

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

ICES stock advice

ICES advises that when the precautionary approach is applied, catches in 2018 should be no more than 11 786 tonnes.

Stock development over time

The stock size indicator (survey biomass index) declined from 2001 to 2003, and has since been stable.

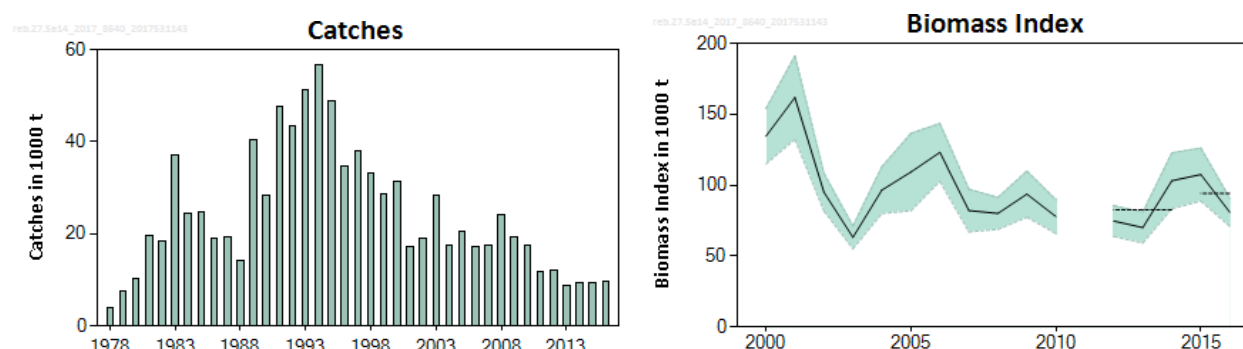


Figure 1 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. Summary of the stock assessment. Left: Catches (thousand tonnes, 1978–2016). Right: Survey biomass index in Division 5.a (Icelandic Autumn Groundfish survey), median (solid line) and 90% confidence intervals (shaded area) are plotted. The dashed horizontal lines indicate the average biomasses for 2012–2014 and for 2015–2016 used in the advice calculations.

Stock and exploitation status

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			
		2014	2015	2016		2014	2015	2016	
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	—	↗	↗	↘
									Stable

Catch options

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 2017. The index is estimated to have increased by 14%. The precautionary buffer was last applied in 2013. The stock status relative to candidate reference points is unknown and therefore the precautionary buffer is 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 options.

Index A (2015–2016)		94 139 t
Index B (2012–2014)		82 570 t
Index ratio (A/B)		1.14
Uncertainty cap	Not applied	-
Advised catch for 2017		12 922 t
Discard rate		Negligible
Precautionary buffer	Applied	0.8
Catch advice 2018 *		11 786 t

* (Advice for 2017) × (index ratio) × (precautionary buffer).

Note: 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.

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 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.

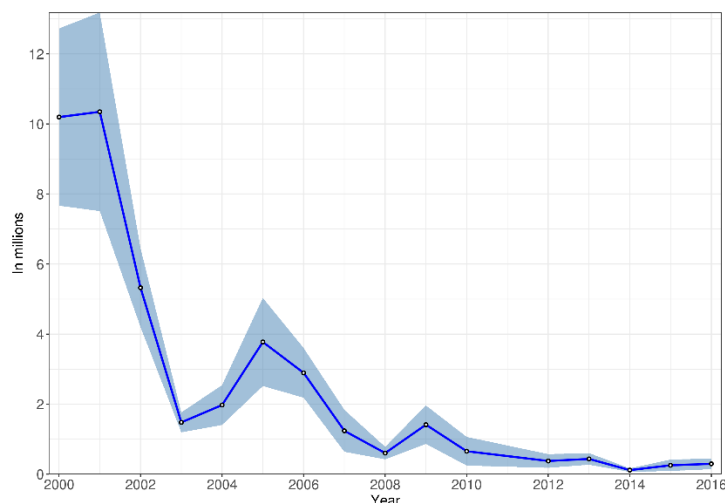


Figure 2 Beaked redfish in Subarea 14 and Division 5.a, Icelandic slope stock. Abundance index of fish sized 30 cm and smaller from the Icelandic Autumn Groundfish survey.

