

Golden redfish (*Sebastes norvegicus*) in subareas 5, 6, 12, and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland)

ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2024 should be no more than 41 286 tonnes.

Management of *Sebastes mentella* and *S. norvegicus* catches in east Greenland under a combined species TAC prevents effective control of the single-species exploitation rates, and is causing overexploitation of *S. mentella* for which there is zero catch advice. ICES advises that management should be implemented at the species level.

ICES advice on conservation aspects

ICES has not identified any conservation aspects.

Stock development over time

Fishing pressure on the stock is below F_{MSY} , F_{pa} and F_{lim} , and spawning-stock size is above MSY $B_{trigger}$, B_{pa} , and B_{lim} .

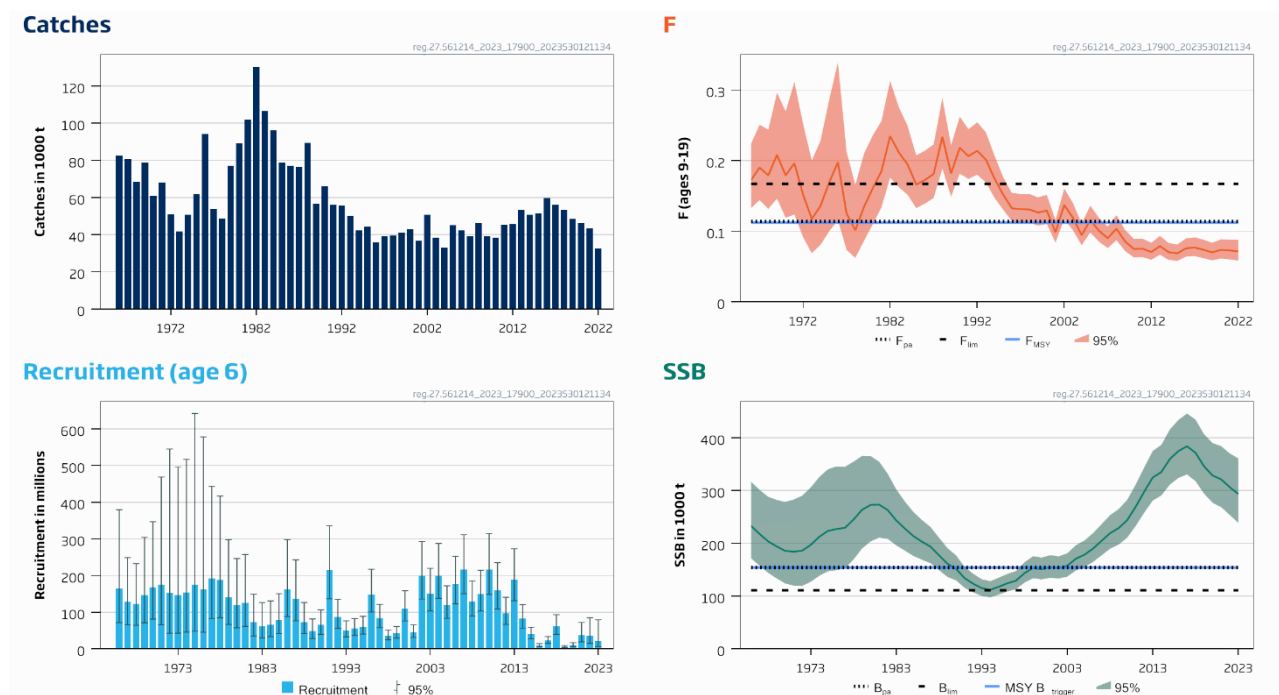


Figure 1 Golden redfish in subareas 5, 6, 12, and 14. Summary of the stock assessment. Recruitment in 2023 is estimated by the model. Catches from ICES Subarea 6 are not included in the assessment.

Conservation status

ICES is not aware of any information on stock/species-specific conservation status.

Catch scenarios

Table 1 Golden redfish in subareas 5, 6, 12, and 14. Values in the forecast and for the interim year.

