

8 Northeast Arctic Greenland halibut¹

8.1 Status of the fisheries

8.1.1 Landings prior to 2022 (Tables 8.1–8.8, Figures 8.1–8.3)

Nominal landings by country for subareas 1 and 2 combined are presented in Table 8.1. Tables 8.2 to 8.4 give the landings for Subarea 1 and divisions 2.a and 2.b separately, and landings separated by gear type are presented in Table 8.5. For most countries, the landings listed in the tables are similar to those officially reported to ICES. Some of the values in the tables vary slightly from the official statistics and represent those presented to the Working Group by the members. Catch per unit effort is presented in Table 8.6 and total catch from 1935 to now in Table 8.7 and Figure 8.1.

The preliminary estimate of the total landings for 2021 is 28 431 t. This is 282 t less than the landings in 2020 and about 5431 t more than the ICES advised maximum catch for 2021 (23 000 t). The catches from most countries remained stable, compared to 2020. Combined landings exceeded the quotas set by the Joint Russian-Norwegian Fisheries Commission for 2021 by 1431 t (total TAC 27 000 t). One explanation is the difficulties in bycatch regulation. Also, catches in the report include all landings in ICES 1 and 2, and thus include catches in EU waters in the southern part of ICES 2.

Some fishing for Greenland halibut has taken place in the northern part of Division 4.a during the past 20–30 years, varying between a few tonnes and up to 1670 t in 1995 and 2577 in 1999. From 2005 to 2011 this catch was mostly below 200 t, taken mostly by Norway, France, and the UK. Preliminary numbers show 144 t in 2021, a reduction from 719 t the year before mainly due to that the Norwegian trawl fleets did not have access to British waters in 2021 (Table 8.8, Figures 8.2 and 8.3). Although there is a continuous distribution of this species from the southern part of Division 2a along the continental slope towards the Shetland area, the stock structure is unclear in this area and these landings have therefore not been added to the total from subareas 1 and 2. Recent mark-recapture and genetic investigations indicate that the stock might have a more south and westward distribution than the current ICES definition of the stock boundaries (Albert and Vollen, 2015; Westgaard *et al.*, 2016).

8.1.2 ICES advice applicable to 2021–2023

The roll over advice from ICES for 2021 was as follows:

ICES advises that when the precautionary approach is applied, catches in 2020 should be no more than 23 000 tonnes. This corresponds to a harvest rate of ≈ 0.036 . All catches are assumed to be landed.

Last advice:

ICES advises that when the precautionary approach is applied, catches in the year 2022 should be no more than 19 094 tonnes and catches in the year 2023 should be no more than 18 494 tonnes.

¹ Greenland halibut (*Reinhardtius hippoglossoides*) in subareas 1 and 2 (Northeast Arctic); ghl.27.1-2.

8.1.2.1 Additional considerations

A benchmark and data workshop process led to an agreed analytic assessment in 2015.

A benchmark meeting (WKBUT; ICES 2013/ACOM:44) was held for the Northeast Arctic (NEA) Greenland halibut in 2013, but the benchmark process was prolonged due to problems with data. A data workshop was conducted in November 2014 (DCWKNGHD ICES CM 2014/ACOM:65), followed by a benchmark by correspondence that ended in 2015. The assessment is reported in the benchmark by correspondence (IBPHALI; ICES CM 2015/ACOM:54) and in the stock annex.

A new benchmark is planned in early 2023.

8.1.3 Management

The 38th JRNFC's session in 2009 decided to cancel the ban against targeted Greenland halibut fishery and established the TAC at 15 000 t for the next three years (2010–2012). The 40th JRNFC Session in 2011 decided to increase the TAC for 2012 up to 18 000 t, and at the 42nd JRNFC Session in 2012, the TAC for 2013 was increased to 19 000 t. The 43rd and 44th sessions kept the same TAC for 2014 and 2015. For 2016 and 2017 TAC was set to 22 and 24 thousand tonnes, respectively. The TAC for 2018 was 27 thousand tonnes and the same for 2019, 2020 and 2021.

The TAC for Greenland halibut set by JRNFC applies to catches in ICES areas 1, 2a and 2b, except the Jan Mayen EEZ and the part of the EU EEZ which is north of 62°N.

In 2021 catches of 32 tonnes were taken in the Jan Mayen area (within ICES Subarea 2), where Greenland halibut fisheries are not regulated by TAC.

Norway previously had a quota for Greenland halibut in the EU EEZ which could be fished in ICES areas 2a and 6. Thus this TAC was given partly within and partly outside the stock boundary. This area is now in UK EEZ and there was no agreement for quota to Norway in this area for 2021. Norway and UK now have agreement on 600 t quota to Norway in area 2a, 4, 5b, 6 in 2022, with only longline fisheries allowed in area 6. There is no ICES separate advice for the fishery in this area.

The TAC set by EU for 2020 applied to "Union waters of 2a and 4; Union and international waters of 5b and 6" were allocated to Norway with the footnote "To be taken in Union waters of 2a and 6. In 6, this quantity may only be fished with longlines (GHL/*2A6-C)." Additionally EU had set another TAC in "International waters of 1 and 2(GHL/1/2INT)" and a minor quota in "Norwegian waters of 1 and 2 (GHL/1N2AB.)", both with the footnote "Exclusively for bycatches².

EU has set a TAC of 629 t for 2021 to be taken in Union waters of 2a and 6. In 6, this quantity may only be fished with longlines. EU has set 1800 t TAC in international waters of ICES 1 and 2, exclusively for bycatches. No directed fisheries are permitted under this³.

EU has set a TAC of 2571 t for 2022 in area 6; United Kingdom and Union waters of 4; United Kingdom waters of 2a and United Kingdom and international waters of 5b (GHL/2A-C46)³.

Further information on regulations is found in the Stock Annex.

² <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0123&from=EN>

³ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32021R0092&from=EN>

³ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32022R0515&qid=1650982320384&from=en>

8.1.4 Expected landings in 2022

Catches in 2021 were 28 431 t, and exceeded the TAC set by JRNFC. The total Greenland halibut landings in the Barents Sea and adjacent waters (ICES Subarea 1 and divisions 2a and 2b) in 2022 may thus be higher than the JRNFC TAC of 25 000 t. Discards at present are not regarded as a problem.

8.2 Status of research

8.2.1 Survey results (Tables 8.9–8.13, Figures 8.4–8.14)

Survey indices from the Russian autumn survey (Figures 8.4–8.6), the Norwegian slope survey (Figures 8.4–8.5 and 8.7–8.8), the Joint Norwegian-Russian Ecosystem survey (A5216), Eco-juv and Eco-south indices; Figures 8.9–8.10) and the Joint Norwegian-Russian Winter Survey (Figure 8.11) are given. Length distributions from these surveys are presented in Tables 8.9–8.12 and Figure 8.12. Results from Spanish surveys are presented in Table 8.13 and Figure 8.13. Results from a Polish spring survey is presented in Figure 8.14.

The Russian bottom-trawl surveys in October–December (ICES acronym: *RU-BTr-Q4*) are important since they usually cover large parts of the total known distribution area of the Greenland halibut within 100–900 m depth. However, it has been considered imprudent to use 2002, 2003 and 2013 data from this survey series. During the 2002 survey, no observations were available from the Exclusive Economic Zone of Norway (NEEZ). In 2003, observations on the main spawning grounds were conducted three weeks later than usual because access to NEEZ was obtained too late. The number of trawl stations was also insufficient due to the same reason. Due to technical problems indices in 2013 were not obtained. Technical and practical changes were made in 2003. In 2017 and 2019 the coverage was insufficient. The 2020 estimate was not considered appropriate to use due to gear-related problems during the survey. A working document with a revision of the Russian index was provided to the 2021 meeting (Russkikh WD12). Revised and recalculated length distributions were not implemented in the 2021 assessment but will be subject to the upcoming benchmark. Length distributions by year for this survey are given in Table 8.9. The biomass indices for this survey increased steeply from 2005 to 2011, but have mainly showed a downward trend since then (Figures 8.4 and 8.5).

Total biomass indices from the Norwegian autumn slope survey (*NO-GH-Btr-Q3*) showed an upward trend in biomass estimates between 1994 and 2003, then a downward trend until 2008 until it increased again in 2009 but levelled out again in 2011, 2013, and 2015 (Figures 8.4–8.5, and 8.7–8.8). Since then, there has been a downward trend until 2020 when the index was at its lowest since the start of the survey. In 2021 there was an increase in the index but it is still among the lowest estimates in the time series. The length distributions from this survey (Figure 8.12, Tables 8.10 and 8.11) show modes that can be followed through the years and indicate new recruitment to the adult stock in 2007. Since then, no such large recruit events are apparent in the length distributions, and since 2009 abundance of fish in adult lengths has been declining as well. This survey was conducted every year during 1994–2009 but is now run biennially.

The Joint Ecosystem Survey in autumn (A5216; *Eco-NoRu-Q3 (Btr)*) covers a large part of the Barents Sea down to 500 m and concerning Greenland halibut it can be regarded to be in the areas where mainly juveniles and immature fish are found. Two indices for Greenland halibut are based on the Joint Ecosystem Survey in the Barents Sea and previous juvenile survey, one for juvenile areas (Figure 8.9) denoted Eco-juv index in the northernmost survey area, and another denoted Eco-south index defined by the survey area south from 76.5°N and west of Spitsbergen (Figure 8.10). The juvenile index, covering the juvenile area (see section 8.3), indicates a highly

variable recruitment success with years between good year classes. The trend has mainly been downward since around 2007 and the 2015 estimates are the lowest registered so far, followed by a minor peak in 2017. The juvenile index has increased the last two years and is now around average for the time series. The Eco-south index for both females and males showed an increasing trend until 2012, followed by a decrease since then. The 2018 estimate in the Eco-south index was excluded from the 2021-assessment. The abundance estimate in 2018 peaked to extend that can be considered unrealistic for a slow-growing species. Additionally, there are concerns about the quality of the estimate due to the lack of survey coverage in 2018, especially in the area south of 76.5°N as defined for the Eco-south index. The male index shows a similar trend except the increase started a year later, in 2016 - 2018, but is also down in 2019. The general downward trend continues in 2021. Length distributions by year for this survey are given in Table 8.11.

The joint winter survey in the Barents Sea (*Eco-NoRu-Q3 (Btr)*) has been run from 1986 to the present (jointly with Russia since 2000, except 2006 and 2007). The survey mainly covers depths of 100–500 m and does not cover the deeper slope areas. Spatially, the survey focuses on the central Barents Sea, and west of Svalbard for some years. The northward coverage is limited by sea ice in some years. It is conducted in February and can thus give information on the stock at a different time of the year, as the other surveys are run in autumn. The biomass index has shown an increasing trend since 2004 with large variations in recent years. This survey is not currently used in the assessment.

The Spanish bottom-trawl survey, (Table 8.13, Figure 8.13) was carried out on a new hired commercial vessel and some changes have been done in the initial standard protocol. The indices for Greenland halibut from earlier Spanish surveys (1997–2005) cannot be standardized with more recent ones (2008 to present, Basterretxea *et al.*, WD13 2013). This means that biomass estimates from the survey are only available for years 2008 and onwards. The Spanish survey has since 2015 only been run in autumn. This survey is not conducted every year. The biomass index from the Spanish survey shows a downward trend since around 2012. This survey is not currently used in the assessment.

Polish bottom-trawl surveys on Greenland halibut were carried out in the Svalbard-Bear Island area (ICES 2b) in October 2006, April 2007, April 2008, June 2009, and March 2011. The main objectives of the survey were to determine the biological structure, distribution, density and standing biomass of Greenland halibut in the survey area (Trella and Janusz, WD6 ICES AFWG 2012). The survey has not been conducted since then. Polish survey index is shown in Figure 8.14, no new data were presented to the meeting. This survey is not currently used in the assessment.

8.2.2 Commercial catch-per-unit-effort (Table 8.6, Figure 8.15)

The CPUE series for the stock was subject to the last benchmark and following data workshops (see reports from WKBUT 2013, DCWKNGHD 2014 and IBPHALI 2015, and working documents by Bakanev (WD14 WKBUT 2013) and Nedreaas (WD 2 DCWKNGHD 2014); Figure 8.15). An alternative CPUE series for the Russian fisheries for the years 2004–2015 was presented at the 2016 meeting (Mikhaylov, WD14 ICES AFWG 2016). It shows some discrepancies compared to the previous CPUE series used for the Russian fisheries for the same years. See the Stock Annex for further comments. The CPUE series are not currently used in the assessment.

8.2.3 Age readings

Based on the scientific understanding that the species is slower growing and more vulnerable than the previous age readings suggest, the Norwegian age reading methods were changed in

2006. The new Norwegian age readings are not comparable with older data or the Russian age readings.

The report from Workshop on Age Reading of Greenland Halibut (WKARGH) 14–17 February 2011 (ICES CM 2011/ACOM:41) described and evaluated several age reading methods for Greenland halibut.

The different methods can be classified into two groups: A) Those that produce age–length relationships that broadly compare with the traditional methods described by the joint NAFO-ICES workshop in 1996 (ICES CM 1997/G:1); and B) Several recently developed techniques that show much higher longevity and approximately half the growth rate from 40–50 cm onwards compared to the traditional method.

A second workshop on age reading of Greenland halibut (WKARGH 2) was conducted in August 2016 and worked on further validation on new age reading methods. The workshop recommended that two of the new methods can be used to provide age estimations for stock assessments. Further, recognizing some bias and low precision in methods, the WKARGH2 suggested that an aging error matrix or growth curve with error be provided for use in future stock assessments (WKARGH2 report 2016, ICES CM 2016/SSGIEOM:16).

WKARGH2 recommends regular inter-lab calibration exercises to improve precision (i.e. exchange of digital images between readers for each method and between methods).

AFWG suggests that Russian and Norwegian scientists and age readers meet to work out issues of disagreements on Greenland halibut aging.

8.3 Data used in the assessment

In the assessment, the catch data are split into four aggregated fleets by gear and countries. Long-line/gillnet fleets include landings from gillnet, longline, and handline. Trawl fleets include landings from bottom trawl, purse-seine (very minor catches, can be bycatch or misreporting) and Danish seine. Catch in tonnes and length distributions per quarter per fleet per sex from 1992–2020 are used in the assessment. Fleets are split between Norwegian (including 3rd countries) and Russian catches, and selectivities are allowed to vary by sex (logistic for gill fleets, asymmetric dome-shaped for trawl fleets), to account for sexual dimorphism influencing vulnerability to fishing. For each fleet listed below, length distributions and reported catch in tonnes are split by quarter and sex (although length distributions are not available for all quarters for some fleets).

