

2.3.6 Greenland halibut (*Reinhardtius hippoglossoides*) in subareas 5, 6, 12, and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland)

ICES stock advice

ICES advises that when the MSY approach is applied, catches in 2017 should be no more than 24 000 tonnes.

Stock development over time

The stock has been above $MSY B_{trigger}$ for the majority of the time-series, and after dropping below the trigger in 2004 and 2005 it has steadily increased and is currently above $MSY B_{trigger}$. Recent fishing mortality (F) is estimated to be relatively close to F_{MSY} .

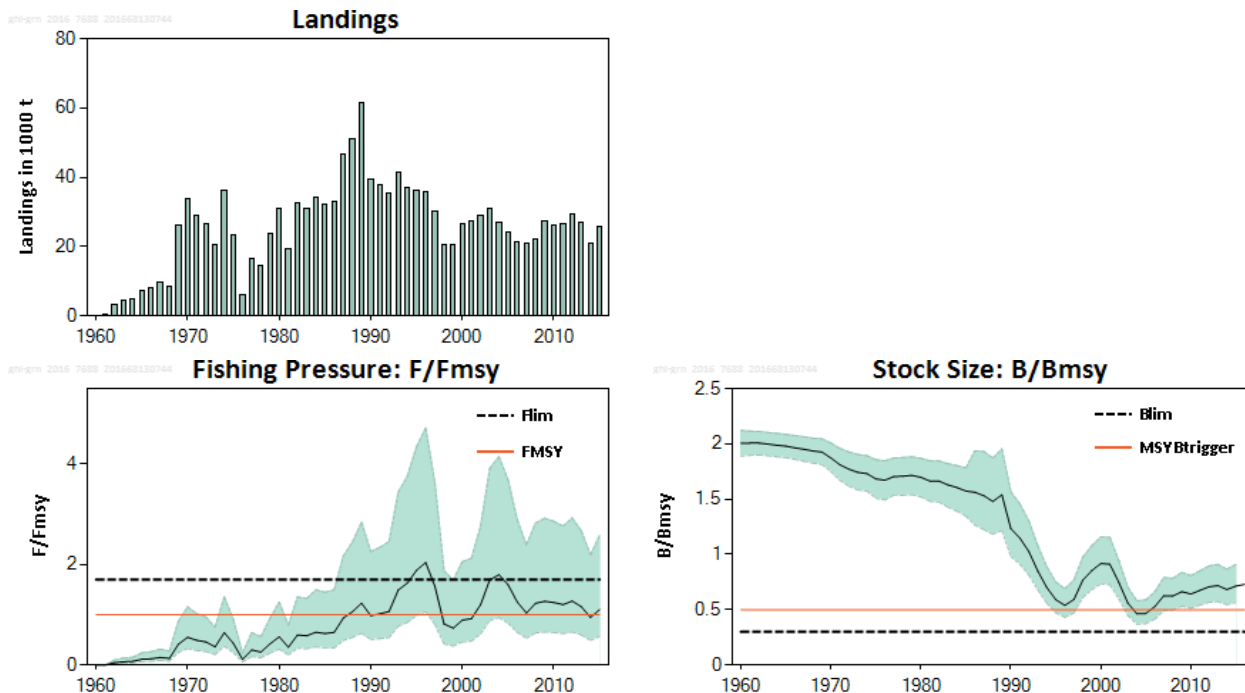


Figure 2.3.6.1 Greenland halibut in subareas 5, 6, 12, and 14. Summary of the stock assessment. Top: Landings. Bottom: Trends in fishing mortality (left) and biomass (right) relative to biomass model-based MSY reference levels (medians) with indication of 90% confidence intervals).

Stock and exploitation status

Table 2.3.6.1 Greenland halibut in subareas 5, 6, 12, and 14. State of the stock and fishery relative to reference points.

		Fishing pressure			Stock size		
		2013	2014	2015	2014	2015	2016
Maximum sustainable yield	F_{MSY}	✘	✔	✘ Above	✔	✔	✔ Above trigger
Precautionary approach	F_{pa}, F_{lim}	○	✔	○ Increased risk	✔	✔	✔ Full reproductive capacity
Management plan	F_{MGT}	-	-	- Not applicable	-	-	- Not applicable

Catch options

Table 2.3.6.2 Greenland halibut in subareas 5, 6, 12, and 14. The basis for the catch options.

Variable	Value	Source	Notes
F (2016)	1.06	ICES (2016a)	F/F _{MSY}
Biomass (2016)*	0.73	ICES (2016a)	B/B _{MSY}
Total catch (2016)	25000 t	ICES (2016a)	Based on TACs of Iceland, Greenland, and assumed catches from the Faroe Islands.

* At the end of 2016.

Table 2.3.6.3 Greenland halibut in subareas 5, 6, 12, and 14. The catch options.

