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Results of Russian Surveys on Greenland Halibut Stock
Assessment on the Flemish Cap in 1987-1996

by

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Abstract

Results of Greenland halibut stock assessment on the Flemish Cap in 1987-1996 are presented. In 1994 trawl survey was not conducted. The calculated abundance and biomass varied considerably by years both in separate strata and over the bank on the whole. The main cause of those variations was that research tows covered only the upper part of the distribution range of Greenland halibut. From 1987 to 1995 tows were made down to 731 m, in 1996 to a depth of 914 m. Only immature feeding individuals occurred in catches.

Indices of abundance, biomass and catches per effort in the years mentioned above had been reducing and somewhat increasing by 1996, which conforms with variations of those parameters in Divs. 2G and 2H in 1978-1996 (Brodie et al., 1997a) and in Divs. 2J and 3K in 1986-1996 (Brodie et al., 1997b) from the data of Canadian trawl surveys.

Russian surveys showed the increase of Greenland halibut mean length with depth in catches taken on the Flemish Cap, which was noted earlier by various researchers.

Materials and Methods

Trawl surveys on demersal fish stock assessment were carried out in the NAFO Regulatory Area using stratified-random method (Doubleday, 1981; Bulatova, Chumakov, 1986, Bulatova et al., 1997). When estimating demersal fish stocks including Greenland halibut in 1987-1995, tows were made down to 731 m depth, in 1996 as deep as 914 m. In 1994 trawl survey was not conducted. Tows were made by 1625-A bottom trawl with a small-mesh insertion (12-mm mesh size) in the codend. Towing duration was 30 min at 3.5 knots. Information on surveys by years and months are presented in Table 1.

Results and Discussion

Mean catches of Greenland halibut on the Flemish Cap by strata, number of sampling tows, calculated abundance and biomass per each year are given in Tables 2-10. Indices of Greenland halibut abundance and biomass by strata and years, as well as over Flemish Cap on the whole are shown in Tables 11-13. Indices of Greenland halibut abundance and biomass varied greatly by years in both separate strata and the bank on the whole. Mean catches per tow, expressed in individuals and weight, also fluctuated from year to year (Table 14, 15). Catches were not large, Greenland halibut were usually evenly distributed over the whole bank.

The main cause of sharp year-to-year fluctuations of the abundance and biomass indices and mean catches is that trawl surveys covered only the upper part of the Greenland halibut vertical distribution range but their main concentrations were far deeper. It is known that in the Flemish Pass area, which includes a part of Flemish Pass, where the main fishery is carried out, Greenland halibut was taken by sampling bottom

trawls to a depth of 1400 m (Gorchinsky, 1996) and constituted negligible by-catch when fishing for redfish down to 700 m (Gorchinsky, Savvatimsky, 1994), and only from 800-900 m downward they constituted more than 70% of catches (Gorchinsky, Savvatimsky, 1996). In the area indicated the Greenland halibut were also taken by longlines as deep as 2039 m (Cardenas et al., 1996).

Indices of Greenland halibut abundance, biomass and catches per effort had been decreasing from 1987 to 1992 and slightly decreasing to 1996, which agrees with a trend of these parameters variations in Divs. 2G and 2H in 1978-1996 (Brodie et al., 1997b) from data of Canadian surveys.

In Russian catches on the Flemish Cap mean length of Greenland halibut males and females in catches was growing with the increased depth (Table 16), which was repeatedly pointed out by different researchers (Cardenas et al., 1996; Gorchinsky, Savvatimsky, 1994; Gorchinsky, 1996; Savvatimsky, Vaskov, 1996).

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Table 1. Information regarding trawl surveys conducted in 1987-1996 in Div. 3M.

Year	Period	Vessel	Cruise No	Valid tows
1987	June, July	MB-1202 "Persey-III"	37	131
1988	June	MB-1202 "Persey-III"	40	124
1989	June, July	MB-1202 "Persey-III"	43	129
1990	June, July	MB-1202 "Persey-III"	48	119
1991	April, May	MG-1362 "Vilnus"	35	100
1992	April	MG-1366 "K. Shajtanov"	27	53
1993	June, July	MG-1362 "Vilnus"	43	69
1995	May	MI-0708 "Olenica"	6	58
1996	April, May	MI-8339 "Olaine"	1	76

Table 2. Results from the trawl survey for Greenland halibut in Div 3M. June-July, 1987.

