

## 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

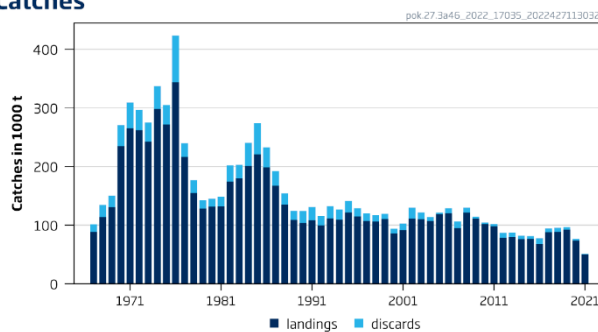
ICES advises that when the MSY approach is applied, catches in 2023 should be no more than 58 912 tonnes.

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

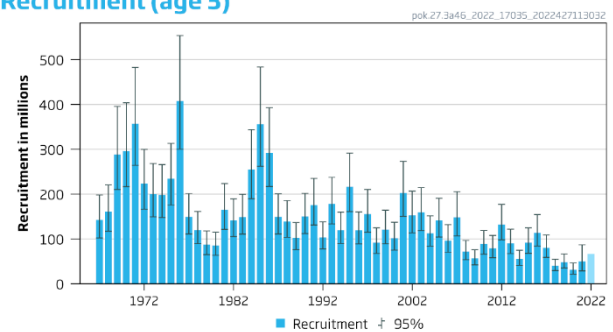
### Stock development over time

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  $B_{lim}$ .

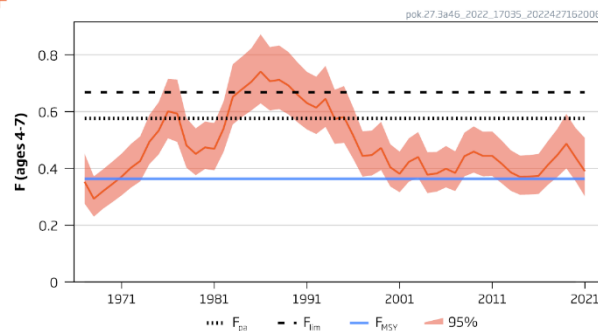
#### Catches



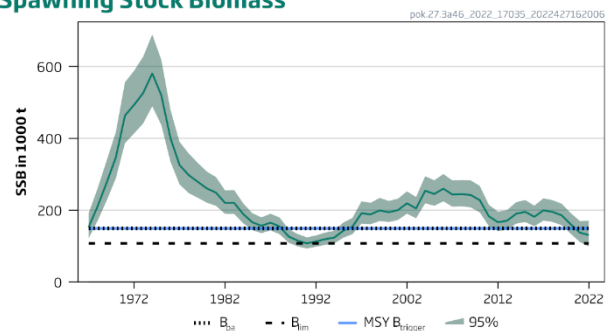
#### Recruitment (age 3)



#### F



#### Spawning Stock Biomass



**Figure 1** Saithe in subareas 4 and 6, and in Division 3.a. Summary of the stock assessment. The assumed recruitment value for 2022 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.

Variable	Value	Notes
$F_{ages\ 4-7}$ (2022)	0.34	Based on a catch constraint for 2022. Average exploitation pattern (2019–2021)
SSB (2023)	141 805	Short-term forecast (STF); tonnes
$R_{age\ 3}$ (2022–2023)	66 473	Resampled recruitment from the years 2012–2021 (geometric mean shown); thousands
Total catch (2022)	49 614	TAC 2022; tonnes
Projected landings (2022)	47 738	Assuming 2019–2021 average landings fraction by age; tonnes
Projected discards (2022)	1876	Assuming 2019–2021 average discards fraction by age; tonnes