Catch option 2017 (in thousand tonnes)	24	0	5	10	15	20	30
Probability of exceeding F _{MSY}	50%	-	1%	5%	16%	34%	71%
Probability of falling below B _{lim} at end of 2017	0%	0%	0%	0%	0%	0%	0%
Probability of exceeding F _{lim}	15%	-	0%	2%	4%	9%	27%
Stock size (B/B _{MSY}), median at end of 2017	0.75	0.80	0.78	0.77	0.76	0.75	0.73
Fishing mortality (F/F _{MSY}), median value	0.99	-	0.20	0.40	0.61	0.82	1.27

Scenarios of catches and stock biomass development in the years 2016–2026 when fishing at F_{MSY} is provided in Figures 2.3.6.4 and 2.3.6.5.

Basis of the advice

Table 2.3.6.4 Greenland halibut in subareas 5, 6, 12, and 14. The basis of the advice.

Advice basis	MSY approach
Management plan	A formal management plan was agreed by Greenland and Iceland in 2014, aimed at being consistent with MSY. This plan has not yet been evaluated by ICES.

Quality of the assessment

Combining the Greenland and the Icelandic survey indices since 2014 improved the quality of the assessment. Historical biomass and exploitation rates prior to the early 1990s are based on cpue series that have been less closely scrutinized. Considerable uncertainty remains as to the inclusion or exclusion of these historical commercial catch rates.

The biomass indicators presently used in the assessment only represent Division 5.a and Subarea 14. Other biomass indicators from these two areas are available and show different trends from those used in the assessment. They demonstrate that there remains uncertainty around the population dynamics within the overall distribution area.

The stock identity for Greenland halibut remains uncertain. Tagging of Greenland halibut in the Barents Sea has demonstrated a connectivity with Greenland halibut in Iceland and the Faroe Islands. These issues contribute to the uncertainty in the advice.

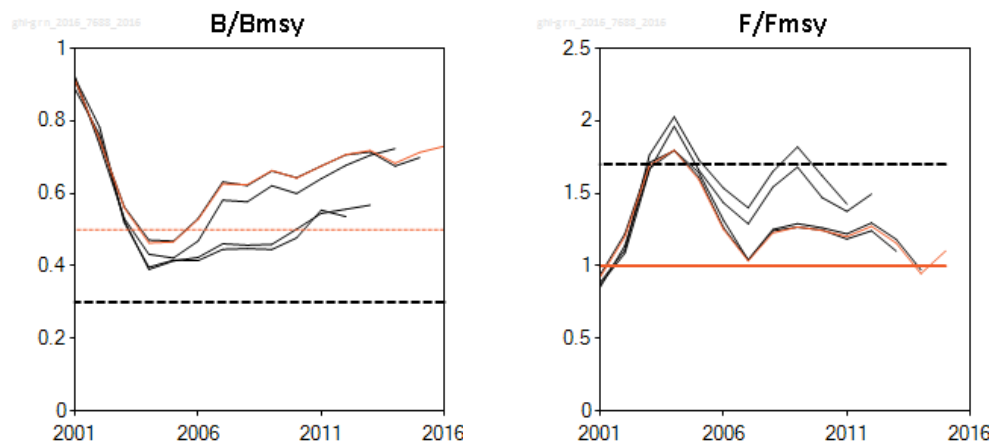


Figure 2.3.6.2 Greenland halibut in subareas 5, 6, 12, and 14. Historical assessment results. The dashed lines indicate MSY $B_{trigger}$ (green), B_{lim} (blue), and F_{lim} (blue).

Issues relevant for the advice

The fishery is conducted over an extensive area of the stock distribution (Figure 2.3.6.3), with the major part of the landings taken in subareas 5 and 14.

Scenarios of stock biomass development under an F_{MSY} fishery display the slow dynamics of this species and indicate that any stock increase will be slow (Figure 2.3.6.5)

