

Beaked redfish (*Sebastes mentella*) in ICES subareas 5, 12, and 14 (Iceland and Faroes grounds, north of Azores, east of Greenland) and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, there should be zero catch in each of the years 2022, 2023, and 2024.

Stock development over time

ICES cannot assess the stock and exploitation status relative to the maximum sustainable yield (MSY) and precautionary approach (PA) reference points because the reference points are undefined; however, the stock is considered to be below any potential reference point.

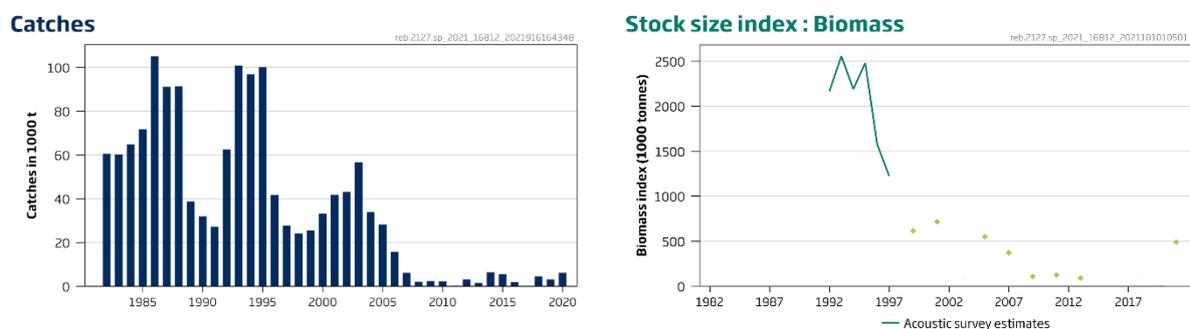


Figure 1* Beaked redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). Stock-size index (biomass) from the acoustic survey in the Irminger Sea and adjacent waters.

Catch scenarios

Based on the survey index in 2021, the stock has increased from a near zero level in 2013 and is now at its highest level since 2005. There is no information on exploitation rates. No reference points are defined for this stock. The estimated stock size in 2021 is about 20% of the maximum stock size observed in the early 1990s and is considered to be below possible reference points for this stock. Based on these considerations ICES advises that when the precautionary approach is applied, there should be zero catch in each of the years 2022, 2023, and 2024.

Basis of the advice

Table 1 Beaked redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). The basis of the advice.

Advice basis	Precautionary approach
Management plan	ICES is not aware of any agreed precautionary management plan for redfish in this area

Quality of the assessment

The 2021 survey index is the first one with adequate coverage of the main stock distribution since 2013 (Table 2). Most of the geographical distribution of the shallow pelagic beaked redfish stock was not covered by surveys in 2015 and 2018. The frequency of the survey conducted by Germany, Iceland, and Russian Federation has been variable over the time-series ranging from yearly to triennial surveys (from 2015 onwards; Table 9). Survey index estimates also appear sensitive to the timing of the survey due to the migratory patterns of this stock. This year's survey extended beyond the normal timing of the survey.

* Version 2: Biomass Figure updated. The 2003 biomass estimate is not shown since it is considered inconsistent as the survey was carried out about one month earlier than usual, and a marked seasonal effect was observed.

The acoustic survey provides an estimate of absolute biomass; however, this is sensitive to several assumptions and is used as a relative index.

In recent years, ICES has not obtained catch estimates disaggregated by depth from all countries (ICES, 2019). ICES recommends that all countries should report depth information on a haul basis in accordance with the NEAFC logbook format. Action is needed through NEAFC and NAFO in order to provide ICES with timely and complete information that may lead to more reliable catch statistics.

Table 2 Beaked redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). Survey biomass estimates (thousand tonnes) 1992–2021 for each survey area (see Figure 2) and the total area coverage (thousand nm²). Areas C–F were not surveyed in 2015, Areas B–F were not surveyed in 2018, and Areas C,D and F were not surveyed in 2021.

