

4.3.4 Saithe (*Pollachius virens*) in Division Vb (Faroes grounds)

ICES stock advice

ICES advises that when the MSY approach is applied, effort should be reduced such that fishing mortality in 2016 will be no more than $F_{MSY} = 0.30$, and catches in 2016 should be no more than 36 000 t.

Stock development over time

The spawning-stock biomass (SSB) has been above B_{pa} until 2011, slightly below in 2012 and 2013, and then increasing again to its present (2015) estimate well above B_{pa} (around 82 kt). Estimated recruitment in 2014 was well above average (61 million). Fishing mortality (F) has decreased from 2013 to 2014 and is estimated at 0.32; F is therefore slightly above the target fishing mortality.

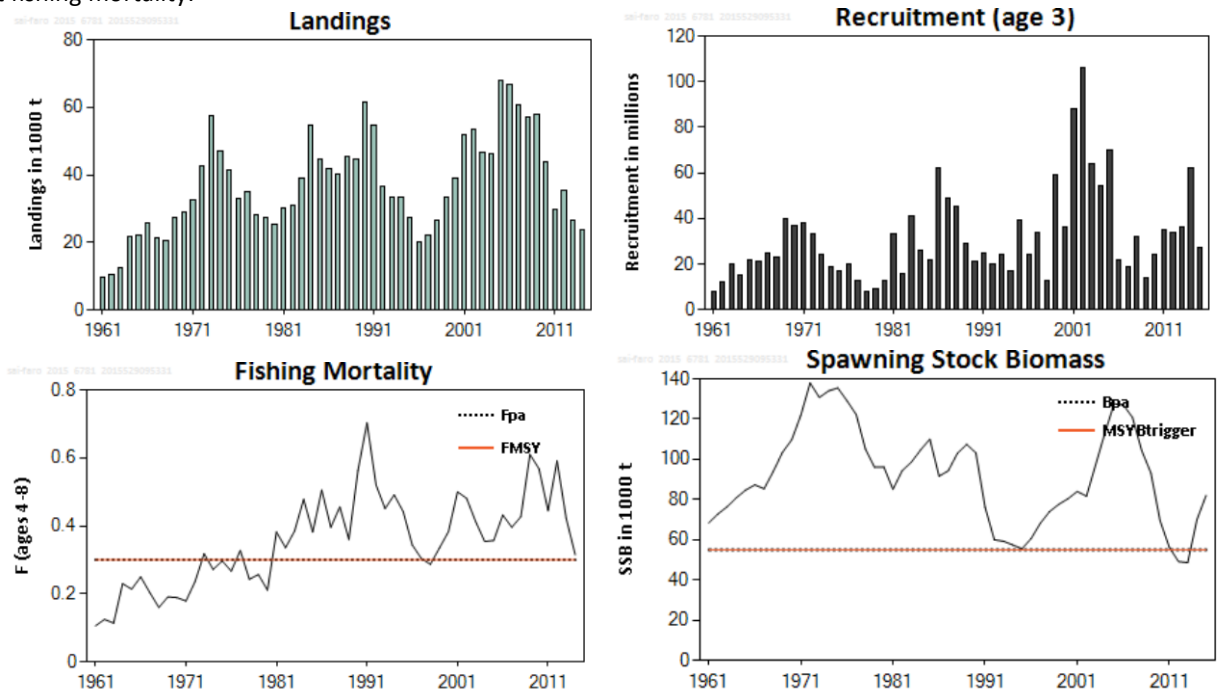


Figure 4.3.4.1 Saithe in Division Vb. Summary of stock assessment (weights in thousand tonnes).

Stock and exploitation status

Table 4.3.4.1 Saithe in Division Vb. State of the stock and fishery, relative to reference points.

		Fishing pressure			Stock size		
		2012	2013	2014	2013	2014	2015
Maximum Sustainable Yield	F_{MSY}	✘	✘	✘ Above F_{MSY}	MSY	✘	✔ Above trigger
Precautionary approach	F_{pa}	?	?	?	$B_{trigger}$	✔	✔ Full reproductive capacity
Management Plan	F_{MGT}	-	-	- Not applicable	B_{pa}	?	✔ Full reproductive capacity
					SSB_{MGT}	-	- Not applicable

Catch options

Table 4.3.4.2 Saithe in Division Vb. The basis for the catch options.

