

ECOREGION North Sea
STOCK Saithe in Subarea IV (North Sea), Division IIIa (Skagerrak), and Subarea VI (West of Scotland and Rockall)

Advice for 2014

ICES advises on the basis of the EU–Norway management plan that landings in 2014 should be no more than 85 581 tonnes for the whole assessment area. Discards are known to take place but cannot be quantified, therefore total catches cannot be calculated.

Stock status

F (Fishing Mortality)			
	2010	2011	2012
MSY (F_{MSY})	✓	✓	✓ Appropriate
Precautionary approach (F_{pa}, F_{lim})	✓	✓	✓ Harvested sustainably
Management plan (F_{MP})	✓	✓	✓ At limit
SSB (Spawning-Stock Biomass)			
	2011	2012	2013
MSY ($B_{trigger}$)	✓	✗	✗ Just below trigger
Precautionary approach (B_{pa}, B_{lim})	✓	○	○ Increased risk
Management plan (SSB_{MP})	✓	✗	✗ Just below trigger

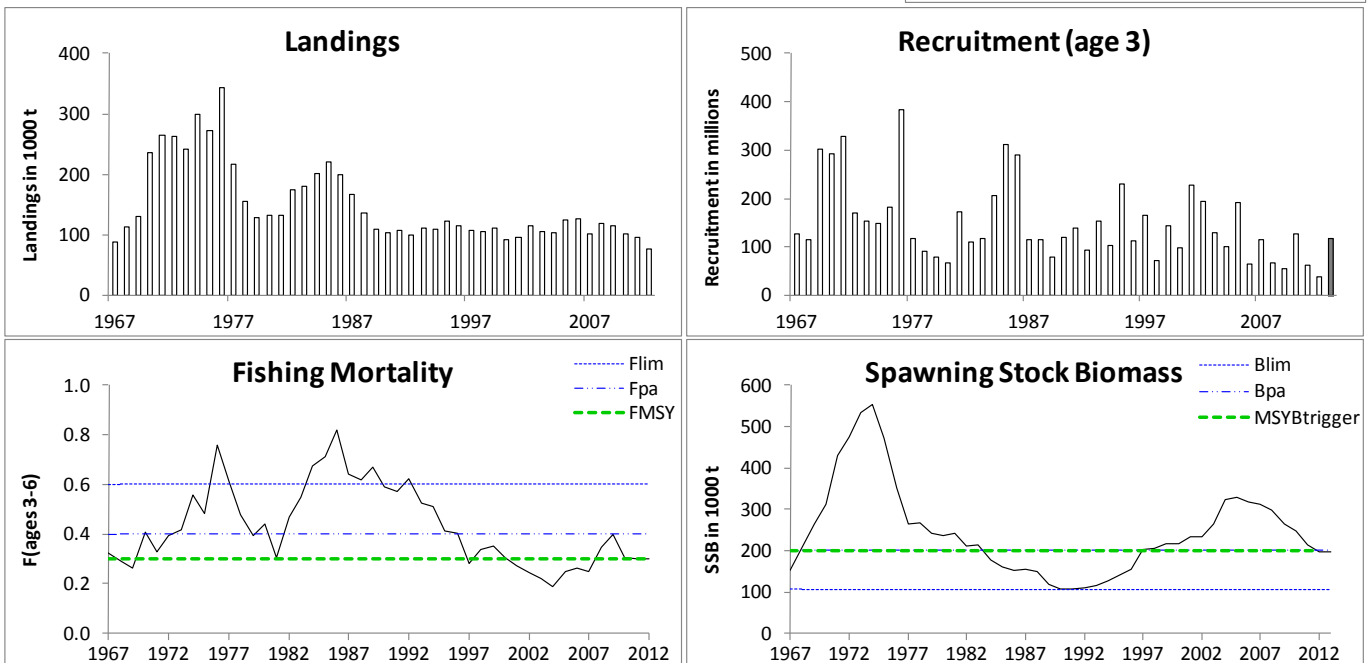
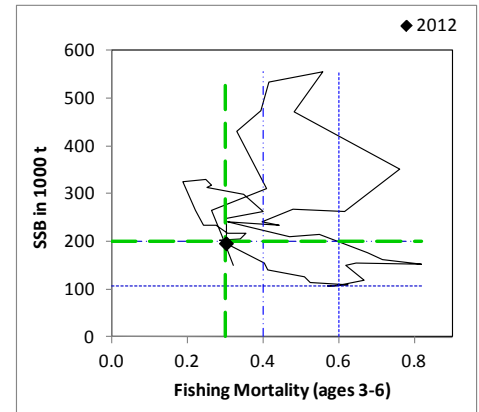


Figure 6.4.21.1 Saithe in Subareas IV and VI, and Division IIIa. Summary of stock assessment in April 2013 (weights in thousand tonnes). Assumed recruitment values are shaded. Top right: SSB and F for the time series used in the assessment.

SSB increased above B_{pa} in 1997, but has declined since 2005. The latest SSB estimate is close to B_{pa} . Fishing mortality has fluctuated around F_{MSY} since 1997. Recruitment has been below average since 2006 and shows a declining trend in recent years.