Stratum	Depth, m	Area, (mile sq.)	Nos of tows	Mean catch/ 1 valid tow		Abundance, '000	Biomass, tons
				fish	kg		
501	127-146	342	4	-	-	-	-
502	147-183	838	10	-	-	-	-
503	184-256	628	7	-	-	-	-
504	"-	348	4	-	-	-	-
505	"-	703	9	-	-	-	-
506	"-	496	6	-	-	-	-
507	258-366	822	10	0.3	0.3	18.3	18.8
508	"-	646	8	1.0	1.5	47.9	71.8
509	"-	314	4	5.0	9.0	116.3	209.3
510	"-	951	12	0.4	0.5	29.4	35.2
511	"-	806	10	0.6	0.7	35.8	39.4
512	367-546	670	9	4.7	6.9	231.6	343.5
513	"-	249	3	1.0	2.0	18.4	36.9
514	"-	602	8	2.0	4.5	89.2	200.7
515	"-	666	8	2.8	5.0	135.7	244.8
516	550-731	634	8	6.4	9.7	299.4	453.8
517	"-	216	3	3.3	6.2	53.3	99.2
518	"-	210	4	0.5	1.3	7.8	19.4
519	"-	414	4	2.5	5.5	76.7	168.7
Total		10555	131			1159.7	1941.0

Table 3. Results from the trawl survey for Greenland halibut in Div 3M. June-July, 1988.

Stratum	Depth, m	Area, mile sq.	Nos of tows	Mean catch/ 1 valid tow		Abundance, '000	Biomass, tons
				fish	kg		
501	127-146	342	4	-	-	-	-
502	147-183	838	9	-	-	-	-
503	184-256	628	7	0.4	0.6	19.9	26.6
504	"	348	4	-	-	-	-
505	"	703	9	-	-	-	-
506	"	496	6	0.3	0.0	12.2	1.5
507	258-366	822	9	0.2	0.3	13.5	16.7
508	"	646	8	0.4	0.5	17.9	24.8
509	"	314	4	-	-	-	-
510	"	951	10	0.1	0.1	7.0	6.5
511	"	806	9	-	-	-	-
512	367-546	670	8	2.9	4.3	142.7	213.8
513	"	249	3	4.3	3.9	79.9	71.1
514	"	602	7	0.9	1.7	38.2	74.5
515	"	666	8	1.8	2.0	86.3	96.5
516	550-731	634	8	11.0	16.4	516.6	768.7
517	"	216	3	5.0	8.3	80.0	133.6
518	"	210	3	16.3	25.6	254.1	412.4
519	"	414	5	19.0	25.3	582.7	775.3
Total		10555	124			1851.2	2622.0

Table 4. Results from the trawl survey for Greenland halibut in Div 3M. June-July, 1989.

Stratum	Depth, m	Area, mile sq.	Nos of tows	Mean catch/ 1 valid tow		Abundance, '000	Biomass, tons
				fish	kg		
501	127-146	342	6	-	-	-	-
502	147-183	838	9	-	-	-	-
503	184-256	628	7	0.4	0.4	19.9	17.1
504	"	348	4	-	-	-	-
505	"	703	9	-	-	-	-
506	"	496	6	-	-	-	-
507	258-366	822	9	0.3	0.5	20.3	31.5
508	"	646	8	0.3	0.3	12.0	13.0
509	"	314	5	8.8	16.7	204.7	387.4
510	"	951	10	0.3	0.5	21.1	36.2
511	"	806	8	0.3	0.2	14.9	12.9
512	367-546	670	8	13.3	13.0	657.6	646.0
513	"	249	3	4.3	8.2	18.4	36.9
514	"	602	8	2.0	3.6	89.2	161.0
515	"	666	9	9.4	10.7	645.9	528.3
516	550-731	634	8	28.0	40.4	1315.0	1896.7
517	"	216	3	6.3	11.4	101.3	182.9
518	"	210	4	2.8	4.3	2.8	4.3
519	"	414	5	10.0	13.1	306.7	403.2
Total		10555	129			3350.6	4533.6

Table 5. Results from the trawl survey for Greenland halibut in Div 3M. June-July, 1990.