Variable	Value	Source	Notes
F ages 4–8 (2015)	0.31	ICES (2015a)	Average of last three years, scaled to the last year.
SSB (2016)	97 000 t	ICES (2015a)	
R _{age3} (2016)	27 mill.	ICES (2015a)	Geometric mean of last six years, excluding the last year.
R _{age3} (2017)	27 mill.	ICES (2015a)	Same as R _{age3} (2016)
Total catch (2015)	35 000 t	ICES (2015a)	

Table 4.3.4.3 Saithe in Division Vb. The catch options.

Rationale	F (2016)	Catch (2016)	Basis	SSB (2017)	% SSB change *
Zero catch	0	0	F = 0	138 kt	43%
MSY approach	0.30	36 kt	F _{MSY} (= F _{sq} × 0.97)	105 kt	9%
<i>Status quo</i>	0.31	37 kt	F _{sq}	104 kt	8%
	0.16	20 kt	F _{sq} × 0.50	120 kt	24%
	0.23	28 kt	F _{sq} × 0.75	113 kt	17%
	0.27	33 kt	F _{sq} × 0.90	108 kt	12%
	0.33	39 kt	F _{sq} × 1.1	103 kt	6%

Weights in thousand tonnes.

* SSB 2017 relative to SSB 2016.

Basis of the advice

Table 4.3.4.4 Saithe in Division Vb. The basis of the advice.

Advice basis	MSY approach.
Management plan	There is no management plan for this stock.

Quality of the assessment

The landings data are considered accurate. There are no incentives to discard fish under the current effort management system. The sampling of the landings is considered to be adequate. The assessment greatly overestimated the stock around 2010.



Figure 4.3.4.2 Saithe in Division Vb. Historical assessment results (final-year recruitment estimates included). Left panel: horizontal line shows MSY B_{trigger} = B_{pa} = 55 000 t. Middle panel: horizontal line represents F_{MSY} = 0.30 = F_{PA} = 0.30.

Issues relevant for the advice

An effort management system has been used since 1996. The Faroese Parliament decides the number of allocated fishing days for each new fishing season. In the 2013/2014 fishing year the number of used fishing days for the pair-trawl fleet was only around half or less of the allocated days. In this situation, with surplus days, effort control is unlikely to be effective.

Reference points

Table 4.3.4.5 Saithe in Division Vb. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	55 000 t	Breakpoint in segmented regression.	ICES (2011)
	F_{MSY}	0.30	Stochastic simulations (ICES, 2014c). Consistent with 2014 estimate of $F_{med} = 0.31$.	ICES (2014b, 2014c)
Precautionary approach	B_{lim}	Not defined.		
	B_{pa}	55 000 t	B_{loss} in 2011.	ICES (1998)
	F_{lim}	Not defined.		
	F_{pa}	0.30	Consistent with 2013 estimate of F_{med} .	ICES (2014d)
Management plan	SSB_{MGT}	Not defined.		
	F_{MGT}	Not defined.		

Basis of the assessment

Table 4.3.4.6 Saithe in Division Vb. The basis of the assessment.

ICES stock data category	1 (ICES, 2015b).
Assessment type	XSA with catch-at-age data, using catches in the model and in the forecast.
Input data	Commercial catches (mainly Faroese catches, ages and length frequencies from catch sampling); commercial indices: pair-trawler fleet; annual maturity data from FO-GFS-Q1; survey distribution from FO-GFS-Q1 and FO-GFS-Q3; natural mortalities set at $M = 0.2$.
Discards and bycatch	Discarding is assumed negligible.
Indicators	None.
Other information	A benchmark assessment was performed in 2010.
Working group	North-Western Working Group (NWVG).

Information from stakeholders

There is no available information.

History of advice, catch, and management

Table 4.3.4.7 Saithe in Division Vb. History of ICES advice, the agreed TAC, and ICES estimates of landings.

