

Saithe (*Pollachius virens*) in subareas 4 and 6, and in Division 3.a (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat)

ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2022 should be no more than 49 614 tonnes.

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

Stock development over time

Fishing pressure on the stock is above F_{MSY} but below F_{pa} and F_{lim} ; spawning-stock size is below MSY $B_{trigger}$ and between B_{pa} and B_{lim} .

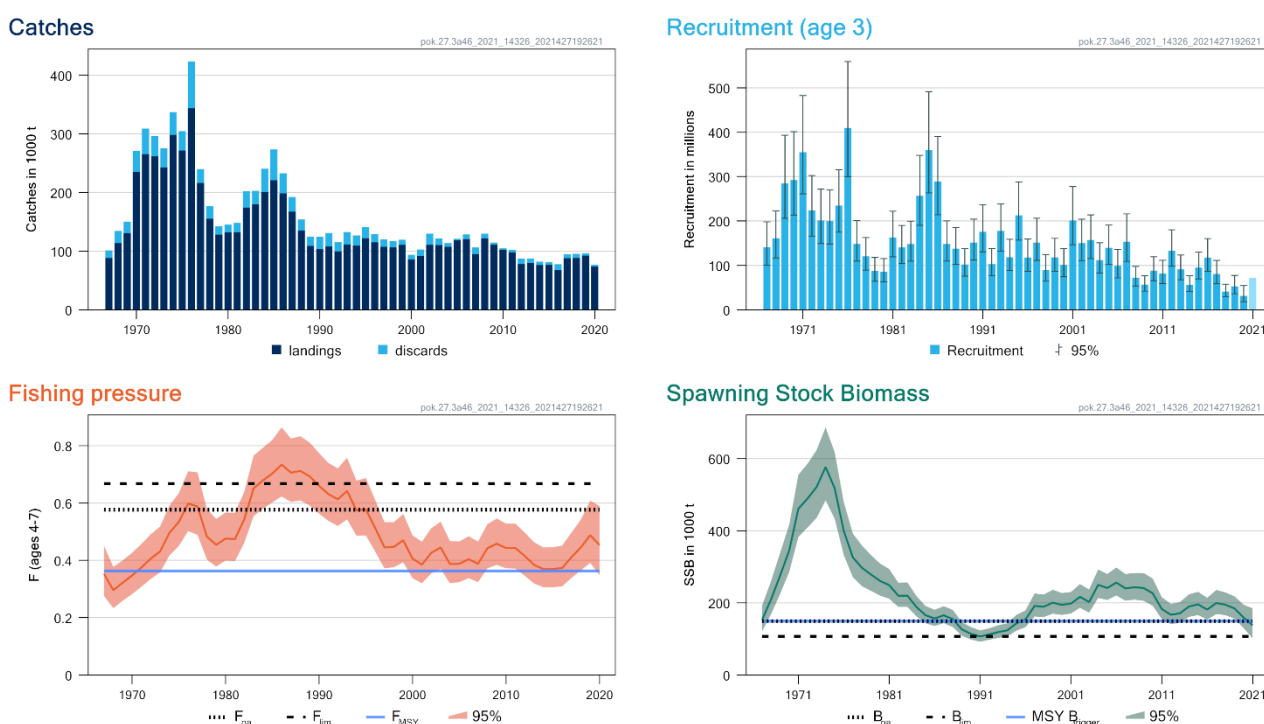


Figure 1 Saithe in subareas 4 and 6, and in Division 3.a. Summary of the stock assessment. The assumed recruitment value for 2021 is shaded in a lighter colour. Landings and discards are for ages 3–10+ only, as used in the assessment.

Catch scenarios

Table 1 Saithe in subareas 4 and 6, and in Division 3.a. Values in the forecast and for the interim year. All weights are in tonnes; recruitment is in thousands.