Management plans

The EU–Norway management plan was reconsidered in February 2013 (Annex 6.4.21), but no modification was implemented. It was previously evaluated by ICES (ICES, 2012) and considered to be consistent with the precautionary approach in the short term (< 4 years).

Biology

The juveniles (ages 0–2 years) generally occur in shallow coastal areas where they are protected from large fisheries. The fish are long-lived (20+ years) and tend to form large aggregations to a higher extent than, for instance, cod. Saithe starts to mature at age 4 (15% mature) and by age 7, all fish can be regarded as being mature. Saithe is one of the top predators in the North Sea ecosystem and saithe abundance influences the yield and abundance of other commercially important species (e.g., whiting, haddock, herring and Norway pout).

Environmental influence on the stock

Low recruitment since 2006 is not linked to low SSB, and may be related to changes in the environment. Current information is not sufficient to identify a relationship between recruitment and specific environmental factors (e.g., temperature, currents, availability of food).

The fisheries

Saithe in the North Sea are mainly taken in a directed trawl fishery in deep water along the Northern Shelf edge and the Norwegian Trench. Analyses show a substantial shift in the Norwegian and German trawlers' fishing pattern after 2008, both in time and spatial distribution. The French fleet has returned to the northern fishing grounds, but the Norwegian and German fleet still have high effort in the southern area. Fishing on spawning aggregations in the first quarter has declined.

Catch distribution Landings 2012 = 77.7 kt, of which approximately 91% are taken by bottom trawl, 8% by gillnets, and the remainder by other gears. Discards are not quantified, but considered low in the targeted fisheries, however can be high in the mixed fisheries.

Effects of the fisheries on the ecosystem

Reduced benthic biomass is found in areas of bottom trawl activity compared to unfished areas. North Sea saithe fisheries are known to have less impact on the seafloor than most other bottom trawl fisheries.

Quality considerations

Recent recruitment estimates are poorly estimated with the current surveys. Additionally, surveys do not cover the areas inhabited by older fish and therefore commercial cpue indices are used for tuning, however there is a concern that use of commercial cpue indices for schooling species may have lead to bias in the assessment. Cpue data from the Norwegian fishing industry lack crucial information on gear specifics and should be improved.

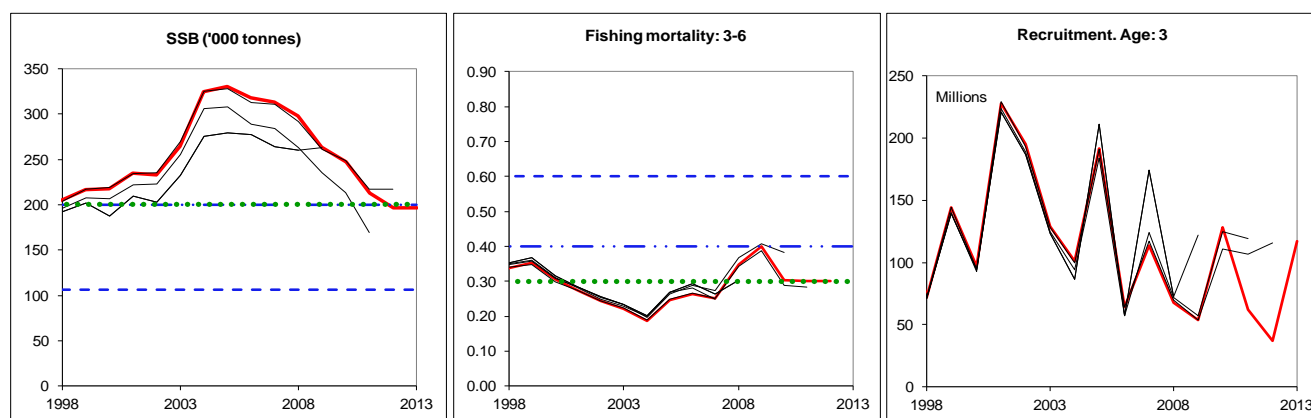


Figure 6.4.21.2 Saithe in Subareas IV and VI, and Division IIIa. Historical assessment results (final-year recruitment estimates included). The 2010 assessment is not included since this was only a forecast based on the 2009 assessment.

Scientific basis

Assessment type	Age-based assessment model (XSA).
Input data	Commercial catches include international landings, and ages and length frequencies from catch sampling., two survey indices (NORACU, IBTS-Q3); Three commercial indices (FRATRB_IV, GER_OTB_IV, NORTR_IV2). Maturity at age and natural mortality are assumed to be constant.
Discards and bycatch	Discards are not included in the assessment, information is available for some fleets.
Indicators	None.
Other information	Benchmarked in January 2011 (revised in October 2011).
Working group report	WGNSSK (ICES, 2013a)

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Reference points

	<i>Type</i>	<i>Value</i>	<i>Technical basis</i>
Management Plan	SSB _{MP}	200 000 t	B _{pa}
	F _{MP}	0.3	Or lower depending on SSB in relation to SSB target.
MSY Approach	MSY B _{trigger}	200 000 t	Default value B _{pa}
	F _{MSY}	0.3	Stochastic simulation using hockey-stick stock–recruitment.
Precautionary approach	B _{lim}	106 000 t	B _{loss} = 106 000 t (estimated in 1998).
	B _{pa}	200 000 t	Affords a high probability of maintaining SSB above B _{lim} .
	F _{lim}	0.6	F _{loss} the fishing mortality estimated to lead to stock falling below B _{lim} in the long term.
	F _{pa}	0.4	Implies that B _{eq} > B _{pa} and (SSB _{MT} < B _{pa}) < 10%.

