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Barents Sea Capelin

Report of the Joint Russian-Norwegian Working Group on Arctic Fisheries (JRN-AFWG) 2025

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Barents Sea Capelin

Barentshavslodde

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Rapport frå Den bilaterale norsk-russiske arbeidsgruppa for arktiske fiskeri (JRN-AFWG) 2025

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Summary (English):

The Joint Norwegian-Russian Arctic Fisheries Working Group (JRN-AFWG) met by correspondence on 2-3 December 2025 to assess the stock and provide quota advice on the Barents Sea capelin.

The geographical coverage of the capelin stock during the Barents Sea autumn 2025 survey was almost complete. The biomass of the total stock was estimated at 339 045 tonnes, and the maturing biomass (≥14 cm) at 123 641 tonnes. This is the lowest maturing biomass estimated since 1995.

The survey results show that the survival of both 2- and 3-year-olds from last year to this year has been very low. The estimated number of recruits (1-year-olds) from this year's survey was also well below the long-term average. The average weight-at-age in 2025 was higher than in 2024 for 3- and 4-year-old fish.

In the stock advice for capelin, a projection of the maturing capelin biomass is made from 1 October to 1 April (spawning time) the following year. The projection model (bifrost) contains a separate module for cod consumption of capelin. In the projection, the median spawning biomass on 1 April 2026 was calculated to be 29 000 tonnes without catches (90% confidence interval: 1-46 000 tonnes), and the probability of being above the reference point (200 000 tonnes) in the harvest control rule was 0%.

In line with the harvest control rule that the quota should not be set higher than there is at least a 95% probability that the spawning biomass is above the reference point, 0 fishing for Barents Sea capelin was recommended for the 2026 season.

Summary (Norwegian):

Den bilaterale norsk-russiske arbeidsgruppa for arktiske fiskeri (JRN-AFWG) hadde møte per korrespondanse 2.-3. desember 2025 for bestandsvurdering og kvoterådgjeving på barentshavslodde.

Den geografiske dekninga av loddebestanden under toktet i Barentshavet hausten 2025 var tilnærma fullstendig. Biomassen av totalbestanden blei berekna til 339 045 tonn, og den modnande biomassen (≥14 cm) til 123 641 tonn. Dette er den lågaste modnande biomassen målt sidan 1995.

Toktresultata viser at overlevinga for både 2 og 3-åringar frå i fjor til i år har vore svært låg. Det berekna talet på rekruttar (1-åringar) frå årets tokt var også langt under langtidsmiddelet. Gjennomsnittsvekt ved alder i 2025 var høgare enn i 2024 for 3 og 4 år gammal fisk.

I bestandsrådgjevinga for lodde blir det gjennomført ei framskriving av den modnande loddebiomassen frå 1. oktober til 1. april (gytetidspunkt) året etter. Framskrivingsmodellen (bifrost) inneheld ein eigen modul for torskekonsum av lodde. I framskrivinga blei median gytebiomasse 1. april 2026 berekna til 29 000 tonn utan fangst (90% konfidensintervall: 1-46 000 tonn), og sannsynet for å ligga over referansepunktet (200 000 tonn) i haustingsregelen var 0%.

I tråd med haustingsregelen om at kvoten ikkje skal settast høgare enn at det er minst 95% sannsyn for at gytebiomassen er over referansepunktet, blei det tilrådd 0 fiske etter barentshavslodde for 2026-sesongen.

Content

1 - Barents Sea Capelin

1.1 - Barents Sea Capelin

The Joint Russian-Norwegian Arctic Fisheries Working Group (JRN-AFWG) met by correspondence on 2-3 December 2025 to assess and give quota advice for the Barents Sea capelin stock.

Participants:

Bjarte Bogstad (Norway, Chair of meeting)

Stine Karlson (Norway)

Yury Kovalev (Russia)

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1.2 - Regulation of the Barents Sea Capelin Fishery

Since 1979, the Barents Sea capelin fishery has been regulated by a bilateral fishery management agreement between Russia (former USSR) and Norway. A TAC has been set separately for the winter fishery and for the autumn fishery. From 1999, no autumn fishery has taken place, except for a small Russian experimental fishery in some years and small by-catch in the northern shrimp fishery. A minimum landing size of 11 cm has been in force since 1979. Scientific advice is to carry out capelin fishery only on mature fish during the period from January to April.

1.3 - TAC and Catch Statistics (Table A1)

The Joint Norwegian-Russian Fishery Commission (JNRFC) set a TAC of 196 000 tonnes for 2024 and 0 tonnes for 2025. For both years, the quotas were in accordance with the advice. The international historical catch by country and season in the years 1965–2025 is given in Table A1. Russia caught 700 tonnes as by-catch in other fisheries in 2025.

A summary of the BESS capelin sampling included in the abundance estimation in 2025 is given below:

Investigation	Samples (N)	Length measured individuals (N)	Aged individuals (N)
BESS 2025 (Norway)	125	5734	2059
BESS 2025 (Russia)	119	8683	300

1.4 - Stock assessment

1.4.1 - Acoustic stock size estimates in 2025 (Table A2-A4, Figures A1-A3)

The geographical survey coverage of the Barents Sea capelin stock during the BESS in 2025 was close to complete and with very good coverage of the main distribution area. The geographical distribution of capelin in 2025 is shown in Figure A1.

The stock estimate (made in StoX v 4.1.1) from the area covered by the 2025 survey was 0.339 million tonnes (Table A2). About 36% (0.124 million tonnes) of the estimated stock biomass consisted of maturing fish (>14.0 cm). The mean weight at age increased from the 2024 to the 2025 survey for ages 1, 3 and 4 and decreased slightly for age 2 (Figure A2). Estimates of stock in number by age group and total biomass for the historical period are shown in Table A3. Survey mortalities for ages 1-2 and 2-3 from 2024 to 2025 were high as shown in Figure A3.