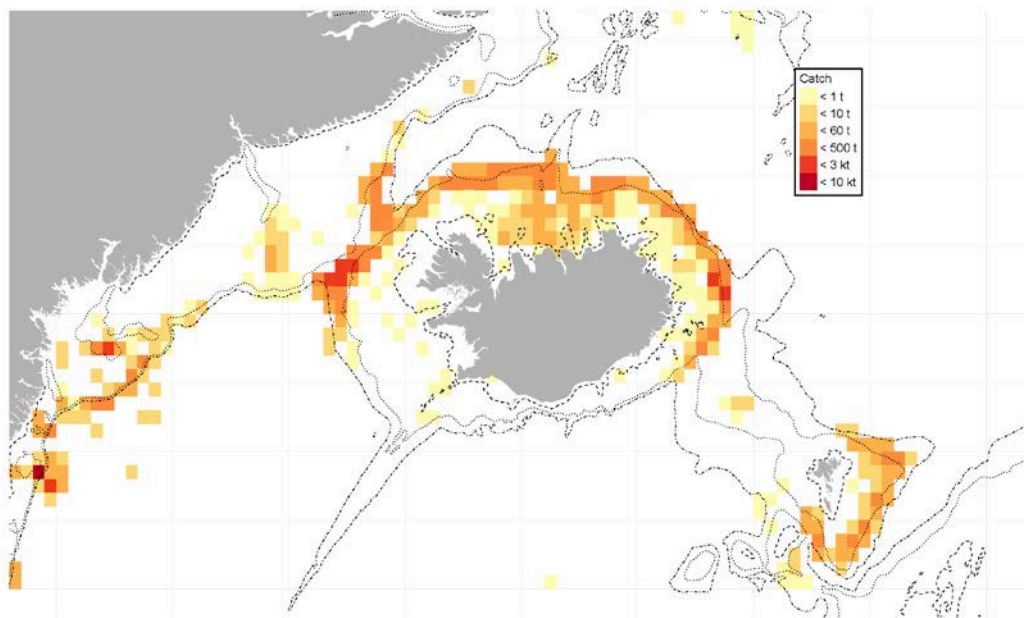


Figure 2.3.6.3 Greenland halibut in subareas 5, 6, 12, and 14. Distribution of total effort in the 2015 fishery with depth contours (200, 500, and 1000 m).

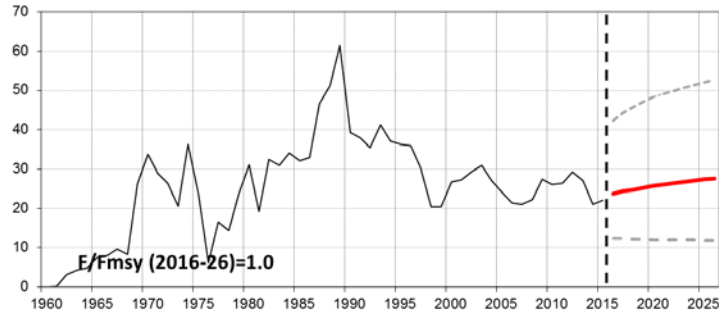


Figure 2.3.6.4 Greenland halibut in subareas 5, 6, 12, and 14. Historical landings (thousand tonnes) and projected landings 2016–2026, assuming F/F_{MSY} (2016–2026) = 1.0. Median and 90% confidence limits are indicated.

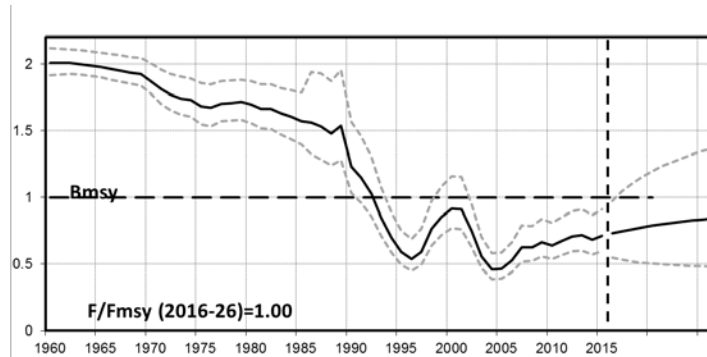


Figure 2.3.6.5 Greenland halibut in subareas 5, 6, 12, and 14. Historical biomass (B/B_{MSY}) and projected biomass when fishing at F_{MSY} . Median and 90% confidence limits are indicated.

Reference points

Table 2.3.6.5 Greenland halibut in subareas 5, 6, 12, and 14. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	0.5 B_{MSY}	B_{MSY} is implicitly estimated from the surplus production model.	ICES (2007)
	F_{MSY}	Relative value	Implicit, estimated from the surplus production model. Fishing mortality values expressed relative to F_{MSY} .	ICES (2007)
Precautionary approach	B_{lim}	0.3 B_{MSY}	Based on a fraction of B_{MSY} where production is reduced to 50% MSY.	ICES (2013)
	B_{pa}	Not relevant	*	
	F_{lim}	1.7 F_{MSY}	The F that on average gives B_{lim} .	ICES (2013)
	F_{pa}	Not relevant	*	
Management plan	SSB_{MGT}	Not defined		
	F_{MGT}	Not defined		

* B_{pa} and F_{pa} are not needed. As the assessment provides probability distributions for B and F, it is possible to estimate the probabilities of $B < B_{lim}$ and of $F > F_{lim}$ directly.

Basis of the assessment

Table 2.3.6.6 Greenland halibut in subareas 5, 6, 12, and 14. The basis of the assessment.