(unchanged since: 2011)

Outlook for 2014

Basis: F (2013) = 0.37 [TAC constraint]; R (2012–2014) = GM (1988–2010) = 116.945 million; SSB (2014) = 162.125; landings (2013) = 100.684.

Rationale	landings 2014	landings IIIa&I V 2014¹⁾	landings VI 2014¹⁾	Basis	F 2014	SSB 2015	% SSB change²⁾	% TAC change³⁾
Management plan	85.581	77.536	8.045	15% TAC constraint	0.31	176.056	8.5%	-15%
MSY approach	82.648	74.879	7.769	F _{MSY} * (SSB ₂₀₁₃ /B _{trigger})	0.29	178.386	+10%	-18%
Precautionary approach	56.181	50.900	5.281	B _{pa} (F ₂₀₁₃ *0.51)	0.19	200.001	+23%	-44%
Zero catch	0	0	0	F = 0	0.0	246.940	+52%	-100%
Other options	84.584	76.633	7.951	F _{MSY}	0.3	176.820	+9%	-16%
	100.869	91.387	9.481	F ₂₀₁₃	0.37	163.723	+1%	0%
<i>Mixed fisheries options – minor differences with calculation above can occur due to different methodology used (ICES, 2013b) □</i>								
<i>Maximum</i>	143.439	129.956	13.483	A	0.54	143.575	-11%	+42%
<i>Minimum</i>	48.050	43.533	4.517	B	0.15	221.170	+36%	-52%
<i>Cod_MP</i>	48.359	43.813	4.546	C	0.15	220.911	+36%	-52%
<i>SQ Effort</i>	89.630	81.205	8.425	D	0.3	186.756	+15%	-11%
<i>Effor_Mgt</i>	68.305	61.884	6.421	E	0.22	204.306	+26%	-32%

Weights in thousand tonnes.

¹⁾ Landings split according to the average in 1993–1998, i.e. 90.6% in Subarea IV and Division IIIa West and 9.4% in Subarea VI.

²⁾ SSB 2015 relative to SSB 2014.

³⁾ Landings 2014 relative to TAC 2013.

Mixed-fisheries assumptions:

- A. Maximum scenario: Fleets stop fishing when the last quota is exhausted.
- B. Minimum scenario: Fleets stop fishing when the first quota is exhausted.
- C. Cod management plan scenario: Fleets stop fishing when the cod quota is exhausted.
- D. SQ effort scenario: Effort in 2012 and 2013 as in 2011.
- E. Effort management scenario: Effort reductions according to cod and flatfish management plans.

Management plan

The EU–Norway agreement management plan does not clearly state whether the SSB in the intermediate year or the SSB at the beginning or end of the TAC year should be used to determine the status of the stock. ICES interprets this as being the SSB at the beginning of the intermediate year (2013).

Since SSB at the beginning of 2013 is below B_{pa} , paragraph 3 of the harvest control rule applies, resulting in a F of 0.29 and a TAC (landings) reduction of more than 15%. Therefore, the maximum TAC reduction of 15% is applied (paragraph 5), resulting in landings of no more than 85 581 t in 2014. This is expected to lead to an SSB of 176 099 t in 2015 which is below B_{pa} . Discards are known to take place but cannot be quantified, therefore total catches cannot be calculated.

MSY approach

Following the ICES MSY framework implies a fishing mortality of 0.29 (below F_{MSY} because SSB is below MSY Btrigger). This would result in landings of no more than 82 600 t in 2014. This is expected to lead to an SSB in 2015 of 178 400 t. Discards are known to take place but cannot be quantified, therefore total catches cannot be calculated.

Precautionary approach

An 49% reduction in F is needed to maintain SSB at B_{pa} in 2015. This corresponds to landings of no more than 56 181 t in 2014. Discards are known to take place but cannot be quantified, therefore total catches cannot be calculated.

Mixed fisheries

In contrast to single-species advice there is no single recommendation for mixed fisheries (ICES, 2013b), but rather a range of plausible scenarios, assuming fishing patterns and catchability in 2013 and 2014 are unchanged from those in 2012. Major differences between the outcomes of the various scenarios indicate potential undershoot or overshoot of the advised landings corresponding to the single-species advice. As a result, fleet dynamics may change, but cannot be determined.