Stratum	Depth, m	Area, (mile sq.)	Nos of tows	Mean catch/ 1 valid tow		Abundance, '000	Biomass, tons
				fish	kg		
501	127-146	342	4	-	-	-	-
502	147-183	838	8	-	-	-	-
503	184-256	628	8	0.1	0.1	5.8	3.2
504	"	348	4	-	-	-	-
505	"	703	6	-	-	-	-
506	"	496	6	-	-	-	-
507	258-366	822	7	-	-	-	-
508	"	646	9	0.4	0.5	21.3	23.7
509	"	314	4	1.8	2.2	40.7	50.8
510	"	951	9	-	-	-	-
511	"	806	9	-	-	-	-
512	367-546	670	7	1.7	1.5	85.1	74.7
513	"	249	4	0.8	1.5	13.8	26.9
514	"	602	8	0.8	0.9	33.4	39.2
515	"	666	8	1.3	0.9	61.7	46.3
516	550-731	634	7	3.0	3.3	140.9	154.9
517	"	216	3	0.3	0.4	5.3	6.4
518	"	210	3	4.3	6.9	67.4	107.1
519	"	414	5	4.2	5.3	128.8	162.1
Total		10555	119			604.2	695.4

Table 6. Results from the trawl survey for Greenland halibut in Div 3M. April-May, 1991.

Stratum	Depth, m	Area, (mile sq.)	Nos of tows	Mean catch/ 1 valid tow		Abundance, '000	Biomass, tons
				fish	kg		
501	127-146	342	3	-	-	-	-
502	147-183	838	7	-	-	-	-
503	184-256	628	5	0.2	0.1	9.3	4.7
504	"	348	3	-	-	-	-
505	"	703	6	0.2	0.0	8.7	0.9
506	"	496	5	-	-	-	-
507	258-366	822	6	0.3	0.1	20.3	3.0
508	"	646	6	-	-	-	-
509	"	314	4	0.3	0.2	5.8	3.5
510	"	951	7	-	-	-	-
511	"	806	6	0.5	0.3	29.9	18.9
512	367-546	670	5	0.2	0.1	9.9	6.9
513	"	249	4	-	-	-	-
514	"	602	8	0.1	0.1	5.6	5.6
515	"	666	7	-	-	-	-
516	550-731	634	6	1.2	0.9	54.8	42.3
517	"	216	3	-	-	-	-
518	"	210	4	-	-	-	-
519	"	414	5	0.8	0.7	24.5	22.1
Total		10555	100			168.8	107.8

Table 7. Results from the trawl survey for Greenland halibut in Div 3M. April, 1992.

Stratum	Depth, m	Area, mile sq.	Nos of tows	Mean catch/ 1 valid tow fish	Mean catch/ kg	Abundance, '000	Biomass, tons
501	127-146	342	3	-	-	-	-
502	147-183	838	3	-	-	-	-
503	184-256	628	5	0.2	0.0	9.3	0.9
504	"	348	-	-	-	-	-
505	"	703	1	1.0	0.1	52.1	6.8
506	"	496	4	0.3	0.1	9.2	2.0
507	258-366	822	5	0.8	0.1	48.7	7.6
508	"	646	2	-	-	-	-
509	"	314	-	-	-	-	-
510	"	951	5	-	-	-	-
511	"	806	5	0.2	0.2	11.9	11.9
512	367-546	670	3	-	-	-	-
513	"	249	-	-	-	-	-
514	"	602	1	1.0	0.7	44.6	30.1
515	"	666	5	1.4	0.8	69.1	37.2
516	550-731	634	4	3.5	3.1	164.4	145.1
517	"	216	-	-	-	-	-
518	"	210	1	-	-	-	-
519	"	414	6	1.7	1.0	51.1	32.0
Total		10555	53			460.3	685.0

Table 8. Results from the trawl survey for Greenland halibut in Div 3M. June-July, 1993.