ICES stock data category	1 (ICES, 2016b)
Assessment type	A probabilistic (Bayesian) version of a surplus production model that uses catches in the model and in the forecast.
Input data	Commercial catches (international landings); one combined survey index (GRL-deep since 1998, and IS-SMH since 1996); one commercial index (Icelandic trawlers (since 1985)).
Discards and bycatch	Considered negligible
Indicators	None
Other information	A benchmark was conducted in 2013 (WKBUT; ICES, 2013).
Working group	North-Western Working Group (NWWG)

Information from stakeholders

There is no available information.

History of the advice, catch, and management

Table 2.3.6.7 Greenland halibut in subareas 5, 6, 12, and 14. History of ICES advice, the agreed TAC, and ICES estimates of landings. Weights are in thousand tonnes.

Year	ICES advice	Predicted catch corresp. to advice	TAC for Iceland EEZ**	TAC for Greenland EEZ	ICES landings subareas 5, 6, 12, and 14
1987	No increase in F	28	30		47
1988	No increase in F	28	30		51
1989	TAC	33	30		61
1990	No advice	-	45		39
1991	TAC	40	30		38
1992	TAC	30	25		35
1993	No increase in effort	28*	30		41
1994	No increase in effort	34*	30		37
1995	TAC	32	30		36
1996	TAC	21	20		36
1997	60% reduction in F from 1995	13	15		30
1998	70% reduction in F from 1996	11	10	8.1	20
1999	65% reduction in F from 1997	11	10	8	21
2000	60% reduction in F from 1998	11	10	8	26
2001	catch less than 1998–1999 catch	< 20	20	14.5	28
2002	F reduced below $0.67 \times F_{MSY}$	< 21	20	14.5	29
2003	F reduced below $0.67 \times F_{MSY}$	< 23	23	14.5	30
2004	F reduced below $0.67 \times F_{MSY}$	< 20	23	14.1	28
2005	Effort reduced to 1/3 of the 2003 level	< 15	15	12	24
2006	Effort reduced to 1/3 of the 2003 level	< 15	15	10	21
2007	Adaptive management plan, start at 15 000 t	< 15	15	11.7	21
2008	Adaptive management plan, start at 15 000 t	< 15	15	11	24
2009	Adaptive management plan, reduce to 5000 t	< 5	15	10	28
2010	Adaptive management plan, reduce to 5000 t	< 5	12	12	26
2011	Adaptive management plan, reduce F substantially below FMSY	< 5	13	12	26
2012	No directed fishery, multi-annual	-	13	13	29

Year	ICES advice	Predicted catch corresp. to advice	TAC for Iceland EEZ**	TAC for Greenland EEZ	ICES landings subareas 5, 6, 12, and 14
	management plan to be developed and implemented				
2013	F reduced to F_{MSY}	< 20	15	10	27
2014	F reduced to F_{MSY}	< 20	12.5	9.8	21
2015	F reduced to F_{MSY}	< 25	14.1	8.3	26
2016	Fishing at F_{MSY}	< 22	12.4	9.5	
2017	Fishing at F_{MSY}	≤ 24			

* Catch at *status quo* F.

** For the fishing year ending 31 August.

History of catch and landings

Table 2.3.6.8 Greenland halibut in subareas 5, 6, 12, and 14. Catch distribution by fleet in 2015 as estimated by ICES.

Total catch (2015)	Landings		Discards
25.677 kt	87% bottom trawl	13% gillnets/longlines/shrimp trawl	Negligible
	25.677 kt		

Table 2.3.6.9 Greenland halibut in subareas 5, 6, 12, and 14. History of official catch for each country participating in the fishery and ICES estimated catch. All weights are in tonnes.

Country	1981	1982	1983	1984	1985	1986	1987	1988	1989
Denmark	-	-	-	-	-	-	6	+	-
Faroe Islands	767	1532	1146	2502	1052	853	1096	1378	2319
France	8	27	236	489	845	52	19	25	-
Germany	3007	2581	1142	936	863	858	565	637	493
Greenland	+	1	5	15	81	177	154	37	11
Iceland	15457	28300	28360	30080	29231	31044	44780	49040	58330
Norway	-	-	2	2	3	+	2	1	3
Russia	-	-	-	-	-	-	-	-	-
UK (Engl. and Wales)	-	-	-	-	-	-	-	-	-
UK (Scotland)	-	-	-	-	-	-	-	-	-
United Kingdom	-	-	-	-	-	-	-	-	-
Total	19239	32441	30891	34024	32075	32984	46622	51118	61156
ICES estimate	-	-	-	-	-	-	-	-	61396
Country	1990	1991	1992	1993	1994	1995	1996	1997	1998
Denmark	-	-	-	-	-	-	1	-	-
Faroe Islands	1803	1566	2128	4405	6241	3763	6148	4971	3817
France	-	-	3	2	-	-	29	11	8
Germany	336	303	382	415	648	811	3368	3342	3056
Greenland	40	66	437	288	867	533	1162	1129	747
Iceland	36557	34883	31955	33987	27778	27383	22055	18569	10728
Norway	50	34	221	846	1173	1810	2164	1939	1367
Russia	-	-	5	-	-	10	424	37	52
Spain									89
UK (Engl. and Wales)	27	38	109	811	513	1436	386	218	190
UK (Scotland)	-	-	19	26	84	232	25	26	43
United Kingdom									
Total	38813	36890	35259	40780	37305	36006	35762	30242	20360
ICES estimate	39326	37950	35423	40817	36958	36300	35825	30309	20382
Country	1999	2000	2001	2002	2003*	2004*	2005*	2006*	2007*
Denmark		0	0	0	0	0	0	0	0
Estonia		0	0	8	0	0	5	3	0
Faroe Islands	3884	0	121	334	458	338	1150	855	1141