A fixed sampling variance expressed as Coefficient of Variation (CV) of 0.2 for all age groups has previously been applied as input for CapTool for the forecast in the capelin assessment (Tjelmeland 2002; Gjøsæter *et al.* 2002). The survey design and estimation software now allow for estimation of a direct CV by age group. CV estimates by age group for the years 2004-2021 and 2023-2025 are given in Table A4. It was found that age groups with very low abundance in the survey usually have very high CVs. That is expected since there are few observations in the survey for such age groups. Vice versa an abundant age group normally has much lower CV. WKCAPELIN recommended to use the average CV for each age group from the last five years with high-quality surveys in the stock projection. However, including age groups with very low abundance and accordingly high CV in the averaging is inappropriate.

Due to incomplete survey coverage in 2022, the CVs of that year were not included in the averaging. It was decided to use the unweighted average for the recent 5 years (2020-2021 and 2023-2025) for ages 1-3 and apply the value for age 3 also for the ages 4 and 5. The summary results are presented below:

CV	Age 1	Age 2	Age 3	Age 4
Average	0.236	0.227	0.287	0.576
2025	0.297	0.375	0.416	0.649
Value to use	0.236	0.227	0.287	0.287

A methodology for handling very small or very large CV values and abundance estimates of different orders of magnitude in the averaging should be explored, together with exploring using annual CVs. With a low CV there is a risk that sampling variance is not a good reflection of total uncertainty, since other sources of uncertainty could then dominate over sampling variance in the total uncertainty.

1.4.2 - Benchmark results

An ICES benchmark meeting joint for the Iceland East Greenland Jan Mayen capelin and Barents Sea capelin (WKCAPELIN) was held in Reykjavik 21-25 November 2022 (ICES, 2023). A summary of the changes to the assessment method following the benchmark is given in the 2023 capelin assessment report.

1.4.3 - Reference points

A B_{lim} (SSB_{lim}) management approach has been suggested for this stock (Gjøsæter *et al.,* 2002). In 2002, the JNRFC agreed to adopt a management strategy based on the harvesting rule that no fishing is permitted if there is less than 95% probability that at least 200 000 tonnes of capelin are left to spawn. Consequently, 200 000 tonnes was used as a B_{lim}. Alternative harvest control rules of 80, 85 and 90% probability of SSB > B_{lim} were suggested by JNRFC and evaluated by ICES (ICES 2016). ICES considers these rules not to be precautionary. At its 2016 meeting, JNRFC decided not to change the adopted management strategy.

The B_{lim} used up until present is based on SSB in 1989 (estimated to 96 000 tonnes) with an uncertainty buffer added (SSB + uncertainty buffer assumed to add up to 200 000 tonnes). The SSB in 1989 is the lowest in the time series which resulted in good recruitment.

In WKCAPELIN it was considered that B_{lim} should not be based on years which are affected by the NSS-herring collapse in the Barents Sea, as was the case for the year 1989. Among the years included, 1990 had the lowest estimated SSB (68 000 tonnes) that still produced above average recruitment.

The procedure of including an uncertainty buffer to B_{lim} like it was done previously, was not accepted by WKCAPELIN. Separate terms for the biological reference point (B_{lim}) and the reference point used in the harvest control rule ($B_{escapement}$) were therefore introduced.

1.4.4 - Harvest control rule evaluation

Trochta et al. (2024) assessed harvest control rules for capelin in the Barents Sea using a management strategy evaluation (MSE), a modelling framework that simulates population and fishery responses to management actions. The form of the current escapement rule is retained and is defined by $B_{escapement}$, the biomass that must escape to spawn after fishing is accounted for. The MSE specifically tested four different $B_{escapement}$ values (100 000, 150 000, 200 000 and 400 000 tonnes) with and without three alternative fixed minimum quotas (25 000, 50 000 or 75 000 tonnes). When assuming historical capelin productivity, accurate survey estimates and correctly estimated survey precision, all four $B_{escapement}$ values without fixed minimum quotas maintained a low risk (<5%) of spawning biomass falling below B_{lim}. However, a $B_{escapement}$ equal to 100 000 tonnes showed notably higher risk (of SSB<B_{lim}) if either the survey estimate is biased high or estimated survey precision is biased low. High probabilities of fishery closures resulted from $B_{escapement}$ = 400 000 tonnes. All the alternative rules using fixed minimum quotas showed very high risk of SSB falling below B_{lim} and the model framework projected reduced future recruitment to the extent of stock collapse over the long term. In general, average catch decreased and the number of years with closed fishery increased with higher $B_{escapement}$. There is also ongoing work exploring rules with minimum levels of quota (e.g. 25 000 or 50 000 tonnes) given that the projected spawning stock biomass is above $B_{escapement}$ with zero catch.

When selecting a rule, managers should also consider the trade-offs with other consequences and potential impacts on the ecosystem given the critical role played by capelin as the key forage fish for various predators in the Barents Sea.

1.4.5 - Comparison of historical capelin advice using updated and original model configuration

As part of the 2022 capelin benchmark, the configuration of the forecast model for Barents Sea capelin, *Bifrost,* was reviewed and updated. Vatnehol and Skaret (2025) compared the quota advice for the advice years 2005-2023 based on forecasts with the updated and original model configurations, using the existing harvest control rule. The results show that the catch advice in general would have been higher with the updated configuration, but the years with no-fishery-advice were the same with the updated and original configuration. The comparison further showed that the changes in parameter settings of the cod consumption module in addition to the parameters set for natural capelin mortality in the autumn (1 October to 1 January) had the greatest impact on the advice. It must be noted that the model configuration is partly adapted to the current ecosystem state, so the comparison between configurations becomes less relevant the further back in time we go. Furthermore, some parameters including the natural capelin mortality in the autumn and the proportion of immature cod in the Svalbard area will be updated each year as part of the capelin assessment, so a direct comparison with historical advice will change each year.

1.4.6 - Stock assessment in 2025 (Table A3, Figures A4-A5)

All projections described below were based on a maturation and predation model as described in the 2023 WKCAPELIN Benchmark report (ICES, 2023), with parameters estimated by the model Bifrost and data on predicted cod number and weight at age in 2026 from the 2025 JRN-AFWG assessment (Howell et al. 2025).

The methodology is described in the Benchmark report (ICES 2023).