Year	Survey biomass (thousand tonnes) by survey area						Total biomass as used in the assessment	Area covered (thousand nm ²)
	A	B	C	D	E	F		
1992							2165*	190
1993 **							2556*	121
1994	673	1228	-	63	226		2190	190
1995 **							2481*	168
1996	639	749	-	33	155		1576	253
1997 **							1225*	158
1999	72	317	16	42	167		614	296
2001	88	220	30	267	103	7	716	420
2003 ^	32	46	1	2	10	0	89	405
2005	121	123	0	87	204	17	551	386
2007	80	95	0	53	142	3	372	349
2009	39	48	4	1	15	1	108	360
2011	5	74	0	3	40	1	123	343
2013	9	33	2	5	42	0	91	340
2015	-	-	-	-	-	-	-	201
2018 **	82	-	-	-	-	-	82	103
2021	144	150	-	-	196	-	490	242

* Results not available by subareas.

** Survey conducted by one vessel.

^ The 2003 biomass estimate is considered inconsistent as the survey was carried out about one month earlier than usual, and a marked seasonal effect was observed.

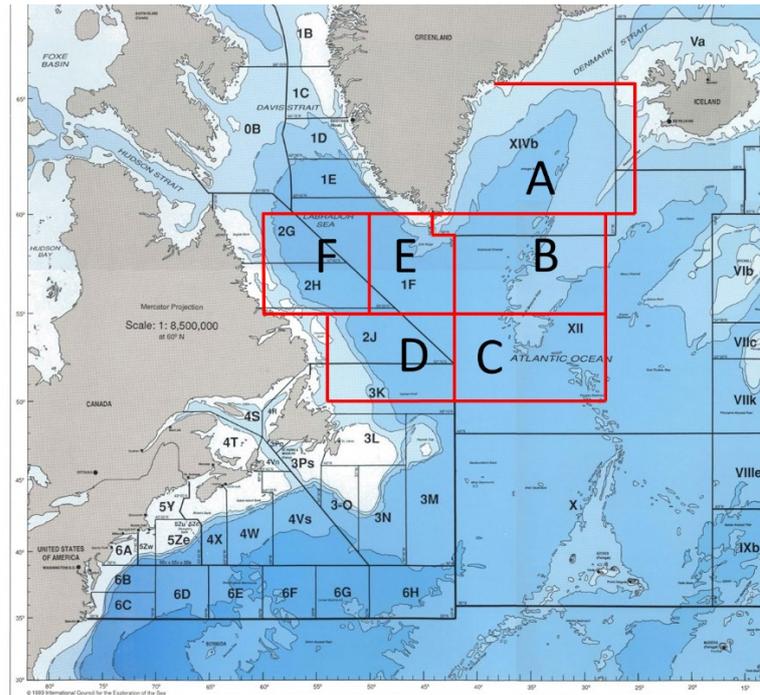


Figure 2 Beaked redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). Redfish survey areas.

Issues relevant for the advice

Beaked redfish is a slow-growing, late-maturing species, and any recovery from a low stock level would therefore extend over many years.

There is no agreement on the TAC for this stock. Russian Federation has, since 2011, unilaterally decided on a Russian quota that considers both redfish management units (the shallow and the deep pelagic redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2) as a single stock. Russian Federation scientists consider the deep and shallow pelagic stocks as a single stock. Until new information is available, ICES continues to use its current stock definition.

The total catches by all countries fishing for pelagic redfish have considerably exceeded the sum of ICES advised catch for both shallow pelagic and deep pelagic redfish stocks. This is particularly true since 2017, when the advice was for zero catch for both stocks.

The current assessment relies on survey information. The next survey is planned to be in 2024.

Reference points

No reference points are defined for this stock.

Basis of the assessment

Table 3 Beaked redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). The basis of the assessment.

ICES stock data category	3 (ICES, 2021a)
Assessment type	Survey-based trends (ICES, 2021b)
Input data	Commercial catches (international landings); one survey index (International Trawl and Acoustic Survey; A3372)
Discards and bycatch	Discarding is assumed negligible and not included in the assessment
Indicators	None
Other information	The stock was benchmarked in 2012; no specific analytical assessment method was accepted (ICES, 2012)
Working group	Northwestern Working Group (NWWG)

History of the advice, catch, and management

Table 4 Beaked redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). History of ICES advice, the agreed TAC, and ICES estimates of catches. All weights are in tonnes.