France	0	2	32	290	177	157	0	62	17
Germany	3082	3265	2800	2050	2948	5169	5150	4299	4930
Greenland	200	1740	1553	1887	1459	0	0	0	0
Iceland	11180	14537	16590	19224	20366	15478	13023	11798	0
Ireland		0	56	0	0	0	0	0	0
Lithuania		0	0	0	2	1	0	2	3
Norway	1187	1750	2243	1998	1074	1233	1124	1097	692
Poland		0	2	16	93	207	0	0	0
Portugal		0	6	130	0	0	0	1094	0
Russia	138	183	187	44	0	262	0	552	501
Spain		779	1698	1395	3075	4721	506	33	0
UK (Engl. and Wales)	261	370	227	71	40	49	10	1	0
UK (Scotland)	69	121	130	181	367	367	391	1	0
United Kingdom	0	166	252	255	841	1304	220	93	17
Total	20001	22913	25897	27609	30900	29286	21579	19890	7301
ICES estimate	20371	26644	27291	29158	30891.4	27102	24978	21466	21873
Country	2008*	2009*	2010*	2008*	2011*	2012*	2013*	2014*	2015*
Denmark	-	0	0	0	0	0	0	0	
Estonia	-	-	-	-	-	-	0	429	
Faroe Islands	-	270	1408	1705	1705	2811	2788	3393	3214
France	114	0	0	0	9	67	133	0	117
Germany	4846	427	5287	5782	5782	4620	3814	3701	3808
Greenland	0	2819	0	3415	3415	5239	3251	1897	3642
Iceland	0	0	13293	13192	1319	13749	14859	9861	12400
Ireland	0	0	0	0	0	0	0	0	-
Lithuania	566		0	0	0	97	0	0	-
Norway	639	124	233	171	176	856	614	764	1126
Poland	1354	988	960	0	0	786	0	0	-
Portugal	0	0	0	0	0	0	0	0	-
Russia	799	762	1070	1095	1095	1168	1369	587	600
Spain	0	0	0	0	0	0	0	67	110
United Kingdom	422	581	577	323	323	12	95	44	127
Total	9744	5974	22901	25693	25618	29405	26923	20743	25145
ICES estimate	24481	28197	25995	26422	26347			21069	25677

* Provisional data.

Table 2.3.6.10 Greenland halibut in subareas 5, 6, 12, and 14. History of official and ICES estimated catch and landings for Division 5.a for each country participating in the fishery.

Country	1981	1982	1983	1984	1985	1986	1987	1988	1989
Faroe Islands	325	669	33	46			15	379	719
Germany									
Greenland									
Iceland	15455	28300	28359	30078	29195	31027	44644	49000	58330
Norway			+	+	2				
Total	15780	28969	28392	30124	29197	31027	44659	49379	59049
ICES estimate									59272**
Country	1990	1991	1992	1993	1994	1995	1996	1997	1998
Faroe Islands	739	273	23	166	910	13	14	26	6
Germany					1	2	4		9
Greenland					1				
Iceland	36557	34883	31955	33968	27696	27376	22055	16766	10580
Norway									
Total	37296	35156	31978	34134	28608	27391	22073	16792	10595
ICES estimate	37308**	35413**							
Country	1999	2000	2001	2002	2003 *	2004 *	2005 *	2006 *	2007*
Faroe Islands	9		15	7	34	29	77	16	25
Germany	13	22	50	31	23	10	6	1	228
Greenland									
Iceland	11087	14507	2310***	2277***	20360	15478	13023	11798	
Norway							100		691
Russia									
UK (E/W/I)	26	73	50	21	16	8	8	1	
UK Scotland	3	5	12	16	5	2	27	1	
UK									1
Total	11138	14607	2437	2352	20438	15527	13241	11817	945
ICES estimate		14607	16752	19714	20415	15477	13172	11817	10525
Country	2008*	2009*	2010*	2011*	2012*	2013*	2014*	2015*	
Faroe Islands			37	123	585	103	30	18	
Germany	4	423	797	576	269	386	587	265	
Greenland				157		92		1	
Iceland			13293	13192	6459	14859	9859	12309	
Norway									
Russia	4								
Poland		270							
UK	179								
Total	187	693	14128	14048	7313	15440	10476	12593	
ICES estimate	11859	15782	14128	14048	7313	15440	10476	12593	

* Provisional data.

