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Advice on fishing opportunities for beaked redfish in 2025 and 2026 in ICES subareas 1 and 2

Institute of Marine Research – IMR

Polar branch of the FSBSI “VINRO” (“PINRO”)

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Content

Stock Name: Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic)

Advice on fishing opportunities

The Joint Russian-Norwegian Working Group on Arctic Fisheries (JRN-AFWG) advises that when the MSY approach is applied, catches in 2025 should be no more than 67 191 tonnes, and catches in 2026 should be no more than 69 177 tonnes.

Stock development over time

Fishing pressure on the stock is below F_{MSY19+} and spawning-stock biomass is above B_{pa} and B_{lim}.

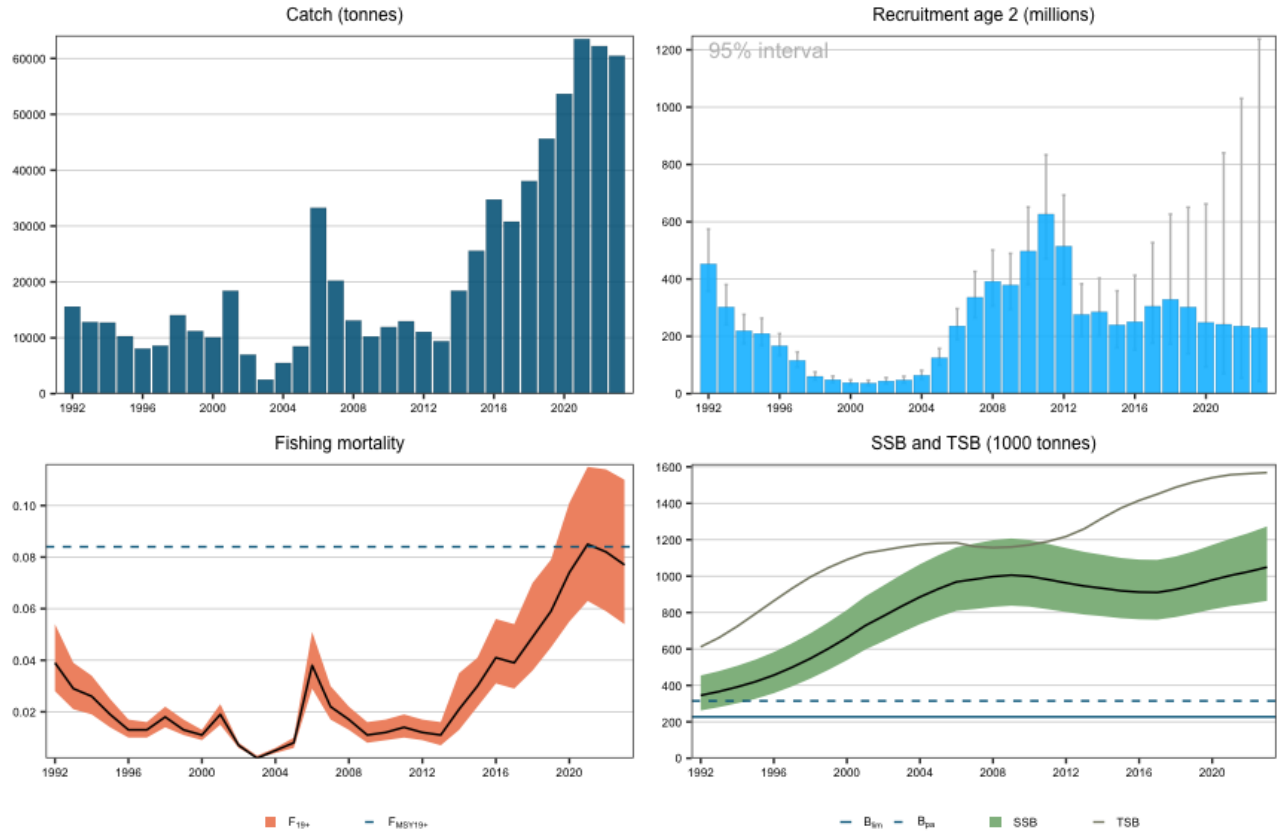

Figure 1. Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic). Catch, recruitment, F, SSB and TSB (total stock biomass, age 2+) with 95% confidence levels. The biomass reference points relate to SSB.