Year	ICES advice *	Catch corresponding to advice *	TAC *	Total deep & shallow pelagic TAC **	Unilateral Russian Federation TAC ***	ICES catch total ^	ICES catch shallow pelagic stock
1987	No assessment	-				91169	91169
1988	No assessment	-				91419	91419
1989	TAC	90000–100000				38784	38784
1990	TAC	90000–100000				31901	31901
1991	TAC	66000				27238	27179
1992	Preference for no major expansion of the fishery	-				65962	62564
1993	TAC	50000				115835	100771
1994	TAC	100000				148689	96869
1995	TAC	100000				175843	100136
1996	No specific advice	-		153000		180322	41770
1997	No specific advice	-		153000–158000		122825	27746
1998	TAC not over recent (1993–1996) levels of 150000 t			153000		116968	24150
1999	TAC to be reduced from recent (1993–1996) levels of 150000 t			153000		109665	25512
2000	TAC set lower than recent (1997–1998) catches of 120000 t	85000		120000		126329	33216
2001	TAC less than 75% of catch 1997–1999	< 85000		95000		128818	41825

Year	ICES advice *	Catch corresponding to advice *	TAC *	Total deep & shallow pelagic TAC **	Unilateral Russian Federation TAC ***	ICES catch total ^	ICES catch shallow pelagic stock
2002	TAC less than 75% of catch 1997–1999, revised to be below current catch levels	< 85000		95000^^		146344	43216
2003	TAC not exceed current catch levels	119000		119000^^		160984	56688
2004	TAC not exceed current catch levels	120000		120000^^		125905	33951
2005	Limit catch to 41000 t	41000	75000^^	116000		73714	28229
2006	Catch less than 41000 t	41000	62000^^	99000		83022	15734
2007	No fishery until clear indications of recovery of the stock	0	46000^^	73000		64642	6126
2008	Starting point for adaptive management strategy	20000	46000^^	73000		32104	2059
2009	Starting point for adaptive management strategy	20000	46000^^	73000		56386	2380
2010	No directed fishery and bycatch as low as possible	-	0^^	73000		61486	2198
2011	Same advice as last year	-	0^^	60000	29480	47567	234
2012	Same advice as last year	-	0^^	54856	29480	35979	3173
2013	Same advice as last year	-	0^^	47918	27300	47567	1529
2014	Same advice as last year	-	0^^	43160	27300	30178	6423
2015	Same advice as last year	-	0^^	34843	27300	33028	5595
2016	No directed fishery and minimize bycatch	-	0^^	34041	27300	30621	1967
2017	Precautionary approach: zero catch advice	0	0^^	30848	27300	29992	101
2018	Precautionary approach: zero catch advice	0	0^^	30055	24900	29052	4599
2019	No advice given	-	0^^	29658	24900	27587	3184
2020	Precautionary approach: zero catch advice	0	0^^	29262	24900	25440	6152

Year	ICES advice *	Catch corresponding to advice *	TAC *	Total deep & shallow pelagic TAC **	Unilateral Russian Federation TAC ***	ICES catch total ^	ICES catch shallow pelagic stock
2021	Precautionary approach: zero catch advice	0	0^^	24900	24900		
2022	Precautionary approach: zero catch advice	0					
2023	Precautionary approach: zero catch advice	0					
2024	Precautionary approach: zero catch advice	0					

* NEAFC recommended TAC. Up to 2009, the shallow pelagic and deep pelagic stocks were considered to be one stock, covered by one advice and one TAC.

** The sum of all quotas in force for both shallow and deep pelagic stocks combined.

*** Unilateral Russian Federation TAC for both shallow and deep pelagic stocks combined.

^ Total catch includes catches for both shallow and deep pelagic stocks.

^^ No agreed NEAFC proposal.

History of the catch and landings

Table 5 Beaked redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). Catch distribution by fleet in 2020 as estimated by ICES. All weights are in tonnes.

Total catch	Landings	Discards
6152	100% pelagic trawl 6152	Negligible

Table 6 Beaked redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). History of ICES estimated commercial catch (in tonnes) by area and total. All weights are in tonnes.