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

Basis	Total catch (2023)	Projected landings (2023)	Projected discards* (2023)	Projected landings ##		F <sub>total</sub> (ages 4–7) (2023)	F <sub>projected landings</sub> (ages 4–7) (2023)	F <sub>projected discards</sub> (ages 4–7) (2023)	SSB (2024)	% SSB change **	% TAC change #	% advice change ^
				Div. 3.a and Subarea 4	Subarea 6							
ICES advice basis												
MSY approach: F <sub>MSY</sub> × SSB (2023) /MSY B <sub>trigger</sub>	58 912	56 645	2 267	51 320	5 325	0.35	0.33	0.01	159 133	12.20	18.70	18.70
Other scenarios												
F = F <sub>MSY lower</sub> × SSB (2023) /MSY B <sub>trigger</sub>	36 076	34 673	1 403	31 414	3 259	0.20	0.19	0.01	179 382	26	–27	–27
F <sub>MSY</sub>	61 507	59 152	2 355	53 592	5 560	0.36	0.35	0.01	156 893	10.60	24	24
F = F <sub>MSY lower</sub>	37 777	36 309	1 468	32 896	3 413	0.21	0.20	0.01	177 899	25	–24	–24
F = 0	0	0	0	0	0	0	0	0	211 886	49	–100	–100
F <sub>pa</sub>	90 144	86 596	3 548	78 456	8 140	0.58	0.56	0.02	132 129	–6.80	82	82
F <sub>lim</sub>	101 104	97 133	3 971	88 002	9 131	0.67	0.64	0.02	122 762	–13.40	104	104
SSB <sub>2024</sub> = B <sub>lim</sub>	121 742	116 900	4 842	105 911	10 989	0.85	0.82	0.03	107 297	–24	145	145
SSB <sub>2024</sub> = B <sub>pa</sub>	72 399	69 563	2 836	63 024	6 539	0.44	0.42	0.01	149 098	5.10	46	46
SSB <sub>2024</sub> = MSY B <sub>trigger</sub>	72 399	69 563	2 836	63 024	6 539	0.44	0.42	0.01	149 098	5.10	46	46
F = F <sub>2022</sub>	57 384	55 183	2 201	49 996	5 187	0.34	0.32	0.01	160 486	13.20	15.70	15.70
TAC <sub>2022</sub>	49 614	47 713	1 901	43 228	4 485	0.28	0.27	0.01	167 290	18.00	0.00	0.00
TAC <sub>2022</sub> –15%	42 172	40 544	1 628	36 733	3 811	0.24	0.23	0.01	173 992	23	–15.00	–15.00
TAC <sub>2022</sub> +15%	57 056	54 868	2 188	49 710	5 158	0.33	0.32	0.01	160 787	13.40	15.00	15.00
TAC <sub>2022</sub> –20%	39 691	38 147	1 544	34 561	3 586	0.22	0.21	0.01	176 170	24	–20	–20
TAC <sub>2022</sub> +25%	62 016	59 642	2 374	54 036	5 606	0.37	0.35	0.01	156 417	10.30	25	25

\* Including BMS landings, assuming recent discard rate.

\*\* SSB 2024 relative to SSB 2023.

# Total catch in 2023 relative to the TAC in 2022 (49 614 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 in 2023 relative to the advice value 2022 (49 614 tonnes).

The change in advice (+18.7%) is mainly due to a realised fishing mortality for 2021 that was lower than assumed in the previous advice and a forecasted increase in spawning stock biomass.

## 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 and UK 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.

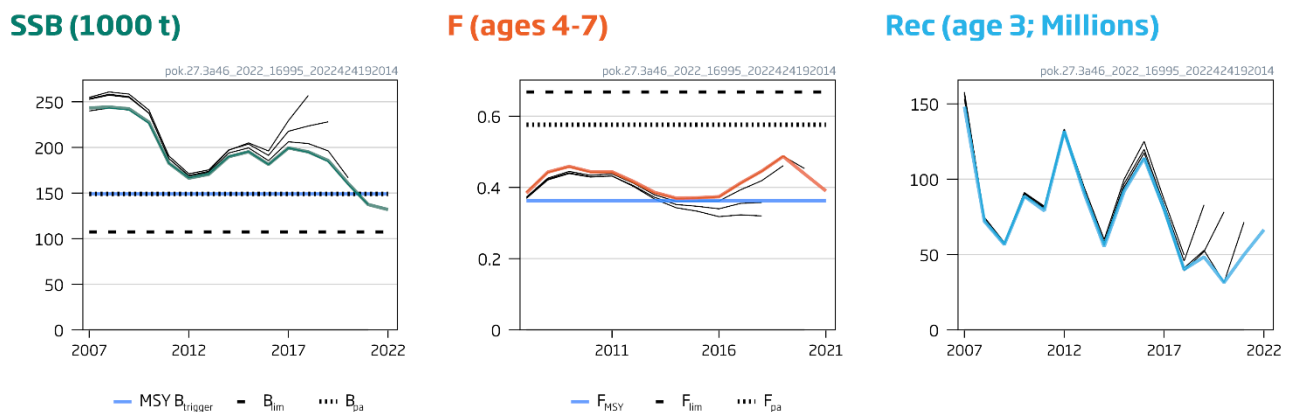
## Quality of the assessment

Conflicting signals between the survey and commercial CPUE index in the previous years contributes to the assessment uncertainty. The two series yield similar signals in the 2022 assessment though.