Cod is the main limiting species for the North Sea demersal fisheries in 2014. Following the 'cod' scenario (full implementation of the cod management plan), and also the effort management scenario, the saithe management plan catch options could not be fully utilized. It is also noted that for the 'max' scenario the implied F would exceed F_{pa} which is not considered precautionary.

Additional considerations

Management plan evaluations

In 2012, an EU-Norway request was sent to ICES on options to revise the long-term management plan for saithe (ICES, 2012). ICES advised that all harvest control rule (HCR) options in the request result in less than 5% annual risks of the stock being below the limit biomass reference point (B_{lim}) in the short term (next 4 years). The long-term performance of the HCRs is less clear, as it is uncertain whether the stock will develop in accordance with the precautionary approach (i.e. with less than 5% risk of being below B_{lim}) in the long term. No substantial differences were found between the options in terms of risk or yield, although the stability of yield is slightly more different between options. The EU and Norway agreed to keep the old management plan (Appendix).

Because the long-term performance is not clear, ICES advises that the HCR selected for management should be re-evaluated within 4 years (i.e. no later than 2016) and revised if necessary.

In 2013, the effects of interannual quota flexibility in the management plan for saithe were evaluated (ICES, 2013c). ICES concluded that the harvest control rules evaluated are robust to inclusion of inter-annual quota flexibility in terms of the probability of stock biomass falling below B_{lim} , and average yield. This conclusion is conditional on the inter-annual quota flexibility being suspended when the stock is estimated to be outside safe biological limits and therefore the management plan should be re-evaluated in 2016 at the latest.

Management considerations

The stock biomass is estimated to be close to B_{pa} and recruitment estimates for the terminal year are uncertain. The forecast and resulting advice are highly sensitive to the assumption on the incoming year class for which no information is available. This is likely to lead to greater interannual variability in the advice. The average recruitment assumed in 2013 and 2014 is high relative to recent values, however this does not affect the advice since this is already limited by the 15% maximum TAC change.

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 2013.

The reported landings have been lower than the TACs since 2002, but the reduction of the TAC in recent years has gradually lessened the difference between landings and TAC.

Regulations and their effects

Since 2009 the EU fleets fishing for saithe have fallen under the effort regime of the EU cod management plan (1342/2008). This may have contributed to a southern shift in geographical distribution and thereby a change in fishing pattern for the German fleet.

Effort restrictions in the EU were introduced in 2003 (annexes to the annual TAC regulations) for the protection of the North Sea cod stock. In addition, a long-term plan for the recovery of cod stocks was adopted in 2008 (EC regulation 1342/2008). In 2009, the effort management programme switched from a days-at-sea to a kW-day system (EC regulation 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. Effort ceilings are updated annually. However, for 2013, the European Council decided upon a roll-over of effort level of 2012 into 2013 for both the cod and the sole/plaice management plan.

Overall nominal effort (kW-days) by EU demersal trawls, seines, beam trawls, gill/trammel nets and longlines (all mesh sizes included) in the North Sea, Skagerrak, and Eastern Channel had been substantially reduced since the implementation of the two successive effort management plans in 2003 and 2008 (–40% between 2003 and 2012, –16% between 2008 and 2012). Following the introduction of days-at-sea regulations in 2003, there was a substantial switch from the larger mesh (>100 mm, TR1) gear to the smaller mesh (70–99 mm, TR2) gear. Subsequently, effort by TR1 has been relatively stable, whereas effort in TR2 and in small mesh beam trawl (80–120 mm, BT2), has shown a pronounced decline (–14%, –45%, and –48%, respectively, between 2004 and 2012). Gill and trammel nets fisheries have remained stable (ICES, 2013b). Effort in large mesh size beam trawl (\geq 120 mm, BT1) has increased significantly in 2012 after a decade of continuous decline. Nominal effort reported by Norway has increased since 2011 due to the generalization of electronic logbooks.

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Information from the fishing industry

Saithe has had growing importance for both the Danish and Scottish fleets. The fishers' survey (Napier, 2012) shows a perception of an increasing stock for the central north and eastern North Sea which is not in accordance with the latest assessment. Reports from Norwegian fishers show concerns about increased landings from pelagic trawling and a possible change in exploitation pattern towards younger year classes.

According to a NSRAC-meeting between scientists and fishers in Hanstholm in April 2012, the industry was worried about the decline in mean weight-at-age after 2000. German industry representatives confirmed changes in fishing pattern due to effort management. French industry representatives noted increased competition over fishing grounds between trawlers and gillnetters in Division VIa, especially in 2009 and 2010. No change in mean age of the catch was observed due to this shift in fishing patterns. Industry commented on conflicting data sources and suggested that fishers' knowledge should be used for the interpretation of the data (i.e. commercial cpue indices). Survey data, especially those for young year classes before age 3, must be improved.

Uncertainties in assessment and forecast

The NORASS survey was considered unreliable and did not track cohorts. Since this survey has been discontinued and only had a small influence the assessment, it has been excluded in the 2013 assessment. The NORACU and Norwegian trawl index were updated and revised.