Catch scenarios

Table 1. Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic). Assumptions made for the interim year and in the forecast. SSB and total catch in tonnes.

Variable	Value	Notes
$F_{ages19+}$ (2024)	0.077	F_{sq} =F_{2023}. From assessment .

Variable	Value	Notes
SSB (2025)	1 094 860	Short-term forecast.
R age 2 (2024-2026)	N/A	Recruits in the intermediate year do not enter the fishery or the SSB in the forecast.
Total catch (2024)	64 029	Short-term forecast.

Table 2a. Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic). Annual catch scenarios for 2025. All weights are in tonnes.

Basis	Total catch (2025)	$F_{ages19+}$ (2025)	SSB (2026)	% SSB change*	% TAC change**	% Advice change***
Advice basis						
$F_{2025} = F_{2024}$	67 191	0.077	1 105 628	5.4	-4.2	-4.2
Other scenarios						
F = 0	0	0	1 168 451	11	-100	-100

*SSB 2026 relative to SSB 2023 (1 048 817 tonnes)

**Catch in 2025 relative to TAC set by Norway and Russia for 2024 (70 164 tonnes)

***Advice value for 2025 relative to the advice value for 2024

Table 2b. Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic). Annual catch scenarios for 2026. All weights are in tonnes.

Basis	Total catch (2026)	F_{ages19}+ (2026)	SSB (2027)	% SSB change*	% Advice change**
Advice basis					
$F_{2026} = F_{2025}$	69 177	0.077	1 117 585	6.6	3.0
Other scenarios					
F = 0***	0	0	1 246 693	19	-100

*SSB 2027 relative to SSB 2023 (1 048 817 tonnes)

**Advice value for 2026 relative to the advice value for 2025

***F=0 in 2025 and 2026

The advice for 2025 is 0.6% higher than the advice for 2023 due to increasing stock size and status quo advice, but 4.4% lower than the advice for 2024.

Basis of the advice

Table 3. Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic). The basis of the advice.

Advice basis	Status quo F.
Management plan	There is no agreed management plan for this stock. Long-term management plan options have been evaluated by ICES (ICES, 2018a).

Quality of the assessment

The stock was benchmarked in 2018. The choice of a scaling coefficient for the Norwegian–Russian ecosystem survey is a source of potential bias, but the advice is robust to this uncertainty.

Data from the pelagic survey in the Norwegian Sea (WGIDEEPS) was reviewed in the recent benchmark

assessment and the survey is now included in the assessment model as age compositions. However, the survey series still does not appropriately cover the geographical distribution of the adult population.

Age determination is lacking for some surveys and catches in recent years. To account for the lack of catch-at-age data in some years a procedure using length distribution and a time-averaged age-length key was applied.

To smooth out spurious variations in SSB, caused by limited sample size in the weight-at-age of the 19+ group, a fixed weight-at-age function (i.e. common across years) was adopted for the assessment model during the Arctic Fisheries Working Group (AFWG) meeting in 2018 (ICES 2018b). In the 2024 assessment the maturity ogive was changed to fixed across time in a similar manner.