Variable	Value	Notes
$F_{ages\ 4-7}$ (2021)	0.45	Average F (2018–2020) scaled to F_{2020}
SSB (2022)	127 092	Short-term forecast (STF)
$R_{age\ 3}$ (2021)	71 483	Geometric mean of recruitment resampled from the years 2011–2020
$R_{age\ 3}$ (2022)	71 215	Geometric mean of recruitment resampled from the years 2011–2020
Total catch (2021)	65 704	STF, F status quo assumption
Projected landings (2021)	62 233	Assuming 2018–2020 average landings fraction by age
Projected discards (2021)	3471	Assuming 2018–2020 average discards fraction by age

Table 2 Saithe in subareas 4 and 6, and in Division 3.a. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2022)	Projected landings* (2022)	Projected discards** (2022)	Projected landings *, ##		F _{total} (ages 4–7) (2022)	F _{projected landings} (ages 4–7) (2022)	F _{projected discards} (ages 4–7) (2022)	SSB (2023)	% SSB change ***	% TAC change #	% advice change ^
				Div. 3.a and Subarea 4	Subarea 6							
ICES advice basis												
MSY approach: F _{MSY} × SSB (2022) /MSY B _{trigger}	49614	46644	2970	42259	4385	0.31	0.29	0.0170	153272	21	-24	-24
Other scenarios												
F = F _{MSY lower} × SSB (2022) /MSY B _{trigger}	30204	28397	1807	25728	2669	0.179	0.169	0.0100	170840	34	-54	-54
F _{MSY}	57046	53596	3450	48558	5038	0.363	0.34	0.0200	146645	15.4	-13.2	-13.2
F = F _{MSY lower}	35009	32911	2098	29817	3094	0.210	0.198	0.0120	166510	31	-47	-47
F = F _{MSY upper}	82159	77129	5030	69879	7250	0.564	0.53	0.032	124350	-2.2	25	25
F = 0	0	0	0	0	0	0.00	0.00	0.00	198814	56	-100	-100
F _{pa}	83556	78420	5136	71049	7371	0.576	0.54	0.032	123198	-3.1	27	27
F _{lim}	93718	87921	5797	79656	8265	0.668	0.63	0.037	114361	-10.0	43	43
SSB ₂₀₂₃ = B _{lim}	102288	95980	6308	86958	9022	0.75	0.71	0.042	107297	-15.6	56	56
SSB ₂₀₂₃ = B _{pa}	54770	51467	3303	46629	4838	0.35	0.33	0.0190	149098	17.3	-16.6	-16.6
SSB ₂₀₂₃ = MSY B _{trigger}	54770	51467	3303	46629	4838	0.35	0.33	0.0190	149098	17.3	-16.6	-16.6
F = F ₂₀₂₁	68786	64585	4201	58514	6071	0.45	0.43	0.025	136046	7.0	4.7	4.7
TAC ₂₀₂₁	65687	61675	4012	55878	5797	0.43	0.40	0.024	138834	9.2	0.00	0.00
TAC ₂₀₂₁ -15%	55835	52458	3377	47527	4931	0.35	0.33	0.0200	147736	16.2	-15.0	-15.0
TAC ₂₀₂₁ +15%	75540	70969	4571	64298	6671	0.51	0.48	0.029	130131	2.4	15.0	15.0
TAC ₂₀₂₁ -20%	52551	49373	3178	44732	4641	0.33	0.31	0.0180	150648	18.5	-20.0	-20.0
TAC ₂₀₂₁ +25%	82110	77084	5026	69838	7246	0.56	0.53	0.032	124392	-2.1	25	25

* Marketable landings.

** Including BMS landings, assuming recent discard rate.

*** SSB 2023 relative to SSB 2022.

Total catch in 2022 relative to the TAC in 2021 (65 687 tonnes).

Projected landings split according to the average in 1993–1998, as agreed by the relevant management authorities, i.e. 90.6% in Subarea 4 and Subdivision 3.a.20 and 9.4% in Subarea 6.

^ Total catch 2022 relative to the advice value 2021 (65 687 tonnes).

The change in advice (-24%) is mainly due to the low incoming recruitment, the 2017 year class being estimated much lower than assumed last year, and the decline in SSB below MSY B_{trigger} in 2022 implying a reduced F_{target}.

Basis of the advice

Table 3 Saithe in subareas 4 and 6, and in Division 3.a. 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 regarding this plan, and it is not used as the basis of the advice for this shared stock. ICES was requested by EC and UK to provide advice based on ICES MSY approach, and to include F_{MSY} ranges in the catch scenarios.

Quality of the assessment

Conflicting signals between the survey and CPUE index contributes to the assessment uncertainty.

The IBTS Q3 survey index is uncertain because it is influenced by occasional large catches and does not cover the whole stock distribution; however, it is considered generally representative of the stock.