With no catch, the estimated median spawning stock size on 1 April 2026 is 29 000 tonnes (90% confidence interval: 1-46 000 tonnes) (Figure A4), and the probabilities for the spawning stock to be above 150 000 and 200 000 tonnes are 0%. Summary plots for catch, stock size and recruitment are given in Figure A5.

This year's headline advice is thus based on a $B_{escapement}$ value of 200 000 tonnes, as in previous years, but we also provide information about what the quota advice would be for a $B_{escapement}$ value of 150 000 tonnes, as this value was also found to be precautionary during the HCR evaluation. The catch options are given in the text table below.

Barents Sea capelin (ICES subareas 1 and 2, excluding Division 2.a west of 5°W). Annual catch scenarios.
P = probability. All weights are in tonnes.

Basis	Total catch (2026)	Median SSB (2026)	P (SSB 2026 > $B_{escapement}$) in %	% TAC change*	% advice change**
ICES advice basis					
MP harvest control rule, P (SSB > $B_{escapement}$=200 000 t) = 95%	0	29 000	0	N/A	N/A
Harvest control rule with P (SSB > $B_{escapement}$=150 000 t) = 95%	0	29 000	0	N/A	N/A

*TAC (2026) vs. TAC (2025).

**Advice (2026) vs. Advice (2025).

1.4.7 - Recruitment

No 0-group estimate was yet available for 2025. The 1-group abundance in 2025 in the area covered by the survey was 33.5 billion which is much lower than the long-term average (Table A3).

High abundance of young herring (mainly age groups 1 and 2) has been suggested to be an important but not a single factor causing recruitment failure in the capelin stock (Hjermann *et al.,* 2010; Gjøsæter *et al.* 2016). In 2024, high abundance of age 2-3 herring was observed during the BESS, while the abundance of age 1 was low. The strength of these herring year classes (2021-2023) in BESS 2024 is consistent with the year class strength estimated by WGWIDE in 2025 (ICES, 2025).

1.5 - References

Gjøsæter, H., B. Bogstad, and S. Tjelmeland. 2002. Assessment methodology for Barents Sea capelin, *Mallotus villosus* (Müller). ICES Journal of Marine Science **59** :1086-1095.

Gjøsæter, H., Hallfredsson, E. H., Mikkelsen, N., Bogstad, B., and Pedersen, T. 2016. Predation on early life stages is decisive for year class strength in the Barents Sea capelin (*Mallotus villosus*) stock. ICES Journal of Marine Science 73(2):182-195.

Hjermann, D. Ø., B. Bogstad, G. E. Dingsør, H. Gjøsæter, G. Ottersen, A. M. Eikeset, and N. C. Stenseth. 2010. Trophic interactions affecting a key ecosystem component: a multi-stage analysis of the recruitment of the Barents Sea capelin. Canadian Journal of Fisheries and Aquatic Sciences **67** :1363-1375.

Howell, D. et al. 2025. Report of the Joint Russian-Norwegian Working Group on Arctic Fisheries (JRN-AFWG) 2024. IMR-PINRO Report Series 6-2025, 287 pp.

ICES. 2016. Report of the second Workshop on Management Plan Evaluation on Northeast Arctic cod and haddock and Barents Sea capelin, 25–28 January 2016, Kirkenes, Norway. ICES CM 2016/ACOM:47. 76 pp. https://doi.org/10.17895/ices.pub.5296.

ICES 2023. Benchmark workshop on capelin (WKCAPELIN). ICES Scientific Reports. 5:62. 282 pp. https://doi.org/10.17895/ices.pub.23260388

ICES. 2024. Working Group on Widely Distributed Stocks (WGWIDE). ICES Scientific Reports. 6:81. 913 pp. https://doi.org/10.17895/ices.pub.26993227

Tjelmeland, S. 2002. A model for the uncertainty around the yearly trawl-acoustic estimate of biomass of Barents Sea capelin, Mallotus villosus (Müller). ICES Journal of Marine Science **59** :1072-1080.

Trochta, J., B. Bogstad, Y. Kovalev, D. Prozorkevich, G. Skaret, S. Vatnehol, and D. Howell. 2024. Report on evaluation of harvest rules for Barents Sea capelin in subareas 1 and 2 (Northeast Arctic), excluding Division 2.a west of 5°W - full report. IMR-PINRO Report Series 17-2024, 45 pp.

Vatnehol, S. and Skaret, G. 2025. Comparison of historical capelin quota advice using original and updated forecast model configuration. Report series: Rapport fra havforskningen 2025-5. https://hdl.handle.net/11250/3180911 .

Appendix

Table A1. Barents Sea CAPELIN. International catch ('000 t) as used by the Working Group.

Year	Winter-Spring				Summer-Autumn			Total
	Norway	**Russia**	**Others**	**Total**	**Norway**	**Russia**	**Total**	
1965	217	7	0	224	0	0	0	224
1966	380	9	0	389	0	0	0	389
1967	403	6	0	409	0	0	0	409
1968	460	15	0	475	62	0	62	537
1969	436	1	0	437	243	0	243	680
1970	955	8	0	963	346	5	351	1314
1971	1300	14	0	1314	71	7	78	1392
1972	1208	24	0	1232	347	13	360	1591
1973	1078	34	0	1112	213	12	225	1337
1974	749	63	0	812	237	99	336	1148
1975	559	301	43	903	407	131	538	1441
1976	1252	228	0	1480	739	368	1107	2587
1977	1441	317	2	1760	722	504	1226	2986
1978	784	429	25	1238	360	318	678	1916
1979	539	342	5	886	570	326	896	1782
1980	539	253	9	801	459	388	847	1648
1981	784	429	28	1241	454	292	746	1986