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, 2017).
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 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	Predicted catch corresp. to advice	Agreed TAC	ICES catch
1987	Precautionary TAC	41 000–58 000	95 000*	19 293
1988	Precautionary TAC	41000–58000	85 000*	14 290
1989	TAC*	117 000*	77 000*	40 269
1990	TAC*	116 000*	80 000*	28 429
1991	Precautionary TAC	(40 000) 117 000*	55 000*,#	47 651
1992	Precautionary TAC	(40 000) 116 000*	90 000*,##	43 414
1993	Precautionary TAC	120 000*	104 000*,##	51 221
1994	Precautionary TAC, if required	100 000*	90 000*,##	56 720
1995	TAC	90 000*	77 000*,##	48 708
1996	Precautionary TAC (45 in Division 5.a; 23 in Subareas VI and 14)	68 000**	65 000*,##	34 741
1997	Effort 75% of 95-value	39 000**	65 000*,##	37 876
1998	Fishing mortality to be further reduced towards the 1986–1990 levels		65 000*,##	33 125
1999	Fishing mortality to be further reduced towards the 1986–1990 levels		65 000*,##	28 590
2000	Fishing effort to be further reduced by 25%		60 000*,##	31 393
2001	Fishing effort to be reduced by 25% from the 1998 level	22 000^	57 000*,##	17 230
2002	Status quo fishing effort	36 000^^	65 000*,##	19 045
2003	Not higher fishing effort than recent average	30 000^^	60 000*,##	28 478
2004	Not higher fishing effort than recent average	26 400^^	57 000*,##	17 564
2005	Reduce catch to 2001 level in Subarea 5	22 500^^	57 000*,##	20 563
2006	Reduce catch to 2001 level in Subarea 5	22 000^^	57 000*,##	17 208
2007	Same advice as last year	22 000^^	57 000*,##	17 373
2008	Same advice as last year	22 000^^	57 000*,##	24 123
2009	Develop management plan and reduce catch	< 10 000#	50 000*,##	19 430
2010	Develop management plan and reduce catch	< 10 000#	50 000*,##	17 642
2011	Same advice as last year	< 10 000#	12 500*,##	11 738
2012	Same advice as last year	< 10 000#	12 000*,##	11 965

Year	ICES advice	Predicted catch corresp. to advice	Agreed TAC	ICES catch
2013	Same advice as last year	< 10 000 [#]	12 000 ^{**##}	8761
2014	10.5% decrease with an additional 20% reduction	≤ 9875	10 000 ^{**##}	9500
2015	Same catch advice as last year	≤ 9875	10 000 ^{**##}	9311
2016	Precautionary approach	≤ 10 768	10 000 ^{**##}	9536
2017	Precautionary approach	≤ 12 922	12 922 ^{**##}	
2018	Precautionary approach	≤ 11 786		

* 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 2016 as estimated by ICES.

Catch (2016)	Landings	Discards
9536 tonnes	Bottom trawl 100%	Negligible
	9536 tonnes	

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. Landings for 2016 are preliminary.

Year	Iceland	Other countries	Total
1978	3693	209	3902
1979	7448	246	7694
1980	9849	348	10 197
1981	19 242	447	19 689
1982	18 279	213	18 492
1983	36 585	530	37 115
1984	24 271	222	24 493
1985	24 580	188	24 768
1986	18 750	148	18 898
1987	19 132	161	19 293
1988	14 177	113	14 290
1989	40 013	256	40 269
1990	28 214	215	28 429
1991	47 378	273	47 651
1992	43 414	0	43 414
1993	51 221	0	51 221
1994	56 674	46	56 720
1995	48 479	229	48 708
1996	34 508	233	34 741
1997	37 876	0	37 876
1998	32 841	284	33 125
1999	27 475	1115	28 590
2000	30 185	1208	31 393
2001	15 415	1815	17 230
2002	17 870	1175	19 045
2003	26 295	2183	28 478
2004	16 226	1338	17 564
2005	19 109	1454	20 563
2006	16 339	869	17 208

Year	Iceland	Other countries	Total
2007	17 091	282	17 373
2008	24 123	0	24 123
2009	19 430	0	19 430
2010	17 642	0	17 642
2011	11 738	0	11 738
2012	11 965	0	11 965
2013	8761	0	8761
2014	9500	0	9500
2015	9311	0	9311
2016	9536	0	9536

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 95 th percentile	Survey biomass 5 th percentile
2000	134 407	153 896	114 918
2001	161 733	191 169	132 298
2002	95 059	108 367	81 750
2003	63 179	71 203	55 155
2004	96 465	112 961	79 970
2005	109 196	136 495	81 897
2006	123 059	143 486	102 631
2007	82 062	97 079	67 044
2008	80 011	91 292	68 729
2009	93 653	109 949	77 357
2010	77 852	89 842	65 863
2011	-	-	-
2012	74 604	85 422	63 786
2013	70 055	80 983	59 126
2014	103 051	122 733	83 368
2015	107 423	126 115	88 732
2016	80 855	90 801	70 910

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. 2017. Report of the North-Western Working Group (NWWG), 27 April–4 May, 2016, ICES Headquarters, Copenhagen. ICES CM 2017/ACOM:08.