Variable	Value	Notes
$F_{ages\ 9-19}$ (2023)	0.086	Based on assumed catch in 2023.
SSB (2024)	264 167	Short-term forecast; tonnes.

Variable	Value	Notes
R _{age 6} (2023)	21 936	From the assessment; thousands.
R _{age 6} (2024)	21 950	Median, resampled from the years 2019–2023; thousands.
R _{age 6} (2025)	21 950	Median, resampled from the years 2019–2023; thousands.
Total catch (2023)	32 327	Sum of expected landings, accounting for interannual transfer from 2022; tonnes.

Table 2 Golden redfish in subareas 5, 6, 12, and 14. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2024)	F _{9–19} (2024)	SSB (2025)	% SSB change*	% advice change**
ICES advice basis					
MSY approach, F = F _{MSY}	41 286	0.112	242 246	–8.3	62
Other scenarios					
F ₂₀₂₄ = 0	0	0	269 608	2.1	–100
F ₂₀₂₄ = F ₂₀₂₂	27 273	0.072	254 058	–3.8	6.8

* SSB 2025 relative to SSB 2024.

** Advice value for 2024 relative to the advice value for 2023 (25 545 tonnes).

The advised catch has increased because of a change in the assessment methodology following a benchmark in 2023 (ICES, 2023a). Reference points were re-calculated at the benchmark.

Basis of the advice

Table 3 Golden redfish in subareas 5, 6, 12, and 14. The basis of the advice.

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

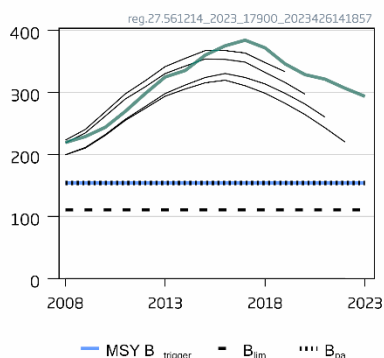
Quality of the assessment

The basis for the advice was revised (ICES, 2023a). The new assessment framework allows for changes in selectivity and growth over time, corresponding to observations, leading to an upward revision of stock biomass and a downward revision of fishing mortality.

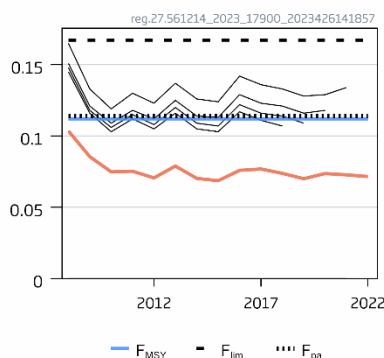
Because of the aggregating behaviour of the species, survey indices are often largely dominated by a few large hauls. This causes high uncertainties in the survey indices, and large interannual fluctuation in estimates of the biomass index.

The catch-at-age data shows very low recruitment, which is consistent with the information from the survey indices.

SSB (1000 t)



F (ages 9-19)



Rec (age 6; Millions)

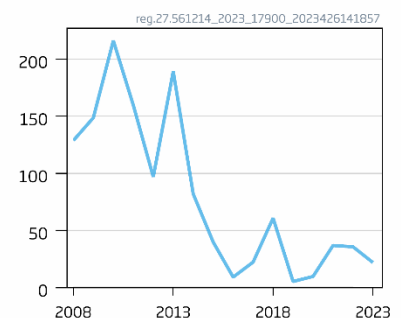


Figure 2 Golden redfish in subareas 5, 6, 12, and 14. Historical assessment results. Final-year recruitment and biomass estimates are included. The reference points were revised in 2023 following a benchmark and only the last assessment results should be compared to the reference points indicated. Prior to the benchmark, recruitment was estimated at age 5 and is not shown.

Issues relevant for the advice

Since 2009, surveys of golden redfish have consistently shown very low abundance of small fish (≤ 30 cm). While current estimates of SSB were revised upwards with the change in assessment model, they are on a decreasing trend since 2017. The assessment also shows historically low levels of incoming cohorts. This raises concerns about the productivity of the stock. Without substantial recruitment, biomass levels are likely to continue to decline for several years leading to decreasing catch advice.