Conflicting signals between the scientific surveys have become more apparent. All scientific surveys on adults have shortcomings in coverage (IBTS-Q3, NORACU). Survey data for young year classes before age 3 are needed. Catches from older age classes in the surveys are not representative and therefore commercial cpue indices are used for tuning.

Commercial catch data from the Norwegian fishing industry lack crucial information on gear specifics and should be improved.

During the benchmark assessment (ICES, 2011) and the June 2011 assessment, the influence of the commercial cpue indices was reduced by using these indices to tune only the older ages (6–9) instead of using all ages (3–9). The latest information indicates strong year effects in the scientific surveys in the most recent years. The option to include the commercial cpue tuning fleets for ages 3–9 was considered appropriate in the November 2011 update, and also in the 2012 and 2013 assessment. However, the potential for bias in commercial cpue (for example hyper-stability) is a general concern for shoaling species such as saithe. A reliable scientific survey is needed to address this issue.

Comparison with previous assessment and advice

The current assessment estimates SSB in 2013 to be 10% lower than estimated in 2012, and fishing mortality in 2011 is estimated 6% higher than last year. The basis for the advice is the same as last year: the management plan.

Assessment and management area

The ICES advice applies to saithe in Division IIIa and in Subareas IV and VI. For these areas, two TACs are set: one for Division IIIa and Subarea IV, and one for Subarea VI.

Sources

- ICES. 2008. Norway and EC request on management plan for saithe in the North Sea and West of Scotland. ICES Advice 2008, Book 6, Section 6.3.3.3.
- ICES. 2011. Report of the Benchmark Workshop on Roundfish and Pelagic Stocks (WKBENCH 2011), 24–31 January 2011, Lisbon, Portugal. ICES CM 2011/ACOM:38.
- ICES. 2012. Joint EU–Norway request to ICES on options to revise the Long-Term Management Plan for saithe in the North Sea. ICES Advice 2012, Book 6, Section 6.3.3.5.
- ICES. 2013a. Report of the Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK), 24 - 30 April 2013. ICES CM 2013/ACOM:13.
- ICES. 2013b Mixed fisheries advice North Sea. Report of the ICES Advisory Committee, 2013. ICES Advice, 2013. Book 6, Section 6.3.2.
- ICES. 2013c EU request on inter-annual quota flexibility for saithe in the North Sea. ICES Advice, 2013. Book 6, Section 6.3.5.4.
- Napier, I. R. 2012. Fishers' North Sea stock survey 2012. NAFC Marine Centre, Shetland, Scotland.

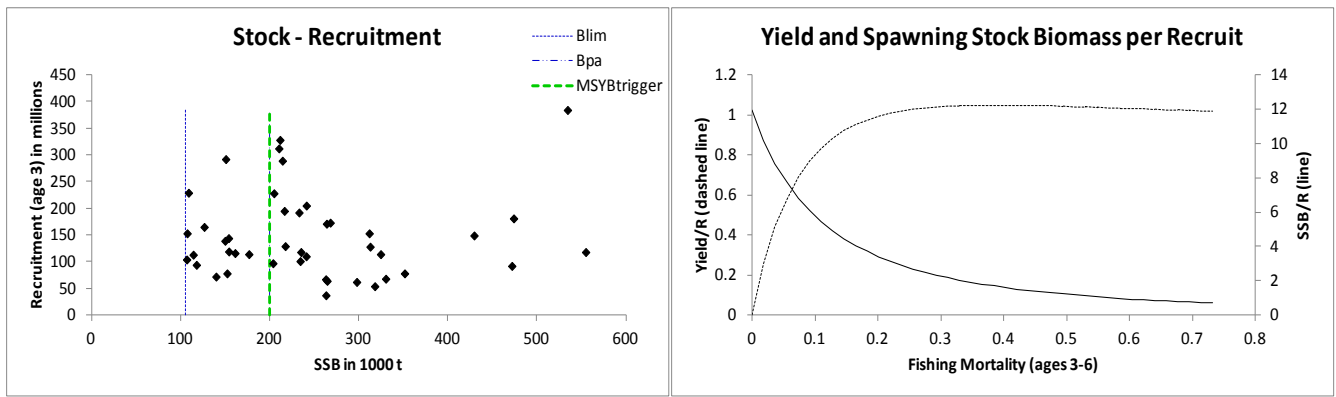


Figure 6.4.21.3 Saithe in Subareas IV and VI and Division IIIa. Stock–recruitment plot and yield-per-recruit analysis.