Stratum	Depth, m	Area, mile sq.	Nos of tows	Mean catch/ 1 valid tow fish	Mean catch/ kg	Abundance, '000	Biomass, tons
501	127-146	342	3	-	-	-	-
502	147-183	838	4	-	-	-	-
503	184-256	628	4	-	-	-	-
504	"	348	3	-	-	-	-
505	"	703	4	-	-	-	-
506	"	496	3	0.3	0.1	12.2	1.9
507	258-366	822	4	4.0	1.0	243.6	59.3
508	"	646	4	0.8	1.0	35.9	47.1
509	"	314	3	3.0	6.1	69.8	142.4
510	"	951	3	1.3	0.9	93.9	62.2
511	"	806	3	2.0	1.1	119.4	64.9
512	367-546	670	5	14.2	11.4	704.7	565.5
513	"	249	3	5.0	5.6	92.2	103.3
514	"	602	4	2.5	3.3	111.5	148.8
515	"	666	4	18.0	15.9	888.0	782.9
516	550-731	634	4	5.5	5.8	258.3	273.2
517	"	216	3	3.3	4.8	53.3	76.3
518	"	210	4	0.3	0.2	3.9	2.6
519	"	414	4	5.0	4.9	153.3	148.8
Total		10555	69			2840.1	2479.0

Table 9. Results from the trawl survey for Greenland halibut in Div 3M. June, 1995.

Stratum	Depth	Area	Nos	Mean catch/		Abundance	Biomass
	m	mile sq.	of	1 valid tow	1 valid tow	'000	tons
			(tows)	fish	kg		
501	127-146	342	3	-	-	-	-
502	147-183	838	3	-	-	-	-
503	184-256	628	3	2.3	0.1	108.5	3.5
504	"	348	3	-	-	-	-
505	"	703	3	1.3	0.4	70.0	19.2
506	"	496	3	0.7	0.0	24.6	0.9
507	258-366	822	3	4.3	0.5	263.6	31.8
508	"	646	3	0.3	0.0	15.8	0.6
509	"	314	3	0.3	0.0	7.8	1.9
510	"	951	3	2.3	0.2	164.1	11.3
511	"	806	4	4.0	0.5	238.8	30.6
512	367-546	670	3	2.0	0.6	99.3	213.8
513	"	249	3	-	-	-	-
514	"	602	3	0.3	0.0	14.7	0.4
515	"	666	3	0.7	0.3	32.6	12.3
516	550-731	634	3	19.0	12.8	892.3	600.5
517	"	216	3	5.0	5.6	80.0	90.0
518	"	210	3	6.0	4.9	93.3	76.4
519	"	414	3	14.3	5.0	439.5	152.1
Total		10555	58			2763.6	1058.3

Table 10. Results from the trawl survey for Greenland halibut in Div 3M. April-May, 1996.

Stratum	Depth	Area	Nos	Mean catch/		Abundance	Biomass
	m	mile sq.	of	1 valid tow	1 valid tow	'000	tons
			(tows)	fish	kg		
501	127-146	342	3	-	-	-	-
502	147-183	838	4	-	-	-	-
503	184-256	628	3	1.3	0.2	62.0	8.1
504	"	348	3	0.7	0.0	17.3	0.3
505	"	703	3	1.0	0.1	52.1	3.2
506	"	496	3	1.0	0.1	36.7	3.7
507	258-366	822	3	9.0	1.3	548.0	79.3
508	"	646	3	3.7	0.4	175.5	18.2
509	"	314	3	0.3	0.0	7.8	0.1
510	"	951	3	3.3	0.4	234.8	28.4
511	"	806	3	0.3	0.0	19.9	2.3
512	367-546	670	3	1.7	0.3	82.7	15.9
513	"	249	3	0.7	0.0	12.3	0.8
514	"	602	3	-	-	-	-
515	"	666	3	0.7	0.1	32.9	4.8
516	550-731	634	3	4.0	2.0	187.9	95.3
517	"	216	4	0.5	0.2	8.0	3.4
518	"	210	5	-	-	-	-
519	"	414	3	2.0	0.8	61.3	25.5
520	732-914	525	4	1.8	1.3	68.1	52.4
524	"	253	5	2.4	0.4	45.0	34.6
528	"	530	3	27.7	19.9	1086.1	781.8
533	"	98	3	4.3	2.3	31.5	17.0
Total		10555	76			2769.9	1177.7

Table 11. Abundance of Greenland halibut (thou. spec) by strata based on data from trawl surveys, 1987-1996*.