1982	568	260	5	833	591	336	927	1760
1983	751	373	36	1160	758	439	1197	2357
1984	330	257	42	629	481	368	849	1477
1985	340	234	17	591	113	164	277	868
1986	72	51	0	123	0	0	0	123
1987-1990	0	0	0	0	0	0	0	0
1991	528	159	20	707	31	195	226	933
1992	620	247	24	891	73	159	232	1123
1993	402	170	14	586	0	0	0	586
1994-1996	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	1	1	1
1998	0	2	0	2	0	1	1	3
1999	50	33	0	83	0	22	22	105
2000	279	94	8	381	0	29	29	410
2001	376	180	8	564	0	14	14	578
2002	398	228	17	643	0	16	16	659
2003	180	93	9	282	0	0	0	282
2004	0	0	0	0	0	0	0	0
2005	1	0	0	1	0	0	0	1
2006	0	0	0	0	0	0	0	0
2007	2	2	0	4	0	0	0	4
2008	5	5	0	10	0	2	0	12
2009	233	73	0	306	0	1	1	307
2010	246	77	0	323	0	0	0	323
2011	273	87	0	360	0	0	0	360
2012	228	68	0	296	0	0	0	296
2013	116	60	0	177	0	0	0	177
2014	40	26	0	66	0	0	0	66
2015	71	44	0	115	0	0	0	115
2016-2017	0	0	0	0	0	0	0	0
2018	129	66	0	195	0	0	0	195
2019-2021	0	0	0	0	0	0	0	0
2022	42	23	0	65	0	0	0	65
2023	38	23	0	61	0	0	0	61
2024	118	51	0	169	0	0	0	0
2025	0	1	0	1				

Table A2. Barents Sea CAPELIN. Stock size estimation table. Estimated stock size (10^9) by age and length, and biomass (1000 tonnes) from the acoustic survey in August-October 2025. TSN: Total stock number. TSB: Total stock biomass. MSN: Maturing stock number. MSB: Maturing stock biomass.

Length (cm)	Age/year class					Sum (10^9)	Biomass (10^3 t)	Mean weight (g)
	1	2	3	4	5			
	2024	2023	2022	2021	2020			
6.0-6.5	0.004					0.004	0.004	1.00
6.5-7.0	0.264					0.264	0.264	1.00
7.0-7.5	1.792					1.792	2.516	1.40
7.5-8.0	1.483					1.483	1.892	1.28
8.0-8.5	2.386	0.410				2.796	5.909	2.11
8.5-9.0	2.705	0.021				2.726	6.957	2.55
9.0-9.5	2.496					2.496	7.669	3.07
9.5-10.0	3.841	0.142				3.984	14.475	3.63
10.0-10.5	3.827	0.066				3.894	16.864	4.33
10.5-11.0	4.114	0.278				4.393	21.513	4.90
11.0-11.5	4.331	0.508				4.839	27.889	5.76
11.5-12.0	3.281	0.651				3.932	27.992	7.12
12.0-12.5	1.228	0.712				1.940	15.743	8.12
12.5-13.0	1.239	0.966				2.205	21.012	9.53
13.0-13.5	0.357	1.260	0.012			1.628	17.659	10.85
13.5-14.0	0.151	1.970	0.011			2.133	27.047	12.68
14.0-14.5	0.031	1.127	0.029			1.187	16.739	14.10
14.5-15.0		1.549	0.086	0.006		1.641	25.674	15.64
15.0-15.5		0.607	0.157	0.129		0.894	15.585	17.44
15.5-16.0		0.502	0.310	0.053	0.007	0.873	16.383	18.77
16.0-16.5		0.146	0.339	0.113	0.036	0.633	13.460	21.26
16.5-17.0			0.422	0.151		0.573	13.662	23.83
17.0-17.5			0.123	0.109	0.027	0.259	6.778	26.16
17.5-18.0			0.166	0.334		0.500	13.666	27.31
18.0-18.5			0.042	0.007		0.049	1.477	30.12
18.5-19.0			0.007			0.007	0.195	28.47
19.0-19.5					0.001	0.001	0.022	29.00
TSN (10^9)	33.531	10.916	1.705	0.903	0.071	47.126		
TSB (10^3 t)	150.895	127.728	37.259	21.402	1.762		339.045	
Mean length (cm)	10.11	13.31	16.32	16.84	16.61			
Mean weight (g)	4.50	11.70	21.85	23.71	24.83			7.19

Length (cm)	Age/year class					Sum (10^9)	Biomass (10^3 t)	Mean weight (g)
	1	2	3	4	5			
	2024	2023	2022	2021	2020			
SSN (10^9)	0.031	3.931	1.682	0.903	0.071	6.618		
SSB (10^3 t)	0.441	63.093	36.943	21.402	1.762		123.641	

Table A3. Barents Sea CAPELIN. Stock size in numbers by age, total stock biomass, biomass of the maturing component (MSB) at 1. October. The stock numbers for 2004-2021 are updated following the data evaluation workshop in 2021, and the subsequent WKCAPELIN benchmark in 2022. The comparison with previous estimates is presented in detail in Annex3 number BS0 in the WKCAPELIN benchmark report (ICES, 2023).

