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Data for the assessment of Greenland halibut in SA2 + Divisions 3KLM

by

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Catches and TACs

Catches of Greenland halibut increased from fairly low levels in the early 1960s to over 36,000 t in 1969 and ranged from 24,000 t to 39,000 t over the next 15 years (Table 1, Fig. 1). From 1985 to 1989, catches exceeded 20,000 t only in 1987. In 1990, an extensive fishery for G. halibut developed in the deepwater area around the boundary of Div. 3L and 3M, resulting in an increase in catch to about 47,000 t in 1990 and perhaps as high as 75,000 t in 1991 (Table 2), although there is some doubt as to the accuracy of recent reported catches. The major participants in this fishery were EEC/Spain and Portugal, as well as some non-NAFO-member countries such as Panama. Catches listed as "other" in Table 2 were derived from observations on the fishery in the Div. 3LM area.

Up to 1990, Canada, USSR, GDR, and Poland were usually the main participants in the fishery (Table 1), although Portugal and Japan have become more involved in the fishery since 1984. USSR catches were around 1100 t in 1988-90 but increased to 8200 t in 1991, the highest level since 1975. The majority of this catch in 1991 was taken in Div. 2H. Canadian catches peaked in 1980 at just over 31,000 t while the largest non-Canadian catches before 1990 occurred in 1969-70 (Fig. 1). In most years, the majority of the catch has come from Div. 3K and 3L, with catches from Div. 2G and 2H usually being relatively low (Fig. 2).

Canadian catches are taken mainly by gillnet and have been around 7,000-10,000 t in most recent years, down from a peak of about 28,000 t in 1980. The 1991 gillnet catch of 3500 t was the lowest in the time series (Fig.3). Much of the effort in this fishery is being diverted to the deepwater slope areas and away from the traditional inshore areas. Otter trawl catches peaked at about 8000 t in 1982, declined to less than 1000 t in 1988, then increased to about 7400 t in 1991 (Table 3) which is the highest level since 1982 (Fig.3).

The TAC for this resource increased from 35,000 t in 1980 to 55,000 t in 1981-84, 75,000 t in 1985, and 100,000 t in 1986-89. The TAC was reduced to 50,000 t in 1990, following declines in the surveyed biomass of G. halibut, and this level was maintained in 1991 and 1992.

Catch-at-age and mean weights-at age

Sampling data from the catches of Canada, Portugal, and Spain were available. Data from other countries involved in the fishery were collected during 1991 but were not available at this time. Table 4 contains a summary of the sampling data available from the Canadian catch in 1991; and Table 5 shows the calculated catch-at-age and mean weights-at-age for the Canadian fisheries in 1991. Ages 6-8 dominated the catch in all components in 1990, which is consistent with the Canadian catch in virtually all years. In 1991 as in most years, 7 is the peak age in the catch, followed by age 8. The mean weights at age in 1991 were slightly higher than those from 1990, but well within the range of previous values. It should be noted that there are substantial amounts of sampling data for some non-Canadian fisheries for 1989-91 that have not been analyzed. These data are being prepared and should be available for the next assessment of this stock, allowing continuation of the catch at age series beyond 1988.

Catch and effort data

It has been noted previously for this stock that C/E data are incomplete for some fisheries/areas/seasons. Canadian trawler catches have been relatively low in many years (Table 6) and effort by many other nations has been variable over time, often being recorded as coming from a mixed fishery. Thus there is no C/E index for this stock at present.

Research vessel surveys

1) Stratified-random groundfish surveys

Results of stratified-random groundfish surveys in autumn in Div. 2J, 3K, and 3L are shown in Tables 7-9 respectively as mean weight (kg) per tow on a stratified basis. Figures 4-6 show the stratification schemes used in the surveys in these divisions. The biomass and abundance indices were calculated using a multiplicative model to estimate strata not surveyed. It should be noted that in Div. 2J and 3K, the strata from 1001-1500 m were rarely surveyed and thus were not included in the indices. In Div. 3L, the deepest strata are only 732 m, and these areas were not surveyed in all years. Div. 2GH were surveyed periodically by Canada since 1977. The 1991 survey in this area did not cover any strata deeper than 500m and surveyed only 5 strata in Div. 2G (Tables 10 and 11).