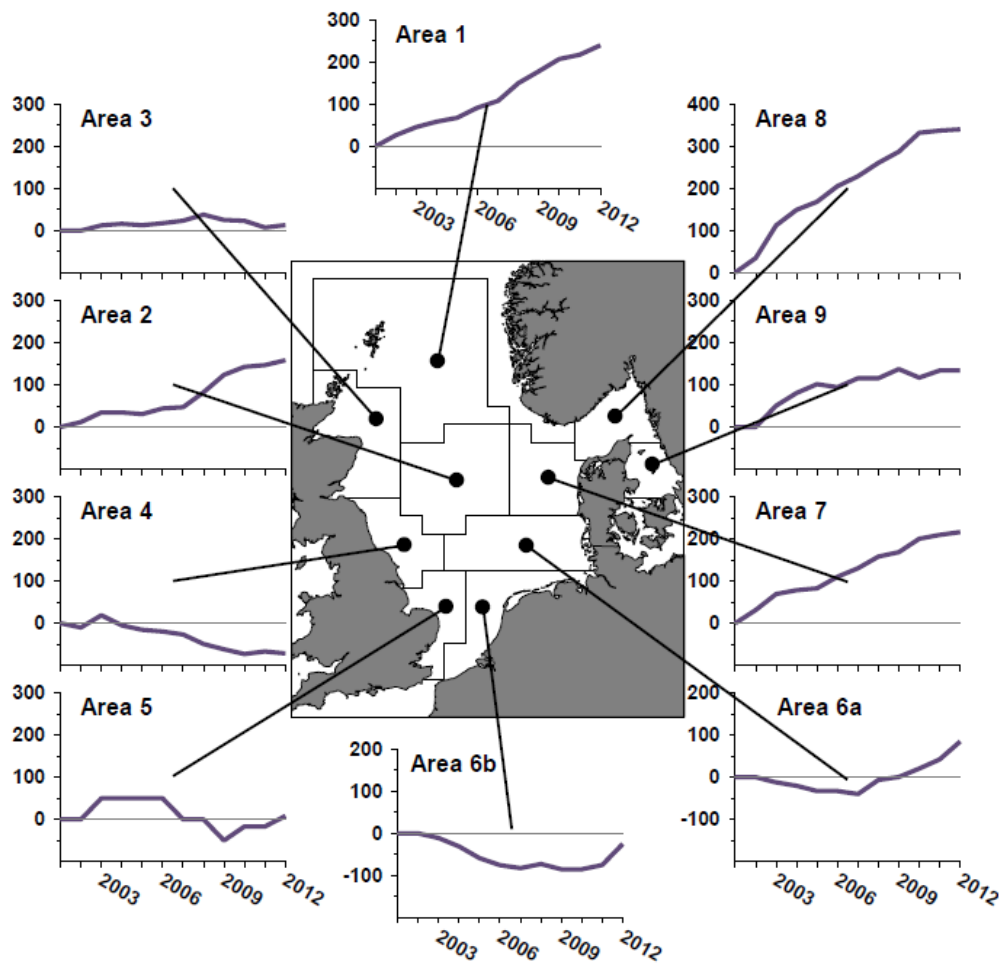


Figure 6.4.21.4 Saithe in Subareas IV and VI and in Division IIIa. Results of the North Sea Commission fishers' survey 2012 on abundance of saithe (Napier, 2012).

Table 6.4.21.1 Saithe in **Subarea IV and Division IIIa**. ICES advice, management, and landings.

Year	ICES Advice	Predicted landings corresp. to advice	Agreed TAC	Official landings	ICES landings
1987	Reduce F	<198	173	154	149
1988	60% of F(86); TAC	156	165	113	107
1989	No increase in F; TAC	170	170	92	92
1990	No increase in F; TAC	120	120	85	88
1991	No increase in F; TAC	125	125	93	99
1992	No increase in F; TAC	102	110	92	92
1993	70% of F(91) ~ 93 000 t	93	93	99	105
1994	Reduce F by 30%	72	97	90	102
1995	No increase in F	107	107	97	113
1996	No increase in F	111	111	96	110
1997	No increase in F	113	115	86	103
1998	Reduce F by 20%	97	97	88	100
1999	Reduce F to F_{pa}	104	110	108	107
2000	Reduce F by 30 %	75	85	85	87
2001	Reduce F by 20 %	87	87	88	90
2002	$F < F_{pa}$	<135	135	115	116
2003	$F < F_{pa}$	<176	165	107	102
2004	$F < F_{pa}^*$	<211	190	104	100
2005	F according to man. plan*	<137	145	111	112
2006	F according to man. plan ($< F_{pa}$) *	<123	123	110	117
2007	F according to man. plan ($< F_{pa}$) *	<124	123	87	94
2008	F according to man. plan ($< F_{pa}$) *	<137	136	115	111
2009	F according to man. plan ($< F_{pa}$) *	<126	126	101	106
2010	F according to man. plan ($< F_{pa}$) *	<107	107	91	95
2011	See scenarios	-	93	89	90
2012 ¹	F according to man. plan ($< F_{pa}$) *	< 79.320	79	69	70
2013	Management plan (TAC + 15%) *	< 91.219	91.220		
2014	Management plan (TAC - 15%) *	< 77.536			

Weights in thousand tonnes.

* Single-stock boundary and the exploitation of this stock should be conducted in the context of mixed fisheries.

¹The June advice in 2011 was updated in November 2011.

Table 6.4.21.2 Saithe in **Subarea VI**. ICES advice, management, and landings.

