

Beaked redfish (*Sebastes mentella*) in Subarea 14 and Division 5.a, Icelandic slope stock (East of Greenland, Iceland grounds)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, catches in 2019 should be no more than 13 012 tonnes.

Stock development over time

The stock size indicator (survey biomass index) declined from 2001 to 2003, and has since been fluctuating without trend.

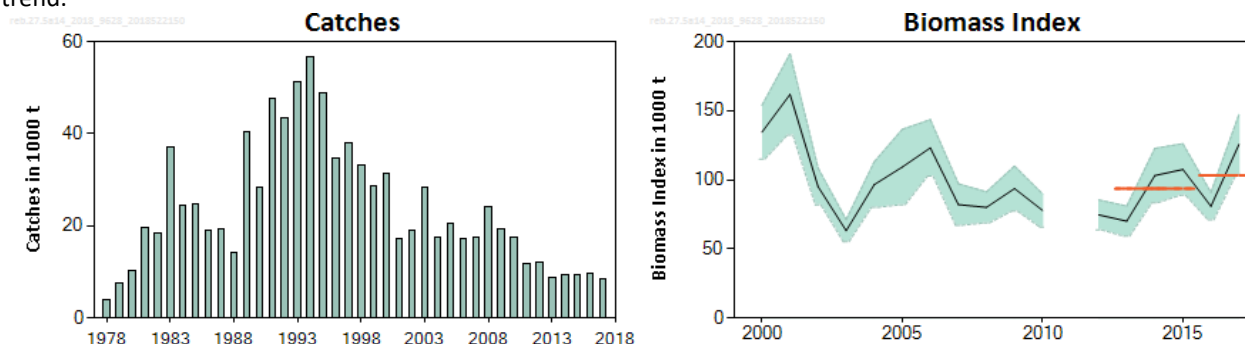


Figure 1 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. Summary of the stock assessment. Left: Catches (thousand tonnes, 1978–2017). Right: Survey biomass index in Division 5.a (Icelandic Autumn Groundfish survey), median (solid line) and 90% confidence intervals (shaded area) are plotted. The red horizontal lines indicate the average biomasses for 2013–2015 and for 2016–2017 used in the advice calculations.

Stock and exploitation status

ICES cannot assess the stock and exploitation status relative to MSY and PA reference points because the reference points are undefined.

Table 1 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. State of the stock and fishery relative to reference points.

		Fishing pressure				Stock size			
		2015	2016	2017		2015	2016	2017	
Maximum sustainable yield	F_{MSY}	?	?	?	Undefined	$MSY B_{trigger}$?	?	?
Precautionary approach	F_{pa}, F_{lim}	?	?	?	Undefined	B_{pa}, B_{lim}	?	?	?
Management plan	F_{MGT}	—	—	—	Not applicable	B_{MGT}	—	—	—
Qualitative evaluation	-	?	?	?	Unknown	-	↗	↘	↗
									Increasing

Catch scenarios

The ICES framework for category 3 stocks was applied. The Icelandic Autumn Groundfish survey index was applied as the index for stock development. The advice is based on a comparison of the two latest index values (index A) with the three preceding values (index B), combined with the catch advice for 2018. The index is estimated to have increased by 10.4% (less than 20%), thus the uncertainty cap was not applied. The precautionary buffer was last applied in 2017 and is not applied this year. Discarding is considered negligible.

Table 2 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. The basis for the catch scenarios. All weights are in tonnes. *

Index A (2016–2017)	103233	
Index B (2013–2015)	93 510	
Index ratio (A/B)	1.104	
Uncertainty cap	Not applied	-
Advised catch for 2018 (issued in 2017)	11786	
Discard rate	Negligible	
Precautionary buffer	Not applied	-
Catch advice 2019 **	13012	
% Advice change	10.4%	

* The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

** (Advice for 2018) × (index ratio).

The advice for 2019 is increased due to an increase in the survey biomass index.

Basis of the advice

Table 3 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. The basis of the advice.

Advice basis	Precautionary approach
Management plan	There is no management plan for the stock.

Quality of the assessment

The lack of a long time-series of biomass indices (only available from 2000) prevents the determination of stock status of this long-lived species.