The trends in the aggregate abundance and biomass indices for Div. 2J3KL are shown in Figures 7 and 8. The biomass index shows a decline, particularly in Div. 2J and 3K, from a relatively stable level in 1981-1986 to the lowest in the series in 1991. The index of population numbers declined from relatively high levels in 1989-1990 to the lowest observed in 1991. The abundance at age is contained in Table 12, and Fig. 9 shows trends in abundance by age group. The number of older fish continued to decline in 1991 with 9+ numbers being about one-sixth of the value in 1988-89. The estimate of recruitment (ages 4-6) dropped from the highest observed levels in 1989 and 1990 to near-average in 1991. The abundance of G. halibut aged 7-9, which form the bulk of the fishery in most years, was at its lowest level in 1991. The groundfish surveys in Div. 2J3KL had suggested that the 1984-86 year-classes were as large or larger at ages 4 and 5 (age 4 only for 1986 year-class) than any others since the 1974 year-class (Fig. 10). However, their abundance is much lower in the 1991 survey, and in fact the 1984 and 1985 year-classes were the lowest in the series at ages 7 and 6 respectively in 1991.

The abundance at age in Div. 2GH also appears to be lower in recent years than in the surveys of the late 1970's and early 1980's (Tables 13 and 14), although the 1991 survey is not an adequate measure of the G. halibut population in that area.

2) Shrimp surveys

Shrimp surveys have been conducted in Div. 2H and 2J for several years and catch considerable quantities of young G. halibut. Data from these surveys have been used to determine the strength of recruiting year-classes of G. halibut, particularly from 1984 onward, when age samples have been collected from the survey catches. These data were presented in the 1991 assessment of this stock and were discussed in some detail at that time. The results generally indicated the 1984-86 year-classes to be strong in most of the shrimp channels off northern Newfoundland and Labrador. Unfortunately, the 1991 survey was done with a different design and was not useful for comparison with earlier years.

Prognosis

Analytical assessments of this stock are not possible with the data available at present. Thus the evaluation of stock status depends on the interpretation of research vessel survey results which, in almost all cases, do not cover the complete distribution of Greenland halibut. These data indicate a continued decline in the surveyed abundance of older fish in 1991, and a decrease in the abundance of the 1984-86 year-classes, previously shown to be relatively strong cohorts. These apparent declines may not be entirely due to the fishery, although the effect on the stock of the recent large increase in catches in the Regulatory Area is not known. Catches should be reduced, so as not to exceed the level of the current TAC of 50,000 tons, and the TAC should apply to the entire stock, including the portion in the Regulatory Area. Precautionary measures to prevent concentration of effort on one part of the stock should also be considered.

Table 1. Greenland halibut landings (metric tons) by year and country for Subarea 2 and Division 3KL from 1963 to 1990. Catches from Div. 3M included for 1990.

Country	Year 63	64	65	66	67	68	69	70	71	72	73	74	75	76
Canada	776	1757	8082	16209	16604	13322	11553	10706	9408	8952	6840	5745	7807	9306
FRG	10	35	-	355	42	4	202	13	-	86	707	515	622	927
Poland	691	1834	939	1114	3296	5806	5406	8266	5234	6986	9060	7105	8447	5942
Iceland	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Norway	-	-	-	-	-	-	4	-	-	1389	501	117	-	6
USSR	125	302	479	242	4287	8732	9268	7384	9094	10183	8652	9650	9439	6799
Romania	-	-	-	-	-	-	40	225	7	120	80	-	-	-
GDR	-	-	-	1324	1415	4122	10014	-	647	402	1681	2701	2025	1512
Den-F	-	-	-	-	-	-	-	-	-	970	950	4	-	-
Spain	-	-	-	-	-	-	-	-	-	3	-	-	-	1
UK	-	-	-	-	-	-	-	-	-	731	201	1112	62	1
Den-G	-	-	-	-	-	-	-	-	-	-	65	2	-	-
Portugal	-	-	-	-	-	-	-	-	-	-	207	161	231	73
Fra-M	-	-	-	-	-	-	-	-	-	-	-	5	-	-
Fra-Sp	-	-	-	-	-	-	-	-	-	-	-	6	48	32
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1602	3928	9500	19244	25644	31986	36488	26594	24392	29822	28944	27123	28681	24598