Year	Stock in numbers (10^9)						Biomass (10^3 tonnes)	
	Age 1	Age 2	Age 3	Age 4	Age 5	Total N	Total BM	MSB
1973	528.5	375.0	39.8	17.1	0.2	960.5	5146.2	1349.7
1974	304.8	547.4	173.1	3.4	0.1	1028.8	5738.1	907.1
1975	190.4	348.1	295.7	86.4	0.3	920.8	7815.8	2915.7
1976	210.8	233.1	163.0	76.6	12.4	695.8	6420.4	3200.3
1977	359.8	174.8	98.5	40.3	7.3	680.8	4802.8	2676.2
1978	83.5	391.7	75.8	8.9	0.7	560.6	4247.5	1402.0
1979	12.0	333.4	113.8	4.9	0.1	464.1	4160.9	1226.6
1980	269.9	195.8	155.3	33.0	0.3	654.3	6723.5	3913.4
1981	402.6	195.3	48.0	13.8	0.3	659.9	3892.1	1551.5
1982	528.3	147.6	56.8	2.2		734.9	3778.2	1591.0
1983	514.9	200.2	38.1	0.4		753.5	4225.4	1328.7
1984	154.8	186.7	48.2	3.1		392.7	2964.3	1207.9
1985	38.7	48.3	20.7	0.9		108.6	857.4	285.1
1986	6.0	4.7	3.3	0.3		14.3	120.2	65.1
1987	37.6	1.7	0.1	0.0		39.4	100.1	16.9
1988	21.0	28.7	0.2			49.9	427.3	200.3
1989	189.2	17.7	2.5	0.0		209.5	868.9	173.6
1990	700.4	177.6	16.2	0.1		894.3	5837.8	2617.0
1991	402.1	580.2	32.9	1.2		1016.4	7281.8	2248.0
1992	351.3	196.3	128.8	1.3		677.7	5155.0	2228.3
1993	2.2	53.4	17.3	2.4		75.3	796.8	330.1
1994	19.8	3.4	4.3	0.2		27.7	199.1	94.4
1995	7.1	8.1	1.5	0.3		17.2	193.6	118.4
1996	81.9	11.5	2.1	0.1		95.6	502.1	248.4
1997	98.9	39.1	1.9	0.1		140.0	910.0	312.1
1998	179.0	72.6	10.5	0.6	0.1	262.9	2054.7	931.7
1999	155.9	101.5	26.5	0.9		284.8	2774.1	1717.8
2000	449.2	110.6	34.1	0.8	0.1	594.7	4273.8	2096.7
2001	113.6	218.7	30.5	1.1	0.1	363.9	3629.1	2018.8
2002	59.7	90.8	50.2	0.6		201.3	2208.7	1289.6
2003	82.4	9.6	11.0	1.4		104.4	533.6	279.6

Year	Stock in numbers (10^9)						Biomass (10^3 tonnes)	
	Age 1	Age 2	Age 3	Age 4	Age 5	Total N	Total BM	MSB
2004	62.1	17.0	4.4	0.7	0.1	84.2	513.8	225.1
2005	22.7	21.3	3.6	0.3	0.0	47.9	497.9	354.7
2006	57.3	16.8	5.1	0.1	0.0	79.3	637.2	347.7
2007	195.1	50.1	5.8	0.3		251.3	1816.3	845.9
2008	292.4	198.1	24.1	0.5		515.1	3951.3	2185.6
2009	172.8	148.6	48.1	0.0		369.4	3247.1	1891.8
2010	243.6	137.1	67.1	1.6		449.5	3823.6	2247.7
2011	194.3	173.3	57.7	7.8		433.0	3603.6	2059.2
2012	176.1	117.0	88.3	3.0		384.4	3456.8	1996.3
2013	323.8	197.5	67.6	11.9	0.0	600.8	3972.8	1725.0
2014	103.1	81.0	37.4	1.9		223.4	1688.8	784.5
2015	37.8	42.4	12.9	1.0		94.0	878.5	434.0
2016	32.6	7.9	2.3	0.1		42.9	316.7	153.3
2017	115.4	119.0	14.0	0.3		248.7	2428.5	1546.8
2018	58.8	60.9	22.5	0.4	0.0	142.6	1641.0	1100.2
2019	18.0	9.6	6.8	1.2	0.0	35.7	413.3	302.4
2020	370.0	31.3	4.1	0.8	0.0	406.2	1890.4	542.4
2021	222.7	326.4	7.4	0.0		556.6	3987.1	1459.5
2022*	75.5	135.8	57.7	1.2	0.0	270.2	2173.7	817.5
2023	108.5	80.3	107.4	23.9	0.2	320.3	2951.7	1285.9
2024	58.6	19.8	13.4	11.1	1.5	104.5	886.7	533.5
2025	33.5	10.9	1.7	0.9	0.1	47.1	339.0	123.6
Average	179.8	134.1	44.5	7.0	0.4	365.9	2712.4	1198.2

***Not adjusted for incomplete area coverage**

Table A4. Barents Sea CAPELIN. CV by age group of the acoustic estimates shown in Table A3, for the period 2004-2025.

Year	CV age 1	CV age 2	CV age 3	CV age 4	CV age 5
2004	0.253	0.235	0.225	0.513	
2005	0.319	0.332	0.375	0.508	
2006	0.301	0.240	0.344	0.705	
2007	0.197	0.232	0.331	0.665	
2008	0.228	0.198	0.302	0.634	
2009	0.455	0.370	0.453	1.680	
2010	0.163	0.224	0.199	0.288	
2011	0.231	0.205	0.276	0.463	
2012	0.210	0.314	0.335	0.605	
2013	0.132	0.127	0.138	0.267	
2014	0.237	0.213	0.237	0.331	
2015	0.235	0.252	0.234	0.364	
2016	0.167	0.237	0.305	0.491	
2017	0.182	0.099	0.123	0.407	
2018	0.288	0.255	0.276	0.441	
2019	0.138	0.322	0.355	0.405	
2020	0.241	0.269	0.338	0.501	
2021	0.168	0.102	0.299	1.301	
2022					
2023	0.280	0.170	0.170	0.200	
2024	0.196	0.218	0.211	0.230	0.336
2025	0.297	0.375	0.416	0.649	0.653