The fishery catching *S. mentella* and *S. norvegicus* in east Greenland is managed using a joint TAC. Given the very low stock size of *S. mentella*, management measures should be implemented at both species- and stock level.

ICES notes that there is no agreement between coastal states on catch allocation, and while most of the catch is taken in Division 5.a and Subarea 14 a proportion of the catch comes from fisheries outside the areas managed with TACs.

Catches from Subarea 6 are not included in the stock assessment because they are only reported as *Sebastes* sp.

Reference points

Table 4 Golden redfish in subareas 5, 6, 12, and 14. Reference points, values, and their technical basis. All weights are in tonnes.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	154 094	B_{pa}	ICES (2023a).
	F_{MSY}	0.112	Fishing mortality that leads to MSY; estimated using stochastic simulations.	ICES (2023a).
Precautionary approach	B_{lim}	110 893	B_{loss} , Lowest SSB (1994)	ICES (2023a).
	B_{pa}	154 094	$B_{lim} \times \exp(0.2 \times 1.645)$	ICES (2023a).
	F_{lim}	0.167	Fishing mortality which, in stochastic simulations, results in median SSB at B_{lim}	ICES (2023a).
	F_{pa}	0.114	F_{P05} , maximum F at which the probability of SSB falling below B_{lim} is $< 5\%$	ICES (2023a).

Basis of the assessment

Table 5 Golden redfish in subareas 5, 6, 12, and 14. Basis of assessment and advice.

ICES stock data category	1 (ICES, 2023b).
Assessment type	Age-based analytical assessment (SAM model) that uses catches in the model and in the forecast (ICES, 2023a).
Input data	Catch-at-age and age-disaggregated survey indices. Landings data and length distributions of catches from Iceland, Greenland, and the Faroes; survey data from the Icelandic Spring Groundfish Survey (IS-SMB [G3239]), Icelandic Autumn Groundfish Survey (IS-SMH [G4493]), German Groundfish Survey in Greenland (GGs [G3244]), Faroes Spring Groundfish Survey (FO-GFS-Q1 [G1264]) and Faroes Summer Groundfish Survey (FO-GFS-Q3 [G3284]); age data from Icelandic catches and the Icelandic Autumn Groundfish Survey (IS-SMH [G4493]).
Discards	Considered negligible.
Indicators	None.
Other information	Benchmarked in 2023 (ICES, 2023a).
Working group	Northwestern Working Group (NWWG) (ICES, 2023c).

History of the advice, catch, and management

Table 6 Golden redfish in subareas 5, 6, 12, and 14. ICES advice, TACs, and ICES catch. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice	Iceland TAC *, ##	Greenland TAC†	ICES catch**
1987	No increase in F	83 000	95 000		77 127
1988	No increase in F	84 000	85 000		89 989
1989	TAC*	117 000*	77 000		57 050

