

Saithe (*Pollachius virens*) in Division 5.b (Faroes grounds)

ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2021 should be no more than 27 368 tonnes. ICES is not in a position to advise on the corresponding level of fishing effort.

Note: This advice sheet is abbreviated due to the COVID-19 disruption. The previous advice issued for 2020 is attached as Annex 1.

Stock development over time

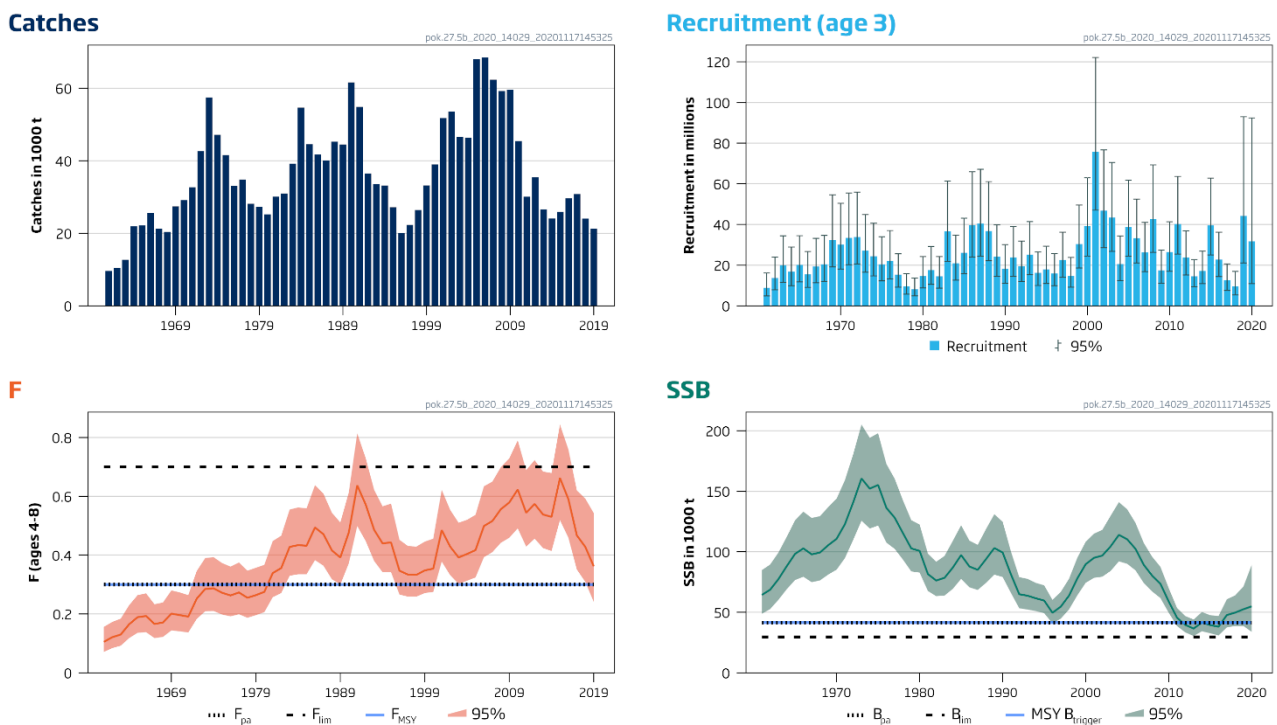


Figure 1 Saithe in Division 5.b (Faroes grounds). Summary of the stock assessment with 95% confidence intervals. Catches, recruitment (R), fishing mortality (F), and spawning-stock biomass (SSB).

Stock and exploitation status

Table 1 Saithe in Division 5.b (Faroes grounds). State of the stock and fishery relative to reference points.

		Fishing pressure			Stock size		
		2017	2018	2019	2018	2019	2020
Maximum sustainable yield	F_{MSY}	✘	✘	✘	✓	✓	✓ Above trigger
Precautionary approach	F_{pa}, F_{lim}	○	○	○	✓	✓	✓ Full reproductive capacity
Management plan	F_{MGT}	—	—	—	—	—	— Not applicable

Catch scenarios

Table 2 Saithe in Division 5.b (Faroes grounds). Assumptions made for the interim year and in the forecast. All weights are in tonnes.