Issues relevant for the advice

Sebastes mentella is a slow-growing, late-maturing species and is therefore considered particularly vulnerable to overexploitation. Since 2007 survey estimates of *S. mentella* have consistently shown very low abundance of juveniles (< 30 cm; Figure 2). This is consistent with patterns seen in a number of other redfish stocks. The absence of any indications of incoming cohorts raises concerns about the future productivity of the stock.

The advice is given by calendar year, though the fishing year runs from 1 September to 31 August of the following year.

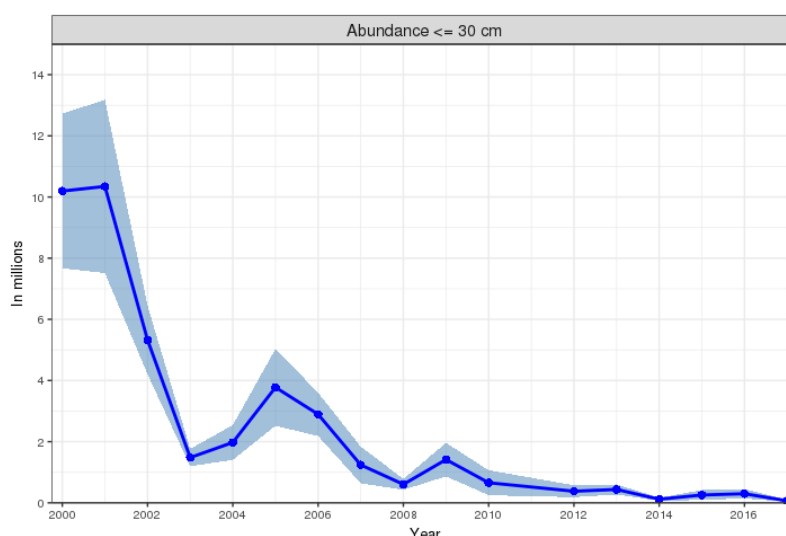


Figure 2 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. Abundance index of fish sized 30 cm and smaller from the Icelandic Autumn Groundfish survey.

Reference points

No reference points are defined for this stock.

Basis of the assessment

Table 4 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. Basis of the assessment and advice.

ICES stock data category	3 (ICES, 2016)
Assessment type	Survey trend-based assessment (ICES, 2018)
Input data	Icelandic Autumn Groundfish survey biomass index (IS-SMH); fishery catches (landings)
Discards and bycatch	Not included, considered negligible
Indicators	Icelandic Autumn Groundfish survey juvenile (< 30 cm) abundance index
Other information	The stock was benchmarked in 2012 (ICES, 2012).
Working group	North-Western Working Group (NWWG)

Information from stakeholders

There is no additional available information.

History of the advice, catch, and management

Table 5 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. ICES advice and catch. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice	Agreed TAC	ICES catch
1987	Precautionary TAC	41000–58000	95000*	19293
1988	Precautionary TAC	41000–58000	85000*	14290
1989	TAC*	117000*	77000*	40269
1990	TAC*	116000*	80000*	28429
1991	Precautionary TAC	(40000) 117000*	55000*,#	47651
1992	Precautionary TAC	(40000) 116000*	90000*,##	43414
1993	Precautionary TAC	120000*	104000*,##	51221
1994	Precautionary TAC, if required	100000*	90000*,##	56720
1995	TAC	90000*	77000*,##	48708
1996	Precautionary TAC (45 in Division 5.a; 23 in Subareas VI and 14)	68000**	65000*,##	34741
1997	Effort 75% of 95-value	39000**	65000*,##	37876
1998	Fishing mortality to be further reduced towards the 1986–1990 levels		65000*,##	33125
1999	Fishing mortality to be further reduced towards the 1986–1990 levels		65000*,##	28590
2000	Fishing effort to be further reduced by 25%		60000*,##	31393
2001	Fishing effort to be reduced by 25% from the 1998 level	22000^	57000*,##	17230
2002	Status quo fishing effort	36000^^	65000*,##	19045
2003	Not higher fishing effort than recent average	30000^^	60000*,##	28478
2004	Not higher fishing effort than recent average	26400^^	57000*,##	17564
2005	Reduce catch to 2001 level in Subarea 5	22500^^	57000*,##	20563
2006	Reduce catch to 2001 level in Subarea 5	22000^^	57000*,##	17208
2007	Same advice as last year	22000^^	57000*,##	17373
2008	Same advice as last year	22000^^	57000*,##	24123
2009	Develop management plan and reduce catch	< 10000#	50000*,##	19430
2010	Develop management plan and reduce catch	< 10000#	50000*,##	17642
2011	Same advice as last year	< 10000#	12500**,##	11738
2012	Same advice as last year	< 10000#	12000**,##	11965
2013	Same advice as last year	< 10000#	12000**,##	8761

