

2.3.14 Saithe (*Pollachius virens*) in Division Va (Iceland grounds)

ICES stock advice

ICES advises that when the Icelandic management plan is applied, catches in the fishing year 2015/2016 should be no more than 55 000 t.

Stock development over time

The spawning-stock biomass (SSB) of Icelandic saithe has been relatively high in recent years, near the maximum from 1980 to the present, and the harvest rate has declined from 27% to 18% (fishing mortalities 0.30 to 0.19) from 2009 to 2014. The year classes from 2008 and 2009 are above average, but recruitment has declined below average since then.

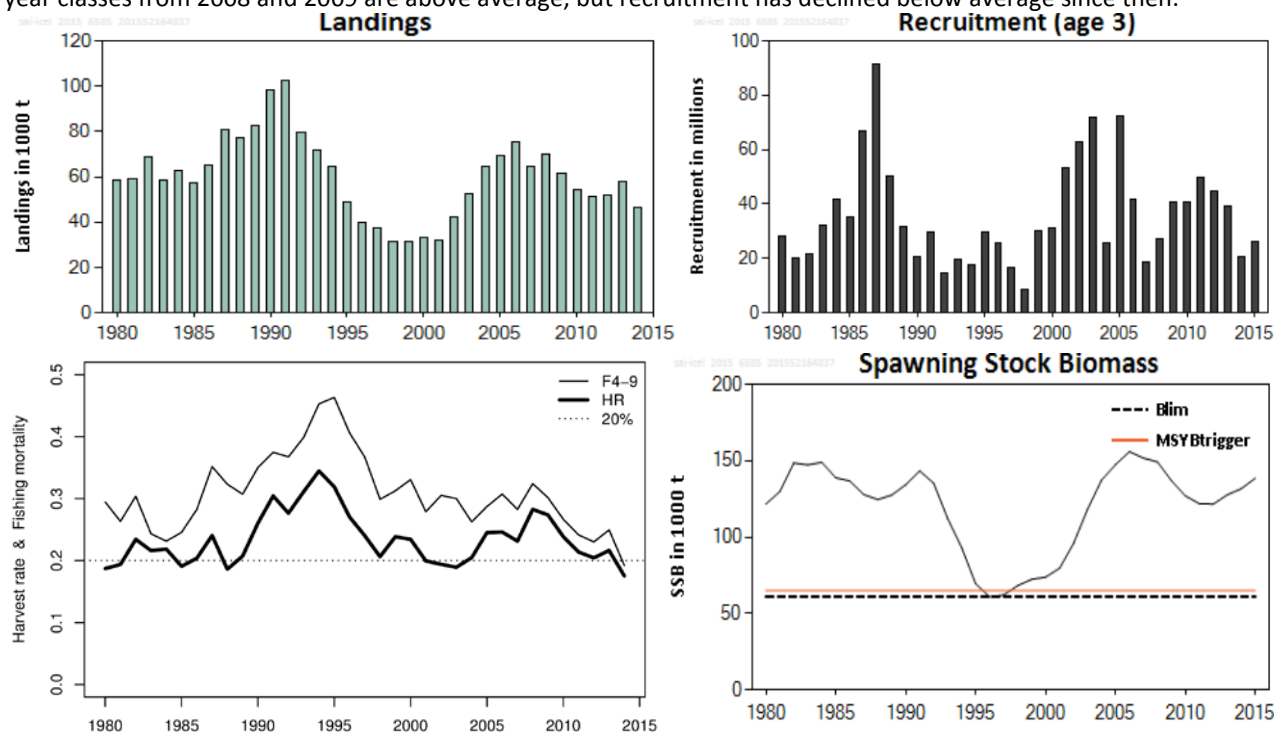


Figure 2.3.14.1 Saithe in Division Va. Summary of stock assessment.

Stock and exploitation status

Table 2.3.14.1 Saithe in Division Va. State of the stock and fishery, relative to reference points.

		Fishing pressure				Stock size				
		2012	2013	2014		2013	2014	2015		
Maximum Sustainable Yield	HR _{MSY}	✓	✗	✓	Appropriate	MSY	✓	✓	✓	SSB above B _{trigger}
Precautionary approach	HR _{pa} , HR _{lim}	✓	?	✓	Below candidate ref. points	B _{lim}	✓	✓	✓	SSB above B _{lim}
Management Plan	HR _{MGT}	✓	✓	✓	Within expected range	MGT	✓	✓	✓	SSB above B _{trigger}
						B _{trigger}	✓	✓	✓	SSB above B _{trigger}

Catch options

Table 2.3.14.2 Saithe in Division Va. The basis for the catch options.