Recent recruitment values are highly uncertain. Assumed recruitment for the intermediate year tends to be revised considerably with successive assessments (Figure 2); therefore, the associated short-term forecast is uncertain for this stock. There has recently been a tendency to overestimate spawning-stock biomass (SSB) and underestimate fishing mortality (F), although this was partly caused by an error in the assessment code impacting assessments prior to 2018.

The proportion of landings sampled for ages was lower in 2020 (< 70%) than in 2019 (\approx 90%), because of the COVID-19 situation. Weights-at-age in the catch and selectivity patterns however did not exhibit unreasonable deviations from the previous years.

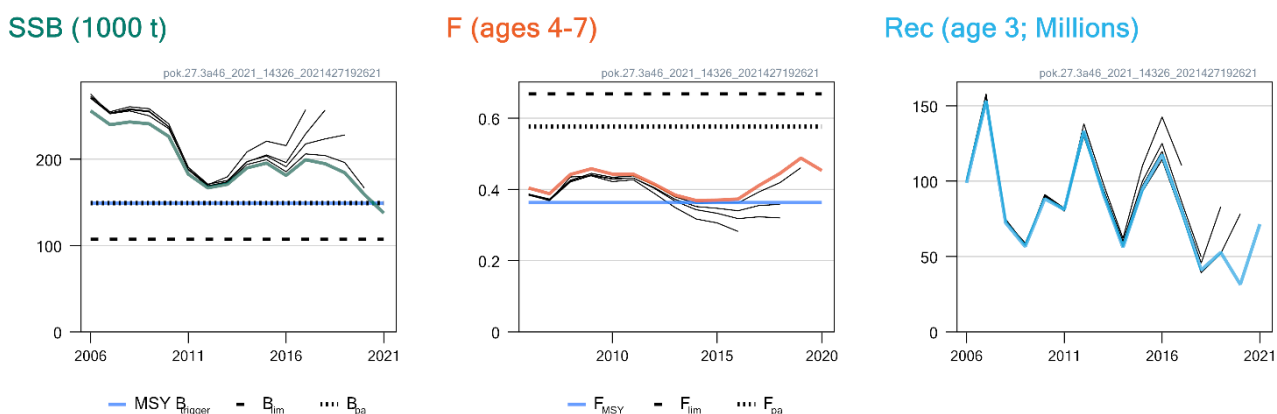


Figure 2 Saithe in subareas 4 and 6, and in Division 3.a. Historical assessment results (final-year recruitment included for each line, corresponding to the forecast recruitment in the interim year).

Issues relevant for the advice

Below minimum size (BMS) landings reported to ICES in 2016–2020 were low. Substantial discarding still continues in Subarea 4, based on observations from sampling programmes, but has decreased since 2018 (3152 tonnes for 2020 in Subarea 4 and Division 3.a – i.e. 4.3% of the total catch, down from 8.7% in 2018).

Some reference points (F_{lim} , F_{pa} , and MAP F_{upper}) have been corrected by ICES (2021a).

Reference points

Table 4 Saithe in subareas 4 and 6, and in Division 3.a. Reference points, values, and their technical basis. All weights are in tonnes.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	149 098	B_{pa}	ICES (2019)
	F_{MSY}	0.363	EQsim analysis based on the recruitment period 1998–2017	ICES (2019)
Precautionary approach	B_{lim}	107 297	B_{loss}	ICES (2019)
	B_{pa}	149 098	$B_{lim} \times \exp(1.645 \times 0.2) \approx 1.4 \times B_{lim}$	ICES (2019)
	F_{lim}	0.668	EQsim analysis based on the recruitment period 1998–2017	ICES (2019, 2021a)
	F_{pa}	0.576	F_{P05} with advice rule (AR); the F that leads to $SSB \geq B_{lim}$ with 95% probability.	ICES (2021a, 2021b)
Management plan (MAP) *	MAP MSY $B_{trigger}$	149 098	MSY $B_{trigger}$	ICES (2019)
	MAP B_{lim}	107 297	B_{lim}	ICES (2019)
	MAP F_{MSY}	0.363	F_{MSY}	ICES (2019)
	MAP range F_{lower}	0.210–0.363	Consistent with ranges provided by ICES, resulting in no more than 5% reduction in long-term yield compared with MSY	ICES (2019)
	MAP range F_{upper}	0.363–0.564	Consistent with ranges provided by ICES, resulting in no more than 5% reduction in long-term yield compared with MSY.	ICES (2019, 2021a)