- Russian, trawl and minor gears (split by sex)
- Russian, gillnet and longline (split by sex)
- Norwegian and 3rd countries, trawl and minor gears (split by sex)
- Norwegian and 3rd countries, gillnet and longline (split by sex)

In addition, the model has four surveys, all modelled with asymmetric dome-shaped selectivities (note that in a model context “selectivity” encompasses all aspects of vulnerability to the fishery, including gear effects, vessel effects, area effects etc.). In each case, data are used as length distribution and biomass index. The biomass index was not available to split by sex for all years, so a combined sex index is used. The four survey indices that go into the current assessment are:

- Norway slope (*NO-GH-Btr-Q3*)– based on the Norwegian Greenland halibut slope survey (yearly 1996–2009, biennially since then). Split by sex.
- EcoJuv - a juvenile index based on data from the northern/northeastern areas of the Joint Ecosystem survey (A5216; *Eco-NoRu-Q3 (Btr)*; 2003–present) and the precursory Norwegian juvenile Greenland halibut survey north and east of Svalbard (1996–2002; Hallfredsson and Vollen, WD 1 ICES IBPhali 2015). Split by sex.

- EcoSouth - an index for the Barents Sea south of 76.5°N, based on data from the Joint Ecosystem survey (A5216; *Eco-NoRu-Q3 (Btr)*; 2003–present; Hallfredsson and Vollen, ICES AFWG, WD 20, April 2015). Split by sex.
- Russian - Russian bottom-trawl survey in the Barents Sea (1992–2015 and 2017; *RU-BTr-Q4*). Sex aggregated (can be split by sex in future work).

No age data or CPUE indices are used in the tuning.

8.4 Methods used in the assessment

A new assessment method with a length-based GADGET model was benchmarked in 2015 (IPH-ALI 2015) and accepted by ACOM the same year. The model is further described in the IPHALI report and the Stock Annex. Advice for the stock is given biennially and last advice applies for 2022 and 2023. Next advice year is 2023 for the years 2024 and 2025. Thus, no analytical assessment was run this year. For description of last assessment see ICES AFWG 2021 report.

8.4.1 Model settings

For last assessment see ICES AFWG 2021 report.

8.4.1.1 Estimated parameters:

For last assessment see ICES AFWG 2021 report.

8.5 Results of the assessment

For last assessment see ICES AFWG 2021 report.

8.5.1 Biological reference points

For last assessment see ICES AFWG 2021 report

8.6 Comments to the assessment

For last assessment see ICES AFWG 2021 report.

8.6.1 Future work

Further development of the assessment is needed, in consistency with conclusions of the IB-PHALI benchmark and report of the external benchmark reviewer.

A new benchmark on the stock is planned for early 2023. Towards the benchmark work is ongoing on revision of all indices that go into the assessment, update of the Gadget model in new version of the program package, amongst other improvements

8.7 Tables and figures

Table 8.1. Greenland halibut in subareas 1 and 2. Nominal Catch (t) by countries (Subarea 1, divisions 2a, and 2b combined) as officially reported to ICES.

Year	Denmark	Estonia	Faroe Islands	France	Fed. Rep. Germany	Greenland	Iceland	Ireland	Latvia	Lithuania	Norway	Poland	Portugal	Russia ³	Spain	GB	UK (Engl. & Wales)	UK (Scot land)	Total
1984	0	0	0	138	2165	0	0	0	0	0	4376	0	0	15181	0	0	23	0	21883
1985	0	0	0	239	4000	0	0	0	0	0	5464	0	0	10237	0	0	5	0	19945
1986	0	0	42	13	2718	0	0	0	0	0	7890	0	0	12200	0	0	10	2	22875
1987	0	0	0	13	2024	0	0	0	0	0	7261	0	0	9733	0	0	61	20	19112
1988	0	0	186	67	744	0	0	0	0	0	9076	0	0	9430	0	0	82	2	19587
1989	0	0	67	31	600	0	0	0	0	0	10622	0	0	8812	0	0	6	0	20138
1990	0	0	163	49	954	0	0	0	0	0	17243	0	0	4764	0	0	10	0	23183
1991	11	2564	314	119	101	0	0	0	0	0	27587	0	0	2490	132	0	0	2	33320
1992	0	0	16	111	13	13	0	0	0	0	7667	0	31	718	23	0	10	0	8602
1993	2	0	61	80	22	8	56	0	0	30	10380	0	43	1235	0	0	16	0	11933
1994	4	0	18	55	296	3	15	5	0	4	8428	0	36	283	1	0	76	2	9226
1995	0	0	12	174	35	12	25	2	0	0	9368	0	84	794	1106	0	115	7	11734
1996	0	0	2	219	81	123	70	0	0	0	11623	0	79	1576	200	0	317	57	14347

Year	Denmark	Estonia	Faroe Islands	France	Fed. Rep. Germany	Greenland	Iceland	Ireland	Latvia	Lithuania	Norway	Poland	Portugal	Russia ³	Spain	GB	UK (Engl. & Wales)	UK (Scot land)	Total
1997	0	0	27	253	56	0	62	2	0	0	7661	12	50	1038	157	0	67	25	9410
1998	0	0	57	67	34	0	23	2	0	0	8435	31	99	2659	259	0	182	45	11893
1999	0	0	94	0	34	38	7	2	0	0	15004	8	49	3823	319	0	94	45	19517
2000	0	0	0	45	15	0	16	1	0	0	9083	3	37	4568	375	0	111	43	14297
2001	0	0	0	122	58	0	9	1	0	0	10896	2	35	4694	418	0	100	30	16365
2002	0	219	0	7	42	22	4	6	0	0	7143	5	14	5584	178	0	41	28	13293
2003	0	0	459	2	18	14	0	1	0	0	8216	5	19	4384	230	0	41	58	13447
2004	0	0	0	0	9	0	9	0	0	0	13939	1	50	4662	186	0	43	0	18899
2005	0	170	0	32	8	0	0	0	0	0	13011	0	23	4883	660	0	29	18	18834
2006	0	0	204	46	8	0	8	0	0	196	11119	201	26	6055	29	0	10	2	17904
2007	0	0	203	41	8	198	15	0	0	0	8230	200	47	6484	8	0	11	8	15453
2008	0	0	663	42	5	0	28	0	0	0	7393	201	46	5294	94	0	16	10	13792
2009	0	0	422	16	19	16	15	2	0	0	8446	204	237	3335	210	0	9	60	12990
2010	0	0	272	102	14	15	16	0	0	0	7700	3	11	6888	182	0	4	22	15229
2011	0	0	538	46	80	4	7	0	0	234	8270	169	21	7053	144	0	36	4	16606
2012	0	0	564	40	40	12	13	0	0	0	9331	22	1	10041	190	0	21	14	20288

Year	Denmark	Estonia	Faroe Islands	France	Fed. Rep. Germany	Greenland	Iceland	Ireland	Latvia	Lithuania	Norway	Poland	Portugal	Russia ³	Spain	GB	UK (Engl. & Wales)	UK (Scot land)	Total
2013	0	0	783	168	49	22	106	1	0	0	10403	30	7	10310	196	0	17	75	22167
2014	0	0	887	269	33	20	86	0	0	0	11232	19	0	10061	206	0	28	184	23025
2015	0	0	312	227	33	14	53	0	0	5	10874	13	1	12953	159	0	25	79	24748
2016	0	359	483	229	9	17	79	0	0	0	12932	8	19	10576	198	0	20	19	24948
2017	0	523	917	177	21	26	10	0	1	72	13741	27	13	10714	56	0	83	0	26380
2018	2	574	401	150	50	20	24	0	0	206	14712	27	6	12072	60	134	0	0	28438
2019	0	587	350	103	44	21	8	0	32	377	14845	122	7	12198	87	74	0	0	28824
2020	1	578	514	49	72	41	19	0	149	226	14532	97	28	12266	96	45	0	0	28713
2021*	1	382	754	137	86	14	40	0	96	159	14008	14	46	12394	124	176	0	0	28431

* Provisional figures.

Table 8.2. Greenland halibut in subareas 1 and 2. Nominal catch (t) by countries in Subarea 1 as officially reported to ICES.

Year	Estonia	Faroe Islands	Fed. Rep. Germany	France	Greenland	Iceland	Ireland	Latvia	Lithuania	Norway	Poland	Portugal	Russia ³	Spain	GB	UK (England & Wales)	UK (Scot land)	Total
1984	0	0	0	0	0	0	0	0	0	593	0	0	81	0	0	17	0	691
1985	0	0	0	0	0	0	0	0	0	602	0	0	122	0	0	1	0	725
1986	0	0	1	0	0	0	0	0	0	557	0	0	615	0	0	5	1	1179
1987	0	0	2	0	0	0	0	0	0	984	0	0	259	0	0	10	0	1255
1988	0	9	4	0	0	0	0	0	0	978	0	0	420	0	0	7	0	1418
1989	0	0	0	0	0	0	0	0	0	2039	0	0	482	0	0	0	0	2521
1990	0	7	0	0	0	0	0	0	0	1304	0	0	321	0	0	0	0	1632
1991	164	0	0	0	0	0	0	0	0	2029	0	0	522	0	0	0	0	2715
1992	0	0	0	0	0	0	0	0	0	2349	0	0	467	0	0	0	0	2816
1993	0	32	0	0	0	56	0	0	0	1754	0	0	867	0	0	0	0	2709
1994	0	17	217	0	0	15	0	0	0	1165	0	0	175	0	0	0	0	1589
1995	0	12	0	0	0	25	0	0	0	1352	0	0	270	84	0	0	0	1743
1996	0	2	0	0	0	70	0	0	0	911	0	0	198	0	0	0	0	1181
1997	0	15	0	0	0	62	0	0	0	610	0	0	170	0	0	0	0	857
1998	0	47	0	0	0	23	0	0	0	859	0	0	491	0	0	2	0	1422

Year	Estonia	Faroe Islands	Fed. Rep. Germany	France	Greenland	Iceland	Ireland	Latvia	Lithuania	Norway	Poland	Portugal	Russia ³	Spain	GB	UK (England & Wales)	UK (Scot land)	Total
1999	0	91	0	0	13	7	0	0	0	1101	0	0	1203	0	0	0	0	2415
2000	0	0	0	0	0	16	0	0	0	1021	0	0	1169	0	0	0	0	2206
2001	0	0	0	0	0	9	0	0	0	925	0	0	951	0	0	2	0	1887
2002	0	0	3	0	0	0	0	0	0	834	0	0	1167	0	0	0	0	2004
2003	0	48	0	0	2	0	1	0	0	962	1	0	735	0	0	0.3	0	1749
2004	0	0	0	0	0	0.3	0	0	0	866	0	0	633	0	0	3	0	1503
2005	0	0	0	1	0	0	0	0	0	572	0	0	595	0	0	3	0	1171
2006	0	17	1	0	0	1	0	0	0	575	0	0	626	2	0	2	0	1224
2007	0	18	0	1	198	3	0	0	0	514	0	3	438	0	0	4	0	1179
2008	0	13	0	1	0	5	0	0	0	599	0	0	390	0	0	0	0	1008
2009	0	33	0	0	16	5	0	0	0	734	0	0	483	0	0	1	0	1272
2010	0	15	0	0	0	16	0	0	0	659	0	0	708	2	0	0	0	1399
2011	0	63	0	0	0	6	0	0	0	867	0	0	782	0	0	0	0	1718
2012	0	8	5	0	0	7	0	0	0	921	0	0	1368	1	0	7	0	2318
2013	0	39	1	8	0	100	0	0	0	1055	4	0	1442	4	0	8	0	2661
2014	0	143	8	11	19	38	0	0	0	1271	7	0	1261	10	0	14	0	2782

Year	Estonia	Faroe Islands	Fed. Rep. Germany	France	Greenland	Iceland	Ireland	Latvia	Lithuania	Norway	Poland	Portugal	Russia ³	Spain	GB	UK (England & Wales)	UK (Scot land)	Total
2015	0	96	14	3	12	47	0	0	5	1424	5	0	1681	8	0	4	0	3299
2016	353	84	2	3	3	38	0	0	0	1265	7	0	1172	7	0	20	0	2954
2017	519	125	4	4	2	8	0	1	72	1389	9	1	1124	13	0	21	0	3293
2018	574	104	9	16	2	20	0	0	199	1008	4	1	894	2	97	0	0	2930
2019	587	116	27	9	5	5	0	32	347	939	119	0	932	15	49	0	0	3182
2020	578	123	37	7	11	18	0	142	223	1388	96	17	787	36	1	0	0	3464
2021*	382	207	17	1	10	35	0	96	159	1617	9	14	713	14	11	0	0	3285

* Provisional figures.

Table 8.3. Greenland halibut in subareas 1 and 2. Nominal catch (t) by countries in Division 2a as officially reported to ICES.

Year	Estonia	Faroe Islands	Fed. Rep. Germ.	France	Greenland	Ireland	Iceland	Lithuania	Norway	Poland	Portugal	Russia ⁵	Spain	GB	UK (Engl. & Wales)	UK (Scot-land)	Total
1984	0	0	265	138	0	0	0	0	3703	0	0	5459	0	0	1	0	9566
1985	0	0	254	239	0	0	0	0	4791	0	0	6894	0	0	2	0	12180
1986	0	6	97	13	0	0	0	0	6389	0	0	5553	0	0	5	1	12064
1987	0	0	75	13	0	0	0	0	5705	0	0	4739	0	0	44	10	10586

Year	Estonia	Faroe Islands	Fed. Rep. Germ.	France	Greenland	Ireland	Iceland	Lithuania	Norway	Poland	Portugal	Russia ⁵	Spain	GB	UK (Engl. & Wales)	UK (Scot-land)	Total
1988	0	177	150	67	0	0	0	0	7859	0	0	4002	0	0	56	2	12313
1989	0	67	104	31	0	0	0	0	8050	0	0	4964	0	0	6	0	13222
1990	0	133	12	49	0	0	0	0	8233	0	0	1246	0	0	1	0	9674
1991	1400	314	21	119	0	0	0	0	11189	0	0	305	0	0	0	1	13349
1992	0	16	1	108	13	0	0	0	3586	0	15	58	0	0	1	0	3798
1993	0	29	14	78	8	0	0	0	7977	0	17	210	0	0	2	0	8335
1994	0	0	33	47	3	4	0	0	6382	0	26	67	0	0	14	0	6576
1995	0	0	30	174	12	2	0	0	6354	0	60	227	0	0	83	2	6944
1996	0	0	34	219	123	0	0	0	9508	0	55	466	4	0	278	57	10744
1997	0	0	23	253	0	0	0	0	5702	0	41	334	1	0	21	25	6400
1998	0	0	16	67	0	1	0	0	6661	0	80	530	5	0	74	41	7475
1999	0	0	20	0	25	2	0	0	13064	0	33	734	1	0	63	45	13987
2000	0	0	10	43	0	0	0	0	7536	0	18	690	1	0	65	43	8406
2001	0	0	49	122	0	1	9	0	8740	0	13	726	5	0	56	30	9751
2002	0	0	9	7	22	0	4	0	5877	0	3	849	0	0	12	28	6811
2003	0	390	5	2	12	0	0	0	6713	0	10	1762	14	0	5	58	8971
2004	0	0	4	0	0	0	9	0	11704	0	24	810	4	0	1	0	12556

Year	Estonia	Faroe Islands	Fed. Rep. Germ.	France	Greenland	Ireland	Iceland	Lithuania	Norway	Poland	Portugal	Russia ⁵	Spain	GB	UK (Engl. & Wales)	UK (Scot-land)	Total
2005	0	0	3	31	0	0	0	0	11216	0	11	1406	0	0	5	18	12690
2006	0	175	0	38	0	0	7	0	8897	0	6	950	0	0	6	2	10081
2007	0	162	2	37	0	0	12	0	6761	0	2	489	1	0	2	8	7475
2008	0	646	4	38	0	0	23	0	5566	1	1	1170	0	0	6	10	7465
2009	0	379	0	13	0	0	10	0	6456	0	9	1531	0	0	0	60	8459
2010	0	255	0	102	15	0	0	0	6426	0	0	4757	0	0	0	22	11577
2011	0	467	0	45	4	0	1	0	6637	0	0	3643	2	0	0	4	10803
2012	0	553	0	37	12	0	6	0	7934	0	0	3878	0	0	0	14	12434
2013	0	739	0	150	22	0	6	0	8215	0	2	4143	0	0	0	75	13352
2014	0	741	0	255	1	0	48	0	8640	0	0	4800	0	0	0	184	14669
2015	0	215	2	221	2	0	6	0	8166	0	1	3691	0	0	0	79	12383
2016	6	380	6	216	14	0	41	0	10073	0	6	1797	7	0	0	19	12566
2017	0	773	0	161	20	0	2	0	10122	0	7	1852	1	0	16	0	12955
2018	0	297	1	104	9	0	4	1	11226	2	5	695	0	6	0	0	12350
2019	0	232	15	94	16	0	3	0	12122	3	7	2754	3	11	0	0	15260
2020	0	385	21	34	28	0	1	0	11437	0	8	2691	0	3	0	0	14608
2021*	0	529	19	123	4	0	5	0	9647	0	5	842	5	108	0	0	11287

* Provisional figures.