Country	Year 77	78	79	80	81	82	83	84	85	86	87	88	89[a]	90[a]
Canada	17967	24692	29940	31774	24125	19248	19031	17283	12277	8213	13450	8451	11919	9863
FRG	755	1022	15	55	-	57	2	9	482	15	1	-	5	-
Poland	5998	5215	1813	203	1806	1111	5258	943	460	177	1001	904	360	360
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	15	3	8	1	-	-	15	18	1	-	-	-	-	-
USSR	4308	5632	1961	238	3325	1471	937	440	149	770	6716	1063	1058	1161
Romania	-	3	-	-	-	-	-	-	-	-	-	-	-	-
GDR	1953	1636	178	316	1350	2487	2587	2498	1850	1868	3268	2246	1726	12
Den-F	350	268	-	-	-	-	-	-	193	451	2877	740	730	571
Spain	-	-	4	-	-	-	-	-	-	-	107	15	22	4685
UK	476	53	110	22	-	1	-	3	-	-	-	-	-	-
Den-G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Portugal	119	-	38	21	16	1818	-	2612	2940	3107	1390	4118	3168	10637
Fra-M	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fra-SP	-	5	1	-	-	7	-	-	-	-	-	-	-	-
Japan	-	3	-	12	60	14	-	1003	258	1277	2128	1506	477	1662
Other	-	-	-	-	-	-	9	-	-	-	-	-	-	18115[b]
Total	31941	38532	34068	32642	30682	26206	27839	24809	18610	15878	30938	19043	19465	46796
TAC[c]	30000	30000	30000	35000	55000	55000	55000	55000	75000	100000	100000	100000	100000	50000

[a] Provisional.
[b] 14815 t for NAFO members; 3300 t for non-members. Includes estimated catches.
[c] TAC from 1977-84 for 2J+3KL only.

Table 2. Catch of G.halibut in SA2+Div.3KL in 1990 and 1991.

	1990	1991
Canada	9863	10942
Poland	360	-
Germany	12	10
USSR	1161	8190
Den-F	571	753
EEC	15322	13389
Japan	1662	1990
Other	18115	39715
Total	46796	74989

Table 3. Catches of Greenland halibut by Canadian vessels in 1991 in SA2+Div. 3KLM.

	Gillnet					GN	Otter trawl						OT	Other gears	Total
	2G	2H	2J	3K	3L	Total	2G	2H	2J	3K	3L	3M	Total	2+3KLM	
Jan								260		46	14		320		320
Feb										114			114		114
Mar										246	2		248		248
Apr					4	4			2	35	27		64		68
May					2	2				9	70	148	227		229
Jun				64	32	96			92	55			147		243
Jul				171	11	182			165	2			167		349
Aug			17	666	126	809			267	2			269		1078
Sep		14	364	327	357	1062	298	203	771	3	7		1282		2344
Oct		31	358	184	670	1243	309	899	805	3	39		2055		3298
Nov			15	25	21	61	723	1182	148	51	151	1	2256		2317
Dec					1	1	226		24		23		273		274
Unk														60	60
Total		45	754	1437	1224	3460	1556	2544	2274	566	333	149	7422	60	10942

	2G	2H	2J	3K	3L	3M	Total
Div. totals	1556	2591	3034	2019	1590	153	10942
Can (Nfld)	995	342	3017	1993	1476	149	7971
Can (S.Fundy)	561	2249	17	26	114	4	2971

Table 4. Samples used to calculate catch at age and mean weights at age for G. halibut in the Canadian fishery in SA2+Division 3KL in 1991. Numbers in parentheses are the number of observations.