Variable	Value	Notes
F _{ages 4-8} (2020)	0.34	Based on catch estimate of 23659 tonnes in 2020.
SSB ₂₀₂₁	73012	Based on catch estimate of 23659 tonnes in 2020 and corresponding F = 0.34; in tonnes.
R _{age 3} (2021 and 2022)	32527	Median of resampled estimates 2015–2019; in thousands.
Landings (2020)	23659	Catch estimate for 2020 based on catch statistics to the end of September adjusted for the entire year; in tonnes.
Discards (2020)	0	Discarding is considered negligible; in tonnes.

Table 3 Saithe in Division 5.b (Faroes grounds). Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2021)	F _{total} (2021)	SSB ₂₀₂₂	% SSB change *	% Advice change **
ICES advice basis					
MSY approach: F _{MSY} = 0.30	27368	0.30	89455	+23	-23
Other scenarios					
F = 0	0	0	113919	+56	-100
F = F ₂₀₂₀	30693	0.34	86258	+18	-14
F = F _{pa}	27368	0.3	89455	+23	-23
F = F _{lim}	54343	0.7	65354	-10	+52

* SSB₂₀₂₂ relative to SSB₂₀₂₁ (73 012 tonnes).

** Advice value for 2021 relative to the advice value for 2020 (35 636 tonnes).

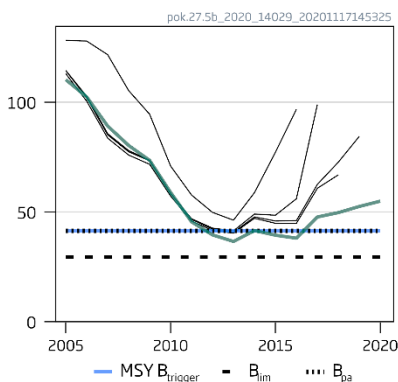
The catch advice for 2021 is lower compared to the advice for 2020 due to a downwards revision in biomass.

Quality of the assessment

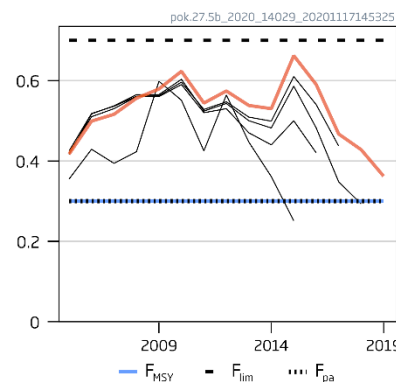
The stock was benchmarked in 2017 and the assessment model and input data were changed (ICES, 2018). As a result, the historical stock perception has changed markedly, with lower estimates of spawning-stock biomass (SSB) and higher estimates of F. Some minor additional changes to the model configuration were made in 2020 (ICES, 2020).

The assessment has a tendency to overestimate SSB.

SSB (1000 t)



F (ages 4-8)



Rec (age 3; Millions)

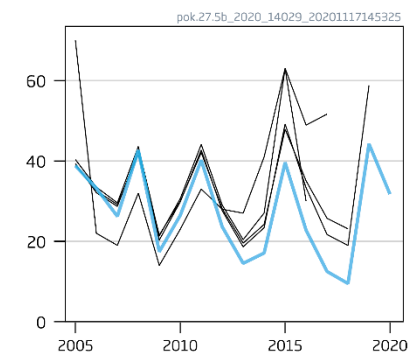


Figure 2 Saithe in Division 5.b (Faroes grounds). Historical assessment results. Results of the last five assessments are plotted, with the solid coloured line representing the current assessment.

Reference points

Table 4 Saithe in Division 5.b (Faroes grounds). Reference points, values, and their technical basis. All weights are in tonnes.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	41400	B_{loss} (SSB in 2013).	ICES (2017)
	F_{MSY}	0.30	Stochastic simulations.	ICES (2017)
Precautionary approach	B_{lim}	29571	$B_{pa}/1.4$.	ICES (2017)
	B_{pa}	41400	B_{loss}	ICES (2017)
	F_{lim}	0.70	Stochastic simulations; the F that gives a 50% probability of $SSB > B_{lim}$.	ICES (2017)
	F_{pa}	0.30	F_{p05} , $P(SSB < B_{lim}) < 5\%$.	ICES (2017) *
Management plan	SSB_{mgt}	Not applicable		
	F_{mgt}	Not applicable		

* In 2020 both the technical basis and the value of F_{pa} were revised.