Assumed recruitment for the intermediate year tends to be revised considerably downward with successive assessments (Figure 2). Assumed recruitment contributes substantially to the landings in 2023.

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. Retrospective biases are getting smaller for the last two years.

The proportion of landings sampled for ages was lower in 2021 ( $\approx 60\%$ ) than in 2020 ( $< 70\%$ ) and 2019 ( $\approx 90\%$ ), likely 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

Saithe on the Northern Shelf is under EU landing obligation and Norway and UK national legislation regulating discards. Below minimum size (BMS) landings reported to ICES in 2016–2021 were low. Discarding still continues in Subarea 4, based on observations from sampling programmes, but has decreased since 2018 (865 tonnes for 2021 in Subarea 4 and Division 3.a – i.e. 1.81% of the total catch, down from 7.9% in 2018).

## 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, 2022a)
Assessment type	Age-based analytical assessment SAM (ICES, 2022b) 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 equal to catch weights.
Discards, BMS landings, and bycatch	Discards were included, and 35% of the landings had associated discarding information; seventy-five percent of the discards were observed and 25% were raised. Of the imported discards, 96% had been sampled for age information. BMS landings for Norway are included with landings in the assessment since 2016; all other BMS landings (less than a tonne in 2021) 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 <sup>#</sup>	ICES discards <sup>##</sup>
1987	Reduce F		< 198 000		173 000	154 000	149 000	
1988	60% of F (86); TAC		156 000		165 000	113 000	107 000	
1989	No increase in F; TAC		170 000		170 000	92 000	92 000	
1990	No increase in F; TAC		120 000		120 000	85 000	88 000	
1991	No increase in F; TAC		125 000		125 000	93 000	99 000	
1992	No increase in F; TAC		102 000		110 000	92 000	92 000	
1993	70% of F (91) ~ 93000 t		93 000		93 000	99 000	105 000	
1994	Reduce F by 30%		72 000		97 000	90 000	102 000	
1995	No increase in F		107 000		107 000	97 000	113 000	
1996	No increase in F		111 000		111 000	96 000	110 000	
1997	No increase in F		113 000		115 000	86 000	103 000	
1998	Reduce F by 20%		97 000		97 000	88 000	100 000	
1999	Reduce F to $F_{pa}$		104 000		110 000	108 000	107 000	
2000	Reduce F by 30%		81 000	75 000	85 000	85 000	87 000	
2001	Reduce F by 20%		96 000	87 000	87 000	88 000	90 000	
2002	$F < F_{pa}$		< 148 000	< 135 000	135 000	115 000	105 632	18 394
2003	$F < F_{pa}$		< 193 000	< 175 600	165 000	107 470	106 257	9 916
2004	$F < F_{pa}^*$		< 234 000	< 211 120	190 000	103 608	102 746	7 464
2005	F according to management plan *		< 150 000	< 137 000	145 000	111 970	113 388	6 558
2006	F according to management plan ( $< F_{pa}$ ) *		< 135 900	< 123 300	123 000	113 354	111 845	6 909
2007	F according to management plan ( $< F_{pa}$ ) *		< 136 000	< 123 800	123 000	91 778	92 602	11 828
2008	F according to management plan ( $< F_{pa}$ ) *		< 150 000	< 136 500	136 000	115 414	115 471	7 378
2009	F according to management plan ( $< F_{pa}$ ) *		< 139 000	$\leq$ 125 900	126 000	103 883	105 973	3 774
2010	F according to management plan ( $< F_{pa}$ ) *		< 118 000	< 107 100	107 000	90 755	96 767	4 071
2011	See scenarios			-	93 000	89 427	91 528	3 837

