

**ECOREGION** North Sea  
**SUBJECT** EU–Norway request to evaluate the performance of the long-term management plan for North Sea haddock

#### Advice summary

ICES advises that the main objectives of the EU–Norway North Sea haddock management plan, in terms of providing sustainable fisheries with stable yields in conformity with the precautionary approach, were achieved. The stock has been exploited around or below the target fishing mortality of the management plan and the stock biomass has remained above the precautionary level. Whereas the TACs have been set in accordance with the management plan, the actual landings have been less than the TAC every year, indicating that external factors helped to achieve the objectives of the plan.

A new joint EU–Norway management plan will be required in the near future, taking into account the new stock boundaries, mixed-fisheries considerations, and recent policy developments (such as the upcoming landing obligation within the EU).

#### Request

*The EU-Norway long-term management plan for North Sea haddock has been in force since 1 January 2009 and should be reviewed before 31 December 2014 to ensure that its provisions continue to be consistent with its objective.*

*To this end ICES is requested to evaluate the performance of the plan in achieving its stated objective of providing for sustainable fisheries with high and stable yields in conformity with the precautionary approach.*

#### Elaboration on ICES advice

The management plan for North Sea haddock first came into force in its present form on 1 January 2007. ICES evaluated this management plan in 2010 and concluded that it was consistent with the precautionary approach (ICES, 2010). Consultation with the clients concerning the present special request indicated that only an ex-post evaluation (i.e. an evaluation of the functioning of this plan until now) is required at this stage; ICES is therefore providing advice on this basis.

ICES advises that the main objectives of the EU–Norway North Sea haddock management plan, in terms of providing sustainable fisheries with stable yields in conformity with the precautionary approach, were achieved. The SSB has been maintained above  $B_{lim}$  and  $B_{pa}$ , whereas  $F$  has been below  $F_{pa}$  and around or below the target  $F$  of the management plan ( $F = 0.3$ ). ICES has been providing annual catch advice according to the management plan, and the TACs have been set in accordance with the management plan since 2008. The set TACs have not changed by more than 15% with respect to the TAC in the previous year. However, the resulting TACs were not fully taken in any year, and the TAC uptake has been 75% on average across years, indicating that external factors (e.g. economic reasons) helped to achieve the objectives of the plan. Low recruitment, and not an improved exploitation pattern, appears to have been the main driver for the low discard rates observed in recent years.

The values of the reference points used in the management plan (target  $F$ ,  $B_{lim}$ ,  $B_{pa}$ ) are in line with those of the North Sea and Skagerrak stock (ICES, 2013). Since 2014, haddock in the North Sea and Skagerrak (Subarea IV and Division IIIa West) and the West of Scotland (Division VIa) is considered as a single stock and assessed as such (ICES, 2014a, 2014b). The reference points of this combined stock are different from those of the previously considered North Sea and Skagerrak stock, on which the management plan is based. ICES bases the ex-post evaluation of the management plan for North Sea haddock on the most recent assessment for the North Sea and Skagerrak (conducted in 2013, see ICES, 2013); a summary of assessment results is shown in Figure 6.2.3.5.1 and Table 6.2.3.5.1. The following points were taken into account in drawing the conclusions presented in this advice:

- The minimum estimated value of the spawning-stock biomass (SSB) during 2007–2013 was 177 868 t. Therefore, SSB has been maintained above  $B_{lim}$  (100 000 t) and  $B_{pa}$  (140 000 t).
- The fishing mortality  $F(2-4)$  decreased strongly after 2000 and has been around or below the target  $F$  of the management plan ( $F = 0.3$ ) since year 2002, with the exception of 2006 and 2007, when  $F$  was higher. The average of  $F(2-4)$  in the period 2007–2012 is 0.27, which is at the lower end of fishing mortalities considered to be consistent with  $F_{MSY}$ . The low  $F$  has succeeded in keeping SSB above  $B_{pa}$ , despite the generally poor recruitment observed since 2000.

