANDINGS	DISCARDS	IBC	YIELD/SSB	MEAN F(2- 4)
1963	2315029	3412701	137055	271851	68821	189329	13700	0.502	0.745
1964	9155436	1281826	417718	379915	131006	160309	88600	0.314	0.794
1965	26286793	1081002	521742	299344	162418	62326	74600	0.311	0.639
1966	68923260	1480501	427843	346349	226184	73465	46700	0.529	0.662
1967	388351571	5527477	224795	246664	147742	78222	20700	0.657	0.626
1968	17114876	6852043	259402	301821	105811	161810	34200	0.408	0.597
1969	12133821	2477692	810551	930043	331625	260065	338353	0.409	1.121
1970	87606750	2541782	900223	805776	524773	101274	179729	0.583	1.152
1971	78211007	2546502	420405	446824	237502	177776	31546	0.565	0.773
1972	21426954	2182328	302982	353084	195545	127954	29585	0.645	1.119
1973	72953038	4088546	297169	307595	181592	114736	11267	0.611	0.866
1974	132869060	4711585	260797	366992	153057	166429	47505	0.587	0.962
1975	11407700	2385624	238364	453205	151349	260369	41487	0.635	1.101
1976	16402039	1097845	309660	375305	172680	154462	48163	0.558	0.972
1977	26219907	1069750	242563	224516	145118	44376	35022	0.598	1.031
1978	39832982	1138494	138416	179376	91683	76789	10903	0.662	1.06
1979	72661935	1353240	117454	145020	87069	41710	16240	0.741	0.985
1980	15806947	1472212	169873	222126	105041	94614	22472	0.618	0.896
1981	32617680	997530	257894	213240	136132	60067	17041	0.528	0.656
1982	20491370	1092906	321698	233283	173335	40564	19383	0.539	0.657
1983	66956253	2254533	277335	244212	165337	65977	12898	0.596	0.882
1984	17181331	1692122	224959	218946	133568	75298	10080	0.594	0.871
1985	23920805	1189276	262039	255366	164119	85249	5998	0.626	0.871
1986	49030758	1942695	237914	223081	168236	52202	2643	0.707	1.201
1987	4156240	1098211	167460	173852	110299	59143	4410	0.659	1.022
1988	8339335	630796	160326	173123	106973	62148	4002	0.667	1.106
1989	8606296	623884	128027	106529	78439	25680	2410	0.613	0.949
1990	28351635	1582939	81017	88934	53780	32565	2589	0.664	1.111
1991	27479298	1553319	63345	93286	47715	40185	5386	0.753	0.886
1992	41947282	1364802	103501	131650	72790	47934	10927	0.703	0.978
1993	13157783	1019411	139012	172550	82176	79608	10766	0.591	0.894
1994	56144741	1488820	161684	151020	82074	65370	3576	0.508	0.826
1995	14447705	1174840	163135	142524	77458	57372	7695	0.475	0.729
1996	21503804	1063289	202515	156609	79148	72461	5000	0.391	0.685
1997	12826240	980803	227379	141347	82574	52089	6684	0.363	0.531
1998	9970725	796184	205012	131316	81054	45160	5101	0.395	0.596
1999	135516779	3608494	159117	112021	65588	42598	3835	0.412	0.702
2000	26511570	3515647	137513	104457	47553	48770	8134	0.346	0.754
2001	2835366	1224874	314654	166960	40856	118225	7879	0.13	0.488
2002	3750722	885642	517532	107922	58348	45857	3717	0.113	0.23
2003	3891493	767729	505527	66806	41964	23692	1150	0.083	0.203
2004	3731671	765036	433795	64839	48734	15551	554	0.112	0.263
2005	38595613	2620075	374772	57162	48357	8637	168	0.129	0.309
2006	7205011	1266096	298800	56056	37613	17908	535	0.126	0.508
2007	4572803	688998	214574	59643	30939	28657	48	0.144	0.405
2008	3735922	532933	203254	43640	30248	13194	199	0.149	0.251
2009	4067014		229325³						
Units	Thousands	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes		

³ Corrections made in November are presented in bold. The relating figures have not been updated from the June advice.

Annex 6.4.3a EU and Norway Management plan

“The plan shall consist of the following elements:

- 1. Every effort shall be made to maintain a minimum level of Spawning Stock Biomass greater than 100,000 tonnes (B_{lim}).*
- 2. For 2009 and subsequent years the Parties agreed to restrict their fishing on the basis of a TAC consistent with a fishing mortality rate of no more than 0.3 for appropriate age-groups, when the SSB in the end of the year in which the TAC is applied is estimated above 140,000 tonnes (B_{pa}).*
- 3. Where the rule in paragraph 2 would lead to a TAC, which deviates by more than 15 % from the TAC of the preceding year, the Parties shall establish a TAC that is no more than 15 % greater or 15 % less than the TAC of the preceding year.*
- 4. Where the SSB referred to in paragraph 2 is estimated to be below B_{pa} but above B_{lim} the TAC shall not exceed a level which will result in a fishing mortality rate equal to $0.3 - 0.2 * (B_{pa} - SSB) / (B_{pa} - B_{lim})$. This consideration overrides paragraph 3.*
- 5. Where the SSB referred to in paragraph 2 is estimated to be below B_{lim} the TAC shall be set at a level corresponding to a total fishing mortality rate of no more than 0.1. This consideration overrides paragraph 3.*
- 6. In the event that ICES advises that changes are required to the precautionary reference points B_{pa} (140,000t) or B_{lim} , (100,000t) the Parties shall meet to review paragraphs 1-5.*
- 7. In order to reduce discarding and to increase the spawning stock biomass and the yield of haddock, the Parties agreed that the exploitation pattern shall, while recalling that other demersal species are harvested in these fisheries, be improved in the light of new scientific advice from inter alia ICES.*
- 8. No later than 31 December 2010, the parties shall review the arrangements in paragraphs 1 to 7 in order to ensure that they are consistent with the objective of the plan. This review shall be conducted after obtaining inter alia advice from ICES concerning the performance of the plan in relation to its objective.*
- 9. This arrangement enters into force on 1 January 2009.”*