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 <sup>#</sup>	ICES discards <sup>##</sup>
2012 <sup>^</sup>	F according to management plan (< F <sub>pa</sub> ) *		< 87 550	< 79 320	79 000	68 241	70 864	6 396
2013	Management plan (TAC +15%) *		< 100 684	< 91 219	91 220	71 516	71 406	6 392
2014	Management plan (TAC-15%) *		< 85 581	< 77 536	77 536	68 695	69 372	5 824
2015	Management plan	< 80 097		< 66 006	66 006	69 796	69 403	4 603
2016	EU-Norway management strategy	≤ 75 049		≤ 62 153	65 696	62 658	62 504	10 693
2017	MSY approach	≤ 140 653		≤ 122 122	100 287	83 594	81 570	6 339
2018	MSY approach	≤ 118 460		≤ 93 980	105 793	80 531	81 866	7 004
2019	MSY approach	≤ 103 327 <sup>^</sup>		≤ 87 178	93 614	87 476	87 649	4 595
2020	MSY approach	≤ 88 093		≤ 73 092	79 813	69 705	69 858	3 152
2021	MSY approach	≤ 65 687		≤ 55 317	59 512	46 168	46 947	865
2022	MSY approach	≤ 49 614		≤ 42 259	44 950			
2023	MSY approach	≤ 58 912		≤ 51 320				

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

\*\* 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.

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

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

<sup>^</sup> 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		19 000		27 800	32 500	31 400	
1988	60% of F (86); TAC		35 000		35 000	32 800	34 200	
1989	No increase in F; TAC		20 000		30 000	22 400	25 600	
1990	No increase in F; TAC		24 000		29 000	18 000	19 900	
1991	No increase in F; TAC		21 000		22 000	17 900	17 000	
1992	No increase in F; TAC		< 19 000		17 000	10 800	11 800	
1993	70% of F (91) ~ 93000 t		6300		14 000	14 500	13 900	
1994	Reduce F by 30%				14 000	13 000	12 800	
1995	No increase in F		-		16 000	10 600	11 800	
1996	No increase in F		10 200		13 000	9400	9400	
1997	No increase in F				12 000	8600	9400	
1998	Reduce F by 20%		4800		10 900	7400	8400	
1999	Reduce F to $F_{pa}$		4800		7500	6800	7300	
2000	Reduce F by 30%		81 000	6 000	7000	6400	5900	
2001	Reduce F by 20%		96 000	9 000	9000	8700	8400	
2002	$F < F_{pa}$		< 148 000	< 13 000	14 000	5600	5519	3150
2003	$F < F_{pa}$		< 193 000	< 17 400	17 100	5220	5789	2242
2004	$F < F_{pa}^*$		< 234 000	< 20 880	20 000	4810	4982	620
2005	F according to management plan*		< 150 000	< 14 000	15 000	8700	6456	1637
2006	F according to management plan ( $< F_{pa}$ )*		< 135 900	< 12 200	13 000	9420	9474	1675
2007	F according to management plan ( $< F_{pa}$ )*		< 136 000	< 12 200	13 000	6690	6602	584
2008	F according to management plan ( $< F_{pa}$ )*		< 150 000	< 13 500	14 000	6010	6712	981
2009	F according to management plan ( $< F_{pa}$ )*		< 139 000	< 13 100	13 000	6170	6294	521
2010	F according to management plan ( $< F_{pa}$ )*		< 118 000	< 11 100	11 000	6220	6263	412
2011	See scenarios			-	10 000	7310	6917	502
2012^	F according to management plan ( $< F_{pa}$ )*		< 87 550	< 8230	8000	7560	7549	887

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 <sup>#</sup>	ICES discards <sup>##</sup>
2013	Management plan (TAC +15%)*		< 100 684	< 9464	9464	8470	8653	1397
2014	Management plan (TAC-15%)*		< 85 581	< 8045	8045	6829	7020	512
2015	Management plan	< 80 097		< 6848	6848	7577	7534	405
2016	EU-Norway management strategy	≤ 75 049		≤ 6448	6816	5852	5573	181
2017	MSY approach	≤ 140 653		≤ 12 670	10 404	7453	7116	139
2018	MSY approach	≤ 118 460		≤ 9751	10 215	7706	6641	322
2019	MSY approach	≤ 103 327 <sup>^</sup>		≤ 9045	9713	4791	4875	59
2020	MSY approach	≤ 88 093		≤ 7584	8280	4074	4081	32
2021	MSY approach	≤ 65 687		≤ 5739	6175	3432	3534	64
2022	MSY approach	≤ 49 614		≤ 4385	4664			
2023	MSY approach	≤ 58 912		≤ 5325				

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

\*\* 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.