Table 8.4. Greenland halibut in subareas 1 and 2. Nominal catch (t) by countries in Division 2b as officially reported to ICES.

Year	Denmark	Estonia	Faroe Islands	Fed. rep. Germ.	France	Greenland	Ireland	Latvia	Lithuania	Norway	Poland	Portugal	Russia ⁴	Spain	GB	UK (Engl. & Wales)	UK (Scot land)	Total
1984	0	0	0	1900	0	0	0	0	0	80	0	0	9641	0	0	5	0	11626
1985	0	0	0	3746	0	0	0	0	0	71	0	0	3221	0	0	2	0	7040
1986	0	0	36	2620	0	0	0	0	0	944	0	0	6032	0	0	0	0	9632
1987	0	0	0	1947	0	0	0	0	0	572	0	0	4735	0	0	7	10	7271
1988	0	0	0	590	0	0	0	0	0	239	0	0	5008	0	0	19	0	5856
1989	0	0	0	496	0	0	0	0	0	533	0	0	3366	0	0	0	0	4395
1990	0	0	23	942	0	0	0	0	0	7706	0	0	3197	0	0	9	0	11877
1991	11	1000	0	80	0	0	0	0	0	14369	0	0	1663	132	0	0	1	17256
1992	0	0	0	12	3	0	0	0	0	1732	0	16	193	23	0	9	0	1988
1993	2	0	0	8	2	0	0	0	30	649	0	26	158	0	0	14	0	889
1994	4	0	1	46	8	0	1	0	4	881	0	10	41	1	0	62	2	1061
1995	0	0	0	5	0	0	0	0	0	1662	0	24	297	1022	0	32	5	3047
1996	0	0	0	47	0	0	0	0	0	1204	0	24	912	196	0	39	0	2422
1997	0	0	12	33	0	0	2	0	0	1349	12	9	534	156	0	46	0	2153
1998	0	0	10	18	0	0	1	0	0	915	31	19	1638	254	0	106	4	2996

Year	Denmark	Estonia	Faroe Islands	Fed. rep. Germ.	France	Greenland	Ireland	Latvia	Lithuania	Norway	Poland	Portugal	Russia ⁴	Spain	GB	UK (Engl. & Wales)	UK (Scot land)	Total
1999	0	0	3	14	0	0	0	0	0	839	8	16	1886	318	0	31	0	3115
2000	0	0	0	5	2	0	1	0	0	526	3	19	2709	374	0	46	0	3685
2001	0	0	0	9	0	0	0	0	0	1231	2	22	3017	413	0	42	0	4736
2002	0	219	0	30	0	0	6	0	0	432	5	11	3568	178	0	29	0	4478
2003	0	0	21	13	0	0	0	0	0	541	4	9	1887	216	0	35	0	2726
2004	0	0	0	5	0	0	0	0	0	1369	1	26	3219	182	0	39	0	4840
2005	0	170	0	5	0	0	0	0	0	1223	0	12	2882	660	0	21	0	4973
2006	0	0	12	7	8	0	0	0	196	1647	201	20	4479	27	0	2	0	6600
2007	0	0	23	6	3	0	0	0	0	955	200	45	5557	7	0	5	0	6801
2008	0	0	4	1	3	0	0	0	0	1228	200	45	3734	94	0	10	0	5319
2009	0	0	10	19	3	0	2	0	0	1256	204	228	1321	210	0	8	0	3260
2010	0	0	2	14	0	0	0	0	0	615	3	11	1423	180	0	4	0	2252
2011	0	0	8	80	1	0	0	0	234	766	169	21	2628	142	0	36	0	4085
2012	0	0	2	35	3	0	0	0	0	476	22	1	4795	189	0	14	0	5537
2013	0	0	5	48	10	0	1	0	0	1133	26	5	4725	192	0	9	0	6154
2014	0	0	3	25	3	0	0	0	0	1321	12	0	4000	196	0	14	0	5574
2015	0	0	1	17	3	0	0	0	0	1284	8	0	7581	151	0	21	0	9066

Year	Denmark	Estonia	Faroe Islands	Fed. rep. Germ.	France	Greenland	Ireland	Latvia	Lithuania	Norway	Poland	Portugal	Russia ⁴	Spain	GB	UK (Engl. & Wales)	UK (Scot land)	Total
2016	2	0	19	1	10	0	0	0	0	1594	1	13	7608	183	0	0	0	9431
2017	0	4	19	17	12	3	0	0	0	2230	17	5	7737	42	0	46	0	10132
2018	2	0	1	40	30	9	0	6	0	2477	21	0	10483	58	31	0	0	13159
2019	0	0	2	2	0	01	0	0	0	1784	0	1	8512	68	14	0	0	10353
2020	1	0	6	15	8	2	0	6	3	1708	1	3	8788	60	40	0	0	10641
2021*	1	0	18	50	13	0	0	0	0	2744	5	27	10839	105	57	0	0	13859

* Provisional figures.

Table 8.5. Greenland halibut in subareas 1 and 2. Landings by gear (tonnes). Approximate figures, the total may differ slightly from Table 8.1.

Year	Gillnet	Longline	Trawl	Danish seine	Other
1980	1189	336	11759	-	-
1981	730	459	13829	-	-
1982	748	679	15362	-	-
1983	1648	1388	19111	-	-
1984	1200	1453	19230	-	-
1985	1668	750	17527	-	-
1986	1677	497	20701	-	-
1987	2239	588	16285	-	-

Year	Gillnet	Longline	Trawl	Danish seine	Other
1988	2815	838	15934	-	-
1989	1342	197	18599	-	-
1990	1372	1491	20325	-	-
1991	1904	4552	26864	-	-
1992	1679	1787	5787	-	-
1993	1497	2493	7889	-	-
1994	1403	2392	5353	-	-
1995	1500	4034	5494	-	-
1996	1480	4616	7977	-	-
1997	998	3378	5198	-	-
1998	1327	7395	6664	-	-
1999	2565	6804	10177	-	-
2000	1707	5029	7700	-	-
2001	2041	6303	7968	-	-
2002	1737	5309	6115	-	-
2003	2046	5483	6049	-	-
2004	2290	7135	8778	599	-
2005	1842	7539	9420	447	-

Year	Gillnet	Longline	Trawl	Danish seine	Other
2006	1503	6146	10042	205	-
2007	997	4503	9618	119	-
2008	901	3575	9285	9	8
2009	1409	4952	6583	34	18
2010	1449	5427	8165	170	10
2011	1583	5039	9351	239	15
2012	1929	5602	12130	413	5
2013	2398	5805	13791	176	0
2014	2647	6166	13673	183	0
2015	2508	6287	15445	489	18
2016	2646	7290	14333	650	304
2017	2677	7221	15774	679	29
2018	3021	6542	17367	842	20
2019	3323	7028	17046	1119	0
2020	2976	6989	17675	1044	28
2021*	2930	7385	17203	866	50

* Provisional figures.

Table 8.6. Greenland halibut in subareas 1 and 2. Catch per unit effort and total effort.

Year	USSR catch/hour trawling (t)		Norway ¹⁰ catch/hour trawling (t)		Average CPUE		Total effort (in '000 hrs trawling) ⁵	CPUE 7+ ⁶	GDR ⁷ (catch/day tonnage (kg)
	RT ¹	PST ²	A ⁸	B ⁹	A ³	B ⁴			
1965	0.80	-	-	-	0.80	-	-	-	-
1966	0.77	-	-	-	0.77	-	-	-	-
1967	0.70	-	-	-	0.70	-	-	-	-
1968	0.65	-	-	-	0.65	-	-	-	-
1969	0.53	-	-	-	0.53	-	-	-	-
1970	0.53	-	-	-	0.53	-	169	0.50	-
1971	0.46	-	-	-	0.46	-	172	0.43	-
1972	0.37	-	-	-	0.37	-	116	0.33	-
1973	0.37	-	0.34	-	0.36	-	83	0.36	-
1974	0.40	-	0.36	-	0.38	-	100	0.36	-
1975	0.39	0.51	0.38	-	0.39	0.45	99	0.37	-
1976	0.40	0.56	0.33	-	0.37	0.45	100	0.34	-
1977	0.27	0.41	0.33	-	0.30	0.37	96	0.26	-
1978	0.21	0.32	0.21	-	0.21	0.27	123	0.17	-
1979	0.23	0.35	0.28	-	0.26	0.32	67	0.19	-
1980	0.24	0.33	0.32	-	0.28	0.33	47	0.25	-

Year	USSR catch/hour trawling (t)		Norway ¹⁰ catch/hour trawling (t)		Average CPUE		Total effort (in '000 hrs trawling) ⁵	CPUE 7+ ⁶	GDR ⁷ (catch/day tonnage (kg))
	RT ¹	PST ²	A ⁸	B ⁹	A ³	B ⁴			
1981	0.30	0.36	0.36	-	0.33	0.36	42	0.28	-
1982	0.26	0.45	0.41	-	0.34	0.43	39	0.37	-
1983	0.26	0.40	0.35	-	0.31	0.38	58	0.32	-
1984	0.27	0.41	0.32	-	0.30	0.37	59	0.30	-
1985	0.28	0.52	0.37	-	0.33	0.45	44	0.37	-
1986	0.23	0.42	0.37	-	0.30	0.40	57	0.32	-
1987	0.25	0.50	0.35	-	0.30	0.43	44	0.35	-
1988	0.20	0.30	0.31	-	0.26	0.31	63	0.26	4.26
1989	0.20	0.30	0.26	-	0.23	0.28	73	0.19	2.95
1990	-	0.20	0.27	-	-	0.24	95	0.16	1.66
1991	-	-	0.24	-	-	-	134	0.18	-
1992	-	-	0.46	0.72	-	-	20	0.29	-
1993	-	-	0.79	1.22	-	-	15	0.65	-
1994	-	-	0.77	1.27	-	-	11	0.70	-
1995	-	-	1.03	1.48	-	-	-	-	-
1996	-	-	1.45	1.82	-	-	-	-	-
1997	0.71	-	1.23	1.60	-	-	-	-	-

Year	USSR catch/hour trawling (t)			Norway ¹⁰ catch/hour trawling (t)		Average CPUE		Total effort (in '000 hrs trawling) ⁵	CPUE 7+ ⁶	GDR ⁷ (catch/day tonnage (kg)
	RT ¹	PST ²		A ⁸	B ⁹	A ³	B ⁴			
1998	0.71	-		0.98	1.35	-	-	-	-	-
1999	0.84	-		0.82	1.77	-	-	-	-	-
2000	0.94	-		1.38	1.92	-	-	-	-	-
2001	0.82	¹¹	-	1.18	1.57	-	-	-	-	-
2002	0.85	-		1.07	1.82	-	-	-	-	-
2003	0.97	¹²	-	0.86	2.45	-	-	-	-	-
2004	0.63	¹³	-	1.16	1.79	-	-	-	-	-
2005	0.61	¹²	-	1.30	2.29	-	-	-	-	-
2006	0.57	¹²	-	0.96	2.09	-	-	-	-	-
2007	0.64	¹²	-	-	-	-	-	-	-	-
2008	0.48	¹²	-	-	-	-	-	-	-	-
2009	0.77	¹³	-	-	-	-	-	-	-	-
2010		1.57	¹²	-	-	-	-	-	-	-
2011		2.32	¹²							
2012		2.06	¹²							
2013		2.25	¹²							
2014		2.52	¹²							

¹ Side trawlers, 800–1000 hp. From 1983 onwards, stern trawlers (SRTM), 1000 hp. From 1997 based on research fishing.

² Stern trawlers, up to 2000 HP.

³ Arithmetic average of CPUE from USSR RT (or SRTM trawlers) and Norwegian trawlers.

⁴ Arithmetic average of CPUE from USSR PST and Norwegian trawlers.

⁵ For the years 1981–1990, based on average CPUE type B. For 1991–1993, based on the Norwegian CPUE, type A.

⁶ Total catch (t) of seven years and older fish divided by total effort.

⁷ For the years 1988–1989, frost-trawlers 995 BRT (FAO Code 095). For 1990, factory trawlers S IV, 1943 BRT (FAO Code 090).

⁸ Norwegian trawlers, ISSC-code 07, 250–499.9 GRT.

⁹ Norwegian factory trawlers, ISSCFV-code 09, 1000–1999.9 GRT

¹⁰ From 1992 based on research fishing. 1992–1993: two weeks in May/June and October; 1994–1995: 10 days in May/June

¹¹ Based on fishery from April–October only, a period with relatively low CPUE. In previous years fishery was carried out throughout the whole year.

¹² Based on fishery from October–December only, a period with relatively high CPUE.

¹³ Based on fishery from October–November only.

Table 8.7. Greenland halibut in subareas 1 and 2. Catch history back to 1935.