Age-length key	Length frequency	Catch (t)	Description
Inshore, Q4, 3L (152)	GN, Sep, 3L (603)	2604	Inshore GN, 2+3KL, Apr-Dec
Offshore, Q3, 3K (139) 3L (118)	GN, Jul, 3K (253)	856	Offshore GN, 3K, Apr-Dec
Offshore, Q1, 3K (182)	OT, Feb, 3K (323) Mar (361)	519	OT, 3K Jan-Jun; 3L Jan-Feb
Offshore, Q1, 3K (182)	OT, Apr, 3L (1412)	99	OT, 3L, Mar-Jun
Offshore, Q1, 3K (182)	OT, Apr, 3M (835) May, 3M (1927)	148	OT, 3M, Apr-May
Offshore, Q3, 3K (139) 3L (118)	OT, Sep, 3L (321)	282	OT, 3KLM, Jul-Dec
Offshore, Q3, 2J (157)	OT, Jun, 2J (172)	354	OT, 2HJ, Jan-Jun
	OT, Aug, 2J (1850) Sep (318)	1203	OT, 2J, Jul-Sep
	OT, Aug, 2G (2130)	298	OT, 2G, Aug-Sep
	OT, Sep, 2H (4968)	201	OT, 2H, Sep
Offshore, Q4, 2J (155)	OT, Oct, 2J (373) Nov, 2J (294)	977	OT, 2J, Oct-Dec
	OT, Oct, 2H (850)	2081	OT, 2H, Oct-Dec
	OT, Nov, 2G (1288)	1258	OT, 2G, Oct-Dec

Table 5. Catch at age and mean weights at age from the Canadian fishery for G.halibut in 2GHJ3KLM in 1991.

	AVERAGE		CATCH		
AGE	WEIGHT	LENGTH	MEAN	STD. ERR.	C. V.
* 5	0.410	37.664	159	27.13	0.17
* 6	0.596	42.067	1684	129.31	0.08
7	0.808	46.059	4348	154.02	0.04
8	1.179	51.550	2121	98.70	0.05
* 9	1.736	57.838	900	44.72	0.05
*10	2.404	63.773	295	11.00	0.04
*11	3.078	68.654	89	8.36	0.09
*12	3.821	73.169	80	7.54	0.09
13	5.294	80.604	21	4.92	0.24
*14	5.940	83.454	21	3.33	0.16
15	6.674	86.355	4	1.74	0.41
*16	9.001	94.500	1	0.05	0.04
*17	9.659	96.500	1	0.05	0.04

Table 6. Catch and effort statistics of Greenland halibut in NAFO Div. 2HJ3K from Canada(N) where effort was considered directed in 1978-91.

Year	NAFO Div.	Months	Mean CPUE (t/hr.)	Directed catch (t)
			Canada(N) (TC 5)	
1980	3K	Mar-May	0.559	1148
1981	3K	Mar-May	0.485	3118
1982	3K	May	0.416	304
	2J	Aug-Sep	0.610	1132
	2H	Aug-Sep	0.924	3406
1983	3K	May-Jul	0.587	1471
	2J	Aug	1.153	1465
	2H	Aug-Sep	1.423	2168
1984	3K	May-Sep	0.607	1759
	2J	Jul-Sep	1.115	1603
	2H	Jul-Sep	1.072	1451
1985	3K	May-Sep	0.269	151
	2J	Jul-Oct	0.600	2398
	2H	Aug-Sep	0.892	1265
1986	2J	Jun-Oct	0.424	1098
1987	2J	Aug	0.694	1936
1988	2J	Aug-Sep	0.365	559
1990	2J	Jul-Sep	0.577	1157
1991	2G	Sep-Dec	0.601[a]	952
	2H	Sep-Nov	0.441[b]	294
	2J	Aug-Oct	0.378	1592

[a] TC 6 and 7.
[b] TC 6.