- The ICES advice for 2007 and subsequent years has followed the agreed management plan and the TACs for 2008 onwards have been equal to the advice (Table 6.2.3.5.2). On the other hand, the actual landings have been below the TAC every year, with a TAC uptake of 75% on average across years. Given the incomplete TAC uptake, it is concluded that external factors (e.g. economic reasons) helped to achieve the objectives of the plan.
- Paragraphs 2 and 3 of the management plan (Annex 6.2.3.5.1) have applied every year since 2007, whereas paragraphs 4 and 5 have never been used. Paragraph 3 includes a 15% constraint on the maximum TAC change between consecutive years (applicable only when  $SSB > B_{pa}$ ), which was used for years 2008, 2010, 2012, 2013, and 2014 (Table 6.2.3.5.2). On the other hand, the maximum change observed in actual landings between consecutive years is 20% (from 2010 to 2011). It is concluded that the plan successfully generated generally stable TACs and yields for the fishing industry. However, yields have remained low, consistent with the low recruitment generally observed since 2000.
- Paragraph 7 of the management plan (Annex 6.2.3.5.1) calls for an improvement of the exploitation pattern (while taking mixed-fisheries considerations into account) with the aim of reducing discarding and increasing the SSB and yield of haddock. Discarding fell significantly during the period of the plan, from 48% of the catch (in weight) in 2007 to 12% in 2012 (Table 6.2.3.5.2). However, in recent years (after the average 2009 year class) recruitment has been very low, and discarding is always expected to decrease in the absence of large numbers of small fish. Figure 6.2.3.5.2 shows the estimated exploitation pattern by age for the last 15 years, indicating there is no systematic decline in mortality rates for the younger ages from 2007 onwards (as might have been expected from a change in selectivity or active avoidance of younger fish). Low recruitment, and not an improved exploitation pattern, thus appears to have been the main driver for the low discard rates observed in recent years.

Following the benchmark meeting in 2014 (ICES, 2014a), haddock are now assessed jointly in Subarea IV and Divisions IIIa and VIa. The existing EU–Norway management plan refers to Subarea IV and Division IIIa only, and is therefore no longer suitable as the basis for advice. A new joint EU–Norway management plan will be required in the near future. The development of a mixed-fisheries management plan for demersal fisheries in the North Sea, taking the upcoming EU landing obligation into account, is currently being discussed in the European Union. As one of the main target stocks, haddock should be included in this plan.