Year	Norway	Russia	Others	Total	Year	Norway	Russia	Others	Total
1935	1534	n/a	-	1534	1979	2843	10311	4088	17312
1936	830	n/a	-	830	1980	3157	7670	2457	13284
1937	616	n/a	-	616	1981	4201	9276	1541	15018
1938	329	n/a	-	329	1982	3206	12394	1189	16789
1939	459	n/a	-	459	1983	4883	15152	2112	22147
1940	846	n/a	-	846	1984	4376	15181	2326	21883
1941	1663	n/a	-	1663	1985	5464	10237	4244	19945

Year	Norway	Russia	Others	Total	Year	Norway	Russia	Others	Total
1942	955	n/a	-	955	1986	7890	12200	2785	22875
1943	824	n/a	-	824	1987	7261	9733	2118	19112
1944	678	n/a	-	678	1988	9076	9430	1081	19587
1945	1148	n/a	-	1148	1989	10622	8812	704	20138
1946	1337	25	-	1362	1990	17243	4764	1176	23183
1947	1409	28	-	1437	1991	27587	2490	3243	33320
1948	1877	110	-	1987	1992	7667	718	217	8602
1949	198	177	-	375	1993	10380	1235	318	11933
1950	1853	221	-	2074	1994	8428	283	515	9226
1951	2438	423	-	2861	1995	9368	794	1572	11734
1952	2576	377	-	2953	1996	11623	1576	1148	14347
1953	2208	393	-	2601	1997	7661	1038	711	9410
1954	3674	416	-	4090	1998	8435	2659	799	11893
1955	3010	290	-	3300	1999	15004	3823	690	19517
1956	3493	446	-	3939	2000	9083	4568	646	14297
1957	4130	505	-	4635	2001	10896	4694	775	16365
1958	2931	1261	-	4192	2002	7143	5584	566	13293
1959	4307	3632	-	7939	2003	8216	4384	847	13447

Year	Norway	Russia	Others	Total	Year	Norway	Russia	Others	Total
1960	6662	4299	-	10961	2004	13939	4662	298	18899
1961	7977	3836	-	11813	2005	13011	4883	940	18834
1962	11600	1760	-	13360	2006	11119	6055	730	17904
1963	11300	3240	-	14540	2007	8230	6484	739	15453
1964	14200	26191	-	40391	2008	7393	5294	1105	13792
1965	18000	16682	-	34751	2009	8446	3335	1210	12990
1966	16434	9768	119	26321	2010	7700	6888	641	15229
1967	17528	5737	1002	24267	2011	8270	7053	1283	16606
1968	22514	3397	257	26168	2012	9331	10041	916	20288
1969	14856	19760	9173	43789	2013	10403	10310	1454	22167
1970	15871	35578	38035	89484	2014	11232	10061	1732	23025
1971	9466	54339	15229	79034	2015	10874	12953	921	24748
1972	15983	16193	10872	43055	2016	12932	10576	1440	24948
1973	13989	8561	7349	29938	2017	13741	10714	1925	26380
1974	8791	16958	11972	37763	2018	14874	12072	1598	28544
1975	4858	20372	12914	38172	2019	14813	12198	1471	28482
1976	6005	16580	13469	36074	2020	14532	12266	1915	28713
1977	4217	15045	9613	28827	2021*	14008	12394	2029	28431

Year	Norway	Russia	Others	Total	Year	Norway	Russia	Others	Total
1978	4082	14651	5884	24617					

* Provisional figures.

Table 8.8. Greenland halibut in ICES Division 4.a (North Sea). Nominal catch (t) by countries as officially reported to ICES. Not included in the assessment.

Year	Denmark	Faroe Islands	France	Germany	Greenland	Ireland	Norway	Russia	GB	UK England & Wales	UK Scotland	Netherlands	Total
1973	0	0	0	4	0	0	9	8	0	28	0	0	49
1974	0	0	0	2	0	0	2	0	0	30	0	0	34
1975	0	0	0	1	0	0	4	0	0	12	0	0	17
1976	0	0	0	1	0	0	2	0	0	18	0	0	21
1977	0	0	0	2	0	0	2	0	0	8	0	0	12
1978	0	0	2	30	0	0	0	0	0	1	0	0	33
1979	0	0	2	16	0	0	2	0	0	1	0	0	21
1980	0	177	0	34	0	0	5	0	0	0	0	0	216
1981	0	0	0	0	0	0	7	0	0	0	0	0	7
1982	0	0	2	26	0	0	17	0	0	0	0	0	45
1983	0	0	1	64	0	0	89	0	0	0	0	0	154
1984	0	0	3	50	0	0	32	0	0	0	0	0	85
1985	0	1	2	49	0	0	12	0	0	0	0	0	64

Year	Denmark	Faroe Islands	France	Germany	Greenland	Ireland	Norway	Russia	GB	UK England & Wales	UK Scotland	Netherlands	Total
1986	0	0	30	2	0	0	34	0	0	0	0	0	66
1987	0	28	16	1	0	0	35	0	0	0	0	0	80
1988	0	71	62	3	0	0	19	0	0	1	0	0	156
1989	0	21	14	1	0	0	197	0	0	5	0	0	238
1990	0	10	30	3	0	0	29	0	0	4	0	0	76
1991	0	48	291	1	0	0	216	0	0	2	0	0	558
1992	1	15	416	3	0	0	626	0	0	+	1	0	1062
1993	1	0	78	1	0	0	858	0	0	10	+	0	948
1994	+	103	84	4	0	0	724	0	0	6	0	0	921
1995	+	706	165	2	0	0	460	0	0	52	283	0	1668
1996	+	0	249	1	0	0	1496	0	0	105	159	0	514
1997	+	0	316	3	0	0	873	0	0	1	162	0	1355
1998	+	0	71	10	0	10	804	0	0	35	435	0	1365
1999	+	0		1	0	18	2157	0	0	43	358	0	2577
2000	+		41	10	0	19	498	0	0	67	192	0	827
2001	+		43	0	0	10	470	0	0	122	202	0	847
2002	+		8	+	0	2	200	0	0	10	246	0	466

Year	Denmark	Faroe Islands	France	Germany	Greenland	Ireland	Norway	Russia	GB	UK England & Wales	UK Scotland	Netherlands	Total
2003	0	0	1	+	+	+	453	0	0	+	122	0	576
2004	0	0	0	0	0	0	413	0	0	90	0	0	503
2005	0	0	2	0	0	0	58	0	0	4	0	0	64
2006	0	0	3	0	0	0	90	0	0	0	7	0	100
2007	0	1	0	0	0	0	133	0	0	1	6	0	141
2008	0	0	0	0	0	0	14	0	0	0	22	0	36
2009	0	9	22	0	0	0	5	0	0	0	129	0	165
2010	+	1	38	0	0	0	10	0	0	0	49	0	98
2011	0	1	39	0	0	0	94	0	0	0	44	0	178
2012	0	0	14	0	0	0	788	0	0	0	43	0	845
2013	0	0	25	0	0	0	122	0	0	0	174	0	321
2014	0	2	27	0	0	0	723	0	0		104	0	856
2015	0	0	34	1	0	0	1151	0	0	0	127	0	1313
2016	0	0	31	0	0	0	983	0	0	0	120	0	1134
2017	0	0	20	0	0	0	753	0	0	0	73	0	846
2018	0	0	15	0	0	0	472	0	42	0	0	0	532
2019	0	0	21	0	0	0	241	0	14	0	0	1	277

Year	Denmark	Faroe Islands	France	Germany	Greenland	Ireland	Norway	Russia	GB	UK England & Wales	UK Scotland	Netherlands	Total
2020	0	0	10	0	0	0	663	0	45	0	0	1	719
2021*	0	4	19	0	0	0	0	0	121	0	0	0	144

* Provisional figures.

Table 8.9. Abundance indices of different length groups in Russian autumn survey.

Year/Length (cm)	≤30	31–35	36–40	41–45	46–50	51–55	56–60	61–65	66–70	71–75	76–80	>80	Total
1984	4837	5078	11690	21171	15167	10886	7370	6549	3751	1786	1128	483	89896
1985	4003	6748	16858	24897	23244	15702	8376	5704	3776	2054	1028	698	113088
1986	3482	6062	13765	18945	15997	10369	4839	3022	2534	1325	440	205	80985
1987	2010	4828	7228	10490	8831	5513	2123	1784	1437	645	481	421	45791
1988	3374	5111	9022	10147	10128	5828	2265	1862	1218	511	361	341	50168
1989	2030	7055	13962	17252	16790	10028	3789	1916	1279	415	200	388	75104
1990	2762	6056	12802	13061	9527	9829	4967	2094	589	312	115	119	62233
1991	1036	5012	16237	20998	17418	11728	8012	4562	814	181	122	174	86294
1992	184	2153	17185	32399	22481	12977	6229	3473	1869	502	182	106	99740
1993	-	290	3593	14782	21080	16013	6743	3341	2031	859	269	164	69165
1994	49	17	1651	12582	16203	12566	5391	3320	2019	819	188	106	54911
1995	-	38	1245	13193	20571	12445	5432	2717	1587	579	187	82	58076

[illegible]

Year/Length (cm)	≤30	31–35	36–40	41–45	46–50	51–55	56–60	61–65	66–70	71–75	76–80	>80	Total
2014	17	1697	10296	34074	45287	35861	22621	8613	5505	2227	929	427	167553
2015	318	2099	13542	35864	43551	36082	21114	10924	4472	1342	850	339	170497
2016*****													
2017	158	2198	10687	32464	61577	71590	40700	16830	7449	3483	1206	1245	249585
2018*****													
2019	144	2186	13500	27129	28572	22536	13943	5825	3080	1654	707	406	119742
2020*****													
2021*****													

* Only half of the standard area was investigated

** No observations in NEEZ

*** Observations in the NEEZ on the main spawning grounds were conducted considerably later than usual

**** Survey was conducted by one vessel with a reduced number of trawls at depths less than 500 m

*****No indices for 2013, 2016, 2018,2020 and 2021

Table 8.10. Abundance indices of different length groups in Norwegian autumn slope survey (in thousands).

Year	<30	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1994	0	0	0	0	1	15	23	80	197	335	645	1225	1611	2432	3431	3511	3830	3519	3940	3724	2896	3020
1995	0	0	1	3	6	15	29	86	141	242	472	931	1210	2294	3092	3840	4475	4540	4633	4321	3836	3856
1996	0	2	1	6	6	2	18	49	54	166	321	772	957	1787	2912	3769	4728	5199	5944	5644	5224	5132
1997	7	5	11	4	33	27	49	186	250	297	443	862	1009	1814	2888	3578	5451	5402	6132	5206	4125	5455

Year	<30	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1998	7	2	6	15	17	22	51	103	174	219	372	504	727	1061	1491	2103	2941	3092	3609	3735	3851	4850
1999	10	4	18	15	20	40	61	75	110	174	202	377	476	862	1175	1655	2397	2543	3485	4214	3694	5274
2000	2	7	11	30	34	46	128	122	163	264	383	677	739	932	1183	1439	2038	2030	2268	2644	2846	3888
2001	21	20	35	37	77	147	274	270	440	462	724	986	1176	1373	1630	1720	2724	2655	3349	3128	3973	3999
2002	97	75	107	122	180	267	399	404	723	669	869	1026	1097	1360	1883	1870	2560	2185	3322	3450	3597	4032
2003	38	27	65	97	172	270	383	692	783	894	1214	1100	1481	1561	2082	1792	2468	2104	3193	3360	3506	3117
2004	27	15	47	125	191	402	636	639	951	1042	1092	1206	1337	1319	1398	1546	2013	1967	2638	2646	3337	3373
2005	66	104	285	317	517	765	861	1220	1492	1540	2053	2295	2293	2588	2262	2677	3041	2446	2854	2095	3056	2336
2006	12	50	80	158	258	456	849	1022	1429	1579	1603	1900	1823	1824	2015	1974	2529	2359	2350	2137	2338	2175
2007	157	96	161	359	766	1423	2508	3142	4411	5679	5346	5639	5502	5038	4600	3632	3667	3628	3278	2571	2882	2597
2008	378	384	723	1323	1763	1793	2441	2911	3249	3685	4229	4300	4257	3568	3911	3534	3020	3066	2769	2582	2639	2284
2009	31	36	93	349	505	934	1663	2660	3050	3680	4138	4885	5567	4148	5327	4639	3688	3752	3682	3410	3553	3215
2011	0	0	20	36	57	124	288	563	646	1414	1454	2228	2680	3174	3649	3750	3532	3031	3299	3991	3251	2454
2013	17	5	3	1	13	64	103	122	324	582	1022	1266	2138	2207	3553	3748	3476	4124	3717	3045	3718	3052
2015	3	24	24	36	131	318	439	721	757	1043	1253	1473	2602	2444	3776	4459	4602	4598	4371	3962	4156	3694
2017	6	20	45	54	63	144	184	328	593	365	928	955	1267	1457	1764	1983	2367	2465	2651	2569	2816	3011
2019	0	0	28	43	128	362	372	569	874	1322	1290	1424	1667	2285	2210	2168	2208	2229	2434	2119	2305	2405
2021	80	67	177	211	375	813	662	1010	1103	1156	1332	1680	1826	2338	2439	3818	3133	3597	2874	3601	3688	2875

Year	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
1994	2545	2729	2398	2092	1975	1547	1488	1103	920	788	565	702	576	523	577	370	367	386
1995	3165	3152	2963	2647	2272	1756	1586	1153	970	880	764	690	680	592	525	461	387	334
1996	4106	3638	3571	2752	2177	1568	1443	1017	867	782	512	449	538	404	391	356	281	248
1997	3644	3427	3018	2302	2111	1502	1131	1042	617	849	585	576	537	403	446	481	294	230
1998	4211	3824	3166	2988	2857	1974	1714	1515	981	1172	783	613	598	668	641	569	479	364
1999	4092	5196	4136	3909	4122	2631	2299	1787	1374	1388	895	1037	865	886	923	791	807	594
2000	3692	3681	3512	3016	3197	2388	2007	1545	1227	1327	915	1028	734	630	732	517	509	505
2001	3649	4512	4106	3005	3358	2552	2589	2147	1293	1350	1099	939	1187	684	787	612	751	603
2002	4241	3516	3966	3602	3855	2837	2511	2248	1672	1787	1239	1237	1139	808	882	604	679	474
2003	4400	3465	3808	3512	3907	3368	3035	2319	1896	1705	1612	1384	1542	1130	1350	972	994	675
2004	3535	4405	3614	3801	3249	2751	2252	1911	1493	1455	1372	1360	1284	1162	962	763	891	590
2005	2400	2734	2413	2084	2295	1882	1681	1492	1458	1168	1241	1057	1065	984	903	782	865	479
2006	2493	2125	2290	2025	2189	1790	1668	1542	1337	1159	1188	1009	925	1036	807	798	647	678
2007	2109	2249	2123	2142	1758	1609	1581	1070	1008	1044	625	938	672	558	537	526	394	469
2008	2288	2248	2229	1815	1751	1514	1150	1019	861	668	652	657	508	582	629	523	484	361
2009	2668	2944	2850	2441	2372	2233	1837	1698	1503	1135	845	962	647	858	715	607	653	609
2011	2905	2746	2602	2713	2387	1709	1704	1529	978	1179	577	649	554	440	466	315	440	550
2013	2498	2035	1905	1631	1710	1573	1424	1009	790	671	503	506	400	456	234	266	227	176