Variable	Value	Source	Notes
F ages 4–9 (2015)	0.26	ICES (2015a)	Projection based on 20% HCR.
SSB (2016)	135 kt	ICES (2015a)	Projection based on 20% HCR.
R _{age3} (2016)	32 millions	ICES (2015a)	Geometric mean and newest survey data.
Total catch (2015)	57 kt	ICES (2015a)	Estimated from recorded landings/TAC to 31 August; predicted catch for the remainder of the calendar year.

Table 2.3.14.3 Saithe in Division Va. The catch options.

Rationale	Landings (2015/2016)	Basis	F (2016)	SSB (2017)	%SSB change *	% TAC change
Management plan	55	20% HCR	0.26	131	-3	-5

Weights in thousand tonnes.

* SSB 2017 relative to SSB 2016.

Basis of the advice

Table 2.3.14.4 Saithe in Division Va. The basis of the advice.

Advice basis	Management plan.
Management plan	Management plan for Icelandic saithe (MII, 2013), evaluated by ICES (Hjörleifsson and Björnsson, 2013).

Quality of the assessment

The combination of an unreliable index of recruitment, uncertain survey indices, and time-varying fleet selectivity leads to high uncertainty in the estimates of current SSB and fishing mortality. The management plan has been designed to take these uncertainties into account.

The management plan is based on harvest rate, calculated as landings/B₄₊ (where B₄₊ stands for biomass of ages 4 and older). Due to time-varying fleet selectivity in the Icelandic saithe fishery, the relationship between harvest rate and F_{4–9} varies from year to year. The reference point HR_{MSY} is defined as 20%, but since F_{4–9} varies at this target harvest rate, a fixed F_{MSY} reference point is not defined.

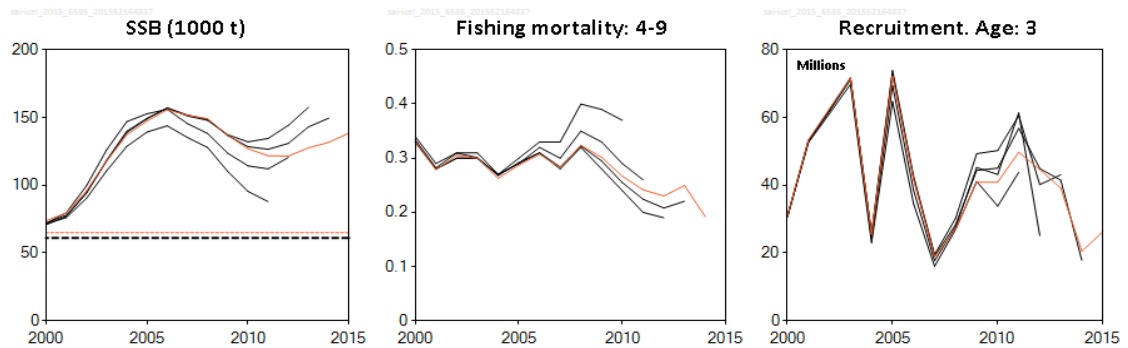


Figure 2.3.14.2 Saithe in Division Va. Historical assessment results (final-year recruitment estimates included).

Issues relevant for the advice

There is no information to present for this stock.

Reference points

Table 2.3.14.5 Saithe in Division Va. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Sources
MSY approach	MSY $B_{trigger}$	65 000 t	Stochastic evaluations.	Hjörleifsson and Björnsson (2013), MII (2013)
	HR _{MSY}	20%	Stochastic HCR evaluation (SSB 95% of the time over B_{lim}).	Hjörleifsson and Björnsson (2013), MII (2013)
Precautionary approach	B_{lim}	61 000 t	B_{loss} as estimated in 2010.	Hjörleifsson and Björnsson (2013)
	B_{pa}	Not defined		
	F_{lim}	Not defined		
	F_{pa}	Not defined		
Management plan	MGT $B_{trigger}$	65 000 t	Same as above.	
	HR _{MGT}	20%	Same as above.	

Basis of the assessment

Table 2.3.14.6 Saithe in Division Va. The basis of the assessment.

ICES stock data category	1 (ICES, 2015b).
Assessment type	Separable statistical catch-at-age model, with changes in selectivity for three different time periods, that uses catches in the model and in the forecast.
Input data	Catch-at-age and spring groundfish survey.
Discards and bycatch	Not included; considered negligible.
Indicators	None.
Other information	Benchmark performed in 2010 (ICES, 2010); management plan adopted in 2013 (MII, 2013).
Working group	North-Western Working Group (NWWG).

Information from stakeholders

There is no available information.

History of advice, catch and management

Table 2.3.14.7 Saithe in Division Va. History of ICES advice, the agreed TAC, and ICES estimates of landings by national fishing year. Weights in thousand tonnes.