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

Basis of the assessment

Table 5 Saithe in subareas 4 and 6, and in Division 3.a. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2021c)
Assessment type	Age-based analytical assessment SAM (ICES, 2021a) that uses catches in the model and in the forecast
Input data	Commercial catches (international landings, BMS landings, discards, and age frequencies from catch sampling); survey index (IBTS Q3 [G2829], ages 3–8); combined commercial index scaled to the exploitable biomass (French, German, and Norwegian trawler fleets). Maturity-at-age and natural mortality are assumed to be constant. Stock weights are catch weights.
Discards, BMS landings, and bycatch	Discards were included, and 29% of the landings had associated discarding information; ninety-two percent of the discards were observed and 8% were raised. Of the imported discards, 68% had been sampled for age information. BMS landings for Norway are included with landings in the assessment since 2016; all other BMS landings (ten tonnes in 2020) are included with the discards. Logbook-registered discards were 0 kg.
Indicators	None
Other information	Benchmarked in 2016 (ICES, 2016a) with additional review (ICES, 2016b). An interbenchmark was conducted in 2019 (ICES, 2019).
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 Saithe in subareas 4 and 6, and in Division 3.a. **Subarea 4 (North Sea) and Division 3.a (Skagerrak and Kattegat)**. ICES advice, TAC, official landings, and ICES catch estimates. All weights are in tonnes. Values of official and ICES landings for the period 1987 to 2001 are presented to the nearest thousand tonnes in Subarea 4 and Division 3.a and to the nearest hundred tonnes in Subarea 6. TAC values are presented to the nearest thousand tonnes. Note that before 2000, the advice was provided for two separate areas: Subarea 4 and Division 3.a, and Subarea 6.

Year	Stock			Subarea 4 (North Sea) and Division 3.a (Skagerrak and Kattegat)				
	ICES advice	Total catch corresponding to advice	Landings corresponding to advice	Landings in Subarea 4 and Division 3.a calculated from the advice**	Agreed TAC	Official landings	ICES landings [#]	ICES discards ^{##}
1987	Reduce F		< 198000		173000	154000	149000	
1988	60% of F (86); TAC		156000		165000	113000	107000	
1989	No increase in F; TAC		170000		170000	92000	92000	
1990	No increase in F; TAC		120000		120000	85000	88000	
1991	No increase in F; TAC		125000		125000	93000	99000	
1992	No increase in F; TAC		102000		110000	92000	92000	
1993	70% of F (91) ~ 93000 t		93000		93000	99000	105000	
1994	Reduce F by 30%		72000		97000	90000	102000	
1995	No increase in F		107000		107000	97000	113000	
1996	No increase in F		111000		111000	96000	110000	
1997	No increase in F		113000		115000	86000	103000	
1998	Reduce F by 20%		97000		97000	88000	100000	
1999	Reduce F to F_{pa}		104000		110000	108000	107000	
2000	Reduce F by 30%		81000	75000	85000	85000	87000	
2001	Reduce F by 20%		96000	87000	87000	88000	90000	
2002	$F < F_{pa}$		< 148000	< 135000	135000	115000	105632	18394
2003	$F < F_{pa}$		< 193000	< 175600	165000	107470	106257	9916
2004	$F < F_{pa}^*$		< 234000	< 211120	190000	103608	102746	7464
2005	F according to management plan *		< 150000	< 137000	145000	111970	113388	6558
2006	F according to management plan (< F_{pa}) *		< 135900	< 123300	123000	113354	111845	6909
2007	F according to management plan (< F_{pa}) *		< 136000	< 123800	123000	91778	92602	11828
2008	F according to management plan (< F_{pa}) *		< 150000	< 136500	136000	115414	115471	7378
2009	F according to management plan (< F_{pa}) *		< 139000	≤ 125900	126000	103883	105973	3774
2010	F according to management plan (< F_{pa}) *		< 118000	< 107100	107000	90755	96767	4071
2011	See scenarios			-	93000	89427	91528	3837