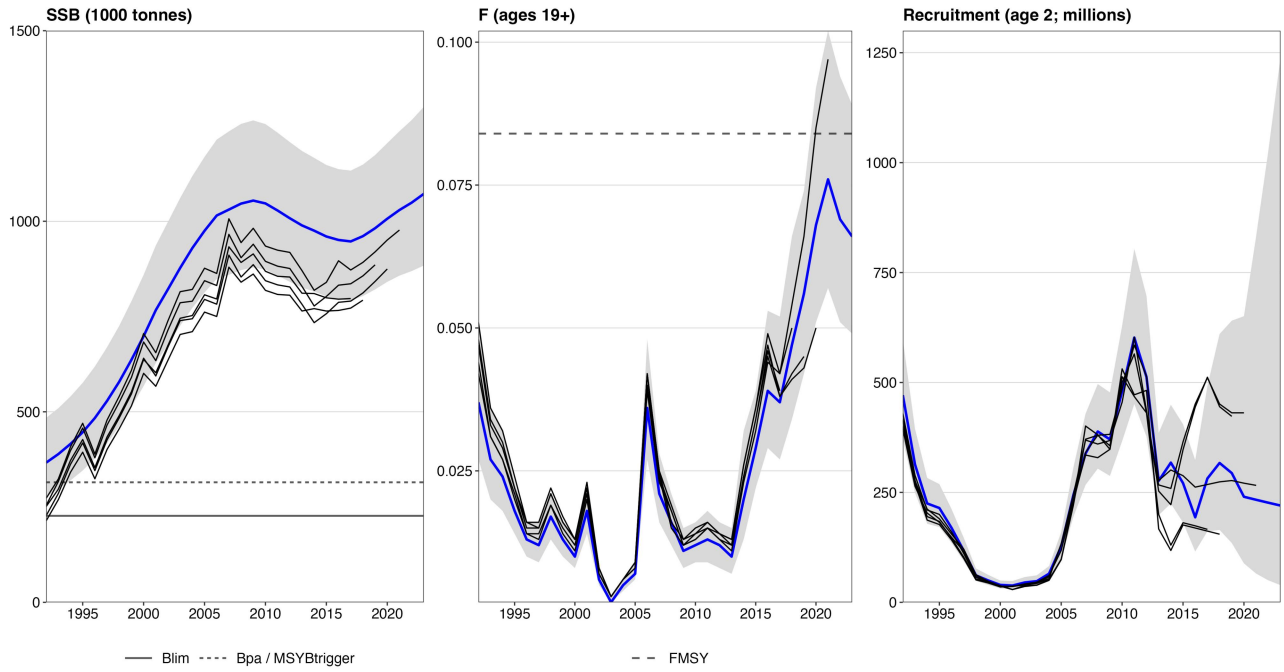

Figure 2. Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic). Historical assessment results. There was a benchmark revision in 2018.

The SSB development over time is smoother than in previous assessments due to the change to a time-invariant maturity ogive. The upward revision of SSB in the 2024 assessment was driven by the addition of data from the 2022 WGIDEEPS survey, which is carried out every three years.

Issues relevant for the advice

Due to the suspension of Russian scientists from ICES, the assessment was conducted by a Joint Russian-Norwegian working group on Arctic Fisheries (JRN-AFWG) consisting of scientists from VNIRO (Russia) and IMR (Norway) (Howell et al., 202 4).

This advice has been conducted outside ICES and should not be considered as ICES advice. However, the assessment has been conducted following the previous procedures and based on the methodology agreed at the ICES benchmark in 2018 (ICES, 2018c).

There has been a significant change in the selectivity in the fisheries, with the fraction of the catch in the 19+ age class increasing in recent years (since 2017). Any evaluation of a FMSY or Fpa value is conditional on the Fbar and selectivities used in the evaluation. As a result of the changing selectivity, applying the same target Fbar will result in a reduction of the catch as a fraction of the fishable stock. Given that the catch is close to advice, and the SSB is relatively stable, we therefore propose F19+ status quo as an approximation to maintain the same overall fraction of the stock being caught. We note that this stock is due for a method revision in 2026 prior to the next release of advice, and the advice basis should be revised at that time.

Long-term management plan options have been proposed by Norway and Russia and evaluated by ICES (ICES, 2018a). In the absence of an agreed management plan, the MSY approach is used. The advice has been based on F19+ = 0.077. The highest fishing mortality of those tested during the MSE evaluations (ICES, 2018a) that was found to be precautionary is 0.06. The present advice is above F19+ = 0.06.

Bycatch of the endangered golden redfish (*Sebastes norvegicus*) should be kept at a minimum to allow for rebuilding of that stock.

Reference points

Table 4. Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic). Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	315 000 t	B_{pa}	ICES (2018a)
	F_{MSY}	0.084	$F_{0,1}$	ICES (2018a)
Precautionary approach	B_{lim}	227 000 t	B_{oss} (SSB in 1992)	ICES (2018a)
	B_{pa}	315 000 t	$B_{lim} * e^{(1.645 \times 0.2)}$	ICES (2018a)
	F_{lim}	-	-	-
	F_{pa}	-	-	-
Management plan	SSB_{mgt}	-	-	-
	F_{mgt}	-	-	-

Basis of the assessment

Table 5. Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic). Basis of the assessment and advice.