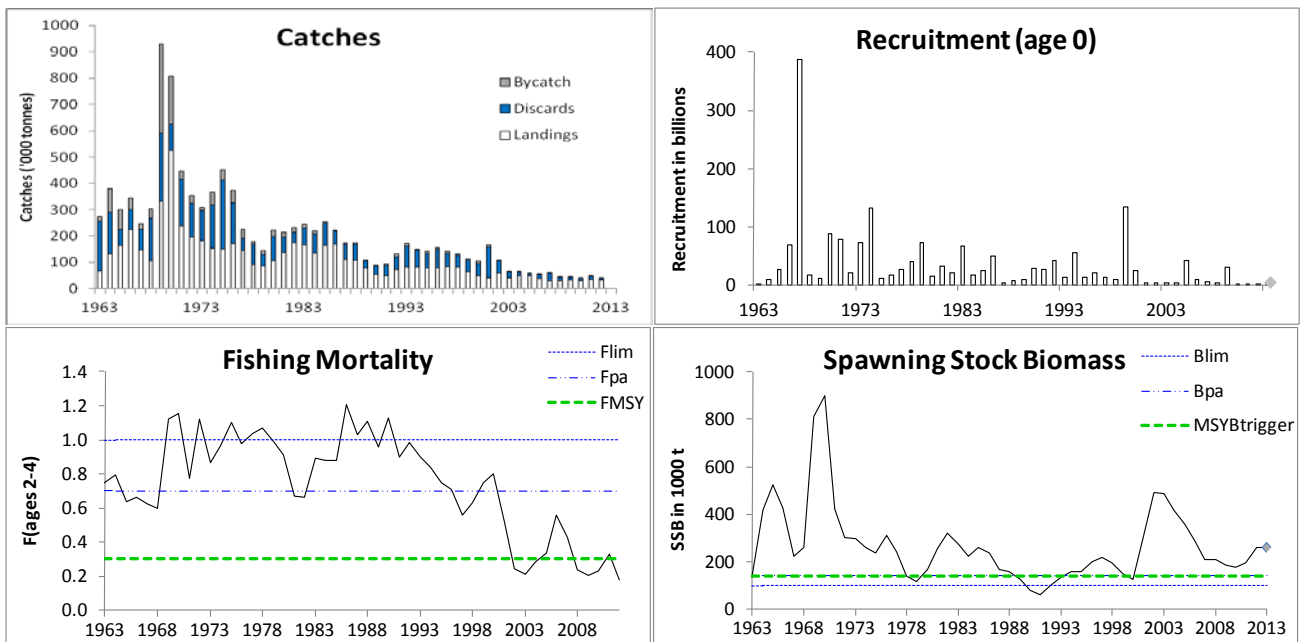
## **Basis of the advice**

### *Methods*

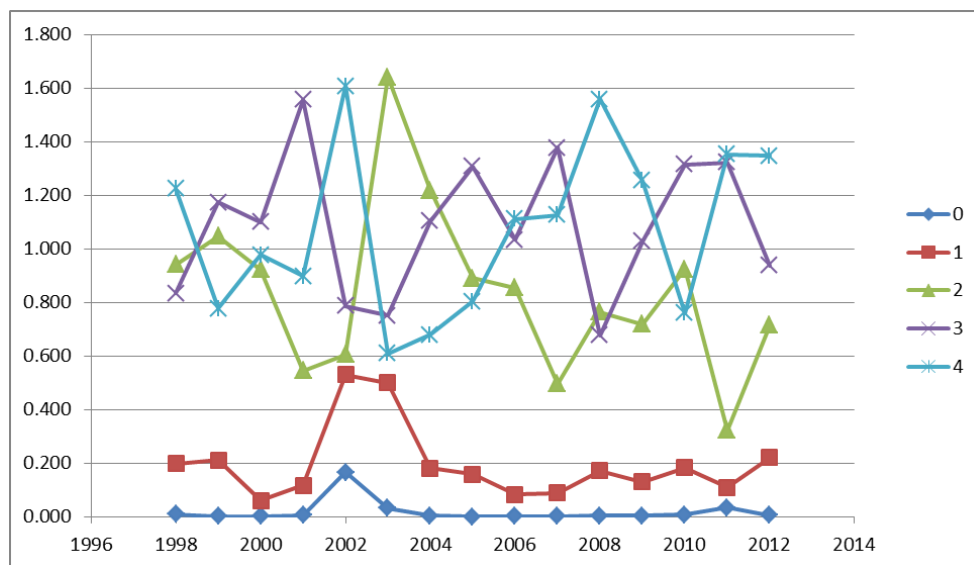
Because of the change in stock boundaries in 2014, with the new stock covering the previous stocks of haddock in the North Sea and Skagerrak (Subarea IV and Division IIIa West) and west of Scotland (Division VIa), the ex-post evaluation of the management plan (Needle, 2014) is based on the most recent assessment for the previous North Sea and Skagerrak stock (conducted in 2013; see ICES, 2013). However, both assessments show very similar overall trends in recruitment, SSB, and F, so the overall stock perception in 2014 (after the new stock definition – ICES, 2014b) remains similar to the perception in the 2013 North Sea and Skagerrak assessment.