\$ 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.

<sup>^</sup> 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 2021 as estimated by ICES for ages 3–10+ only, as used in the assessment.

Catch	Landings			Discards
	Bottom otter trawl 87%	Gillnet 3%	Other 10%	
50 951 tonnes	50 124 tonnes*			827 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*	2021*
Belgium	22	28	15	18	7	27	15	2	2	3	5	6	16	15	14	6	5	11
Denmark	7991	7498	7471	5443	8068	802	8018	6331	171	5695	4913	4512	4084	5690	7017	5275	3777	2947
Faroe Isl.	558	463	60	15	108	841	146	2	8	3	1	0	18	16	4	14	28	0
France	13 628	11 830	16 953	15 083	15 881	7 203	4582*	13856*	14093*	8475	7910	11 574	10 794	10 334	12 598	11 361	9487	9146
Germany	9589	12 401	14 397	12 791	14 140	13 410	11 193	10 234	8052	9690	8602	7954	6279	7943	7952	7055	6853	4444
Greenland	403	1042	924	564	888	927	0	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	0
Lithuania	0	149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Netherlands	3	40	28	5	3	16	3	24	34	168	43	75	112	191	267	178	181	140
Norway	62 783	68 122	61 318	45 396	61 464	57 708	52 712	46 809	33 288	35 701	37 519	35 631	31 596	49 580	38 787	50 306	39 630	20 442
Poland	0	1100	1084	1384	1407	988	654	584	0	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	0
Russia	0	35	2	5	5	13	0	0	0	0	0	0	0	0	0	0	0	0
Sweden	2249	2132	1746	1381	1639	1363	1 545	1335	1306	1402	1329	1156	1198	1186	1316	1413	1181	1001
UK (E/W/Ni)	457	960	9128**	9625**	11 804**	12 584**	11 887**	10 250**	7287**	10 379**	687	8888**	8561**	8640**	12 575**	11 868**	8557**	8037**
UK (Scotland)	5924	6170									7686							
Total reported	103 608	111 970	113 354	91 778	115 414	103 883	90 755	89 427	69 241	71 516	68 695	69 796	62 658	83 594	80 531	87 476	69 705	46 168
Unallocated	-862	1418	-1509	824	57	2090	6012	2101	1623	-110	677	-393	-152	-2024	1335	173	153	779
BMS landings														< 1	11	20	10	4
ICES estimate	102 746	113 388	111 845	92 602	115 471	105 973	96 767	91 528	70 864	71 406	69 372	69 403	62 506 <sup>#</sup>	81 570 <sup>#</sup>	81 866 <sup>#</sup>	87 649 <sup>#</sup>	69 858 <sup>#</sup>	46 947 <sup>#</sup>
TAC	190 000	145 000	123 250	135 900	135 900	125 934	107 000	93 600	79 320	91 220	77 536	66 006	65 696	100 287	105 793	93 614	79 813	59 512

\* Official values are preliminary.

\*\* Scotland+E/W/Ni combined.

<sup>#</sup> 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*	2021*
Denmark	0	0	0	0	0	0	0	0	0	0	20	0	0	5	1	7	0	0
Faroe Islands	34	25	76	32	23	60	24	5	6	25	29	3	7	13	21	7	3	2
France	053	3954	6092	4327	4170	2102	2008	2357	2612	3814	2904	3484	2299	3968	3626	1336	1263	1314
Germany	4	373	532	580	148	298	257	0	9	0	0	0	9	< 1	0	0	0	1
Ireland	95	168	267	322	288	407	520	359	364	313	128	105	185	171	231	109*	125	72
Netherlands	0	0	3	36	1	0	0	0	0	0	0	6	12	3	100	4	< 1	3
Norway	16	20	28	377	78	68	121	240	5	715	442	677	555	633	955	478	1	0
Russia	6	25	7	2	50	4	2	0	0	0	9	1	0	2	0	2	0	0
Poland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Spain	2	3	6	3	4	8	18	31	13	21	9	15	15	4	7	24	15	38
Sweden	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UK (E/W/Ni)	37	133	2748**	1 424**	2955**	3491**	3168**	4500**	4549**	3 646**	97	3 286**	2 770**	2 652**	2 764**	2 824**	2 666**	2 001**
UK (Scotland)	1563	2922									3 191							
Total reported	4810	7623	9759	7103	7717	6438	6118	7492	7558	8534	6829	7577	5852	7453	7706	4791	4074	3432
Unallocated	172	-1167	-1 191	-501	-1005	-144	145	-575	-9	119	191	-43	-279	-337	-1 065	84	7	102
BMS landings														0	31	< 1	< 1	<1
ICES estimate	4982	6456	8568	6602	6712	6294	6263	6917	7549	8653	7020	7534	5573 <sup>#</sup>	7116 <sup>#</sup>	6641 <sup>#</sup>	4875 <sup>#</sup>	081 <sup>#</sup>	3534 <sup>#</sup>
TAC	20 000	15 044	12 787	14 100	14 100	13 066	11 000	9570	8230	9464	8045	6848	6816	10 404	10 215	9713	8280	6175