ICES stock data category	1
Assessment type	Statistical catch-at-age model .
Input data	Commercial catches: international landings (tonnes), age frequencies and weight-at-age from catch sampling of the pelagic and demersal fisheries and from the survey; survey indices: numbers-at-age from BS-NoRu-Q1-Btr, Eco-NoRu-Q3-Btr, Ru-Q4-Btr; proportion-at-age from deep pelagic ecosystem survey ; maturity data from BS-NoRu-Q1-Btr, Eco-NoRu-Q3-Btr, and commercial catch sampling; natural mortalities were fixed at 0.05.
Discards and bycatch	Discarding and bycatch are assumed negligible.
Other information	Last benchmark was in January 2018 (WKREDFISH; ICES, 2018c). Proposed management plans were evaluated in 2018 (WKREBMSE; ICES, 2018a). The JRN-AFWG 2024 changed maturity ogive from time-varying to time-invariant. A method revision is planned for 2026.

Working group	Joint Russian-Norwegian Arctic Fisheries Working Group (JRN-AFWG) .

History of the advice, catch, and management

Table 6. Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic). ICES advice, agreed TACs, and ICES catches. All weights are in tonnes.

Year	ICES advice	Predicted catch corresponding to advice	Agreed TAC	ICES catches
1987	Precautionary TAC	70 000*	85 000	35 000
1988	F = $F_{0.1}$; TAC	11 000	-	41 000
1989	*Status quo* F; TAC	12 000	-	47 000
1990	*Status quo* F; TAC	18 000	-	63 000
1991	F at F_{med}; TAC	12 000	-	68 000
1992	If required, precautionary TAC	22 000	-	15 590
1993	If required, precautionary TAC	18 000	18 000	12 814
1994	If required, precautionary TAC	-	-	12 721
1995	Lowest possible F	-	-	10 284
1996	Catch at lowest possible level	-	-	8 075
1997	Catch at lowest possible level	-	-	8 598
1998	No directed fishery, reduce bycatch	-	-	14 04 4
1999	No directed fishery, reduce bycatch	-	-	11 209
2000	No directed fishery, bycatch at lowest possible level	-	-	10 075
2001	No directed fishery, bycatch at lowest possible level	-	-	18 418
2002	No directed fishery, bycatch at lowest possible level	-	-	6 99 4
2003	No directed fishery, bycatch at lowest possible level	-	-	2 520
2004	No directed trawl fishery and low bycatch limits	-	-	5 493**
2005	No directed trawl fishery and low bycatch limits	-	-	8 46 6 **
2006	No directed trawl fishery and low bycatch limits	-	-	33 261**
2007	No directed trawl fishery and low bycatch limits	-	15 500^	20 21 8 **
2008	Protection of juveniles, no directed trawl fishery and low bycatch limits	-	14 500^	13 09 6 **
2009	Protection of juveniles, no directed trawl fishery and low bycatch limits	-	10 500^	10 246**
2010	Protection of juveniles, no directed trawl fishery and low bycatch limits	-	8 600^	11 924**
2011	Protection of juveniles, no directed trawl fishery and low bycatch limits	-	7 900^	12 962**
2012	Protection of juveniles, no directed fishery and low bycatch limits	-	7 500^	11 059**
2013	$F_{0.1}$	< 47 000	19 500^	9 389 **
2014	*Status quo* catch	< 24 000	36 800^^	18 427 **

Year	ICES advice	Predicted catch corresponding to advice	Agreed TAC	ICES catches
2015	Precautionary approach	< 30 000	30 000#	25 570
2016	Precautionary approach	< 30 000	30 000#	34 754
2017	Precautionary approach	< 30 000	30 000#	30 782
2018	Precautionary approach	< 32 658	32 658#	38 046
2019	Precautionary approach	< 53 757	53 757#	45 640
2020	Precautionary approach	< 55 860	55 860#	53 657
2021	Precautionary approach	< 66 158	66 158#	63 479^^^
2022	Precautionary approach	< 67 210	67 210#	62 194^^^
2023	*Status quo* F	< 66 779^^^	66 779 #	60 466^^^
2024	*Status quo* F	< 70 164^^^	70 164 #	
2025	*S tatus quo* F	< 67 191^^^		
2026	*Status quo* F	< 69 177^^^		

* Includes both *Sebastes mentella* and *S. norvegicus* .

** Includes the pelagic catches in the Norwegian Sea outside the EEZ.

^ TAC set by the North-East Atlantic Fisheries Commission (NEAFC) for an Olympic fishery in international waters.