Year	ICES advice	Catch corresponding to advice	Agreed TAC	ICES catch
2014	10.5% decrease with an additional 20% reduction	≤ 9875	10000**,###	9500
2015	Same catch advice as last year	≤ 9875	10000**,###	9311
2016	Precautionary approach	≤ 10768	10000**,###	9536
2017	Precautionary approach	≤ 12922	12922**,###	8371
2018	Precautionary approach	≤ 11786	11786**,###	
2019	Precautionary approach	≤ 13012		

* Deep-sea *S. mentella* and *S. norvegicus* combined.

** Deep-sea *S. mentella* only.

^ In Division 5.a only.

^^ For the entire Subarea 5.

Year ending 31 August.

Quota year September–August.

History of the catch and landings

Table 6 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. Catch distribution by fleet in 2017 as estimated by ICES.

Catch (2017)	Landings	Discards
8371 tonnes	Bottom trawl 100%	Negligible
	8371	

Table 7 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. History of commercial catch in the Icelandic EEZ; ICES estimated values are presented. All weights are in tonnes. Catches for 2017 are preliminary.

Year	Iceland	Other countries	Total
1978	3693	209	3902
1979	7448	246	7694
1980	9849	348	10197
1981	19242	447	19689
1982	18279	213	18492
1983	36585	530	37115
1984	24271	222	24493
1985	24580	188	24768
1986	18750	148	18898
1987	19132	161	19293
1988	14177	113	14290
1989	40013	256	40269
1990	28214	215	28429
1991	47378	273	47651
1992	43414	0	43414
1993	51221	0	51221
1994	56674	46	56720
1995	48479	229	48708
1996	34508	233	34741
1997	37876	0	37876
1998	32841	284	33125
1999	27475	1115	28590
2000	30185	1208	31393
2001	15415	1815	17230
2002	17870	1175	19045
2003	26295	2183	28478
2004	16226	1338	17564
2005	19109	1454	20563
2006	16339	869	17208
2007	17091	282	17373

Year	Iceland	Other countries	Total
2008	24123	0	24123
2009	19430	0	19430
2010	17642	0	17642
2011	11738	0	11738
2012	11965	0	11965
2013	8761	0	8761
2014	9500	0	9500
2015	9311	0	9311
2016	9536	0	9536
2017	8371	0	8371

Summary of the assessment

Table 8 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. Assessment summary. Weights are in tonnes.

Year	Survey Biomass (Icelandic Autumn Groundfish survey)	Survey biomass upper 95 th percentile	Survey biomass lower 5 th percentile
2000	134407	153896	114918
2001	161733	191169	132298
2002	95059	108367	81750
2003	63179	71203	55155
2004	96465	112961	79970
2005	109196	136495	81897
2006	123059	143486	102631
2007	82062	97079	67044
2008	80011	91292	68729
2009	93653	109949	77357
2010	77852	89842	65863
2011*			
2012	74604	85422	63786
2013	70055	80983	59126
2014	103051	122733	83368
2015	107423	126115	88732
2016	80855	90801	70910
2017	125611	147216	104006

* No survey was conducted in 2011.

Sources and references

ICES. 2012. Report of the Benchmark Workshop on Redfish (WKRED 2012), 1–8 February 2012, Copenhagen, Denmark. ICES CM 2012/ACOM:48. 291 pp.

ICES. 2016. Advice basis. *In* Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2.

ICES. 2018. Report of the North-Western Working Group (NWWG), 26 April–3 May, 2018, ICES HQ, Copenhagen. ICES CM 2018/ACOM:09.