Year	Stock			Subarea 4 (North Sea) and Division 3.a (Skagerrak and Kattegat)				
	ICES advice	Total catch corresponding to advice	Landings corresponding to advice	Landings in Subarea 4 and Division 3.a calculated from the advice**	Agreed TAC	Official landings	ICES landings [#]	ICES discards ^{##}
2012 [^]	F according to management plan (< F _{pa}) *		< 87550	< 79320	79000	68241	70864	6396
2013	Management plan (TAC +15%) *		< 100684	< 91219	91220	71516	71406	6392
2014	Management plan (TAC-15%) *		< 85581	< 77536	77536	68695	69372	5824
2015	Management plan	< 80097		< 66006	66006	69796	69403	4603
2016	EU-Norway management strategy	≤ 75049		≤ 62153	65696	62658	62504	10693
2017	MSY approach	≤ 140653		≤ 122122	100287	83594	81570	6339
2018	MSY approach	≤ 118460		≤ 93980	105793	80531	81866	7004
2019	MSY approach	≤ 103327 [^]		≤ 87178	93614	87473	87649	4595
2020	MSY approach	≤ 88093		≤ 73092	79813	69705	69858	3152
2021	MSY approach	≤ 65687		≤ 55317	59512			
2022	MSY approach	≤ 49614		≤ 42259				

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

** Split between areas according to the average in 1993–1998, as agreed by the relevant management authorities – i.e. 90.6% in Subarea 4 and Subdivision 3.a.20, and 9.4% in Subarea 6.

Since 2016, landings include the Norwegian component of BMS landings.

Since 2016, discards include all BMS landings except the Norwegian component.

[^] Values corrected in February 2019.

Table 6b Saithe in subareas 4 and 6, and in Division 3.a. **Subarea 6 (Rockall and West of Scotland)**. ICES advice, TAC, official landings, and ICES catch estimates. All weights are in tonnes. Values of official and ICES landings for the period 1987 to 2001 are presented to the nearest thousand tonnes in Subarea 4 and Division 3.a, and to the nearest hundred tonnes in Subarea 6. TAC values are presented to the nearest thousand tonnes. Note that before 2000, the advice was provided for two separate areas: Subarea 4 and Division 3.a, and Subarea 6.

Year	Stock			Subarea 6 (Rockall and West of Scotland)				
	ICES advice	Total catch corresponding to advice	Landings corresponding to advice	Landings in Subarea 6 calculated from the advice**	Agreed TAC	Official landings	ICES landings [#]	ICES discards ^{##}
1987	Reduce F		19000		27800	32500	31400	
1988	60% of F (86); TAC		35000		35000	32800	34200	
1989	No increase in F; TAC		20000		30000	22400	25600	
1990	No increase in F; TAC		24000		29000	18000	19900	
1991	No increase in F; TAC		21000		22000	17900	17000	
1992	No increase in F; TAC		< 19000		17000	10800	11800	
1993	70% of F (91) ~ 93000 t		6300		14000	14500	13900	
1994	Reduce F by 30%				14000	13000 [§]	12800	
1995	No increase in F		-		16000	10600 [§]	11800	
1996	No increase in F		10200 ^{§§}		13000	9400 [§]	9400	
1997	No increase in F				12000	8600 [§]	9400	
1998	Reduce F by 20%		4800		10900	7400 [§]	8400	
1999	Reduce F to F _{pa}		4800		7500	6800	7300	
2000	Reduce F by 30%		81000	6000	7000	6400	5900	
2001	Reduce F by 20%		96000	9000	9000	8700	8400	
2002	F < F _{pa}		< 148000	< 13000	14000	5600	5519	3150
2003	F < F _{pa}		< 193000	< 17400	17100	5220	5789	2242
2004	F < F _{pa} *		< 234000	< 20880	20000	4810	4982	620
2005	F according to management plan*		< 150000	< 14000	15000	8700	6456	1637
2006	F according to management plan (< F _{pa})*		< 135900	< 12200	13000	9420	9474	1675
2007	F according to management plan (< F _{pa})*		< 136000	< 12200	13000	6690	6602	584
2008	F according to management plan (< F _{pa})*		< 150000	< 13500	14000	6010	6712	981
2009	F according to management plan (< F _{pa})*		< 139000	< 13100	13000	6170	6294	521
2010	F according to management plan (< F _{pa})*		< 118000	< 11100	11000	6220	6263	412
2011	See scenarios			-	10000	7310	6917	502
2012 [^]	F according to management plan (< F _{pa})*		< 87550	< 8230	8000	7560	7549	2887