\*Official values are preliminary.

\*\*Scotland+E/W/Ni combined.

<sup>#</sup> 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	2021
ICES	107 728	119 844	121 320	99 204	122 184	112 267	103 030	98 446	78 414	80 059	76 392	76 936	68 709 <sup>#</sup>	88 686 <sup>#</sup>	88 507 <sup>#</sup>	92 524 <sup>#</sup>	73 938 <sup>#</sup>	50 482 <sup>#</sup>
TAC	210 000	160 044	136 037	150 000	150 000	139 000	118 000	103 170	87 550	100 684	85 581	72 854	72 512	110 691	116 008	103 327	88 093	65 687

<sup>#</sup> 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 (Age 3)			Spawning-stock biomass			Landings^	Discards^	Fishing Pressure (Ages 4–7)		
	R	High	Low	SSB	High	Low			F	High	Low
	thousands			tonnes							
1967	142 300	198 068	102 234	152 326	191 151	121 387	88 339	12 992	0.35	0.45	0.28
1968	160 741	220 533	117 160	211 063	261 094	170 619	113 741	20 818	0.29	0.37	0.23
1969	288 405	395 667	210 221	277 547	339 122	227 153	130 580	19 713	0.32	0.40	0.26
1970	295 841	403 661	216 820	347 234	417 755	288 618	235 012	35 817	0.35	0.42	0.28
1971	357 119	482 618	264 255	463 449	556 064	386 260	265 356	43 821	0.37	0.45	0.31
1972	223 262	299 706	166 316	493 122	588 044	413 522	261 914	34 567	0.40	0.49	0.33
1973	200 110	268 342	149 228	526 082	627 242	441 237	242 513	32 651	0.43	0.51	0.35
1974	198 212	266 140	147 622	580 796	689 389	489 308	298 347	38 674	0.49	0.59	0.42
1975	234 233	313 138	175 210	519 493	618 078	436 633	271 610	33 035	0.53	0.63	0.45
1976	407 671	553 706	300 151	400 607	479 538	334 668	343 898	79 449	0.60	0.72	0.51
1977	149 479	201 231	111 036	325 517	390 113	271 618	216 393	23 520	0.59	0.71	0.49
1978	120 095	161 185	89 480	297 697	358 100	247 482	155 124	21 727	0.48	0.58	0.40
1979	87 537	117 896	64 995	278 895	331 683	234 509	128 352	14 295	0.45	0.54	0.38
1980	85 500	115 152	63 484	260 493	307 374	220 762	131 897	13 392	0.47	0.57	0.40
1981	164 775	223 432	121 516	248 809	292 160	211 891	132 273	15 971	0.47	0.56	0.39
1982	141 145	189 375	105 198	220 138	255 201	189 893	174 336	27 775	0.54	0.64	0.46
1983	148 680	199 648	110 723	220 172	255 975	189 376	180 040	22 978	0.65	0.77	0.56
1984	255 285	343 502	189 723	189 034	218 911	163 236	200 843	39 723	0.68	0.79	0.58
1985	355 869	483 515	261 921	166 175	191 526	144 180	220 870	52 802	0.71	0.82	0.60
1986	292 033	392 822	217 104	156 393	179 908	135 952	198 605	34 190	0.74	0.87	0.63
1987	149 344	200 731	111 112	165 104	189 963	143 499	167 503	24 877	0.71	0.83	0.60
1988	138 595	185 604	103 492	154 493	179 576	132 913	135 176	19 076	0.71	0.83	0.61
1989	101 911	136 623	76 019	126 511	146 590	109 183	108 892	15 707	0.69	0.81	0.59
1990	150 317	201 816	111 960	114 785	133 304	98 838	103 831	20 619	0.66	0.77	0.56
1991	175 572	234 965	131 192	107 476	124 168	93 028	108 071	22 902	0.63	0.74	0.54