Year	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
2015	3469	2384	2546	2084	2142	1734	1336	1108	1020	899	713	621	605	495	274	289	341	291
2017	2890	2547	2501	2091	1792	1786	1532	1274	1269	1029	765	579	481	446	294	299	247	245
2019	1653	1799	1617	1490	1057	1185	846	840	670	568	461	313	304	312	231	242	179	130
2021	2949	2978	2916	2231	1852	1665	1400	1372	1159	942	934	882	622	713	613	408	387	393
Year	69		70	71	72	73	74	75	76	77	78	79	>80	SUM				
1994	256		253	151	136	122	74	113	47	39	40	30	97	57444				
1995	339		244	181	179	97	100	137	56	53	53	34	101	64574				
1996	232		168	118	123	93	97	61	28	40	39	21	74	68887				
1997	171		207	216	119	109	111	104	61	32	35	40	185	67819				
1998	308		320	235	222	229	144	102	64	65	61	43	192	59786				
1999	478		406	385	319	182	205	223	125	109	145	51	328	67569				
2000	341		376	232	210	168	153	141	77	96	77	47	233	55187				
2001	490		375	279	170	207	178	157	85	133	69	49	306	66941				
2002	469		383	297	251	183	163	134	104	130	48	65	251	70069				
2003	563		632	464	249	244	170	242	201	128	125	114	356	74961				
2004	654		420	373	325	521	248	181	135	121	100	109	431	68415				
2005	523		508	400	262	196	159	156	162	109	82	61	426	67190				
2006	474		508	397	285	185	276	185	140	136	81	96	497	59886				

Year	69	70	71	72	73	74	75	76	77	78	79	>80	SUM
2007	289	254	261	101	140	130	75	52	80	59	47	278	90260
2008	313	258	226	201	138	107	59	62	89	66	76	508	80851
2009	574	541	271	386	219	171	191	112	121	89	100	407	93764
2011	415	409	200	285	235	193	225	204	175	51	87	503	67066
2013	162	173	124	114	109	112	66	72	79	34	43	260	55662
2015	252	265	176	195	186	205	89	78	73	141	53	286	69236
2017	178	185	88	98	77	51	61	50	35	40	46	184	49195
2019	144	117	71	81	50	44	32	31	9	13	12	113	43056
2021	226	188	130	103	154	113	77	58	76	70	27	175	64668

*Biennial surveys since 2009.

Table 8.11. Abundance indices of females of different length groups in Norwegian autumn slope survey (in thousands).

Year	<30	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1994	0	0	0	0	1	15	23	80	196	335	643	1223	1611	2429	3426	3503	3824	3510	3934	3716	2886	3018
1995	0	0	1	3	6	15	29	86	141	242	472	930	1210	2291	3088	3837	4470	4537	4629	4317	3835	3855
1996	0	0	0	4	0	1	10	26	28	64	123	228	233	424	415	773	937	1020	1185	1151	1037	1374
1997	6	5	7	4	17	14	36	134	139	146	187	337	331	419	569	685	899	852	1169	1058	828	1226
1998	5	0	0	11	4	7	26	41	78	77	156	170	190	274	290	364	413	526	605	665	743	970
1999	2	0	1	0	7	14	19	12	41	68	93	137	117	227	285	300	336	313	496	574	533	1049
2000	1	5	6	14	16	16	44	44	65	121	155	201	229	245	268	278	374	311	303	411	410	517

Year	<30	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
2001	13	6	14	15	38	61	118	123	177	167	293	411	462	355	425	376	544	477	493	379	558	673
2002	51	48	58	60	77	109	178	182	290	275	326	319	306	407	500	378	515	331	483	461	501	575
2003	25	25	27	43	100	124	182	276	413	429	532	504	512	545	610	450	552	394	539	487	523	406
2004	15	3	13	61	83	160	305	278	436	358	434	404	440	384	381	454	413	362	382	309	427	472
2005	30	24	110	99	182	258	322	464	565	537	723	758	619	630	452	633	723	467	593	293	500	329
2006	4	19	48	81	148	187	327	442	595	674	713	686	648	568	649	482	619	501	503	512	468	452
2007	85	67	104	178	371	731	1321	1539	2259	2654	2515	2403	2454	2145	1580	1242	1132	988	851	727	640	554
2008	216	210	432	698	829	958	1190	1372	1529	1597	1720	1516	1625	1069	1180	928	889	948	834	677	773	615
2009	13	19	33	146	210	343	662	1001	1263	1470	1491	1814	1979	1441	1752	1533	1044	1195	1037	988	922	878
2011	0	0	8	22	24	31	103	175	195	469	311	538	642	722	623	645	686	664	528	665	751	298
2013	0	0	0	0	3	11	49	30	50	186	261	246	521	286	650	509	621	693	626	664	745	576
2015	0	7	7	19	67	149	183	304	380	358	391	377	491	387	549	490	682	904	632	689	761	766
2017	4	17	16	43	44	79	83	120	267	117	395	312	365	373	288	411	524	444	6277	453	439	579
2019	0	0	16	25	92	119	183	300	360	500	527	498	604	609	512	517	426	558	489	503	541	479
2021	41	15	96	105	239	423	355	536	475	484	450	595	551	475	592	450	522	539	450	733	744	591

*Biennial surveys since 2009.

Year	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73
1994	2535	2719	2384	2088	1969	1545	1482	1098	917	785	560	700	571	522	573	368	364	385	254	253	151	136	122
1995	3162	3145	2958	2646	2271	1752	1586	1152	968	875	761	689	680	592	525	461	387	333	339	244	181	179	97

Year	51	52	53	54	55	56	57	58	69	60	61	62	63	64	65	66	67	68	69	70	71	72	73
1996	1044	886	895	771	527	547	639	548	508	602	410	401	481	383	387	344	281	230	232	167	118	123	93
1997	911	985	824	650	669	590	523	562	346	633	484	501	506	364	433	437	289	225	171	207	216	119	109
1998	995	1043	999	1056	903	758	754	831	667	907	615	543	569	639	638	567	453	362	308	307	235	222	225
1999	830	1105	928	1042	1287	1019	1002	955	845	1106	754	927	816	814	890	780	798	582	478	403	384	317	182
2000	590	591	593	663	756	816	704	649	670	839	699	829	620	588	665	487	491	495	328	376	230	210	167
2001	479	632	761	643	680	698	962	877	743	936	928	714	1062	594	772	577	746	598	488	370	279	170	207
2002	610	438	638	694	823	672	824	779	780	989	780	1024	813	705	827	598	656	443	458	383	295	251	183
2003	604	582	662	611	968	854	1111	964	1057	1126	1260	1165	1314	1085	1278	938	962	670	555	625	462	249	242
2004	461	638	570	693	760	937	876	839	966	998	1202	1186	1227	1116	932	749	885	585	639	420	373	325	461
2005	378	411	427	451	597	638	775	718	800	871	935	938	965	904	860	740	860	449	523	465	390	262	192
2006	490	458	461	392	537	523	545	678	805	796	893	865	820	927	775	768	637	633	468	499	376	285	178
2007	476	499	471	491	469	533	607	549	566	776	494	790	587	534	517	515	394	469	278	254	261	101	133
2008	509	481	515	495	443	547	441	543	466	490	530	572	482	539	610	514	483	361	309	252	226	201	138
2009	640	665	738	639	733	724	698	783	814	605	653	765	534	776	701	525	616	587	561	526	263	378	219
2011	557	468	480	472	466	369	329	469	324	378	341	523	477	348	450	300	415	550	393	409	192	285	235
2013	518	381	477	308	375	529	526	304	296	334	324	377	329	390	218	260	227	174	159	173	120	114	109
2015	826	770	744	579	811	649	471	494	553	537	470	462	420	450	270	283	339	283	251	265	176	195	186
2017	530	438	516	448	392	555	578	498	563	530	473	330	378	371	271	286	243	245	178	185	88	98	77

Year	51	52	53	54	55	56	57	58	69	60	61	62	63	64	65	66	67	68	69	70	71	72	73
2019	401	481	431	494	351	391	324	458	402	367	277	254	260	257	210	218	174	123	143	114	71	81	50
2021	623	672	574	541	506	440	555	692	687	603	721	741	557	676	585	382	387	379	226	188	130	103	154

*Biennial surveys since 2009

Year	74	75	76	77	78	79	>80	SUM
1994	74	113	47	39	40	30	95	51911
1995	100	137	56	53	53	34	99	58202
1996	92	61	28	40	39	21	74	18961
1997	111	104	61	29	35	40	185	20387
1998	144	102	64	65	61	43	192	19839
1999	205	223	125	109	140	47	328	22940
2000	153	141	77	96	77	47	233	17914
2001	178	157	85	131	69	49	306	22069
2002	163	131	104	130	48	65	251	21985
2003	170	242	201	128	125	114	356	28378
2004	241	181	135	119	100	109	431	25728
2005	149	156	152	109	82	61	426	24995
2006	259	185	138	136	81	96	491	24521
2007	124	75	52	80	59	47	275	38016
2008	107	59	62	89	66	76	506	32917

Year	74	75	76	77	78	79	>80	SUM
2009	171	191	104	121	80	100	385	36529
2011	193	225	204	175	51	87	503	18768
2013	112	66	72	79	34	43	260	14415
2015	205	89	78	73	141	53	286	20002
2017	51	61	50	35	40	46	184	20388
2019	44	32	31	9	13	12	113	14444
2021	113	77	58	76	70	27	175	21179

*Biennial surveys since 2009.

Table 8.12. Abundance indices (numbers in thousands) from bottom-trawl surveys in the Barents Sea standard area winter (Mehl *et al.*, WD4 AFWG 2019).

Year	Length group (cm)															Total	Biomass (tonnes)
	≤14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	≥80		
1994	0	0	21	76	148	1117	3139	4740	3615	1941	889	541	21	0	0	16248	19228
1995	298	0	0	0	90	129	2877	7182	5739	2027	1622	839	489	86	0	21378	27459
1996	4121	0	0	0	62	124	1214	4086	4634	1871	1112	638	337	74	12	18285	20256
1997 ¹	0	68	0	0	55	163	949	4313	5629	2912	1609	643	300	65	21	16728	24214
1998 ¹	68	220	945	578	481	487	1088	4016	6591	3076	1798	707	326	93	44	20518	27248
1999	43	84	241	436	566	269	784	1701	3097	1669	1094	491	89	75	0	10640	14681
2000	140	184	344	836	1722	3857	2253	1560	2144	1714	1191	615	249	76	0	16883	17246
2001	68	49	147	179	737	1525	3716	3271	2302	2010	1088	529	160	50	39	15871	18224

Year	Length group (cm)															Total	Biomass (tonnes)
	≤14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	≥80		
2002	271	0	70	34	382	1015	1916	3803	3250	2279	1138	976	242	159	114	15648	21198
2003	51	0	74	19	304	715	1842	3008	4765	2235	714	561	245	146	0	14678	19635
2004	106	104	15	0	319	1253	1229	1717	2277	1227	798	298	148	94	26	9615	11872
2005	263	70	159	1139	2235	2621	4206	3782	3847	2037	917	585	336	118	0	22314	22293
2006 ²	0	72	94	414	1968	5149	4613	5743	4283	2132	891	449	258	34	18	26118	25579
2007 ¹	0	18	146	1869	1418	3114	5710	5947	4287	2205	963	658	391	80	89	26896	28006
2008	0	0	0	243	1708	5974	4654	6136	5198	3403	827	638	174	82	50	29088	30153
2009	55	0	0	26	1044	4327	8133	4551	4084	2266	996	627	442	253	154	26960	28919
2010	0	0	0	99	678	3648	5729	6560	4897	2467	1064	552	229	128	41	26092	25979
2011	51	0	0	0	216	4396	5864	5498	5237	3698	699	936	327	252	97	27271	31552
2012 ³	77	0	0	0	51	1145	4524	5366	4517	2774	1147	195	73	0	48	19917	22656
2013	0	0	0	0	0	511	5368	4868	5374	3687	1944	939	348	131	154	23504	31748
2014	0	0	46	92	156	368	2271	5587	5903	3555	2251	1369	154	260	79	22090	31112
2015	367	0	61	0	284	1612	3187	6452	7249	6752	3350	1936	587	334	0	32172	46828
2016	205	0	124	511	950	1953	3486	4539	5479	5613	1999	1973	646	98	80	27657	35831
2017 ⁴	52	0	0	78	592	1328	1885	3850	4852	4550	1721	1455	317	190	23	20827	29756
2018	0	0	62	0	383	1333	2049	3445	4258	3573	1904	1366	736	196	20	19325	28688

Year	Length group (cm)															Total	Biomass (tonnes)
	≤14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	≥80		
2019	0	0	0	375	272	1671	3285	4034	5177	4265	3570	2526	1328	535	137	27176	45912
2020 ³	80	91	2464	442	790	2272	4391	5136	4929	4613	3278	1803	894	384	250	29599	43631
2021 ³	0	154	927	927	2370	2976	3869	4265	3516	2991	2378	1649	670	682	238	27613	37090

¹ Indices raised to also represent the Russian EEZ

² Not complete coverage in southeast due to restrictions, strata 7 area set to default and strata 13 as in 2005

³ Indices not raised to also represent uncovered parts of the Russian EEZ.

⁴ Indices raised to also represent uncovered parts of the Russian EEZ

Table 8.13. Greenland halibut catch in weight, numbers, and biomass (in tonnes) and abundance (in thousands) estimated from Spanish autumn and spring surveys. NB. Absolute biomass and abundance values must not be compared between spring and autumn surveys due to different gears. The trawl used during spring surveys is considered less efficient on benthic species as Greenland halibut and skates, and better to catch species less associated with bottom.

Autumn survey

Year	Catch (Kg)	Catch (numbers)	Biomass™	Abundance ('000)
1997	195056	211533	344014	379444
1998	180974	187259	351466	373149
1999	198781	172687	436956	377792
2000	169389	140355	340619	291265
2001	152681	129289	283511	249219
2002	144335	115213	256460	207466
2003	151952	132117	283644	256327
2004	153859	135631	320485	283965
2005	144573	134566	317320	313459
2008	91573	101578	129221*	144561*
2010	167862	182464	191510*	216731*
2012	178607	174670	336543*	339697*
2013	172762	168619	264101*	267548*
2014	175553	160557	321485*	307679*
2016	176015	142413	247644*	214778*
2019	50880	45631	209439*	187830*

No survey in 2006, 2007, 2009, 2011, 2015, 2017, 2018, 2020 and 2021.