Year	Stock			Subarea 6 (Rockall and West of Scotland)				
	ICES advice	Total catch corresponding to advice	Landings corresponding to advice	Landings in Subarea 6 calculated from the advice**	Agreed TAC	Official landings	ICES landings [#]	ICES discards ^{##}
2013	Management plan (TAC +15%)*		< 100684	< 9464	9464	8470	8653	1397
2014	Management plan (TAC-15%)*		< 85581	< 8045	8045	6829	7020	512
2015	Management plan	< 80097		< 6848	6848	7577	7534	405
2016	EU-Norway management strategy	≤ 75049		≤ 6448	6816	5852	5573	181
2017	MSY approach	≤ 140653		≤ 12670	10404	7453	7116	139
2018	MSY approach	≤ 118460		≤ 9751	10215	7706	6641	322
2019	MSY approach	≤ 103327 [^]		≤ 9045	9713	4787	4875	59
2020	MSY approach	≤ 88093		≤ 7584	8280	4074	4081	32
2021	MSY approach	≤ 65687		≤ 5739	6175			
2022	MSY approach	≤ 49614		≤ 4385				

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

** Split between areas according to the average in 1993–1998, as agreed by relevant management authorities – i.e. 90.6% in Subarea 4 and Subdivision 3.a.20, and 9.4% in Subarea 6.

\$ Incomplete data.

\$\$ *Status quo* catch.

Since 2016, landings include the Norwegian component of BMS landings.

Since 2016, discards include all BMS landings except the Norwegian component.

[^] Values corrected in February 2019.

History of the catch and landings

Table 7 Saithe in subareas 4 and 6, and in Division 3.a. Catch distribution by fleet in 2020 as estimated by ICES for ages 3–10+ only, as used in the assessment.

Catch (2020)	Landings			Discards
	Bottom trawl 84%	Gillnet 6%	Other 10%	
76820 tonnes	73791 tonnes*			3029 tonnes**

* Landings include the Norwegian component of BMS landings.

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

Table 8 Saithe in subareas 4 and 6, and in Division 3.a. History of commercial landings; both the official and ICES estimated values are presented by area for each country participating in the fishery. All weights are in tonnes and over all age groups.

Subarea 4 and Division 3.a

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019*	2020*
Belgium	22	28	15	18	7	27	15	2	2	3	5	6	16	15	14	7	5
Denmark	7991	7498	7471	5443	8068	8802	8018	6331	5171	5695	4913	4512	4084	5690	7017	5275	3777
Faroe Isl.	558	463	60	15	108	841	146	2	8	3	1	0	18	16	4	5	28
France	13628	11830	16953	15083	15881	7203	4582*	13856*	14093*	8475	7910	11574	10794	10334	12598	11366	9487
Germany	9589	12401	14397	12791	14140	13410	11193	10234	8052	9690	8602	7954	6279	7943	7952	7048	6853
Greenland	403	1042	924	564	888	927	0	0	0	0	0	0	0	0	0	0	0
Ireland	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	<1	4
Lithuania	0	149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Netherlands	3	40	28	5	3	16	3	24	34	168	43	75	112	191	267	178	181
Norway	62783	68122	61318	45396	61464	57708	52712	46809	33288	35701	37519	35631	31596	49580	38787	50311	39630
Poland	0	1100	1084	1384	1407	988	654	584	0	0	0	0	0	0	0	0	0
Portugal	0	0	228	68	0	0	0	0	0	0	0	0	0	0	0	0	0
Russia	0	35	2	5	5	13	0	0	0	0	0	0	0	0	0	0	0
Sweden	2249	2132	1746	1381	1639	1363	1545	1335	1306	1402	1329	1156	1198	1186	1316	1409	1181
UK (E/W/Nl)	457	960	9128**	9625**	11804**	12584**	11887**	10250**	7287**	10379**	687	8888**	8561**	8640**	12575**	11875**	8557**
UK (Scotland)	5924	6170									7686						
Total reported	103608	111970	113354	91778	115414	103883	90755	89427	69241	71516	68695	69796	62658	83594	80531	87473	69705
Unallocated	-862	1418	-1509	824	57	2090	6012	2101	1623	-110	677	-393	-152	-2024	1335	176	153
BMS landings														< 1	11	20	10
ICES estimate	102746	113388	111845	92602	115471	105973	96767	91528	70864	71406	69372	69403	62506#	81570#	81866#	87649#	69858
TAC	190000	145000	123250	135900	135900	125934	107000	93600	79320	91220	77536	66006	65696	100287	105793	93614	79813

* Official values are preliminary.