1992	103 646	138 134	77 768	112 762	129 534	98 162	99 745	15 792	0.61	0.72	0.52
1993	178 040	237 385	133 531	119 117	137 620	103 102	111 499	21 119	0.65	0.76	0.55
1994	119 769	159 598	89 880	123 531	142 475	107 107	109 621	17 138	0.57	0.68	0.49
1995	216 503	291 463	160 822	142 702	165 458	123 076	121 795	19 395	0.58	0.69	0.49
1996	119 415	160 457	88 871	153 856	178 055	132 945	114 968	13 928	0.52	0.61	0.43
1997	155 443	210 191	114 956	191 026	224 560	162 499	107 348	12 755	0.44	0.53	0.37
1998	91 899	124 807	67 668	188 351	220 502	160 887	106 126	11 096	0.45	0.53	0.38
1999	121 062	164 245	89 232	199 207	233 976	169 605	110 531	8 936	0.47	0.56	0.39
2000	101 516	137 399	75 005	194 074	225 706	166 875	85 781	8 014	0.40	0.49	0.34
2001	202 624	272 991	150 395	200 010	231 858	172 537	91 741	11 118	0.38	0.46	0.32
2002	153 036	206 646	113 334	218 903	252 234	189 976	110 911	18 936	0.42	0.51	0.35
2003	159 472	214 481	118 571	204 854	236 799	177 218	110 282	11 374	0.44	0.53	0.37
2004	112 684	151 367	83 886	254 008	294 598	219 012	107 356	6 436	0.38	0.46	0.31
2005	141 072	190 644	104 390	245 029	283 108	212 072	118 625	2 592	0.38	0.46	0.32
2006	96 133	131 833	70 100	259 805	300 577	224 564	120 414	8 297	0.40	0.48	0.33
2007	148 095	205 427	106 764	243 334	282 602	209 523	94 958	11 375	0.38	0.46	0.32
2008	72 017	96 754	53 604	244 265	283 420	210 520	121 618	8 269	0.44	0.53	0.37
2009	56 618	76 005	42 176	242 360	282 807	207 697	110 972	3 548	0.46	0.55	0.39
2010	88 646	119 087	65 986	227 659	267 723	193 591	102 128	2 595	0.44	0.53	0.37
2011	79 044	107 913	57 898	182 842	214 948	155 532	98 034	3 972	0.44	0.53	0.37
2012	131 860	177 132	98 159	166 341	195 694	141 391	78 144	8 905	0.42	0.50	0.35

Year	Recruitment (Age 3)			Spawning-stock biomass			Landings^	Discards^	Fishing Pressure (Ages 4–7)		
	R	High	Low	SSB	High	Low			F	High	Low
	thousands			tonnes							
2013	90 536	121 687	67 359	170 520	200 226	145 222	79 859	7 412	0.39	0.46	0.32
2014	55 300	74 787	40 890	189 849	222 125	162 263	76 057	6 115	0.37	0.45	0.31
2015	91 980	124 793	67 795	195 259	228 311	166 992	76 748	4 697	0.37	0.45	0.31
2016	113 926	154 414	84 055	181 437	212 322	155 044	67 620*	10 052**	0.37	0.45	0.31
2017	80 142	108 921	58 968	199 442	232 972	170 738	88 010*	6 572**	0.41	0.50	0.34
2018	40 065	54 573	29 414	195 111	227 834	167 087	88 328*	7 118**	0.45	0.54	0.37
2019	48 437	66 543	35 257	185 595	218 060	157 964	92 390*	4 244**	0.49	0.59	0.40
2020	31 416	46 511	21 220	160 486	191 960	134 172	73 791*	3 029**	0.44	0.54	0.35
2021	49 833	86 961	28 557	137 451	169 761	111 291	50 124*	827**	0.39	0.51	0.30
2022	66 473***			130 482	170 732	98 563					

<sup>^</sup> 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 2022 is the geometric mean of resampled assessment recruitment estimates from 2012 to 2021.

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