*New swept-area estimation method

Spring survey

Year	Catch (Kg)	Catch (numbers)	Biomass™	Abundance ('000)
2008	96797	109515	38406	38951
2009	200299	222018	58273	65464
2011	136610	160566	98142	117666
2015**	111425	105385	150385	155333

No survey in 2010, 2012, 2013 and 2014.

**Different from the one used during the 2014 Spanish "autumn" survey.

Table 8.14. Greenland halibut in subareas 1 and 2. The catch scenarios. Weights in tonnes. Assessment 2021 as basis for advice for 2022 and 2023. NB. according to working group forecast, this may diverge slightly from final advice by ACOMTAC for 2021 from EU/UK was not sat at the time of the working group and TAC change is thus relative only to the TAC sat by JRNFC.

Table a Greenland halibut in subareas 1 and 2. Annual catch scenarios for 2022. All weights are in tonnes.

Basis	Total catch (2022)	HR _{total} (2022)	Biomass 45 cm+ (2023)	% Biomass 45 cm+ change *	% TAC change **	% Advice change ***
ICES advice basis						
HR = 0.035	19094	0.035	535	-5%	-29%	-17%
Other scenarios						
HR = 0	0	0	554	-1%	-100%	-100%
HR = 0.025	13873	0.025	540	-4%	-49%	-40%
Catch_SQ (HR=0.052/0.055)	28713	0.052/0.055	526	-6%	6%	25%

* Biomass 45 cm+ 2023 relative to 2022 (561 tonnes).

** Advice in 2022 relative to TAC in 2021. Only TAC sat by JRNFC in 2021 (27 000 tonnes) was available.

*** Advice value for 2022 relative to the advice value for 2021.

Table b Greenland halibut in subareas 1 and 2. Annual catch scenarios for 2023. All weights are in tonnes.

Basis	Total catch (2023)	HR _{total} (2023)	Biomass 45 cm+ (2024)	% Biomass 45 cm+ change *	% Advice change **
ICES advice basis					
HR = 0.035	18494	0.035	523	-2%	-3%
Other scenarios					
HR = 0	0	0	558	1%	0%
HR = 0.025	13590	0.025	533	-1%	-2%
Catch_SQ (HR=0.052/0.055)	28713	0.052/0.055	505	-4%	0%

* Biomass 45cm+ 2024 relative to 2023 (biomass 2023 depends on scenario).

** Advice value for 2023 relative to the advice value for same scenario in 2022.

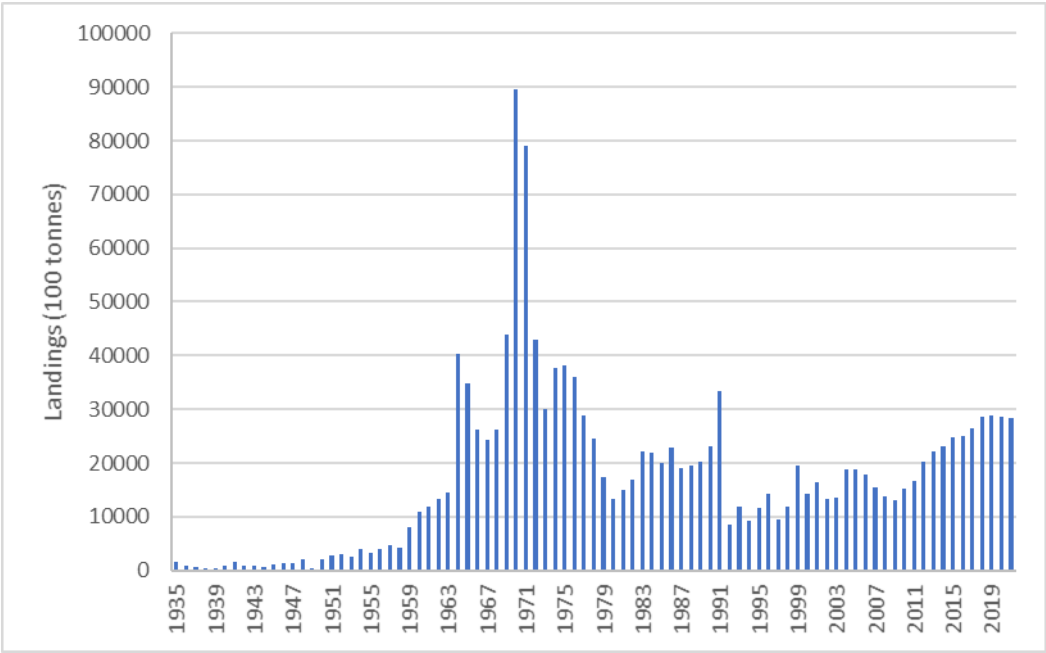


Figure 8.1. NEA Greenland halibut landings. Historical landings (Nedreaas and Smirnov 2003 and AFWG).

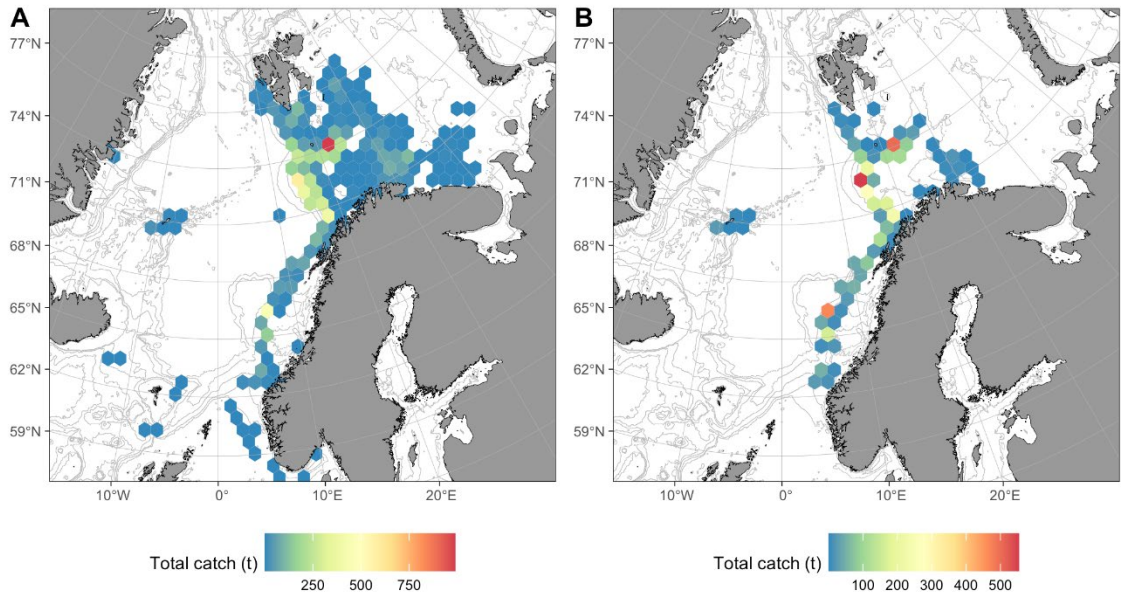


Figure 8.2. Spatial distribution of Greenland halibut catches in 2021 according to Norwegian electronic logbooks, in all registered fisheries including bycatch (A), and catches where *G. halibut* make more than 50% of the total catches (B).

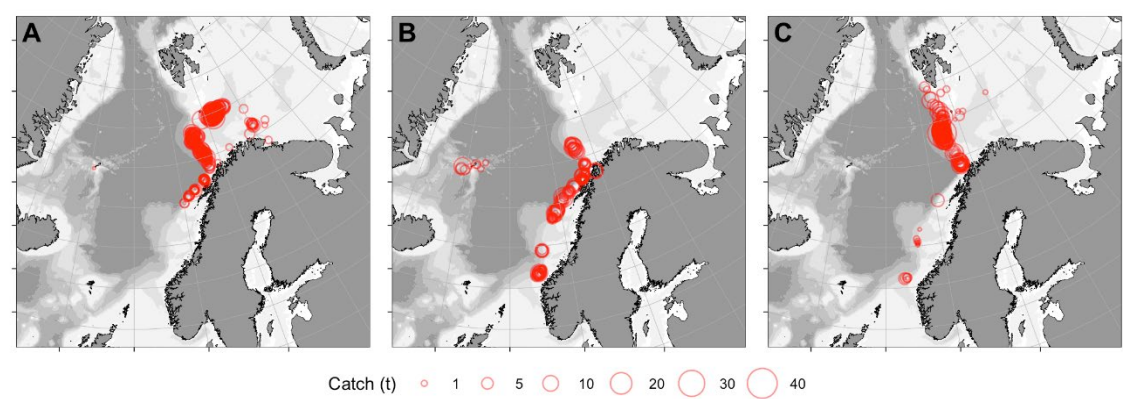


Figure 8.3. Spatial distribution of catches where Greenland halibut make more than 50% of the total catches, according to Norwegian electronic logbooks from 2021. Bubble area is proportional to the size of single catches expressed in metric tonnes. The panels show longline (A), gillnet (B) and trawl (C) catches.

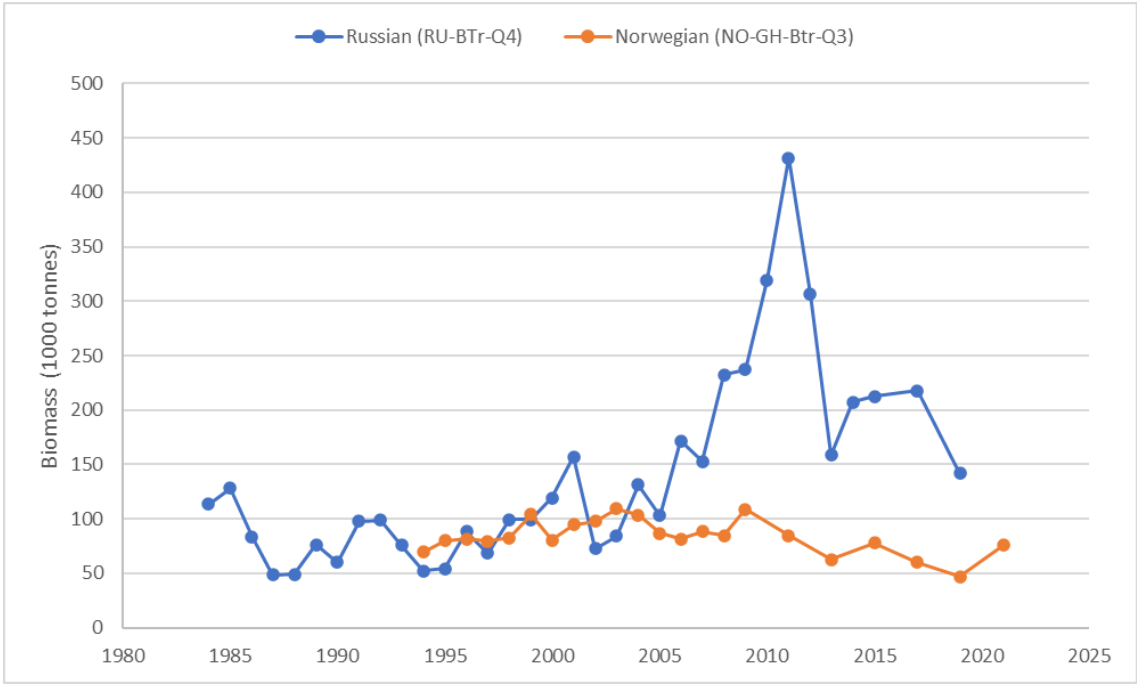


Figure 8.4. NEA Greenland halibut. Total biomass estimates from Russian autumn survey and the Norwegian slope survey. Note that the Norwegian survey is run every other year since 2009. Uncertain estimate for 2013 from the Russian survey. Russian data from 1992 and onwards are revised in 2021 (Russkikh WD12). No Russian data for 2016, 2018 and 2020.

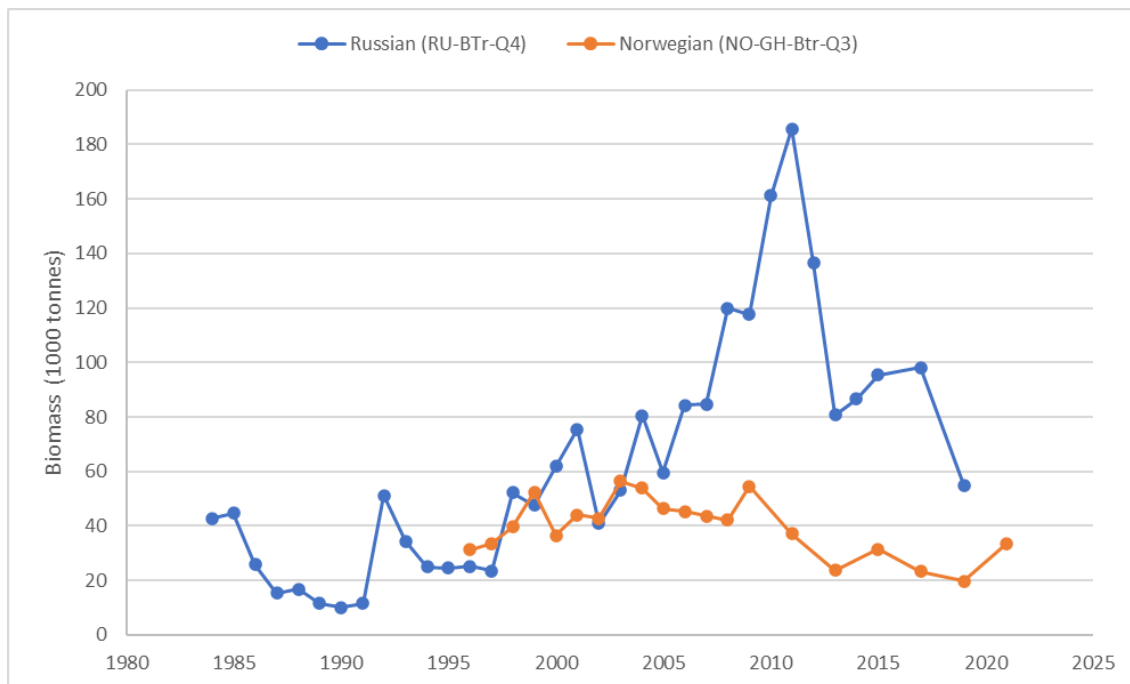


Figure 8.5. NEA Greenland halibut. Swept-area estimate of the female biomass based on the data from the Norwegian slope survey in August (every other year since 2009) and the Russian trawl survey in October–December (compared to previous reports, . Russian data from 1992 and onwards are revised in 2021 (Russkikh WD12)). Uncertain estimate for 2013 from the Russian survey.