** Scotland+E/W/Nl combined.

Since 2016, landings include the Norwegian component of BMS landings.

Subarea 6

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019*	2020*
Denmark	0	0	0	0	0	0	0	0	0	0	20	0	0	5	1	7	0
Faroe Islands	34	25	76	32	23	60	24	5	6	25	29	3	7	13	21	7	3
France	3053	3954	6092	4327	4170	2102	2008	2357	2612	3814	2904	3484	2299	3968	3626	1335	1263
Germany	4	373	532	580	148	298	257	0	9	0	0	0	9	< 1	0	< 1	0
Ireland	95	168	267	322	288	407	520	359	364	313	128	105	185	171	231	109	125
Netherlands	0	0	3	36	1	0	0	0	0	0	0	6	12	3	100	4	< 1
Norway	16	20	28	377	78	68	121	240	5	715	442	677	555	633	955	478	1
Russia	6	25	7	2	50	4	2	0	0	0	9	1	0	2	0	2	0
Spain	2	3	6	3	4	8	18	31	13	21	9	15	15	4	7	24	15
Sweden	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UK (E/W/Ni)	37	133	2748**	1424**	2955**	3491**	3168**	4500**	4549**	3646**	97	3286**	2770**	2652**	2764**	2822**	2666**
UK (Scotland)	1563	2922									3191						
Total reported	4810	7623	9759	7103	7717	6438	6118	7492	7558	8534	6829	7577	5852	7453	7706	4787	4074
Unallocated	172	-1167	-1191	-501	-1005	-144	145	-575	-9	119	191	-43	-279	-337	-1065	88	7
BMS landings														0	31	< 1	< 1
ICES estimate	4982	6456	8568	6602	6712	6294	6263	6917	7549	8653	7020	7534	5573 [#]	7116 [#]	6641 [#]	4875 [#]	4081 [#]
TAC	20000	15044	12787	14100	14100	13066	11000	9570	8230	9464	8045	6848	6816	10404	10215	9713	8280

*Official values are preliminary.

**Scotland+E/W/Ni combined.

[#] Does not include BMS landings.

Subareas 4 and 6 and Division 3.a

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ICES	107728	119844	121320	99204	122184	112267	103030	98446	78414	80059	76392	76936	68709 [#]	88686 [#]	88507 [#]	92524 [#]	73938 [#]
TAC	210000	160044	136037	150000	150000	139000	118000	103170	87550	100684	85581	72854	72512	110691	116008	103327	88093

[#] Since 2016, landings include Norwegian component of BMS landings.

Summary of the assessment

Table 9 Saithe in subareas 4 and 6, and in Division 3.a. Assessment summary. Recruitment is in thousands, weights are in tonnes. High and Low indicate 95% confidence intervals.