Year	ICES advice	Catch corresponding to advice	Iceland TAC *, ##	Greenland TAC†	ICES catch**
1990	TAC*	116 000*	80 000		66 632
1991	Precautionary TAC	77 000 (117 000*)	55 000#		56 364
1992	Precautionary TAC	76 000 (116 000*)	90 000		55 710
1993	Precautionary TAC*	120 000*	104 000		50 350
1994	Precautionary TAC, if required*	100 000*	90 000		42 515
1995	TAC*	90 000*	77 000		44 765
1996	TAC for Division 5.a (28000 tonnes); precautionary TAC for Division 5.b and Subarea 15 (4000 tonnes)	32 000	65 000		36 597
1997	Effort 75% of 1995 value	32 000	65 000		39 761
1998	Effort reduced in steps of 25% from the 1995 level	37 200	65 000		39 825
1999	Effort not increased compared to 1997	35 000	65 000		42 040
2000	Catch not increased compared to 1998	35 000	60 000		43 550
2001	Effort not increased compared to 1999	33 000,^	57 000		37 326
2002	25% reduction in effort	29 000^^	65 000		51 092
2003	25% reduction in effort (2001)	31 000^^	60 000		39 220
2004	25% reduction in effort (2002)	37 400^^	57 000		33 451
2005	Maintain fishable biomass above U_{pa}	37 000^^	57 000		45 329
2006	Maintain fishable biomass above U_{pa}	37 000^^	57 000		42 211
2007	Maintain fishable biomass above U_{pa}	37 000^^	57 000	5000	39 134
2008	Maintain fishable biomass above U_{pa}	37 000^^	57 000	1000	46 251
2009	Maintain fishable biomass above U_{pa}	< 30 000	50 000		39 177
2010	Maintain fishable biomass above U_{pa}	< 30 000	50 000	6000	38 648
2011	Same advice as last year	< 30 000	37 500	8500	45 354
2012	Maintain catches	< 40 000	40 000	8500	45 635
2013	Maintain catches	< 40 000	45 000	8500	53 263
2014	20% increase in catches (relative to 2010–2012)	< 51 980	52 000	8500	50 736
2015	Management plan	< 47 300	45 600	8500	51 645
2016	Management plan	< 51 000	48 500	8500	59 707
2017	Management plan	≤ 52 800	47 205	7520	56 141
2018	Management plan	≤ 50 800	45 450	6222	53 227
2019	Management plan	≤ 43 600	39 240	5274	48 530
2020	Management plan	≤ 43 568	38 896	5271	46 197
2021	Management plan	≤ 38 343	34 379	4748	43 426
2022	Management plan	≤ 31 855	28 554	3186	32 873
2023	Management plan	≤ 25 545	22 615	5109	
2024	F_{MSY}	≤ 41 286			

* Deep-sea *S. mentella* and *S. norvegicus* combined until 2010.

** Includes *Sebastes spp* landings in Subarea 6.

^ In Division 5.a only.

^^ Both divisions 5.a and 5.b and Subarea 14.

Fishing year ending 31 August.

From 1992 onwards: fishing year 1 September–31 August.

†Demersal redfish (*Sebastes norvegicus* and *S. mentella*).

History of the catch and landings

Table 7 Golden redfish in subareas 5, 6, 12, and 14. Catch distribution by fleet in 2022 as estimated by ICES. All weights are in tonnes.

Catch (2022)	Landings		Discards
32 873	Bottom trawl 95%	Other gear 5%	Considered negligible
	32 873		

Table 8 Golden redfish in subareas 5, 6, 12, and 14. History of commercial catch; ICES estimated values are presented by area in the fishery. All weights are in tonnes.

Year	Area				Total
	Division 5.a	Division 5.b	Subarea 6**	Subarea 14	
1966	59 245	54		23 290	82 589
1967	47 413	64		33 198	80 675
1968	45 089	99		23 079	68 267
1969	48 391	33		30 367	78 792
1970	42 662	33		18 162	60 857
1971	47 498	24		20 436	67 958
1972	36 857	53		13 970	50 880
1973	33 605	206		7899	41 710
1974	36 219	473		13 978	50 670
1975	40 029	963		20 915	61 907
1976	40 519	109		53 545	94 172
1977	38 507	767		14 433	53 707
1978	31 300	2039	313	15 477	49 129
1979	56 616	4805	6	15 787	77 214
1980	62 052	4920	2	22 203	89 177
1981	75 828	2538	3	23 608	101 977
1982	97 899	1810	28	30 692	130 429
1983	87 412	3394	60	15 636	106 502
1984	84 766	6228	86	5040	96 120
1985	67 312	9194	245	2117	78 868
1986	67 772	6300	288	2988	77 348
1987	69 212	6143	576	1196	77 127
1988	80 472	5020	533	3964	89 989
1989	51 852	4140	373	685	57 050
1990	63 156	2407	382	687	66 632
1991	49 677	2140	292	4255	56 364
1992	51 464	3460	40	746	55 710
1993	45 890	2621	101	1738	50 350
1994	38 669	2274	129	1443	42 515
1995	41 516	2581	606	62	44 765
1996	33 558	2316	664	59	36 597
1997	36 342	2839	542	37	39 760
1998	36 771	2565	379	109	39 824
1999	39 824	1436	773	7	42 040
2000	41 187	1498	776	89	43 550
2001	35 067	1631	535	93	37 326
2002	48 570	1941	392	189	51 092
2003	36 577	1459	968	215	39 219
2004	31 686	1139	519	107	33 451
2005	42 593	2484	137	115	45 329
2006	41 521	656	0	34	42 211
2007	38 364	689	0	83	39 136
2008	45 538	569	64	80	46 251
2009	38 442	462	50	224	39 178
2010	36 155	620	220	1653	38 648
2011	43 773	493	83	1005	45 354