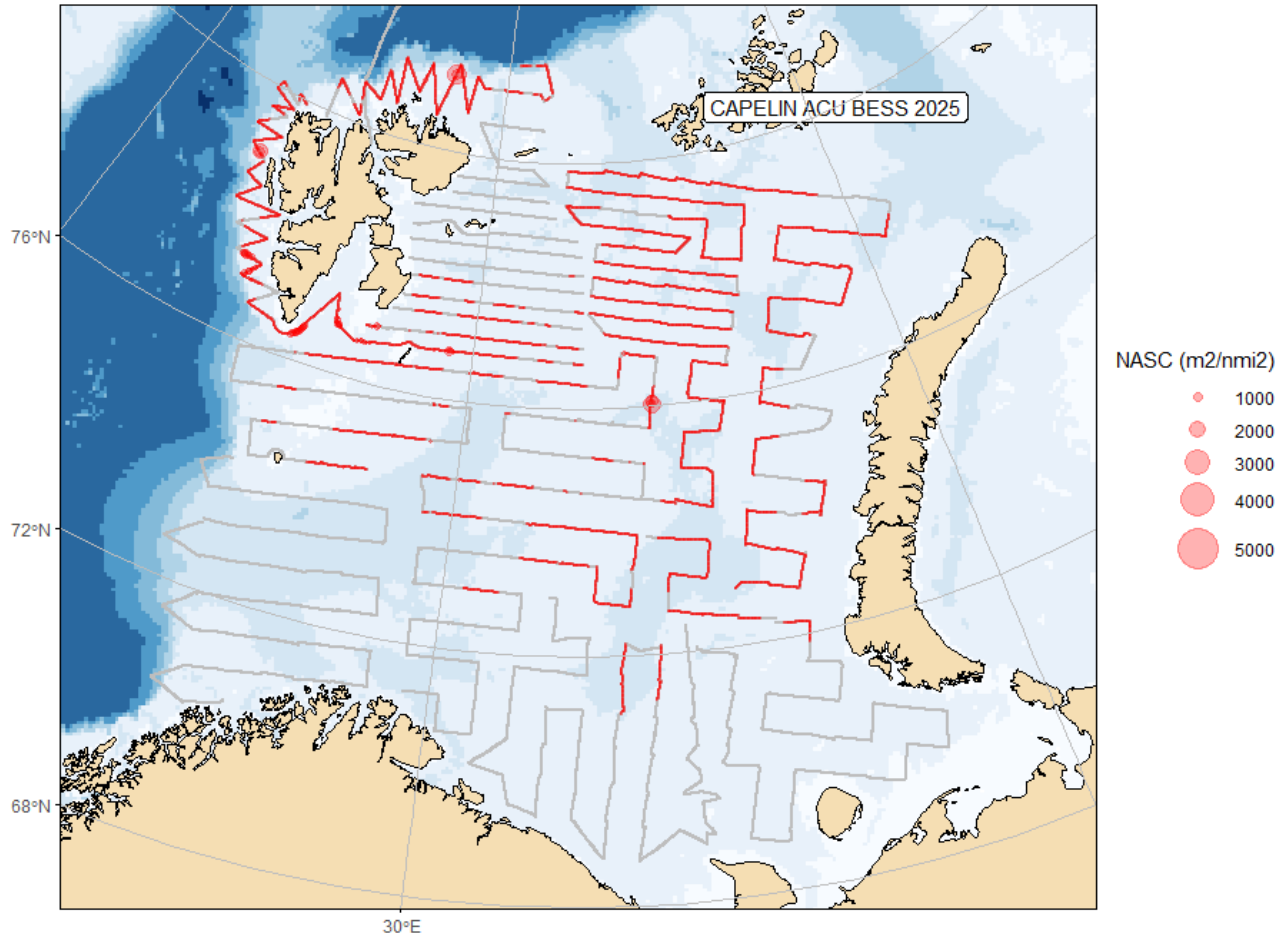

Figure A1. Survey coverage and geographical distribution of acoustic recordings of capelin in autumn 2025 and 2024. The size of the circles corresponds to nautical acoustic scattering coefficient (NASC; m^2/nm^2) per 1 nautical mile.

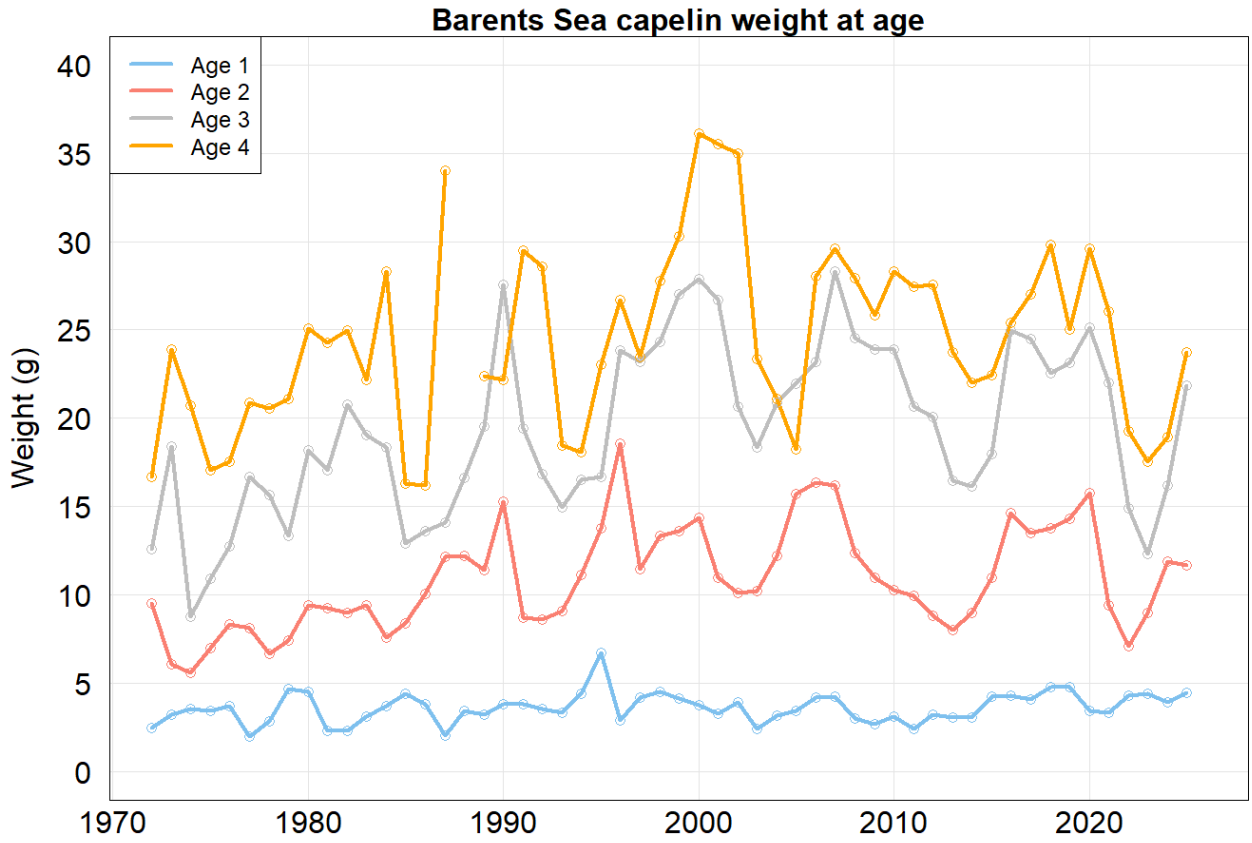

Figure A2. Weight-at-age (grams) for capelin from the autumn survey.