^^ Sum of TAC set by NEAFC in international waters and by Norway in the Norwegian Economic Zone.

^^^ In 2022 and 2024 the assessments and advice were carried out by the Joint Russian-Norwegian working group on Arctic Fisheries (JRN-AFWG) which compiled catches for 2021-2023, and gave advice for 2023-2026.

TAC set jointly by Norway and Russia .

History of catch and landings

Table 7. Beaked redfish in ICES subareas 1 and 2. Catches inside and outside the NEAFC Regulatory Area (RA) as estimated by JRN-AFWG.

Year	Inside the NEAFC RA (tonnes)	Outside the NEAFC RA (tonnes)	Total catches (tonnes)	Proportion inside the NEAFC RA (%)
2019	6 060	39 580	45 640	13.3%
2020	5 469	48 188	53 657	10.2%
2021	2 872	60 607	63 479	4.5%
2022	2 680	59 514	62 194	4.3%
2023	5	60 461	60 466	0.01%

Table 8. Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic). History of commercial landings by country. All weights are in tonnes.

Year	Faroe Islands	France	Germany	Greenland	Latvia	Lithuania	Norway	Portugal	Russia	Spain	UK**	Others	Total
1992	23	12	0	0	0	0	10 751	972	3 577	14	241	0	15 590
1993	13	50	35	1	0	0	5 182	963	6 260	5	293	12	12 814
1994	4	74	18	1	0	0	6 511	895	5 021	30	136	31	12 721
1995	3	16	176	2	0	0	2 646	927	6 346	67	97	4	10 284
1996	4	75	119	3	0	0	6 053	467	925	328	99	2	8 075
1997	4	37	81	16	0	0	4 657	474	2 972	272	78	7	8 598
1998	20	73	100	14	0	0	9 733	125	3 646	177	134	22	14 044
1999	73	26	202	50	0	0	7 884	65	2 731	29	140	9	11 209
2000	50	12	62	29	0	0	6 020	115	3 519	87	130	51	10 075
2001	74	16	198	17	0	0	13 937	179	3 775	90	120	12	18 418
2002	75	58	99	18	0	0	2 152	242	3 904	190	188	68	6 994
2003	64	22	32	8	0	0	1 210	44	952	47	124	17	2 520
2004	588	13	10	4	0	0	1 375	235	2 879	257	76	56	5 493
2005	1 147	46	33	39	0	0	1 760	140	5 023	163	95	20	8 466
2006	3 808	215	2 483	63	341	845	4 710	1 804	11 413	710	1 027	5 842	33 261
2007	2 197	234	520	29	349	785	3 209	1 483	5 660	2 181	202	3 369	20 218
2008	1 849	187	16	25	267	117	2 220	713	7 117	463	83	39	13 096
2009	1 343	15	42	0	0	0	2 677	806	3 843	177	80	1 263	10 246
2010	979	175	21	12	243	457	2 065	293	6 414	1 184	79	2	11 924
2011	984	175	835	0	536	565	2 471	613	5 037	1 678	55	13	12 962
2012	259	0	517	0	447	449	2 114	1 038	4 101	1 780	0	354	11 059
2013	697	0	80	21	280	262	1 750	1 078	3 677	1 459	0	85	9 389
2014	743	215	446	15	215	167	13 149	505	1 704	1 162	0	106	18 427

Year	Faroe Islands	France	Germany	Greenland	Latvia	Lithuania	Norway	Portugal	Russia	Spain	UK**	Others	Total
2015	657	49	242	48	537	192	19 433	678	1 142	2 529	52	11	25 570
2016	502	134	493	74	1 243	1 065	18 191	1 066	8 419	3 213	122	232	34 754
2017	443	45	763	66	562	790	17 077	1 060	6 593	2 838	436	109	30 782
2018	425	67	2 473	82	1 020	1 010	18 594	699	10 497	2 457	63	659	38 046
2019	156	370	1 599	615	0	653	23 844	1 422	13 444	2 222	590	725	45 640
2020	149	163	1 807	67	0	1 081	32 950	889	13 874	744	437	1 496	53 657
2021	290	218	1 166	85	0	1 379	43 794	381	14 887	615	655	9	63 479
2022*	235	221	1 758	39	0	990	40 715	464	16 717	278	114	663	62 194
2023*	185	133	626	109	0	1	44 496	369	13 976	295	231	45	60 466

* Provisional figures.