Year	ICES Division 5.a	ICES Subarea 12	ICES Subarea 14	NAFO 1F	NAFO 2J	NAFO 2H	Total
1982	0	39783	20798	0	0	0	60581
1983	0	60079	155	0	0	0	60234
1984	0	60643	4189	0	0	0	64832
1985	0	17300	54371	0	0	0	71671
1986	0	24131	80976	0	0	0	105107
1987	0	2948	88221	0	0	0	91169
1988	0	9772	81647	0	0	0	91419
1989	0	17233	21551	0	0	0	38784
1990	0	7039	24477	385	0	0	31901
1991	0	9689	17048	458	0	0	27195
1992	106	22976	38709	0	0	0	62564
1993	0	66458	32500	0	0	0	100771
1994	665	77174	18679	0	0	0	96869
1995	77	78895	17895	0	0	0	100136
1996	16	22474	18566	0	0	0	41770
1997	321	18212	8245	0	0	0	27746
1998	284	21976	1598	0	0	0	24150
1999	165	23659	827	534	0	0	25512
2000	3375	17491	687	11052	0	0	33216
2001	228	32164	1151	5290	8	1751	41825
2002	10	24004	222	15702	0	3143	43216
2003	49	24211	134	26594	325	5377	56688
2004	10	7669	1051	20336	0	4778	33951
2005	0	6784	281	16260	5	4899	28229
2006	0	2094	94	12692	260	593	15734
2007	71	378	98	2843	175	2561	6126

Year	ICES Division 5.a	ICES Subarea 12	ICES Subarea 14	NAFO 1F	NAFO 2J	NAFO 2H	Total
2008	32	25	422	1580	0	0	2059
2009	0	210	2170	0	0	0	2380
2010	15	686	423	1074	0	0	2198
2011	0	0	234	0	0	0	234
2012	28	0	0	3113	32	0	3173
2013	32	13	40	1443	1	0	1529
2014	153	5068	489	713	0	0	6423
2015	161	2281	0	3119	34	0	5595
2016	235	1671	0	61	0	0	1967
2017	81	10	10	0	0	0	101
2018	0	2203	0	2396	0	0	4599
2019 *	0	1799	0	1385	0	0	3184
2020 *	0	2532	0	3620	0	0	6152

* Preliminary

Table 7 Beaked redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). Catches inside and outside the NEAFC Regulatory Area (RA) as estimated by ICES. All weights are in tonnes.

Year	Inside the NEAFC RA	Outside the NEAFC RA	Total catches
2012	0	3173	3173
2013	53	1476	1529
2014	5557	866	6423
2015	2281	3314	5595
2016	1671	296	1967
2017	20	81	101
2018	2203	2396	4599
2019	1799	1385	3184
2020	2532	3620	6152

Table 8 Beaked redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). History of the commercial catch, ICES estimated values are presented by country. All weights are in tonnes.

Year	Bulgaria	Canada	Estonia	Faroes	France	Germany	Greenland	Iceland	Japan	Latvia	Lithuania	Netherlands	Norway	Poland	Portugal	Russian Federation*	Spain	UK	Ukraine	Total
1982														581		60000				60581
1983						155										60079				60234
1984	2961					989								239		60643				64832
1985	5825					5438								135		60273				71671
1986	11385			5		8574								149		84994				105107
1987	12270			382		7023								25		71469				91169
1988	8455			1090		16848										65026				91419
1989	4546			226		6797	567	3816						112		22720				38784
1990	2690					7957		4537					7085			9632				31901
1991			2195	115		201		8724					6197			9747				27179
1992	628		1810	3765	2	6447	9	12080		780	6656		14654			15733				62564
1993	3216		6365	812		16677	710	10167		6803	7899		14112			25229			2782	100771
1994	3600		17875	2896	606	15133		5897		13205	7404		6834		1510	16349			5561	96869
1995	2660	421	11798	3667	158	10714	277	8733	841	3502	16025	9	4288		2170	28314	1934		2230	100136
1996	1846	343	3741	2523		5696	1866	5760	219	572	5618		1681		476	9348	1671	137	273	41770
1997		102	3405	3510		9276		4446	28				330	776	367	3693	1812			27746
1998			3892	2990		9679	1161	1983	30		1734		701	12	60	89	1819			24150
1999			2055	1190		8271	998	3662					2098	6	62	6538	447	183		25512
2000			4218	486		5672	956	3766			430		2124		37	14373	1154			33216
2001			9	4364		4755	1083	14745			8269		947		256	5964	1433			41825
2002				719		5354	657	5229		1841	12052		1094	428	878	13958	1005			43216
2003				1955		3579	1047	4274		1269	21629		3214	917	1926	15418	1461			56688
2004				777		1126	750	5728		1114	3698		2721	1018	2133	13208	1679			33951
2005				210		1152		3086		919	1169		624	1170	2780	15562	1557			28229
2006				334		994		1293		1803	466		280	663	1372	4953	3576			15734
2007			209	98		0		71		186	467			189	529	4037	339			6126
2008				319				63			8					1597	73			2059
2009				87				5			138					649	1438			2380
2010				653				22			551		12		377	567	16			2198
2011				162				72												234
2012								28								3145				3173
2013								72								1457				1529
2014								355			287					5781				6423
2015								161								5434				5595
2016								235								1732				1967
2017								91								10				101
2018								0								4599				4599
2019**																3184				3184
2020**																6152				6152