History of the advice, catch, and management

Table 5 Saithe in Division 5.b (Faroes grounds). ICES advice, TACs, and catch. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice	Agreed TAC *	ICES catch
1987	No increase in F	< 32000		40020
1988	No increase in F	< 32000		45285
1989	Reduction in F	< 40000		44477
1990	Reduction in F	< 41000		61628
1991	TAC	< 30000		54858
1992	Reduction in F	< 27000		36487
1993	Reduction in F	< 37000		33543
1994	TAC	< 26000	42000 **	33182
1995	TAC	< 22000	39000 **	27209
1996	TAC	< 39000	-	20029
1997	20% reduction in F from 1995 level	< 21000	-	22306
1998	30% reduction in effort from 1996/1997 level	-	-	26421
1999	F below F_{pa} (0.28)	< 14000		33207
2000	F below than F_{pa} (0.28)	< 15000		39020
2001	Reduce fishing effort to generate F well below F_{pa} (0.28)	< 17000		51786
2002	Reduce fishing effort to generate F below F_{pa} (0.28)	< 28000		53546
2003	Reduce fishing effort to generate F below F_{pa} (0.28)	< 47000		46555
2004	Reduce fishing effort to generate F below F_{pa} (0.28)	< 48000		46355
2005	Reduce fishing effort to generate F below F_{pa} (0.28)	< 32000		67967
2006	Reduce fishing effort to generate F below F_{pa} (0.28)	< 24000		68465
2007	Average catch considerations	40000		62351
2008	Do not increase effort	-		57044
2009	Reduce fishing effort by around 20%	-		59558
2010	Reduce fishing effort by around 20%	-		45441
2011	Reduce fishing effort to generate F below F_{pa} (0.28)	< 38000		30084
2012	Reduce fishing effort to generate F below F_{MSY} (0.28)	< 40000		35448
2013	$F < 0.28$	< 29100		26539
2014	Reduce fishing effort to generate F below F_{MSY} (0.30)	< 29000		24103
2015	Reduce fishing effort to generate F below F_{MSY} (0.30)	< 26000		25900
2016	Reduce fishing effort to generate F below F_{MSY} (0.30)	< 36000		29671

Year	ICES advice	Catch corresponding to advice	Agreed TAC *	ICES catch
2017	MSY approach (F ≤ 0.30)	≤ 46000		30853
2018	MSY approach (F ≤ 0.30)	≤ 35003		24019
2019	MSY approach	≤ 23967		21303
2020	MSY approach	≤ 35636		
2021	MSY approach	≤ 27368		

* Not applicable since 1997.

** 1 September in the quota year to 31 August the following year.

Summary of the assessment

Table 6 Saithe in Division 5.b (Faroes grounds). Assessment summary. Weights are in tonnes, recruitment in thousands.