Year	Area				Total
	Division 5.a	Division 5.b	Subarea 6**	Subarea 14	
2012	43 089	491	80	1973	45 633
2013	51 330	372	92	1485	53 279
2014	47 775	202	60	2706	50 743
2015	48 769	270	44	2562	51 645
2016	54 036	179	50	5442	59 707
2017	50 119	1418	93	4511	56 141
2018	48 014	1129	80	4004	53 227
2019	44 746	1119	101	2665	48 631
2020	40 688	1304	100	4105	46 197
2021	39 616	178	100	3532	43 426
2022*	30 037	128	498	2210	32 873

* Preliminary.

** *Sebastes* spp.

Summary of the assessment

Table 9 Golden redfish in subareas 5, 6, 12, and 14. Assessment summary. Catches from ICES Subarea 6 are not included in the assessment. Weights are in tonnes. Recruitment in thousands. 'High' and 'Low' correspond to 95% confidence intervals.

Year	Recruitment (thousands)			SSB (tonnes)			Total catch (tonnes)	Fishing Mortality		
	Low	Age 6	High	Low	SSB	High		Low	Ages 9–19	High
1966	71491	164774	379774	171869	233458	317117	82589	0.132	0.172	0.22
1967	65591	127736	248762	157542	218044	301782	80675	0.144	0.19	0.25
1968	64263	122232	232491	144180	203987	288602	68267	0.132	0.179	0.24
1969	71163	147201	304483	133586	194258	282487	78792	0.146	0.21	0.3
1970	81133	167763	346892	123944	185812	278561	60857	0.119	0.179	0.27
1971	65600	175370	468818	119788	184138	283056	67958	0.124	0.196	0.31
1972	42524	152254	545139	119273	186107	290390	50880	0.091	0.152	0.25
1973	42798	145807	496746	126926	197125	306148	41710	0.069	0.117	0.2
1974	45736	153820	517329	138496	212445	325881	50670	0.081	0.136	0.23
1975	47965	175524	642322	146745	223497	340393	61907	0.1	0.169	0.29
1976	45216	161715	578379	149100	227129	345995	94172	0.115	0.198	0.34
1977	82951	191759	443290	152422	229385	345208	53707	0.073	0.125	0.21
1978	84574	187799	417016	169120	244964	354820	48816	0.062	0.102	0.166
1979	66653	140845	297619	189982	263622	365804	77208	0.086	0.135	0.21
1980	57429	118922	246261	203546	272805	365630	89174	0.11	0.161	0.24
1981	61138	125469	257491	210647	273419	354898	101974	0.134	0.185	0.26
1982	35042	72361	149426	208383	263111	332214	130401	0.176	0.23	0.31
1983	29957	61482	126181	195999	243477	302456	106442	0.162	0.21	0.28
1984	33252	65947	130789	186185	228209	279719	96034	0.152	0.195	0.25
1985	41380	78869	150318	175993	213778	259674	78623	0.133	0.166	0.21
1986	87992	161925	297981	168841	203160	244455	77060	0.139	0.173	0.21
1987	76521	136348	242952	162399	193826	231335	76551	0.147	0.181	0.22
1988	41680	72681	126740	149012	177273	210894	89456	0.189	0.23	0.29
1989	28105	47885	81586	136111	161210	190938	56677	0.149	0.182	0.22
1990	39506	64792	106262	129697	151629	177271	66250	0.181	0.22	0.26
1991	136484	214125	335935	115434	133947	155429	56072	0.174	0.21	0.24
1992	55860	86838	134995	106982	123442	142434	55670	0.18	0.21	0.25
1993	32889	50187	76585	100221	115073	132125	50249	0.169	0.2	0.24
1994	36854	55210	82708	97545	111917	128407	42386	0.147	0.174	0.21
1995	40194	59702	88677	102786	117811	135033	44159	0.13	0.152	0.176
1996	100454	147779	217399	108693	124340	142239	35933	0.114	0.132	0.154
1997	57877	83809	121359	113007	129132	147558	39218	0.113	0.131	0.153
1998	24567	35663	51772	125442	143518	164199	39445	0.112	0.131	0.153