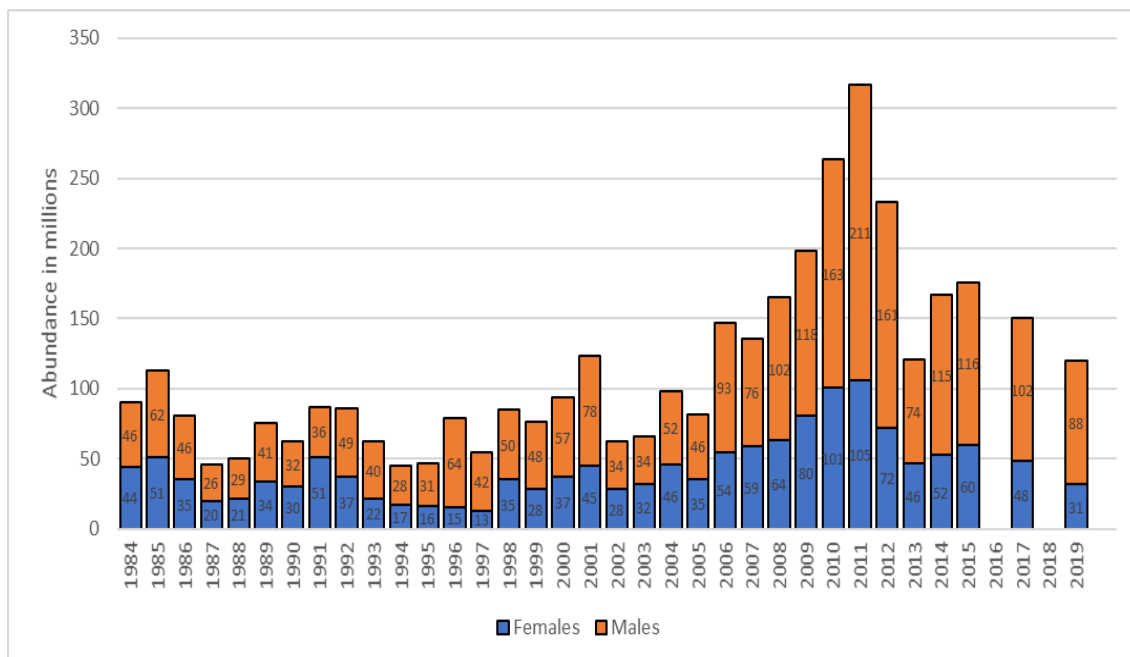


Figure 8.6. Russian autumn survey; Greenland halibut abundance by sex (Russkikh and Smirnov, WD16 AFWG 2016). Russian data from 1992 and onwards are revised in 2021 (Russkikh WD12). In this figure the 1992, 1996, 2002, 2017 and 2019 indices were not raised to also represent uncovered parts of the standard survey area.

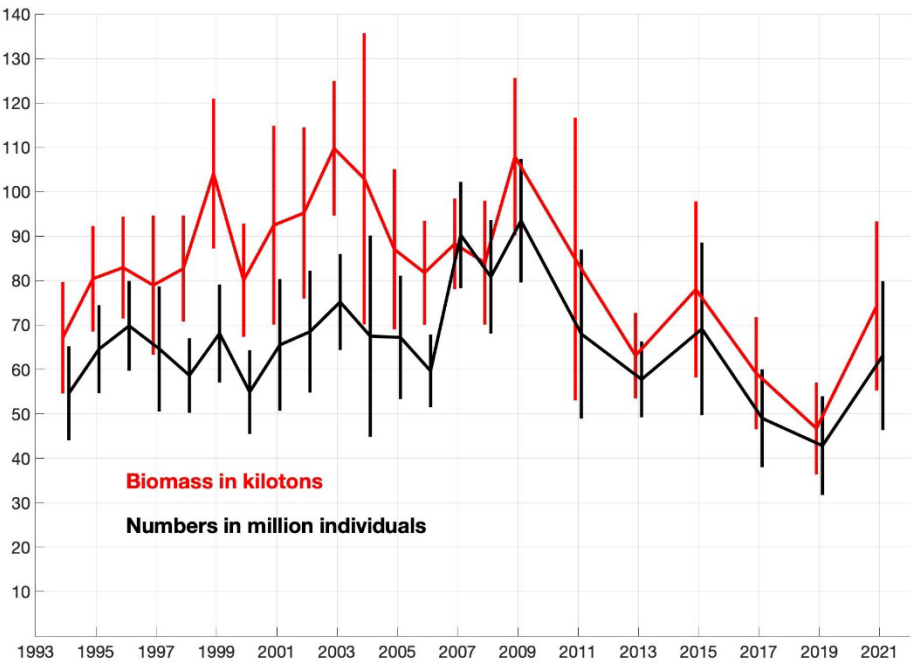


Figure 8.7. Estimated Greenland halibut total abundance in biomass and by number of individuals from the Norwegian slope surveys. The vertical bars show 95% confidence intervals.

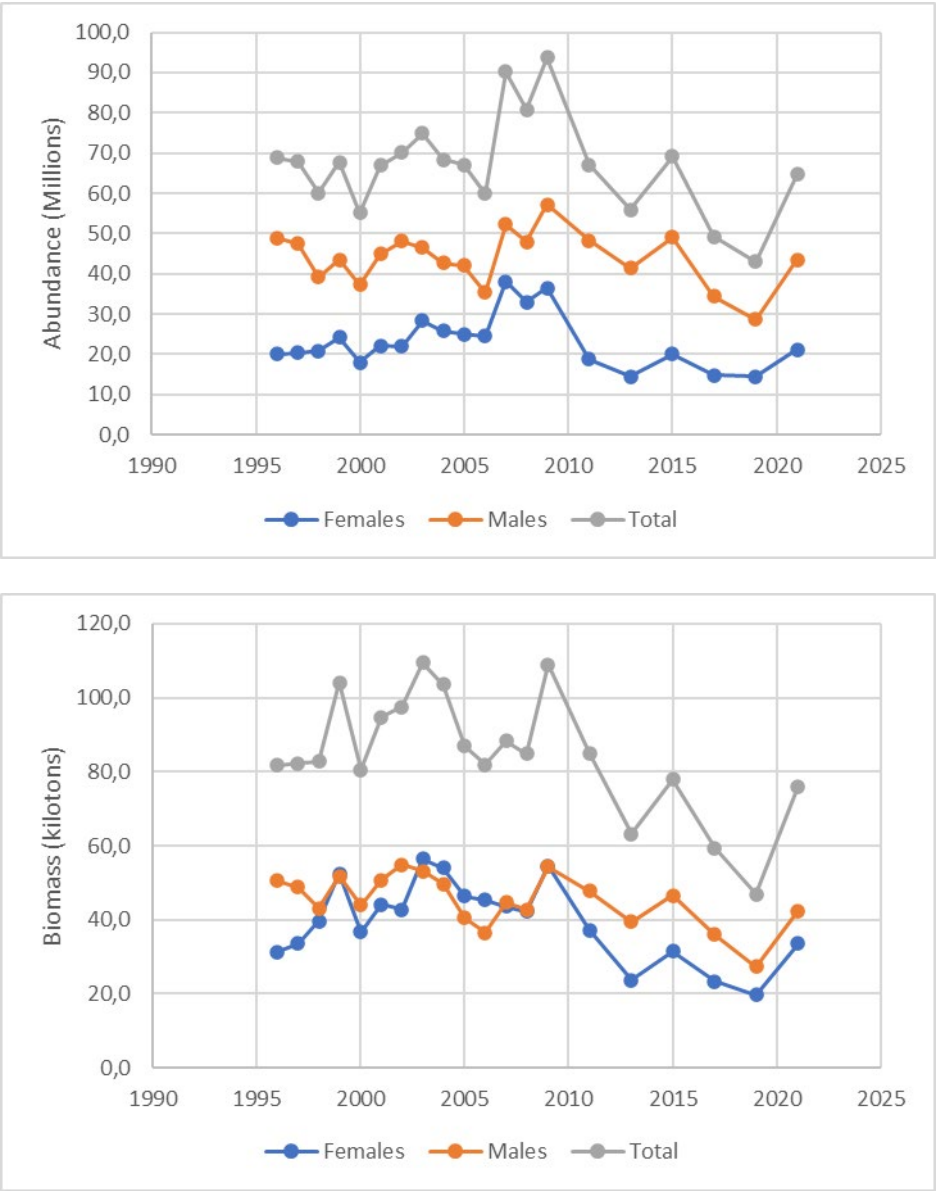


Figure 8.8. Estimated Greenland halibut abundance (upper panel) and biomass (lower panel), by sex, from the Norwegian autumn slope survey.

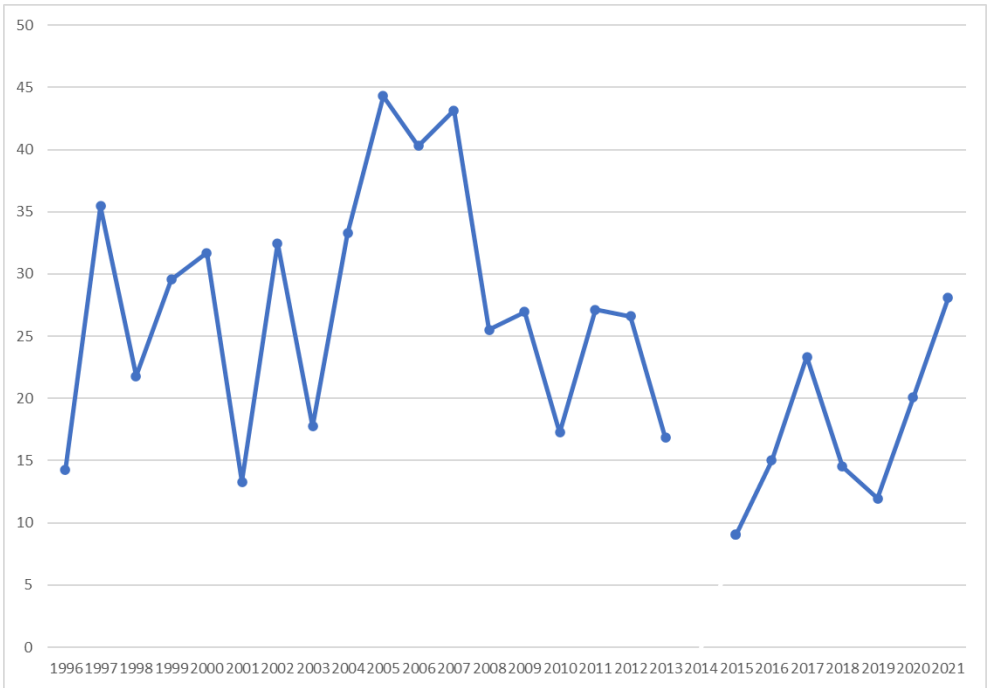


Figure 8.9. Total juvenile biomass index (EcoJuv) (sex distribution is assumed 50/50 in the juvenile area so in the figure female biomass = male biomass) for Greenland halibut based on the Barents Sea Ecosystem Survey (A5216) (2014 not included due to poor survey coverage in the juvenile area) and the juvenile survey 1996–2002 (for area see Hallfredsson and Vollen, WD20 AFWG 2015).

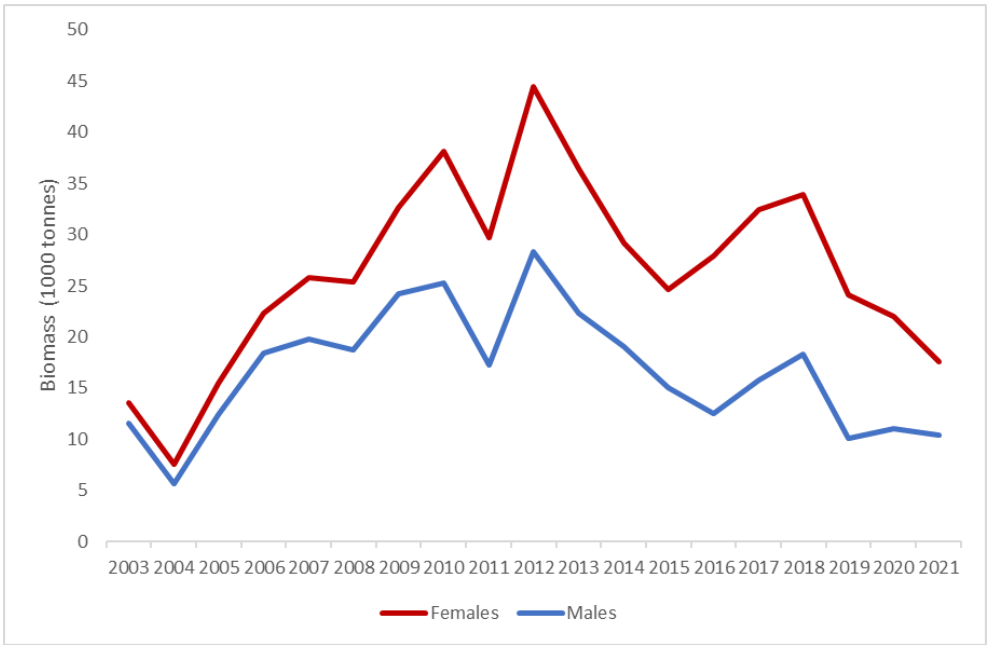


Figure 8.10. Eco-south biomass index by sex for Greenland halibut in the Barents Sea Ecosystem Survey (A5216) , outside the juvenile area (for area see Hallfredsson and Vollen, WD20 AFWG 2015). The 2018 estimate is not considered reliable mainly due to lack in survey coverage, and was excluded from the 2021 assessment.

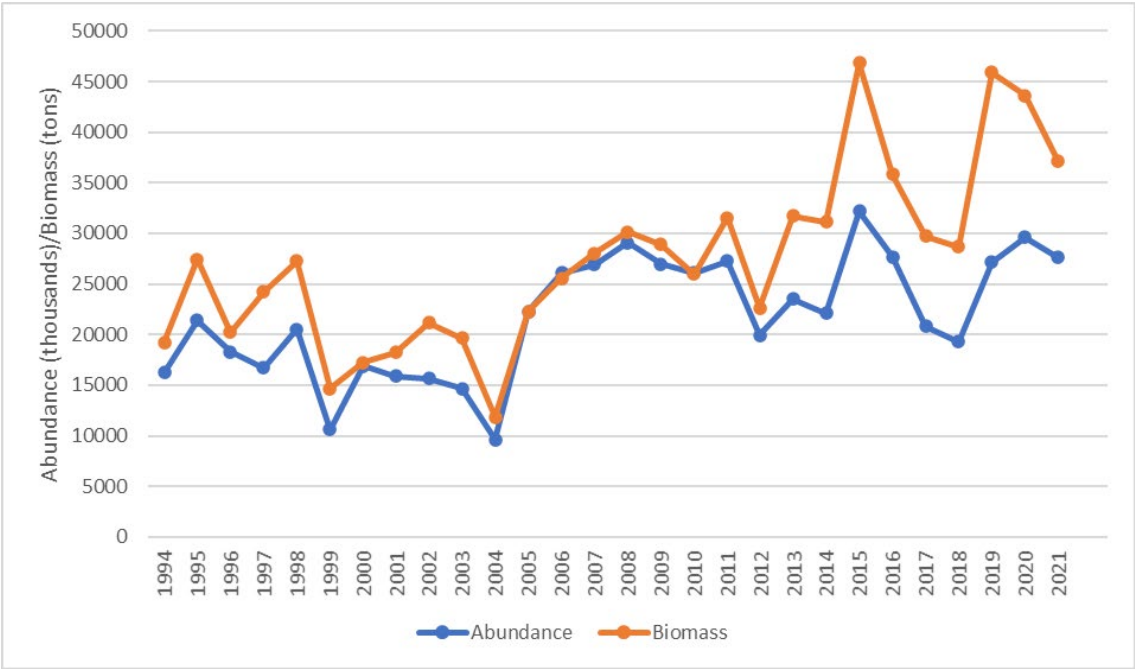


Figure 8.11. Joint Norwegian–Russian winter survey in the Barents Sea ; Greenland halibut abundance and biomass estimates.