Year	ICES Advice	Predicted landings corresp. to advice	Agreed TAC**	Official landings	ICES landings
1987	F reduced towards F_{max}	19	27.8	32.5	31.4
1988	80% of F(86); TAC	35	35	32.8	34.2
1989	$F < 0.3$; TAC	20	30	22.4	25.6
1990	80% of F(88); TAC	24	29	18.0	19.9
1991	Stop SSB decline; TAC	21	22	17.9	17.0
1992	Avoid further reduction in SSB	<19	17	10.8	11.8
1993	$F = 0.21$	6.3	14	14.5	13.9
1994	Lowest possible F		14	13.0 ²	12.8
1995	Significant reduction in effort	-	16	10.6 ²	11.8
1996	No increase in F	10.2 ¹	13	9.4 ²	9.4
1997	Significant reduction in F		12	8.6 ²	9.4
1998	60% Reduction in F	4.8	10.9	7.4 ²	8.4
1999	60% reduction in F	4.8	7.5	6.8	7.3
2000	Reduce F by 30%	6.0	7	6.4	5.9
2001	Reduce F by 20%	9.0	9	8.7	8.4
2002	$F < F_{pa}$	< 13	14	5.6	5.2
2003	$F < F_{pa}$	< 17	17.1	5.0	5.3
2004	$F < F_{pa}^*$	< 21	20	1.6	4.4
2005	F according to man. plan ($< F_{pa}$) *	< 14	15	8.7	5.7
2006	F according to man. plan ($< F_{pa}$) *	< 12	13	9.4	8.6
2007	F according to man. plan ($< F_{pa}$) *	< 12	13	6.7	6.8
2008	F according to man. plan ($< F_{pa}$) *	< 14	14	6.0	7.2
2009	F according to man. plan ($< F_{pa}$) *	< 13	13	6.2	7.0
2010	F according to man. plan ($< F_{pa}$) *	< 11	11	6.2	6.9
2011	See scenarios	-	10	7.3	7.4
2012 ³	F according to man. plan ($< F_{pa}$) *	< 8.230	8	7.6	7.2
2013	Management plan (TAC + 15%) *	< 9.464	9.464		
2014	Management plan (TAC - 15%) *	< 8.045			

Weights in thousand tonnes.

¹ *Status quo* catch.

² Incomplete data.

³ The June advice in 2012 was updated in November 2012.

* Single-stock boundary and the exploitation of this stock should be conducted in the context of mixed fisheries.

** Since 1996, the saithe in this area has been assessed together with North Sea/Skagerrak saithe, with allocation of TAC based on historical landings. In recent years TACs in Subarea VI have been included in a total TAC for Divisions VIIb and VIIc, but it is unclear if anything is added. The areas were combined shortly after the Saithe Study Group meeting in 1995. Presumably the assessment was merged in 1996, and used in the advice for 1997.

Table 6.4.21.3 Saithe in Subarea IV, Division IIIa (Skagerrak), and Subarea VI. Officially reported landings and ICES estimates (in tonnes).

SAITHE IV and IIIa											
Country	2002	2003	2004*	2005*	2006	2007*	2008*	2009	2010	2011*	2012*
Belgium	107	45	22	28	16	18	7	27	15	2	1
Denmark	5668	6954	7991	7498	7471	5458	8069	8802	8019	6325	5170
Faroe Isl.	872	495	558	184	62	15	108	-	146	0	8
France	25441	18001	13628	10768	15739	13043	15302	5445*	4582*	13856	14093
Germany	10999	8956	9589	12401	14390	12790	14141	13689	11192	10234	8007
Greenland	62	1616	403	-	-	-	-	-	-	0	-
Ireland	-	-	1	-	0	-	81	81	-	0	0
Netherlands	6	11*	3	40	28	5	3	17	3	24	34
Norway	60013	61735	62783	67365	61268	45395	62055	57708	53031	46778	33028
Poland	752	734*	0	1100	-	-	1407	988	654	584	-
Russia	-	-	-	35	2	5	5	13	-	0	-
Sweden	1863	1876	2249	2114	1695	1380	1639	1363	1545	1331	1305
UK (E/W/Nl)	2521	1215	457	1190	9129**	-	-	-	-	-	-
UK (Scotland)	6596	5829	5924	7703	-	9628**	11701**	12545**	11887**	10148**	7287**
Total reported	114900	107467	103608	110575	109800	87377	114517	100678	91074	89282	68933
Unallocated	1291	-5809	-3646	968	7312	6241	-3084	4851	4026	422	952
ICES estimate	116191	101658	99962	111543	117112	93618	111433	105529	95100	89704	69885
TAC	135000	165000	190000	145000	123250	135900	135900	125934	107000	93600	79320