Year	Recruitment			Spawning-stock biomass			Landings [^]	Discards [^]	Fishing mortality		
	Age 3	High	Low	SSB	High	Low			Ages 4–7	High	Low
	thousands			tonnes							
1967	141089	197983	100544	152157	191910	120638	88339	12992	0.35	0.45	0.28
1968	161066	222467	116612	209694	260670	168688	113741	20818	0.30	0.38	0.23
1969	284618	393169	206037	275978	338775	224821	130580	19713	0.32	0.40	0.26
1970	292306	401232	212952	345461	417271	286009	235012	35817	0.35	0.43	0.28
1971	354885	482397	261078	460472	554731	382230	265356	43821	0.38	0.46	0.31
1972	223862	302274	165791	488880	585148	408450	261914	34567	0.41	0.49	0.34
1973	201393	271640	149313	520691	623120	435100	242513	32651	0.43	0.52	0.36
1974	199985	269986	148133	576387	686454	483969	298347	38674	0.50	0.59	0.42
1975	234780	315393	174771	517286	617547	433304	271610	33035	0.53	0.63	0.45
1976	409407	559158	299762	399145	479281	332407	343898	79449	0.60	0.71	0.50
1977	148463	200946	109687	325855	391934	270916	216393	23520	0.59	0.71	0.49
1978	120589	162743	89354	297083	358769	246003	155124	21727	0.48	0.58	0.40
1979	87000	117858	64220	278199	332185	232986	128352	14295	0.45	0.54	0.38
1980	85247	115497	62920	260607	308819	219921	131897	13392	0.48	0.57	0.40
1981	162764	222053	119306	249047	293697	211186	132273	15971	0.47	0.57	0.40
1982	140710	189821	104305	219768	255631	188935	174336	27775	0.54	0.64	0.46
1983	147846	199573	109526	220003	256559	188655	180040	22978	0.65	0.77	0.55
1984	257046	347632	190065	188325	218677	162185	200843	39723	0.68	0.79	0.58
1985	359692	491334	263320	165577	191294	143317	220870	52802	0.70	0.82	0.60
1986	289076	390617	213931	156663	180637	135871	198605	34190	0.73	0.86	0.62
1987	148255	200245	109764	165372	190699	143409	167503	24877	0.71	0.83	0.60
1988	137847	185512	102428	154784	180414	132796	135176	19076	0.71	0.83	0.61
1989	102041	137511	75721	126134	146484	108610	108892	15707	0.69	0.81	0.59
1990	151289	204206	112084	113904	132530	97896	103831	20619	0.66	0.77	0.56
1991	175748	236570	130564	106632	123388	92153	108071	22902	0.63	0.74	0.54
1992	102977	137917	76888	112232	129154	97527	99745	15792	0.61	0.72	0.52
1993	177601	238529	132235	118955	137796	102689	111499	21119	0.64	0.76	0.54
1994	118545	159018	88373	123621	143263	106671	109621	17138	0.57	0.68	0.49
1995	212660	287999	157029	142904	166480	122667	121795	19395	0.58	0.69	0.49
1996	117718	159375	86949	154032	178994	132550	114968	13928	0.51	0.61	0.43
1997	151334	206296	111016	191359	225935	162074	107348	12755	0.45	0.53	0.37
1998	89503	124065	64569	189136	222792	160564	106126	11096	0.45	0.53	0.38
1999	118060	160966	86591	200308	236177	169886	110531	8936	0.47	0.56	0.39
2000	101270	137810	74419	194362	227054	166377	85781	8014	0.41	0.49	0.34
2001	201421	277270	146321	197910	230022	170281	91741	11118	0.39	0.47	0.32
2002	150151	204126	110448	216544	251877	186167	110911	18936	0.43	0.51	0.35
2003	157142	213873	115460	202253	236942	172643	110282	11374	0.45	0.54	0.37
2004	111772	150975	82749	249787	292415	213372	107356	6436	0.39	0.47	0.32
2005	139655	190850	102193	241160	279794	207860	118625	2592	0.39	0.47	0.32
2006	98787	135938	71790	256097	297763	220262	120414	8297	0.40	0.48	0.34
2007	153319	216096	108779	239997	279767	205880	94958	11375	0.39	0.47	0.32
2008	72344	97754	53538	243151	282949	208951	121618	8269	0.44	0.53	0.37
2009	56582	76535	41830	241012	282588	205553	110972	3548	0.46	0.55	0.38
2010	88254	119538	65157	226343	267263	191689	102128	2595	0.44	0.53	0.37
2011	81176	111644	59022	182692	215541	154849	98034	3972	0.44	0.53	0.37
2012	133296	180270	98563	166751	197246	140970	78144	8905	0.42	0.50	0.35

Year	Recruitment			Spawning-stock biomass			Landings [^]	Discards [^]	Fishing mortality		
	Age 3	High	Low	SSB	High	Low			Ages 4–7	High	Low
	thousands			tonnes							
2013	91239	123400	67460	170951	201983	144687	79859	7412	0.38	0.46	0.32
2014	56033	76489	41047	189913	223741	161200	76057	6115	0.37	0.45	0.31
2015	94763	129548	69318	195498	230351	165918	76748	4697	0.37	0.45	0.31
2016	117456	160276	86077	181261	213960	153559	67620*	10052**	0.37	0.45	0.31
2017	80693	111197	58556	199348	235572	168693	88010*	6572**	0.41	0.50	0.34
2018	41095	57421	29411	194749	228795	165769	88328*	7118**	0.45	0.54	0.37
2019	52781	77394	35995	184317	217971	155858	92390*	4244**	0.49	0.61	0.39
2020	31492	54730	18121	159269	194791	130225	73791*	3029**	0.45	0.59	0.35
2021	71483***			137513	184655	101145					

[^] ICES estimates; landings, and discards for ages 3–10+ only, as used in the assessment.

* Since 2016, landings include the Norwegian component of BMS landings.

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

*** Recruitment in 2021 is the geometric mean of resampled assessment recruitment estimates from 2011 to 2020.

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