** Includes 223 t catch by Norway.

*** Fished in Icelandic EEZ but allocated to Division 14.b.

Table 2.3.6.11 Greenland halibut in subareas 5, 6, 12, and 14. History of official and ICES estimated catch (tonnes) for Division 5.b for each country participating in the fishery.

Country	1981	1982	1983	1984	1985	1986	1987	1988	1989
Denmark	-	-	-	-	-	-	6	+	-
Faroe Islands	442	863	1112	2456	1052	775	907	901	1513
France	8	27	236	489	845	52	19	25	...
Germany	114	142	86	118	227	113	109	42	73
Greenland	-	-	-	-	-	-	-	-	-
Norway	2	+	2	2	2	+	2	1	3
UK (Engl. and Wales)	-	-	-	-	-	-	-	-	-
UK (Scotland)	-	-	-	-	-	-	-	-	-
United Kingdom	-	-	-	-	-	-	-	-	-
Total	566	1032	1436	3065	2126	940	1043	969	1589
ICES estimate	-	-	-	-	-	-	-	-	1606**
Country	1990	1991	1992	1993	1994	1995	1996	1997	1998
Denmark	-	-	-	-	-	-	-	-	-
Faroe Islands	1064	1293	2105	4058	5163	3603	6004	4750	3660
France	3*	2	1	28	29	11	8*
Germany	43	24	71	24	8	1	21	41	
Greenland	-	-	-	-	-	-	-	-	-
Norway	42	16	25	335	53	142	281	42*	114*
UK (Engl. and Wales)	-	-	1	15	-	31	122		
UK (Scotland)	-	-	1	-	-	27	12	26	43
United Kingdom	-	-	-	-	-				
Total	1149	1333	2206	4434	5225	3832	6469	4870	3825
ICES estimate	1282**	1662**	2269**	-	-	-	-	-	-
Country	1999	2000*	2001*	2002*	2003 *	2004 *	2005 *	2006 *	2007 *
Denmark									
Faroe Islands	3873		106	13	58	35	887	817	1116
France		1	32	4	8	17		40	9
Germany	22								
Iceland									
Ireland									
Norway	87	1	2	1	1		1		1
UK (Engl. and Wales)	9	35	77	50	24	41	2		
UK (Scotland)	66	116	118	141	174	87	204		
United Kingdom								19	1
Total	4057	153	335	209	265	180	1094	876	1127
ICES estimate	2694**	5079	3951	2694	2459	1771	892	873	1060
Country	2008	2009	2010	2011	2012	2013	2014	2015*	
Denmark									
Faroe Islands			1037	1476	2149	2560	2953	3139	
France	36		35	1.33	13	20		28	
Germany									
Iceland								45	
Ireland									
Norway	1	1	5				3	10	
UK (Engl. and Wales)									
UK (Scotland)									
United Kingdom	32	117	336.26	11.216		2	2	9	
Total	69	118	1413	1489	2162	2582	2958	3231	
ICES estimate	1759	1739	1413	1489	2162	2582	2958	3231	

* Provisional data.

** ICES estimate includes additional catches as described in ICES reports since 2001.

Table 2.3.6.12 Greenland halibut in subareas 5, 6, 12, and 14. History of official and ICES estimated catch (tonnes) for Subarea 14 for each country participating in the fishery.