Year	Recruitment (thousands)			SSB (tonnes)			Total catch (tonnes)	Fishing Mortality		
	Low	Age 6	High	Low	SSB	High		Low	Ages 9–19	High
1999	29117	42132	60963	133718	153304	175760	41267	0.108	0.127	0.148
2000	76195	109883	158467	131584	150934	173130	42774	0.11	0.129	0.152
2001	31142	45196	65591	134618	154639	177637	36791	0.084	0.099	0.116
2002	135704	199379	292933	133335	152861	175246	50700	0.117	0.137	0.161
2003	103287	150689	219847	136901	157549	181312	38251	0.101	0.119	0.14
2004	137584	198907	287562	148436	170762	196446	32933	0.08	0.094	0.111
2005	83137	119635	172156	154902	178406	205475	45192	0.098	0.116	0.136
2006	122701	175946	252297	164420	189875	219271	42211	0.085	0.101	0.119
2007	150403	216408	311379	176924	204502	236378	39136	0.076	0.09	0.107
2008	89517	128795	185307	189587	219179	253390	46187	0.087	0.104	0.123
2009	103141	148740	214498	197506	228776	264998	39128	0.072	0.086	0.102
2010	148622	216261	314684	210505	243788	282335	38428	0.063	0.075	0.089
2011	108576	159759	235068	232773	269341	311653	45271	0.063	0.075	0.09
2012	66760	96958	140816	257928	298033	344373	45553	0.06	0.071	0.084
2013	131259	189285	272965	281126	324832	375334	53187	0.067	0.079	0.094
2014	55770	82053	120724	290480	335173	386743	50683	0.059	0.07	0.083
2015	27100	39916	58793	311251	359897	416146	51601	0.058	0.069	0.081
2016	5921	9206	14313	323905	374952	434044	59657	0.064	0.076	0.09
2017	14871	22359	33620	330508	384017	446188	56048	0.065	0.077	0.091
2018	39762	60868	93176	317711	371634	434709	53147	0.062	0.074	0.088
2019	3281	5388	8849	294035	345871	406845	48530	0.059	0.07	0.084
2020	5720	9787	16744	276627	328534	390182	46097	0.061	0.074	0.089
2021	18871	36884	72091	268469	321215	384324	43326	0.06	0.073	0.088
2022	15061	35756	84888	253650	306621	370655	32375	0.058	0.072	0.088
2023	6059	21936	79417	238675	293541	361020				

Sources and references

ICES. 2023a. Benchmark workshop on Greenland halibut and redfish stocks (WKBNorth). ICES Scientific Reports. 5:33. <https://doi.org/10.17895/ices.pub.22304638>

ICES. 2023b. Advice on fishing opportunities. In Report of the ICES Advisory Committee, 2023. ICES Advice 2023, section 1.1.1. <https://doi.org/10.17895/ices.advice.22240624>

ICES. 2023c. Northwestern Working Group (NWWG). ICES Scientific Reports. 5:64. <https://doi.org/10.17895/ices.pub.23267153>

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