Year	ICES advice	Predicted catch corresp. to advice	Agreed TAC	Landings
1987*	TAC	64	70	81
1988*	TAC	64	80	77
1989*	TAC	80	80	82
1990*	TAC	80	90	98
1991*	TAC	87	65	71
1991/92	TAC	70	75	88
1992/93	Marginal gains from increase in F	75	95	78
1993/94	No measurable gains from increase in F	84	85	69
1994/95	No measurable gains from increase in F	72	75	61
1995/96	No measurable gains from increase in F	65	70	41
1996/97	No measurable gains from increase in F	52	50	38
1997/98	F below $F_{med} = 0.23$	30	30	33
1998/99	F below 60% of F(97)	28	30	32
1999/00	F below 60% of F(98)	24	30	30
2000/01	F = 70% of F(99)	25	30	32
2001/02	No directed fishing	-	37	36
2002/03	2/3 F_{pa} to rebuild stock	24	45	47
2003/04	No advice	-	50	56
2004/05	F_{pa}	69	70	71
2005/06	F_{pa}	78	80	78
2006/07	F_{pa}	81	80	66
2007/08	No advice	-	75	68
2008/09	Maintain SSB $>B_{pa}$	< 22	65	62
2009/10	F reduced below 0.22	< 34	50	54
2010/11	F_{MSY}	< 40	50	51
2011/12	F_{MSY}	≤ 45	52	51
2012/13	MSY framework [B-rule]	≤ 49	50	52
2013/14	Management plan [20% HCR]	57	57	54
2014/15	Management plan [20% HCR]	58	58	
2015/16	Management plan [20% HCR]	55		

* Calendar year.

History of catch and landings

Table 2.3.14.8 Saithe in Division Va. Catch distribution by fleet in 2014 as estimated by ICES.

Total catch (2014)	Commercial landings			Commercial discards
46 kt	83% bottom trawl	5% gillnet	12% other gears	negligible
	46 kt			

Summary of the assessment

Table 2.3.14.9 Saithe in Division Va. Assessment summary (weights in thousand tonnes, recruitment in millions). The recruitment column is aligned so that the 2000 cohort is shown in the year 2000, but that cohort is the estimated N at age 3 in 2003.

Year	B4+	SSB	Cohort	Yield	F ₄₋₉	Harvest rate
1980	312	122	32	58	0.29	19%
1981	304	130	42	59	0.26	19%
1982	294	148	35	69	0.30	23%
1983	270	147	67	58	0.24	22%
1984	287	149	91	63	0.23	22%
1985	299	139	50	57	0.25	19%
1986	318	137	32	65	0.28	20%
1987	335	128	21	81	0.35	24%
1988	415	125	29	77	0.32	19%
1989	397	127	15	82	0.31	21%
1990	377	134	20	98	0.35	26%
1991	336	143	18	102	0.37	30%
1992	288	135	30	80	0.37	28%
1993	230	112	25	72	0.40	31%
1994	187	93	17	64	0.45	34%
1995	152	70	9	49	0.46	32%
1996	148	61	30	40	0.41	27%
1997	155	62	31	37	0.37	24%
1998	153	68	53	32	0.30	21%
1999	131	72	63	31	0.31	24%
2000	141	74	72	33	0.33	23%
2001	161	80	26	32	0.28	20%
2002	217	96	72	42	0.31	19%
2003	276	118	42	52	0.30	19%
2004	316	137	19	65	0.26	20%
2005	282	147	27	69	0.29	25%
2006	307	156	41	76	0.31	25%
2007	278	152	41	64	0.28	23%
2008	248	149	50	70	0.32	28%
2009	224	137	45	61	0.30	27%
2010	227	127	39	54	0.27	24%
2011	239	122	21	51	0.24	21%
2012	253	122	26	52	0.23	20%
2013	268	128	32	58	0.25	22%
2014	265	132	33	46	0.19	18%
2015	255	139	33			

Sources and references

Hjörleifsson, E. and Björnsson, H. 2013. Report of the evaluation of the Icelandic saithe management plan. ICES CM 2013/ACOM:60. 70 pp.

ICES. 2015a. Report of the North-Western Working Group (NWWG), 28 April–5 May 2015, ICES Headquarters, Copenhagen, Denmark. ICES CM 2015/ACOM:07.

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MII. 2013. Adoption of management plan for Icelandic saithe. Letter from Icelandic Ministry of Industries and Innovation to ICES, dated 22 April 2013.

<https://community.ices.dk/ExpertGroups/NWWG/2013%20Meeting%20Docs/Background%20Documents/20130422%20Adoption%20of%20management%20plan%20for%20Iceland%20saithe%28B.4.g%29.pdf>.