Year	Recruitment			SSB			Catch	F		
	Age 3	97.5 percentile	2.5 percentile	SSB	97.5 percentile	2.5 percentile		Mean F _{ages 4-8}	97.5 percentile	2.5 percentile
	Thousands			Tonnes				Tonnes		
1961	8835	16148	4834	64301	84831	48739	9592	0.105	0.156	0.071
1962	13699	23864	7864	68616	89433	52644	10454	0.121	0.173	0.084
1963	19920	34436	11522	77390	99365	60275	12693	0.130	0.184	0.092
1964	16844	28871	9827	88083	112339	69064	21893	0.165	0.23	0.118
1965	20120	34468	11744	98242	125977	76614	22181	0.189	0.26	0.136
1966	15521	26680	9029	102777	133142	79338	25563	0.193	0.27	0.138
1967	19396	33186	11336	97862	127925	74864	21319	0.166	0.23	0.118
1968	20374	34608	11994	99365	129383	76312	20387	0.171	0.24	0.122
1969	32318	54549	19147	105424	136945	81159	27437	0.20	0.28	0.144
1970	30150	50390	18039	110665	143811	85159	29110	0.196	0.27	0.141
1971	33405	55438	20129	122720	159072	94676	32706	0.191	0.26	0.137
1972	33840	55891	20489	140769	180495	109787	42663	0.25	0.35	0.183
1973	27203	44894	16483	160538	205119	125646	57431	0.28	0.39	0.21
1974	24406	40603	14670	152133	194177	119192	47188	0.29	0.39	0.21
1975	20371	33966	12217	155171	197953	121635	41576	0.27	0.37	0.198
1976	22069	37002	13162	136245	172556	107575	33065	0.26	0.36	0.192
1977	15284	25535	9149	128119	160356	102363	34835	0.27	0.38	0.199
1978	9502	15839	5700	115300	142315	93413	28138	0.26	0.35	0.187
1979	8189	13677	4903	102726	126070	83704	27246	0.26	0.36	0.196
1980	14598	24220	8798	100700	122515	82769	25230	0.28	0.37	0.21
1981	17521	29169	10524	81549	98434	67560	30103	0.34	0.45	0.26
1982	14501	24184	8695	76219	91764	63308	30964	0.36	0.47	0.27
1983	36575	61375	21796	78468	96527	63787	39176	0.43	0.56	0.33
1984	20904	34718	12586	86928	108983	69336	54665	0.43	0.56	0.34
1985	26083	43069	15796	97256	121903	77592	44605	0.43	0.56	0.34
1986	39692	65953	23888	87798	109154	70621	41716	0.49	0.64	0.38
1987	40480	67134	24408	85056	105702	68442	40020	0.47	0.61	0.36
1988	36785	61072	22156	93952	118814	74293	45285	0.42	0.54	0.32
1989	24065	39817	14545	103090	131031	81108	44477	0.39	0.51	0.30
1990	18199	30058	11018	99365	124789	79121	61628	0.48	0.61	0.37
1991	23775	39013	14489	81293	100203	65951	54858	0.64	0.81	0.50
1992	19402	31807	11836	64907	79014	53319	36487	0.57	0.73	0.45
1993	25158	41402	15288	63679	77588	52263	33543	0.49	0.62	0.38
1994	16229	26394	9979	61523	74262	50969	33182	0.44	0.57	0.34
1995	17919	29270	10970	59656	72261	49250	27209	0.44	0.57	0.34
1996	15880	25648	9832	49601	60229	40849	20029	0.35	0.45	0.27

Year	Recruitment			SSB			Catch	F		
	Age 3	97.5 percentile	2.5 percentile	SSB	97.5 percentile	2.5 percentile		Mean F _{ages 4-8}	97.5 percentile	2.5 percentile
	Thousands			Tonnes						
1997	22480	36185	13966	54640	66832	44672	22306	0.33	0.43	0.26
1998	14746	23770	9147	63804	77751	52360	26421	0.33	0.43	0.26
1999	30330	49550	18565	78026	95089	64025	33207	0.35	0.45	0.27
2000	39256	62918	24492	89687	108203	74339	39020	0.35	0.46	0.28
2001	75782	122112	47029	94969	114971	78447	51786	0.49	0.62	0.38
2002	46810	76686	28573	96825	118081	79395	53546	0.43	0.55	0.33
2003	43422	70487	26749	104437	129677	84109	46555	0.39	0.51	0.30
2004	20545	34355	12286	113943	141007	92074	46355	0.40	0.52	0.31
2005	38781	61824	24327	110285	135097	90030	67967	0.42	0.54	0.32
2006	33201	52436	21022	102379	123848	84631	68465	0.50	0.63	0.39
2007	26211	41035	16742	89128	107193	74108	62351	0.52	0.65	0.41
2008	42656	69304	26254	80286	95919	67200	59243	0.56	0.70	0.44
2009	17425	27455	11060	73512	87551	61724	59558	0.58	0.73	0.46
2010	26465	41297	16960	58912	69986	49589	45441	0.62	0.79	0.49
2011	40208	63602	25418	45490	53562	38634	30084	0.54	0.69	0.43
2012	23629	36895	15133	39546	46884	33357	35448	0.57	0.72	0.46
2013	14525	22704	9292	36567	44023	30374	26539	0.54	0.68	0.42
2014	17089	26830	10884	41505	50203	34314	24103	0.53	0.68	0.41
2015	39611	62802	24984	39406	47563	32648	25900	0.66	0.84	0.52
2016	22766	36179	14325	38055	46975	30829	29671	0.59	0.76	0.46
2017	12494	20577	7586	47709	60735	37476	30853	0.47	0.62	0.35
2018	9500	16932	5330	49701	63954	38625	24019	0.43	0.59	0.31
2019	44243	93005	21047	52506	71290	38671	21303*	0.36	0.54	0.24
2020	31734	92374	10902	54921	89291	33781				

* Preliminary.

Sources and references

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