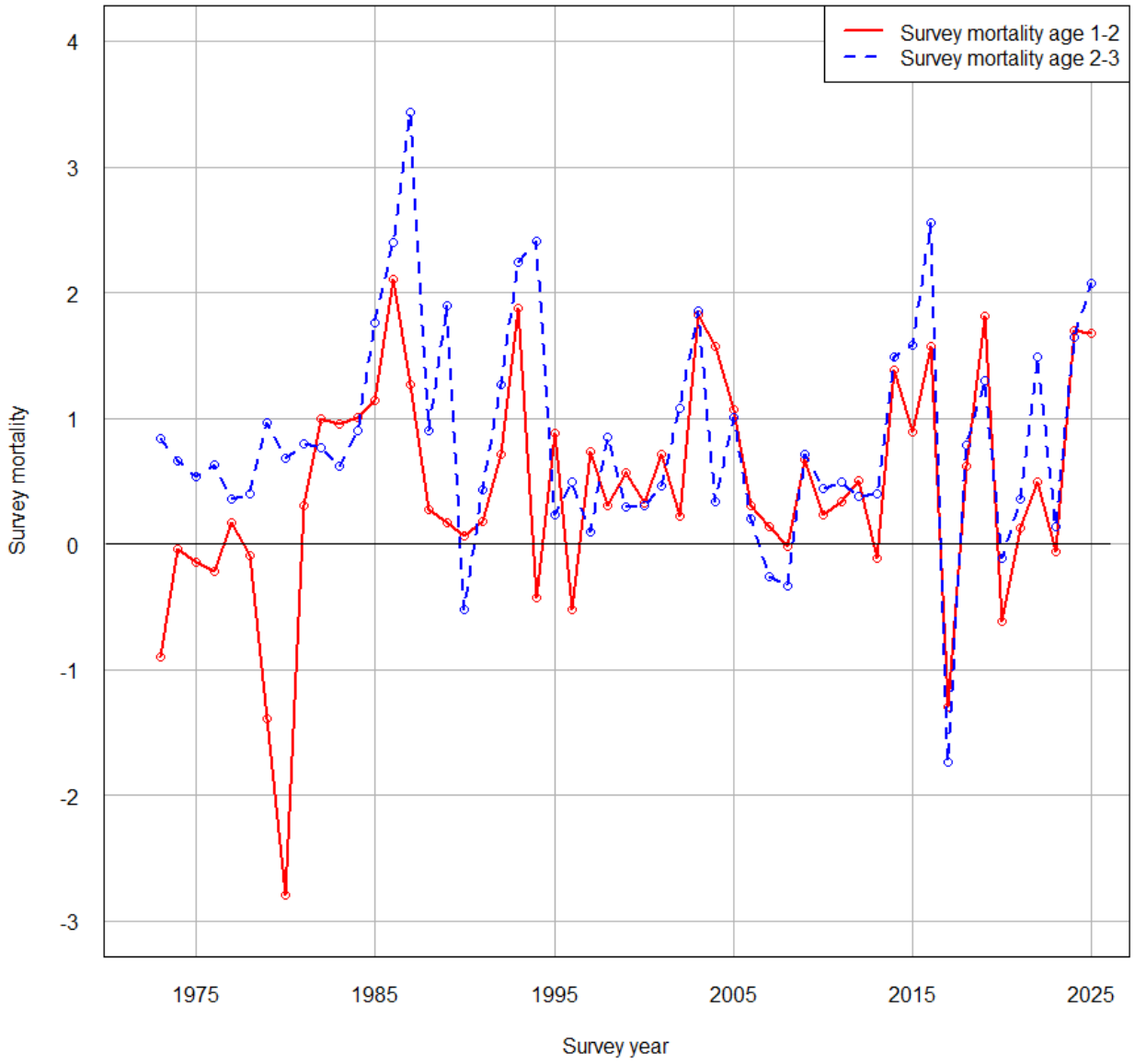

Figure A3. Survey mortality by survey year. Survey mortality in year y+1 is calculated as -log((N age (a+1) in year (y+1) + catch immatures of age a in year y and year (y+1))/N immatures age a in year y). Capelin >14.0 cm are assumed to be maturing.