Year	ICES advice	Predicted catch corresp. to advice	Agreed TAC	ICES landings
1987	No increase in F	< 32		40
1988	No increase in F	< 32		45
1989	Reduction in F	< 40		44
1990	Reduction in F	< 41		62
1991	TAC	< 30		55
1992	Reduction in F	< 27		36
1993	Reduction in F	< 37		34
1994	TAC	< 26	42*	33
1995	TAC	< 22	39*	27
1996	TAC	< 39	-	20
1997	20% reduction in F from 1995 level	< 21	-	22
1998	30% reduction in effort from 1996/97 level	-	-	26
1999	F below F_{pa} (0.28)	< 14		33
2000	F below than F_{pa} (0.28)	< 15		39
2001	Reduce fishing effort to generate F well below F_{pa} (0.28)	< 17		52
2002	Reduce fishing effort to generate F below F_{pa} (0.28)	< 28		54
2003	Reduce fishing effort to generate F below F_{pa} (0.28)	< 47		47
2004	Reduce fishing effort to generate F below F_{pa} (0.28)	< 48		46
2005	Reduce fishing effort to generate F below F_{pa} (0.28)	< 32		68
2006	Reduce fishing effort to generate F below F_{pa} (0.28)	< 24		67
2007	Average catch considerations	40		61
2008	Do not increase effort	-		57
2009	Reduce fishing effort by around 20%	-		58
2010	Reduce fishing effort by around 20%	-		44
2011	Reduce fishing effort to generate F below F_{pa} (0.28)	< 38		29
2012	Reduce fishing effort to generate F below F_{MSY} (0.28)	< 40		35
2013	$F < 0.28$	< 29.1		26
2014	Reduce fishing effort to generate F below F_{MSY} (0.30)	< 29		24
2015	Reduce fishing effort to generate F below F_{MSY} (0.30)	< 26		
2016	Reduce fishing effort to generate F below F_{MSY} (0.30)	< 36		

Weights in thousand tonnes.

* In the quota year 1 September–31 August the following year.

The fishing year runs from 1 September to 31 August the following year.

History of catch and landings

Table 4.3.4.8 Saithe in Division Vb. Catch distribution by fleet in 2014 as estimated by ICES.

Total catch (2014)	Commercial landings			Commercial discards
24 kt	96% pair trawler	1% single trawler	3% jiggers and others	0 kt
	24 kt			

Table 4.3.4.9 Saithe in Division Vb. History of commercial catch and landings; both the official and ICES estimated values are presented for each country participating in the fishery.

Country	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Denmark	94	-	2	-	-	-	-	-	-	-	-	-	-	-
Estonia	-	-	-	-	-	-	-	-	-	16	-	-	-	-
Faroe Islands	44 402	43 624	59 821	53 321	35 979	32 719	32 406	26 918	19 267	21 721	25 995	32 439		49 676
France ***	313	-	-	-	120	75	19	10	12	9	17	-	273	934
Germany	-	-	-	32	5	2	1	41	3	5	-	100	230	667
German Dem.Rep.	-	9	-	-	-	-	-	-	-	-	-	-	-	-
German Fed. Rep.	74	20	15	-	-	-	-	-	-	-	-	-	-	5
Greenland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ireland	-	-	-	-	-	-	-	-	-	-	-	0	0	0
Netherlands	-	22	67	65	-	-	-	-	-	-	-	160	72	60
Norway	52	51	46	103	85	32	156	10	16	67	53	-	-	-
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	20	1
UK (Eng. & W.)	-	-	-	5	74	279	151	21	53	-	19	67	32	80
UK (Scotland)	92	9	33	79	98	425	438	200	580	460	337	441	534	708
USSR/Russia **	-	-	30	-	12	-	-	-	18	28	-	-	-	-
Total	45 027	43 735	60 014	53 605	36 373	33 532	33 171	27 200	19 949	22 306	26 065	33 207	1 161	52 131
Working Group estimate ^^^	45 285	44 477	61 628	54 858	36 487	33 543	33 182	27 209	20 029	22 306	26 421	33 207	39 020	51 786
Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014*	
Denmark	-	-	-	-	34	-	-	-	-	-	-	-	-	
Estonia	-	-	-	-	-	-	-	-	-	-	-	-	-	
Faroe Islands	55 165	47 933	48 222	71 496	70 696	64 552	61 117	61 889	46 686	32 056	38 175	28 609	25 440	
France	607	370	147	123	315	108	97	68	46	135	40	31	0	
Germany	422	281	186	1	49	3	3	0						
Greenland	125	-			73	239	0	1			1			
Ireland	-	-	-	-	-	-	-	-						
Iceland	-	-	-	-	-	-	-	148	-					
Netherlands	0	0	0	0	0	3	0	0	0					
Norway	77	62	82	82	35	81	38	23	28				165	
Portugal	-	-	5	-	-	-	-	-						
Russia	10	32	71	210	104	159	38	44	3			1		
UK (E/W/NI)	58	89	85	32	88	4	-	-						
UK (Scotland)	540	610	748	4 322	1 011	408	400	685						
United Kingdom	-	-	-	-	-	-	-	-	706	19		1	340	
Total	57 004	49 377	49 546	76 266	72 405	65 557	61 693	62 858	47 469	32 210	38 216	28 642	25 945	
Working Group estimate ^,^^,>>>	53 546	46 555	46 355	67 967	66 902	60 785	57 044	57 949	43 885	29 658	35 314	26 463	23 854	