Stratum	Depth, m	1987	1988	1989	1990	1991	1992	1993	1995	1996
503	185-256	-	19.9	19.9	5.8	9.3	9.3	-	108.5	62.0
504	"	-	-	-	-	-	-	-	-	17.3
505	"	-	-	-	-	8.7	52.1	-	70.0	52.1
506	"	-	12.2	-	-	-	9.2	12.2	24.6	36.7
507	258-366	18.3	13.5	20.3	-	20.3	48.7	243.6	263.6	548.0
508	"	47.9	17.9	12.0	21.3	-	-	35.9	15.8	175.5
509	"	116.3	-	204.7	40.7	5.8	-	69.8	7.8	7.8
510	"	29.4	7.0	21.1	-	-	-	93.9	164.1	234.8
511	"	35.8	-	14.9	-	29.9	11.9	119.4	238.8	19.9
512	367-549	231.6	142.7	657.6	85.1	9.9	-	704.7	99.3	82.7
513	"	18.4	79.9	18.4	13.8	-	-	92.2	-	12.3
514	"	89.2	38.2	89.2	33.4	5.6	44.6	111.5	14.7	-
515	"	135.7	86.3	645.9	61.7	-	69.1	888.0	32.6	32.9
516	550-731	299.4	516.6	1315.0	140.9	54.8	164.4	258.3	892.3	187.9
517	"	53.3	80.0	101.3	5.8	-	-	53.3	80.0	8.0
518	"	7.8	254.1	2.8	67.4	-	-	3.9	93.3	61.3
519	"	76.7	582.7	306.7	128.8	24.5	51.1	153.3	439.5	68.1
520	732-914	-	-	-	-	-	-	-	-	45.0
524	"	-	-	-	-	-	-	-	-	1086.1
528	"	-	-	-	-	-	-	-	-	31.5
533	"	-	-	-	-	-	-	-	-	2.3

* No investigations were carried out in 1994.

Table 12. Biomass of Greenland halibut (tons) by strata based on data from trawl surveys, 1987-1996*.

Stratum	Depth, m	1987	1988	1989	1990	1991	1992	1993	1995	1996
503	185-256	-	26.6	17.1	3.2	4.7	0.9	-	3.5	8.1
504	"	-	-	-	-	-	-	-	-	0.3
505	"	-	-	-	-	0.9	6.8	-	19.2	3.2
506	"	-	1.5	-	-	-	2.0	1.9	0.9	3.7
507	258-366	18.8	16.7	31.5	-	3.0	7.6	59.3	31.8	79.3
508	"	71.8	24.8	13.0	23.7	-	-	47.1	0.6	18.2
509	"	209.3	-	387.4	50.8	3.5	-	142.4	1.9	0.1
510	"	35.2	6.5	36.2	-	-	-	62.2	11.3	28.4
511	"	39.4	-	12.9	-	18.9	11.9	64.9	30.6	2.3
512	367-549	343.5	213.8	646.0	74.7	6.9	-	565.5	213.8	15.9
513	"	36.9	71.1	36.9	26.9	-	-	103.3	-	0.8
514	"	200.7	74.5	161.0	39.2	5.4	30.1	148.8	0.4	-
515	"	244.8	96.5	528.3	46.3	-	37.2	782.9	12.3	4.8
516	550-731	453.8	768.7	1896.7	154.9	42.3	145.1	273.2	600.5	95.3
517	"	99.2	133.6	182.9	6.4	-	-	76.3	90.0	3.4
518	"	19.4	412.4	4.3	107.1	-	-	2.6	76.4	-
519	"	168.7	775.3	403.2	162.1	22.1	32.0	148.8	152.1	25.5
520	732-914	-	-	-	-	-	-	-	-	52.4
524	"	-	-	-	-	-	-	-	-	34.6
528	"	-	-	-	-	-	-	-	-	781.8
533	"	-	-	-	-	-	-	-	-	17.0

* No investigations were carried out in 1994.

Table 13. Estimates provided by the trawl survey for Greenland halibut in Div. 3M for 1987-1996.

Year	Trawl survey	
	Abundance, th. sp.	Biomass, t
1987	1159.7	1941.0
1988	1851.2	2622.0
1989	3351.3	4536.1
1990	604.2	695.4
1991	168.8	107.8
1992	460.3	685.0
1993	2840.1	2479.0
1994	-	-
1995	1851.2	2622.0
1996	2769.9	1177.7

Table 14. Data on average catches (spes.) per one valid tow from the Russian trawl surveys for Greenland halibut in Div. 3M by stratum in 1987-1996*.