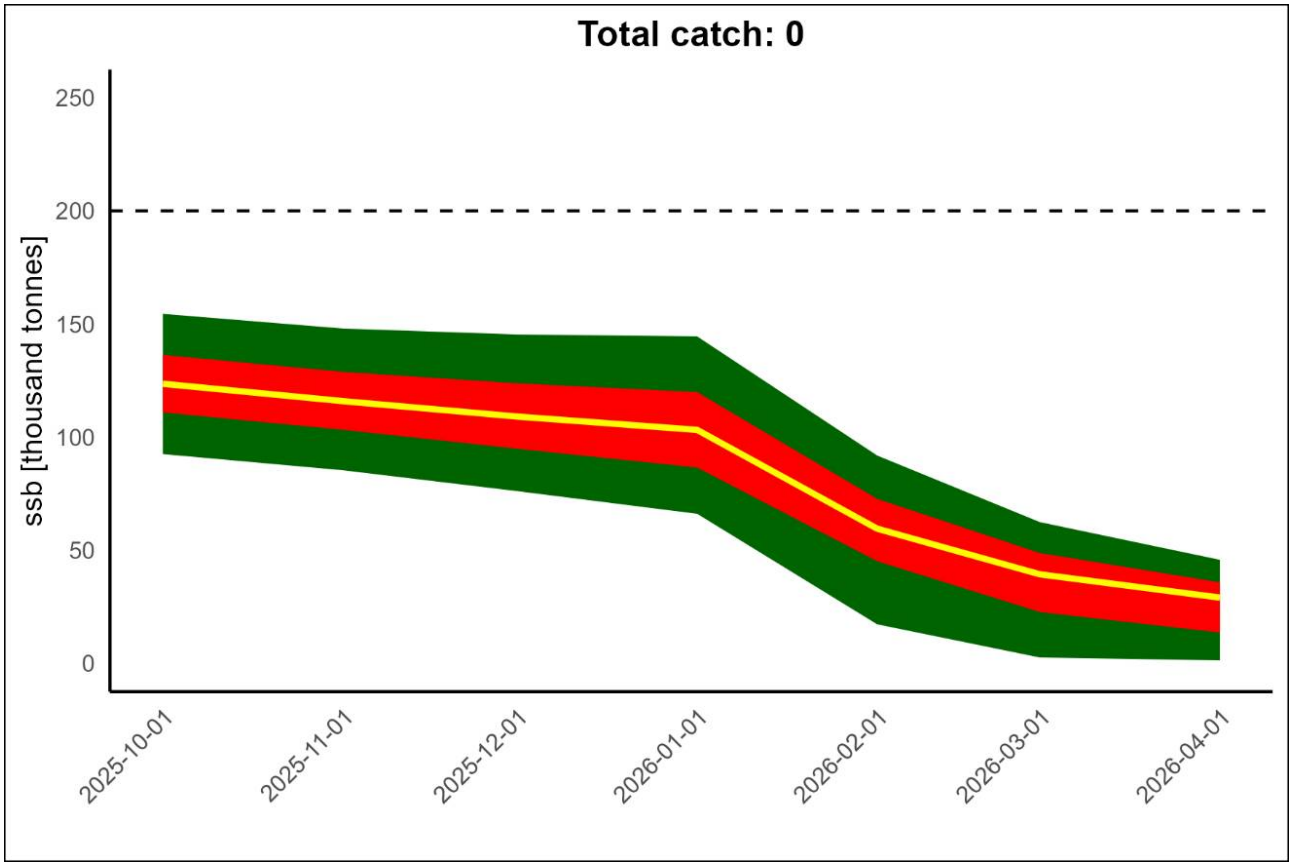

Figure A4. Probabilistic prognosis 1 October 2025—1 April 2026 for Barents Sea capelin maturing stock, with zero catch. Yellow line shows median, green area shows 25-75 percentiles and red area 5-95 percentiles. $B_{escapement}$ is shown in black as a dashed line. Based on 50 000 simulations.

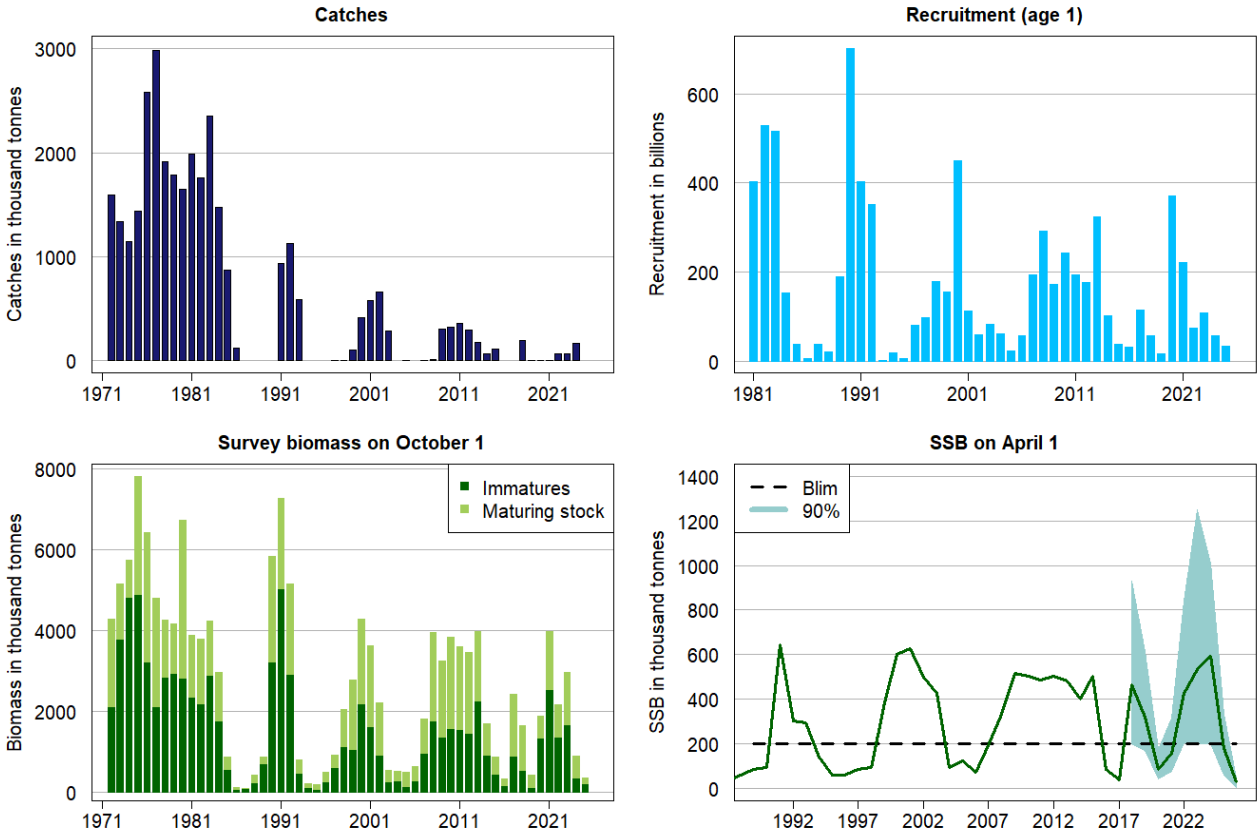

Figure A5. Capelin in subareas 1 and 2, excluding Division 2a west of 5°W (Barents Sea capelin). Catch, recruitment and summary of stock assessment (maturing and immature stock biomass October 1 and SSB April 1 in 1000 tonnes). The 2022 estimate of maturing and immature stock biomass is not corrected for incomplete survey coverage.

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