## **Sources**

- ICES. 2010. Joint EU–Norway request on the evaluation of the long-term management plan for haddock in Subarea IV (North Sea) and Division IIIa West (Skagerrak). *In* Report of the ICES Advisory Committee, 2010. ICES Advice 2010, Book 6, Section 6.3.3.2.
- ICES. 2013. Haddock in Subarea IV (North Sea) and Division IIIa West (Skagerrak). *In* Report of the ICES Advisory Committee, 2013. ICES Advice 2013, Book 6, Section 6.4.7.
- ICES. 2014a. Report of the ICES Benchmark Meeting on Northern Haddock Stocks (WKHAD). ICES CM 2014/ACOM:41.
- ICES. 2014b. Haddock in Subarea IV and Divisions IIIa West and VIa (North Sea, Skagerrak, and West of Scotland). *In* Report of the ICES Advisory Committee, 2014. ICES Advice 2014, Book 6, Section 6.3.7.
- Needle, C. 2014. Response to Joint EU–Norway request to ICES to evaluate the performance of the long-term management plan for North Sea haddock. Working paper to ACOM, October 2014.



**Figure 6.2.3.5.1** Haddock in Subarea IV and Division IIIa. Summary plots for assessment conducted in 2013 (ICES, 2013), from 1963 to 2012. The 2013 values of recruitment and SSB (marked with a diamond) were predictions at the time of the 2013 assessment.



**Figure 6.2.3.5.2** Haddock in Subarea IV and Division IIIa. Exploitation pattern: F-at-age/F(2-4) for each of the ages 0-4 over the last 15 years. The results stem from the assessment conducted in 2013 (ICES, 2013).

**Table 6.2.3.5.1** Haddock in Subarea IV and Division IIIa. Summary of results from the assessment conducted in 2013 (ICES, 2013). Recruitment in thousands, weights in tonnes.

	Recruitment	TSB	SSB	Catch	Landings	Discards	Bycatch	Yield/SSB	Mean F(2–4)
1963	2314960	3412683	137050	271851	68821	189330	13700	0.502	0.745
1964	9155373	1281817	417713	379915	131006	160309	88600	0.314	0.794
1965	26286878	1080997	521738	299343	162418	62325	74600	0.311	0.639
1966	68923101	1480495	427838	346349	226184	73465	46700	0.529	0.662
1967	388349879	5527432	224790	246664	147742	78222	20700	0.657	0.626
1968	17114655	6851991	259396	301821	105811	161810	34200	0.408	0.597
1969	12133703	2477668	810542	930043	331625	260065	338353	0.409	1.121
1970	87603165	2541724	900215	805776	524773	101274	179729	0.583	1.152
1971	78183136	2546129	420392	446824	237502	177776	31546	0.565	0.773
1972	21423632	2181798	302958	353084	195545	127954	29585	0.645	1.119
1973	72899283	4085944	297087	307594	181592	114735	11267	0.611	0.867
1974	132782108	4708422	260633	366992	153057	166429	47505	0.587	0.963
1975	11403696	2383875	238058	453205	151349	260370	41487	0.636	1.104
1976	16381746	1096449	309033	375305	172680	154462	48163	0.559	0.976
1977	26150710	1066970	241589	224516	145118	44376	35022	0.601	1.039
1978	39744556	1134862	137248	179375	91683	76789	10903	0.668	1.066
1979	72494671	1348844	116074	145019	87069	41710	16240	0.75	0.992
1980	15762259	1466405	167440	222127	105041	94614	22472	0.627	0.91
1981	32573237	993166	255403	213240	136132	60067	17041	0.533	0.667
1982	20481167	1088498	318717	233283	173335	40564	19383	0.544	0.664
1983	66907115	2249316	273915	244212	165337	65977	12898	0.604	0.892
1984	17177582	1687290	221318	218946	133568	75298	10080	0.604	0.881
1985	23909178	1185101	258408	255366	164119	85249	5998	0.635	0.877
1986	48938701	1937034	234848	223081	168236	52203	2643	0.716	1.206
1987	4142071	1094118	165079	173852	110299	59143	4410	0.668	1.027
1988	8335950	628563	158854	173124	106973	62148	4002	0.673	1.11
1989	8599596	622238	126905	106526	78439	25677	2410	0.618	0.957
1990	28285263	1578502	79776	88934	53780	32565	2589	0.674	1.125
1991	27405410	1548619	62403	93287	47715	40185	5386	0.765	0.898
1992	41659387	1356841	102106	131650	72790	47934	10927	0.713	0.983
1993	13021649	1011378	137116	172551	82176	79609	10766	0.599	0.902
1994	55427392	1470832	159452	151020	82074	65370	3576	0.515	0.841
1995	13954774	1155066	160348	142524	77458	57371	7695	0.483	0.747
1996	21227007	1041768	197709	156609	79148	72461	5000	0.4	0.71
1997	12600705	959556	219424	141347	82574	52089	6684	0.376	0.557
1998	9874593	776833	195019	131316	81054	45160	5101	0.416	0.627
1999	133501618	3546973	148698	112021	65588	42598	3835	0.441	0.745
2000	25617352	3429716	126118	104457	47553	48770	8134	0.377	0.801
2001	2728460	1185703	298022	166960	40856	118225	7879	0.137	0.517
2002	3585892	849841	493227	107923	58348	45857	3717	0.118	0.241
2003	3749453	738293	485657	66805	41964	23691	1150	0.086	0.212
2004	3608535	735324	415791	64839	48734	15551	554	0.117	0.28
2005	42003728	2787581	359286	57162	48357	8637	168	0.135	0.334
2006	9049360	1393103	285459	56056	37613	17908	535	0.132	0.556
2007	5523197	770942	208556	59643	30939	28657	48	0.148	0.43
2008	4090983	589255	210380	43640	30248	13193	199	0.144	0.239
2009	30449019	1811890	185258	43407	32807	10548	52	0.177	0.207
2010	2173968	610507	177868	39640	29054	10155	431	0.163	0.23
2011	770959	393263	194942	46378	34840	11515	23	0.179	0.331
2012	2506199	438587	258458	37558	33052	4505	1	0.128	0.176
2013	3103226*		257701**		38935				