Stratum	Depth, m	1987	1988	1989	1990	1991	1992	1993	1995	1996
503	185-256	-	0.4	0.4	0.1	0.2	0.2	-	2.3	1.3
504	"	-	-	-	-	-	-	-	-	0.7
505	"	-	-	-	-	0.2	1.0	-	1.3	1.0
506	"	-	0.3	-	-	-	0.3	0.3	0.7	1.0
507	258-366	0.3	0.2	0.3	-	0.3	0.8	4.0	4.3	9.0
508	"	1.0	0.4	0.3	0.4	-	-	0.8	0.3	3.7
509	"	5.0	-	8.8	1.8	0.3	-	3.0	0.3	0.3
510	"	0.4	0.1	0.3	-	-	-	1.3	2.3	3.3
511	"	0.6	-	0.3	-	0.5	0.2	2.0	4.0	0.3
512	367-549	4.7	2.9	13.3	1.7	0.2	-	14.2	2.0	1.7
513	"	1.0	4.3	4.3	0.8	-	-	5.0	-	0.7
514	"	2.0	0.9	2.0	0.8	0.1	1.0	2.5	0.3	-
515	"	2.8	1.8	9.4	1.3	-	1.4	18.0	0.7	0.7
516	550-731	6.4	11.0	28.0	3.0	1.2	3.5	5.5	19.0	4.0
517	"	3.3	5.0	6.3	0.3	-	-	3.3	5.0	0.5
518	"	0.5	16.3	2.8	4.3	-	-	0.3	6.0	-
519	"	2.5	19.0	10.0	4.2	0.8	1.7	5.0	14.3	2.0
520	732-914	-	-	-	-	-	-	-	-	1.8
524	"	-	-	-	-	-	-	-	-	2.4
528	"	-	-	-	-	-	-	-	-	27.7
533	"	-	-	-	-	-	-	-	-	4.3

* No investigations were carried out in 1994.

Table 15. Data on average catches (kg) per one valid tow from the Russian trawl surveys for Greenland halibut in Div. 3M by stratum in 1987-1996*.

Stratum	Depth, m	1987	1988	1989	1990	1991	1992	1993	1995	1996
503	185-256	-	0.6	0.4	0.1	0.1	0.0	-	0.1	0.2
504	"	-	-	-	-	-	-	-	-	0.0
505	"	-	-	-	-	0.0	0.1	-	0.4	0.1
506	"	-	0.0	-	-	-	0.1	0.1	0.0	0.1
507	258-366	0.3	0.3	0.5	-	0.1	0.1	1.0	0.5	1.3
508	"	1.5	0.5	0.3	0.5	-	-	1.0	0.0	0.4
509	"	9.0	-	16.7	2.2	0.2	-	6.1	0.0	0.0
510	"	0.5	0.1	0.5	-	-	-	0.9	0.2	0.4
511	"	0.7	-	0.2	-	0.3	0.2	1.1	0.5	0.0
512	367-549	6.9	4.3	13.0	1.5	0.1	-	11.4	0.6	0.3
513	"	2.0	3.9	8.2	1.5	-	-	5.6	-	0.0
514	"	4.5	1.7	3.6	0.9	0.1	0.7	3.3	0.0	-
515	"	5.0	2.0	10.7	0.9	-	0.8	15.9	0.3	0.1
516	550-731	9.7	16.4	40.4	3.3	0.9	3.1	5.8	12.8	2.0
517	"	6.0	8.3	11.4	0.4	-	-	4.8	5.6	0.2
518	"	1.3	25.6	4.3	6.9	-	-	0.2	4.9	-
519	"	5.5	25.3	13.1	5.3	0.7	1.0	4.9	5.0	0.8
520	732-914	-	-	-	-	-	-	-	-	1.3
524	"	-	-	-	-	-	-	-	-	0.4
528	"	-	-	-	-	-	-	-	-	19.9
533	"	-	-	-	-	-	-	-	-	2.3

* No investigations were carried out in 1994 .

Table 16. Mean length (cm) of males and females of Greenland halibut in Divisions 3M in 1987-1992.

Depth, m	males		females	
	L. av.	n	L. av.	n
184 - 256	27,5	13	30,8	25
257 - 366	32,8	82	43,5	198
367 - 549	43,6	143	49,7	437
550 - 731	47,6	256	52,1	653
732 - 914	43,6	39	44,1	62