*Preliminary, ²Preliminary data reported in Iva, **Scotland+E/W/Nl combined

SAITHE VI											
Country	2002	2003	2004*	2005*	2006	2007*	2008*	2009	2010	2011*	2012*
Faroe Islands	-	2	34	21	76	32	23	-	24	5	6
France	3062	3499	3053	3452	5782	3956	2617	2093	2003	2382	2612
Germany	467	54	4	373	532	580	147	298	257	0	9
Ireland	91	170	95	168	243	322	208	208	519	359	341
Netherlands	-	-	-	-	-	-	1	-	-	0	0
Norway	12	28	16	20	28	377	78	68	249	160	47
Russia	1	6	6	25	7	2	50	4	2	0	-
Spain	4	6	2	3	-	-	-	-	-	0	-
UK (E/W/Nl)	307	263	37	203	2748**	-	-	-	-	-	-
UK (Scotland)	1567	1189	1563	4433	-	1419**	2887**	3501**	3168**	4399**	4549**
Total reported	5513	5215	4810	8699	9416	6688	6011	6172	6222	7305	7564
Unallocated	-327	35	-296	-2960	848	98	1223	791	666	95	-357
ICES estimate	5186	5250	4514	5739	8568	6786	7234	6963	6840	7400	7207
TAC	14000	17119	20000	15044	12787	14100	14100	13066	11000	9570	8230

*Preliminary **Scotland+E/W/Nl combined

SAITHE IV, IIIa and VI											
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
ICES estimate	121377	106908	104476	117282	125680	100404	118667	112492	101940	97104	77717
TAC	149000	182119	210000	160044	136037	150000	150000	139000	118000	103170	87550

Table 6.4.21.4

Saithe in Subarea IV, Division IIIa (Skagerrak), and Subarea VI. Summary of stock assessment. (landings for fish age 3–10+)

Year	Recruitment Age 3 thousands	SSB tonnes	Landings tonnes	Mean F Ages 3-6
1967	127000	150800	88300	0.322
1968	114000	211700	113800	0.291
1969	301000	264000	130600	0.262
1970	292000	311900	235000	0.408
1971	328000	429600	265400	0.329
1972	171000	474000	261900	0.395
1973	153000	534500	242500	0.416
1974	149000	554900	298400	0.556
1975	181000	472000	271600	0.482
1976	384000	351600	344000	0.760
1977	118000	263100	216400	0.615
1978	92000	268100	155100	0.477
1979	78000	241100	128400	0.396
1980	67000	235200	131900	0.443
1981	173000	241300	132300	0.306
1982	110000	210500	174400	0.469
1983	118000	214400	180000	0.548
1984	205000	176800	200800	0.677
1985	312000	161200	220900	0.714
1986	289000	152300	198600	0.818
1987	114000	154300	167500	0.644
1988	116000	150000	135200	0.619
1989	78000	117900	108900	0.668
1990	119000	107500	103800	0.592
1991	139000	107000	108000	0.570
1992	94000	109000	99700	0.625
1993	153000	114300	111500	0.525
1994	104000	126600	109600	0.509
1995	229000	139900	121800	0.412
1996	113000	154000	115000	0.403
1997	165000	203800	107300	0.283
1998	72000	204900	106100	0.339
1999	144000	216600	110700	0.354
2000	97000	217600	91300	0.307
2001	228000	234400	95000	0.274
2002	195000	233100	115400	0.243
2003	129000	264600	105600	0.222
2004	101000	324700	104200	0.188
2005	192000	330400	124500	0.247
2006	64000	318100	125700	0.263
2007	114000	312900	101200	0.251
2008	68000	297800	119300	0.348
2009	54000	263300	115700	0.399
2010	128000	247500	101900	0.304
2011	62000	212900	96300	0.302
2012	37000	196500	77100	0.301
2013*	116945	196237		
Average	148680	244145	149317	0.432

* Geometric mean recruitment 1988–2010.

Annex 6.4.21 EU–Norway Management plan

In 2013, EU and Norway renewed the existing agreement on “a long-term plan for the saithe stock in the Skagerrak, the North Sea and west of Scotland, which is consistent with a precautionary approach and designed to provide for sustainable fisheries and high yields. The plan shall consist of the following elements. The 2008 management plan was extended without changes.

1. *Every effort shall be made to maintain a minimum level of Spawning Stock Biomass (SSB) greater than 106,000 tonnes (Blim).*
2. *Where the SSB is estimated to be above 200,000 tonnes the Parties agreed to restrict their fishing on the basis of a TAC consistent with a fishing mortality rate of no more than 0.30 for appropriate age groups.*
3. *Where the SSB is estimated to be below 200,000 tonnes but above 106,000 tonnes, the TAC shall not exceed a level which, on the basis of a scientific evaluation by ICES, will result in a fishing mortality rate equal to $0.30 - 0.20 * (200,000 - SSB) / 94,000$.*
4. *Where the SSB is estimated by the ICES to be below the minimum level of SSB of 106,000 tonnes the TAC shall be set at a level corresponding to a fishing mortality rate of no more than 0.1.*
5. *Where the rules in paragraphs 2 and 3 would lead to a TAC which deviates by more than 15 % from the TAC of the preceding year the Parties shall fix a TAC that is no more than 15 % greater or 15 % less than the TAC of the preceding year.*
6. *Notwithstanding paragraph 5 the Parties may where considered appropriate reduce the TAC by more than 15 % compared to the TAC of the preceding year.*
7. *A review of this arrangement shall take place no later than 31 December 2015.*
8. *This arrangement enters into force on 1 January 2009.”*