* Preliminary.

** As from 1991.

*** Quantity unknown 1989–1991.

^ Includes catches from Subdivision Vb₂ and Division IIa in Faroese waters.

^^ Includes French, Greenlandic, and Russian catches from Division Vb, as reported to the Faroese coast guard.

> Includes Faroese, French, and Greenlandic catches from Division Vb, as reported to the Faroese coast guard.

>> The 2001–2008 catches from Faroe Islands, as stated from the Faroese coast guard, have been corrected to be consistent with procedures used in previous years.

Summary of the assessment

Table 4.3.4.10 Saithe in Division Vb. Assessment summary.

Year	Recruitment (age 3)	SSB	Landings	Mean F Ages 4–8
	thousands	tonnes	tonnes	
1961	7 827	68 467	9 592	0.106
1962	12 256	72 862	10 454	0.125
1963	19 837	76 441	12 693	0.114
1964	14 811	80 928	21 893	0.23
1965	22 362	84 690	22 181	0.214
1966	21 229	87 313	25 563	0.25
1967	24 897	85 361	21 319	0.204
1968	22 879	93 938	20 387	0.16
1969	39 798	103 452	27 437	0.191
1970	37 092	109 688	29 110	0.189
1971	38 446	121 969	32 706	0.179
1972	33 424	137 956	42 663	0.236
1973	23 621	130 735	57 431	0.318
1974	19 420	134 009	47 188	0.272
1975	17 327	135 484	41 576	0.297
1976	19 709	129 099	33 065	0.267
1977	13 106	122 227	34 835	0.328
1978	8 332	105 216	28 138	0.243
1979	8 686	96 036	27 246	0.257
1980	13 075	96 216	25 230	0.211
1981	33 145	85 056	30 103	0.382
1982	15 676	94 389	30 964	0.336
1983	40 830	98 639	39 176	0.385
1984	26 075	104 707	54 665	0.478
1985	22332	110 005	44 605	0.382
1986	61 856	91 583	41 716	0.505
1987	48 619	94 297	40 020	0.396
1988	44 854	103 005	45 285	0.456
1989	28 601	107 398	44 477	0.36
1990	20 712	103 216	61 628	0.562
1991	24 971	76 177	54 858	0.703
1992	19 572	59 993	36 487	0.52
1993	23 780	59 260	33 543	0.451
1994	16 877	57 407	33 182	0.491
1995	38 973	55 521	27 209	0.442
1996	24 356	60 584	20 029	0.344
1997	33 517	68 222	22 306	0.304
1998	12 756	74 050	26 421	0.287
1999	58 813	77 635	33 207	0.335
2000	35 840	80 387	39 020	0.383
2001	88 038	83 993	51 786	0.5
2002	105902	81 692	53 546	0.481
2003	64 250	97 221	46 555	0.413
2004	53 951	112 980	46 355	0.354
2005	69 984	127 585	67 967	0.357
2006	22 222	127 123	66 902	0.432
2007	18 880	120 818	60 785	0.396

Year	Recruitment (age 3)	SSB	Landings	Mean F Ages 4–8
	thousands	tonnes	tonnes	
2008	31 507	104 362	57 044	0.427
2009	13 723	93 278	57 949	0.61
2010	24 290	69 401	43 885	0.568
2011	34 720	56 238	29 658	0.445
2012	34 439	49 174	35 314	0.591
2013	35 951	48 637	26 463	0.423
2014	61 619	70 026	23 854	0.315
2015	26 993	82 089		

Sources and references

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