** Includes UK (E&W) since 2000

Summary of the assessment

Table 9. Beaked redfish in ICES subareas 1 and 2 (Northeast Arctic). Assessment summary. High and low refer to 95% confidence bounds.

Year	Recruitment			Spawning stock biomass			Total	Fishable	Catches	Fishing mortality		
	Recruitment age 2	High 95%	L ow 95%	SSB	High 95%	Low 95%	Biomass ages 2+	Biomass ages 6+		F ages 19+	High 95%	Low 95%
	thousands			tonnes								
1992	452952	573974	357448	345186	454535	262143	611717	569423	15590	0.039	0.054	0.028
1993	302438	380255	240546	366134	478330	280254	661913	608242	12814	0.029	0.039	0.021
1994	219712	276166	174798	391405	507665	301770	724329	671143	12721	0.026	0.034	0.019
1995	210082	263083	167760	420420	541526	326398	793907	745630	10284	0.019	0.025	0.014
1996	167147	209252	133514	456061	582601	357005	863999	830471	8075	0.013	0.017	0.010
1997	116283	145397	92999	499137	631316	394632	932291	906693	8598	0.013	0.016	0.010
1998	60351	75804	48049	547527	685386	437397	995129	972177	14045	0.018	0.022	0.014
1999	48801	61307	38846	602508	747417	485694	1046555	1029056	11209	0.013	0.017	0.011
2000	38510	48228	30751	661882	813902	538256	1090085	1078258	10075	0.011	0.013	0.009
2001	36793	46776	28940	727746	888212	596270	1126266	1119514	18418	0.019	0.023	0.015
2002	44125	56048	34738	780517	948395	642355	1142259	1136681	6993	0.007	0.008	0.006
2003	47619	60647	37389	834606	1008909	690416	1159605	1154819	2520	0.002	0.003	0.002

2004	64325	81305	50891	885348	1065126	735913	1173472	1168542	5493	0.005	0.006	0.004
2005	125351	157508	99760	929475	1114407	775232	1180159	1174025	8465	0.008	0.010	0.006
2006	236264	296565	188225	968449	1158617	809494	1182895	1174795	33261	0.038	0.051	0.029
2007	336307	426212	265366	982667	1178842	819139	1162513	1150498	20219	0.022	0.030	0.017
2008	391976	501109	306611	997597	1197665	830950	1156442	1135734	13096	0.017	0.022	0.013
2009	379212	489200	293953	1005386	1206884	837530	1159965	1127354	10246	0.011	0.016	0.008
2010	497618	651235	380238	998700	1198215	832406	1171314	1128711	11924	0.012	0.017	0.009
2011	626739	833536	471248	981447	1177212	818237	1190010	1140923	12962	0.014	0.019	0.010
2012	514641	693022	382174	962631	1154401	802718	1217414	1165806	11059	0.012	0.017	0.009
2013	276468	382870	199636	945419	1132922	788948	1260022	1198241	9389	0.011	0.016	0.007
2014	285439	402696	202325	933193	1116637	779886	1319256	1251947	18426	0.021	0.035	0.013
2015	240181	358801	160776	919537	1099781	768833	1373404	1320734	25570	0.030	0.041	0.022
2016	251114	412847	152740	912156	1090798	762771	1415521	1383052	34754	0.041	0.056	0.031
2017	305167	527032	176701	910447	1089312	760952	1450210	1417486	30783	0.039	0.054	0.029
2018	329305	626301	173147	926703	1107845	775179	1487605	1457585	38046	0.049	0.070	0.036
2019	302303	650475	140493	950401	1136225	794968	1517065	1484750	45640	0.059	0.079	0.045
2020	248567	662240	93298	978366	1171157	817312	1540450	1503687	53656	0.074	0.101	0.055
2021	242187	840141	69815	1003603	1205298	835660	1556718	1519207	63479	0.085	0.115	0.063
2022	235979	1030110	54058	1024549	1236651	848825	1562770	1529199	62196	0.082	0.114	0.059
2023	229938*	1237841	42713	1048817	1272835	864224	1568484	1524679	60466	0.077	0.110	0.054

*Predicted value based on regression between survey indices and recruitment time series .

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