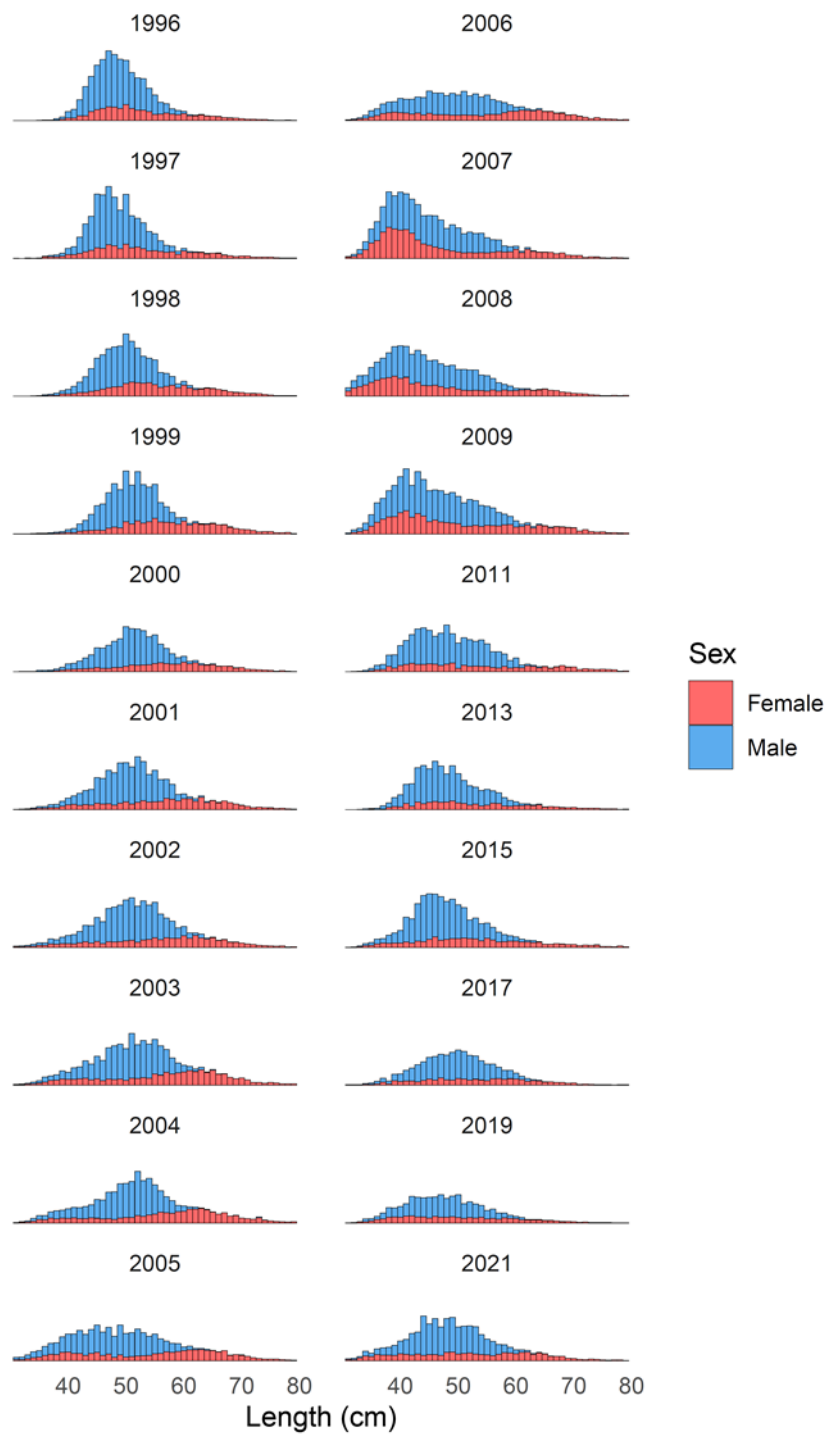


Figure 8.12. Length frequency distribution estimates for the entire area covered by the Norwegian Slope survey during autumn. Note biennial surveys after 2009.

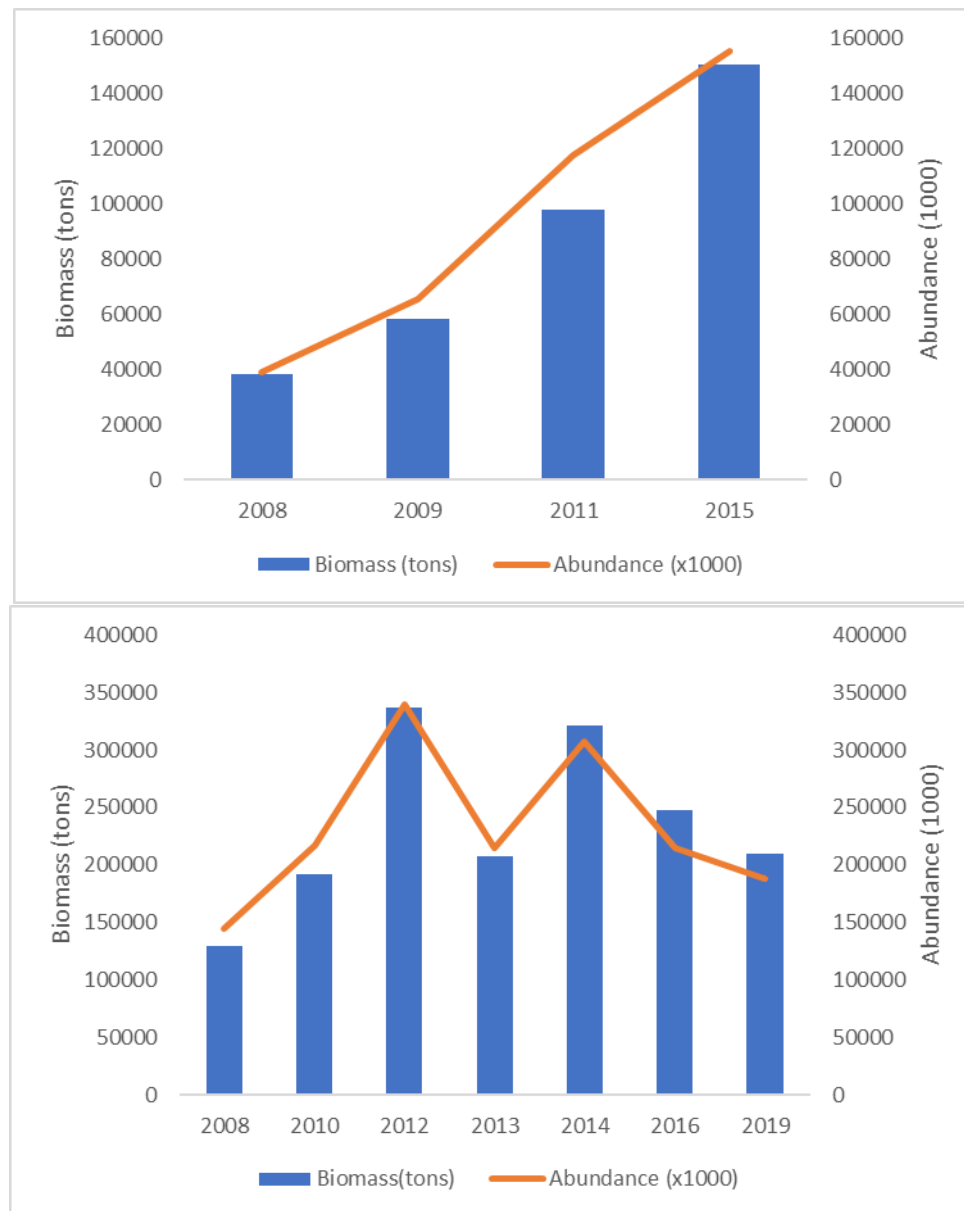


Figure 8.13. Abundance and biomass estimates from Spanish autumn surveys (lower panel) (Muñoz *et al.*, WD7 AFWG 2017), and abundance and biomass estimates from Spanish spring surveys (upper panel) (Muñoz *et al.*, WD10 AFWG 2016). Note that X-axis is not continuous.

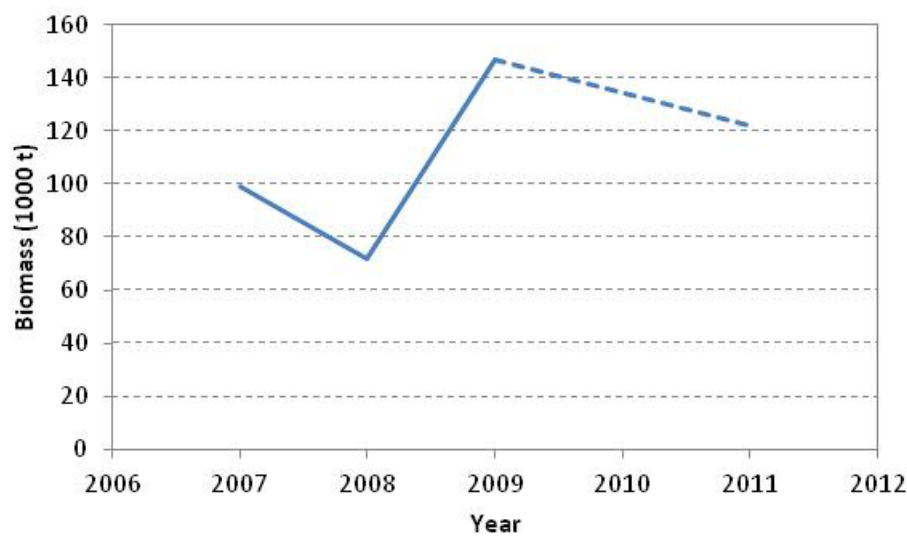


Figure 8.14. Biomass estimates from Polish spring survey (based on: Janusz *et al.*, WD8 AFWG 2008; Janusz and Trella, WD10 AFWG 2009; Trella and Janusz, WD6 AFWG 2012). No update presented to the 2020 AFWG.

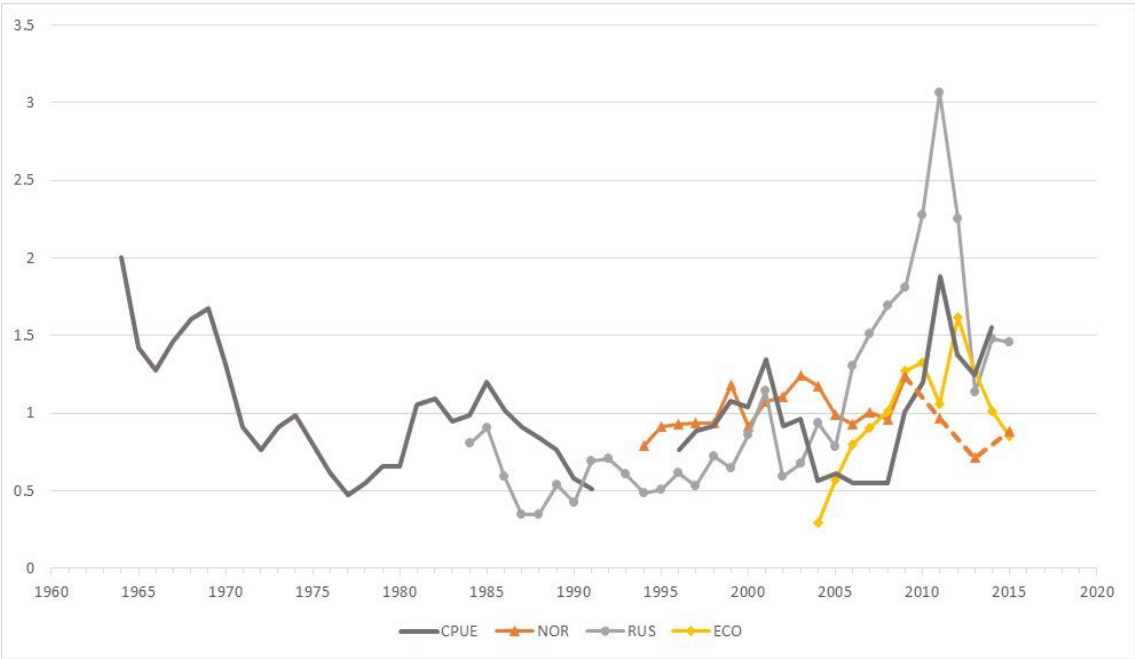


Figure 8.15. Dynamics of indices of the Barents Sea Greenland halibut stock in 1964–2015. Indices are divided by corresponding mean to put them in comparable scale. CPUE series divided in two, 1964–1991 and after 1996. In addition to the standardized CPUE three survey indices are shown; the Russian autumn survey (RUS), the Norwegian autumn survey (NOR) and the EcoSouth index (ECO).

Section contents

8	Northeast Arctic Greenland halibut	382
8.1	Status of the fisheries	382
8.1.1	Landings prior to 2022 (Tables 8.1–8.8, Figures 8.1–8.3)	382
8.1.2	ICES advice applicable to 2021–2023.....	382
8.1.3	Management.....	383
8.1.4	Expected landings in 2022	384
8.2	Status of research	384
8.2.1	Survey results (Tables 8.9–8.13, Figures 8.4–8.14).....	384
8.2.2	Commercial catch-per-unit-effort (Table 8.6, Figure 8.15).....	385
8.2.3	Age readings	385
8.3	Data used in the assessment	386
8.4	Methods used in the assessment	387
8.4.1	Model settings	387
8.5	Results of the assessment.....	387
8.5.1	Biological reference points	387
8.6	Comments to the assessment.....	387
8.6.1	Future work.....	387
8.7	Tables and figures	388