Country	1981	1982	1983	1984	1985	1986	1987	1988	1989
Faroe Islands	-	-	-	-	-	78	74	98	87
Germany	2893	2439	1054	818	636	745	456	595	420
Greenland	+	1	5	15	81	177	154	37	11
Iceland	-	-	1	2	36	17	136	40	+
Norway	-	-	-	+	-	-	-	-	-
Russia	-	-	-	-	-	-	-	-	+
UK (Engl. and Wales)	-	-	-	-	-	-	-	-	-
UK (Scotland)	-	-	-	-	-	-	-	-	-
United Kingdom	-	-	-	-	-	-	-	-	-
Total	2893	2440	1060	835	753	1017	820	770	518
ICES estimate	-	-	-	-	-	-	-	-	-
Country	1990	1991	1992	1993	1994	1995	1996	1997	1998
Denmark	-	-	-	-	-	-	1	+	+
Faroe Islands	-	-	-	181	168	147	130	148	151
Germany	293	279	311	391	639	808	3343	3301	3399
Greenland	40	66	437	288	866	533	1162	1129	747
Iceland	-	-	-	19	82	7	-	1803	148
Norway	8	18	196	511	1120	1668	1881	1897*	1253
Russia	-	-	5	-	-	10	424	37	52
UK (Engl. and Wales)	27	38	108	796	513	1405	264	218	190
UK (Scotland)	-	-	18	26	84	205	13		
United Kingdom	-	-	-	-	-	-	-		
Total	368	401	1075	2212	3472	4783	7218	8533	5940
ICES estimate	736**	875***	1176^	2249^^	3125^^^	5077#	7283	8558	
Country	1999	2000	2001	2002	2003	2004	2005	2006	2007
Denmark									
Faroe Islands	2			274	366	274	186	22	
Germany	3047	3243	2750	2019	2925	5159	5144	4298	4702
Greenland	200*,^	1740	1553	1887	1459				
Iceland	93	30	14280	16947	6				
Ireland			7						
Norway	1100	1161	1424	1660	846	1114	1023	1094	
Poland						205			
Portugal			6	130				1094	
Russia	138	183	186	44		261		505	500
Spain		8	10		2131	3406	2		
UK (Engl. and Wales)	226	262	100						
UK (Scotland)				24	188	278	160		
United Kingdom				178	799	1294			
Total	4806	6627	20316	22889	8720	11991	6515	7013	5202
ICES estimate	5376	6958	6588^^^	6750^^^	8017	9854	10185	8589	10261
Country	2008	2009	2010	2011	2012	2013	2014	2015*	
Estonia							429		
Faroe Islands		270	333		77	124.85	409	57	
Germany	4842	4	4490	5206	4351	3428	3114	3543	
Greenland		2819		3258	5239	3159	1897	3641	
Iceland					7290		3	46	
Ireland									
Norway	637	29	226	164	853	613	761	1115	
Poland	1354	718	960		786				
Portugal									

Russia	763		1070	1095	1168	1369	587	600	
Spain									
United Kingdom	131	452	229	309	1	1			
Total	7727	4292	7308	10032	19765	8694	7200	9002	
ICES estimate	9102	9805	10402	10761			7526	9534###	

* Provisional data.

**ICES estimates include additional catches as described in the NWWG reports since 2001.

*** Includes 125 t by Faroe Islands and 206 t by Greenland.

^ Excluding 4732 t reported as area unknown.

^^ Includes 1523 t by Norway, 102 t by Faroe Islands, 3343 t by Germany, 1910 t by Greenland, 180 t by Russia, as reported to Greenland authorities.

^^^ Does not include most of the Icelandic catch as those are included in WG estimate of Division 5.a.

Excluding 138 t reported as area unknown.

Logbook information contain additional catches from Faroe Islands and Germany.

Table 2.3.6.13 Greenland halibut in Subareas 5, 6, 12, and 14. History of official and ICES estimated catch (tonnes) for Subarea 12 for each country participating in the fishery.

Country	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Faroe Islands		47					40			
France					1			4	30	
Ireland						49				
Lithuania								2	1	
Poland						2		2	1	
Spain **	2	42	67	137	751	1338	28	730	1145	501
UK					7	5				3
Russia										
Norway	2				553	500	316	201	119	
Estonia										
Total	4	89	67	137	1312	1894	384	939	1296	504
ICES estimate										504
Country	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015*
Faroe Islands						106				
France										
Ireland										
Lithuania	2	3	566				97			
Poland										
Spain **									67	91
UK										
Russia	46	1		762						
Norway				94						
Estonia	2									
Total	50	4	566	856	0	106	97	0	67	91
ICES estimate	50	4	566	856	0	106	97	0	67	91

* Provisional data.

** Based on estimates by observers on-board vessels.

Table 2.3.6.14 Greenland halibut in Subareas 5, 6, 12, and 14. History of official and ICES estimated catch (tonnes) for Subarea 6 for each country participating in the fishery.

Country	1996	1997	1998	1999	2000	2001	2002	2003	2004		
Estonia							8				
Faroe Islands											
France							286	165	110		
Poland							16	91	1		
Spain **			22	88	20	350	1367	214	170		
UK					159	247	77	42	10		
Russia						1			1		
Norway					35	317	21	26			
Total	0	0	22	88	214	915	1775	538	292		
ICES estimate											
Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015*
Estonia	5	1									
Faroe Islands						1.2			0	1	
France		22	8	114		38	8	54	113		89
Poland											
Spain **	3	33									18
UK	217	74	15	80	12	11	3	11	93	41	119
Russia		1		32							
Norway		3		1	3	2.1	7	3	1	0	1
Lithuania				968				2			
Total	225	134	23	1195	15	52	18	70	207	43	227
ICES estimate	225	134	23	1195	15	52	18	70	207	43	227

*Provisional data.

**Based on estimates by observers on-board vessels.

Summary of the assessment

Table 2.3.6.15 Greenland halibut in subareas 5, 6, 12, and 14. Assessment summary with 90% confidence intervals.