* Prior to 1991, the figures represent USSR and include Russian Federation, Estonian, Latvian, Lithuanian, and Ukrainian catches.

** Preliminary

Summary of the assessment

Table 9 Beaked redfish in ICES subareas 5, 12, and 14 and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). Survey biomass estimates. All weights are in tonnes.

Year*	Total catch	Biomass index	
		Acoustic estimates	Total area covered (thousand nm ²)
1982	60581		
1983	60234		
1984	64832		
1985	71671		
1986	105107		
1987	91169		
1988	91419		
1989	38784		
1990	31901		
1991	27195		
1992	62564	2165000	190
1993	100771	2556000	121
1994	96869	2190000	190
1995	100136	2481000	168
1996	41770	1576000	253
1997	27746	1225000	158
1998	24150		
1999	25512	614000	296
2000	33216		
2001	41825	716000	420
2002	43216		
2003*	56688	-	405
2004	33951		
2005	28229	550000	386
2006	15734		
2007	6126	372000	349
2008	2059		
2009	2380	108000	360
2010	2198		
2011	234	123000	343
2012	3173		
2013	1529	91000	340
2014	6423		
2015**	5595	-	201
2016	1967		
2017	101		
2018***	4599	-	103
2019	3184		
2020	6152		
2021		490000	242

* The 2003 biomass estimate is considered inconsistent, as the survey was carried out about one month earlier than usual, and a marked seasonal effect was observed.

** No acoustic estimates were obtained in 2015.

*** The 2018 biomass estimate is considered partial as only survey area A was surveyed.

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. <https://doi.org/10.17895/ices.pub.5288>.

ICES. 2014. Report of the Workshop on Redfish Management Plan Evaluation (WKREDMP), 20–25 January, Copenhagen, Denmark. ICES CM 2014/ACOM:52. 269 pp. <https://doi.org/10.17895/ices.pub.5601>.

ICES. 2021a. Advice on fishing opportunities. *In* Report of the ICES Advisory Committee, 2021. ICES Advice 2021, section 1.1.1. <https://doi.org/10.17895/ices.advice.7720>.

ICES. 2021b. Northwestern Working Group (NWWG). ICES Scientific Reports, 3:52. 556 pp. <https://doi.org/10.17895/ices.pub.8186>.

ICES. 2021c. Working Group on International Deep Pelagic Ecosystem Surveys (WGIDEEPS). ICES Scientific Reports. 3:43. 32 pp. <https://doi.org/10.17895/ices.pub.8056>.

Recommended citation: ICES. 2021. Beaked redfish (*Sebastes mentella*) in ICES subareas 5, 12, and 14 (Iceland and Faroes grounds, north of Azores, east of Greenland) and in NAFO subareas 1 and 2 (shallow pelagic stock < 500 m). *In* Report of the ICES Advisory Committee, 2021. ICES Advice 2021, reb.2127.sp. <https://doi.org/10.17895/ices.advice.7839>.