\* Geometric mean of the five lowest recruitment values over the period 1994–2010.

\*\* Estimated FLXSA survivors from 2012.

**Table 6.2.3.5.2** Haddock in Subarea IV and Division IIIa. Advice, TAC, TAC update (actual landings as a percentage of TAC), percentage of change in TAC and landings (with respect to the previous year), and percentage of catch that is discarded (in weight).

	Advice (follows Management Plan)			TAC			TAC uptake	% change in TAC	% change in landings	% of catch discarded (in weight)
	Landings	Basis	F	IV + IIa	IIIa + SD 22-32	Total				
<b>2006</b>				51 850	3 189	55 039				
<b>2007</b>	55 400	F = 0.3	0.3	54 640	3 360	58 000	53%	+5%	-18%	48%
<b>2008</b>	49 300	-15% TAC	0.32	46 444	2 856	49 300	61%	-15%	-2%	30%
<b>2009</b>	44 700	F = 0.3	0.3	42 110	2 590	44 700	73%	-9%	+8%	24%
<b>2010</b>	38 000	-15% TAC	0.33	35 794	2 201	37 995	76%	-15%	-11%	26%
<b>2011</b>	36 152 (rounded to 36 000)	F = 0.3	0.3	34 057	2 095	36 152	96%	-5%	+20%	25%
<b>2012</b>	41 575	+15% TAC	0.29	39 166	2 409	41 575	79%	+15%	-5%	12%
<b>2013</b>	47 811	+15% TAC	0.29	45 040	2 770	47 810	81%	+15%	+18%	
<b>2014</b>	40 639	-15% TAC	0.33	38 284	2 355	40 639		-15%		

Weights in tonnes.

#### Annex 6.2.3.5.1 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 (Blim).*
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 (Bpa).*
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 Bpa but above Blim the TAC shall not exceed a level which will result in a fishing mortality rate equal to  $0.3 - 0.2 * (Bpa - SSB) / (Bpa - Blim)$ . This consideration overrides paragraph 3.*
5. *Where the SSB referred to in paragraph 2 is estimated to be below Blim 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 Bpa (140,000t) or Blim, (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 2014, 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.”*