Year	Catch (kt)	B/B _{MSY}	Low	High	F/F _{MSY}	Low	High
1960	0.000	2.006	1.889	2.121	0.000	0	0
1961	0.029	2.007	1.896	2.114	0.000	2.67E-04	9.33E-04
1962	3.071	2.007	1.899	2.111	0.046	0.02834	0.09903
1963	4.275	1.998	1.893	2.102	0.065	0.03963	0.1382
1964	4.748	1.987	1.883	2.094	0.073	0.04416	0.1541
1965	7.421	1.979	1.875	2.086	0.114	0.06926	0.2418
1966	8.030	1.964	1.859	2.074	0.124	0.07532	0.2634
1967	9.597	1.951	1.843	2.063	0.150	0.0905	0.3167
1968	8.337	1.935	1.827	2.051	0.131	0.07911	0.2775
1969	26.200	1.926	1.814	2.045	0.414	0.2495	0.8749
1970	33.823	1.872	1.75	2.007	0.552	0.3291	1.157
1971	28.973	1.811	1.67	1.959	0.491	0.2894	1.021
1972	26.473	1.771	1.617	1.926	0.460	0.2684	0.9553
1973	20.463	1.742	1.583	1.903	0.362	0.2091	0.754
1974	36.280	1.731	1.573	1.893	0.645	0.3721	1.355
1975	23.494	1.683	1.508	1.856	0.431	0.2452	0.9048
1976	6.045	1.671	1.493	1.847	0.112	0.06313	0.2368
1977	16.578	1.704	1.537	1.872	0.299	0.1696	0.6452
1978	14.349	1.707	1.535	1.876	0.257	0.146	0.5635
1979	23.622	1.715	1.541	1.882	0.421	0.2391	0.9327
1980	31.157	1.698	1.521	1.869	0.562	0.3181	1.253
1981	19.239	1.663	1.48	1.846	0.355	0.1992	0.7941

Year	Catch (kt)	B/B _{MSY}	Low	High	F/F _{MSY}	Low	High
1982	32.441	1.663	1.473	1.846	0.598	0.3357	1.354
1983	30.891	1.629	1.428	1.82	0.582	0.3253	1.324
1984	34.024	1.605	1.392	1.803	0.652	0.361	1.495
1985	32.075	1.573	1.347	1.783	0.627	0.3435	1.449
1986	32.984	1.562	1.265	1.938	0.649	0.3405	1.493
1987	46.622	1.531	1.225	1.93	0.935	0.4875	2.167
1988	51.118	1.479	1.182	1.872	1.060	0.5517	2.447
1989	61.396	1.539	1.217	1.954	1.230	0.6312	2.84
1990	39.326	1.233	0.9813	1.566	0.982	0.5078	2.256
1991	37.950	1.148	0.9114	1.457	1.019	0.5251	2.341
1992	35.487	1.026	0.8149	1.303	1.065	0.5477	2.458
1993	41.247	0.850	0.6783	1.077	1.491	0.773	3.439
1994	37.190	0.700	0.559	0.8875	1.632	0.8489	3.76
1995	36.288	0.590	0.4727	0.7503	1.884	0.9847	4.344
1996	35.932	0.539	0.4319	0.6902	2.038	1.065	4.713
1997	30.309	0.592	0.4707	0.7682	1.569	0.809	3.631
1998	20.382	0.768	0.6116	0.9761	0.818	0.4197	1.876
1999	20.371	0.854	0.682	1.079	0.734	0.3789	1.695
2000	26.644	0.918	0.7344	1.159	0.892	0.4613	2.056
2001	27.291	0.912	0.7268	1.155	0.922	0.4735	2.124
2002	29.158	0.747	0.5982	0.9437	1.201	0.6214	2.765
2003	30.891	0.560	0.4488	0.703	1.694	0.8859	3.911
2004	27.102	0.463	0.3697	0.581	1.797	0.9437	4.149
2005	24.249	0.466	0.3743	0.5888	1.595	0.8341	3.679
2006	21.432	0.528	0.4166	0.6632	1.251	0.652	2.891
2007	20.957	0.626	0.4908	0.7906	1.034	0.5338	2.387
2008	22.169	0.624	0.4985	0.7837	1.227	0.6392	2.825
2009	27.349	0.663	0.5313	0.837	1.268	0.6572	2.92
2010	25.995	0.642	0.5144	0.808	1.244	0.648	2.859
2011	26.424	0.675	0.5409	0.8511	1.202	0.6257	2.764
2012	29.309	0.707	0.567	0.8951	1.273	0.6597	2.927
2013	27.045	0.718	0.5747	0.9099	1.158	0.5986	2.668
2014	21.069	0.683	0.5458	0.8657	0.947	0.4904	2.189
2015	25.677	0.713	0.5652	0.91	1.103	0.5675	2.58
2016		0.730					

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