Table 1. Average weight (kg) of Greenland halibut caught per set from fall research vessel surveys by the GADUS ATLANTICA in Division 2J. Numbers in parenthesis indicate the number of sets per stratum.

Stratum	Depth (m)	Gadus 3 1977	Gadus 12, 15 1978	Gadus 27, 29 1979	Gadus 42, 44 1980	Gadus 58 1981	Gadus 71, 72 1982	Gadus 86, 87, 88 1983	Gadus 101, 102, 103 1984	Gadus 116, 117, 118 1985	Gadus 131, 132, 133 1986	Gadus 145, 146, 147 1987	Gadus 159, 160, 161 1988	Gadus 174, 175, 176 1989	Gadus 190, 191, 192 1990	Gadus 208 209, 210 1991
201	101-200	7.26(2)	1.36(3)	0.45(2)	2.83(3)	2.70(5)	9.67(6)	3.72(6)	4.83(3)	0.41(6)	0.98(5)	0.19(6)	0.08(8)	0.80(8)	0.53(6)	0.06(3)
202	201-300	21.34(2)	16.39(4)	22.00(4)	29.00(4)	34.50(2)	45.50(2)	30.75(2)	92.75(2)	10.05(2)	8.50(2)	17.76(2)	-	0.47(2)	3.37(2)	2.13(3)
203	301-400	31.55(2)	40.08(3)	65.32(3)	21.13(4)	52.00(2)	64.33(3)	226.83(3)	179.25(2)	25.00(3)	108.00(2)	27.83(3)	34.00(2)	89.98(3)	24.33(2)	30.78(3)
204	401-500	175.70(2)	484.67(2)	260.36(2)	-	170.50(2)	284.00(3)	250.83(3)	260.00(2)	16.50(2)	267.50(2)	146.50(2)	166.00(2)	567.23(2)	125.15(2)	56.08(3)
205	101-200	20.97(4)	6.58(4)	10.21(2)	3.75(4)	14.94(8)	24.09(12)	14.25(8)	6.97(8)	1.44(8)	1.11(7)	0.35(10)	1.05(6)	0.39(10)	0.30(8)	0.35(2)
206	101-200	20.80(11)	7.78(7)	8.11(8)	10.11(7)	37.18(11)	18.72(18)	8.70(14)	10.86(11)	4.44(14)	4.03(11)	0.41(14)	1.78(14)	0.65(13)	0.94(11)	0.12(6)
207	101-200	77.77(5)	25.54(4)	10.39(5)	6.90(5)	18.22(9)	10.33(15)	7.65(10)	6.26(7)	2.18(13)	1.21(7)	0.26(11)	0.05(7)	0.04(10)	0.00(7)	0.00(2)
208	301-400	186.14(4)	145.98(5)	90.72(4)	149.62(4)	240.75(2)	348.67(3)	110.00(2)	496.17(3)	406.14(3)	189.75(2)	103.00(2)	84.00(2)	201.75(2)	170.96(2)	36.88(3)
209	201-300	65.25(7)	22.01(6)	88.44(7)	104.75(6)	55.67(6)	129.64(11)	52.77(7)	37.42(7)	34.47(9)	13.67(7)	8.55(8)	11.22(5)	10.28(8)	8.20(6)	2.52(7)
210	201-300	19.41(6)	8.81(7)	9.53(4)	10.80(5)	5.00(3)	20.88(6)	41.50(2)	26.88(4)	5.19(4)	3.67(3)	4.00(4)	7.88(3)	6.76(4)	11.83(3)	2.37(7)
211	301-400	34.96(2)	85.30(4)	46.97(4)	72.82(5)	35.75(2)	55.75(2)	134.75(2)	55.75(2)	164.00(3)	103.00(2)	44.50(2)	81.50(2)	23.33(2)	151.35(2)	17.75(5)
212	501-750	189.61(4)	150.82(2)	232.24(2)	103.50(2)	147.75(2)	144.10(5)	44.75(3)	70.83(3)	109.75(4)	383.00(3)	374.69(4)	75.25(2)	42.75(4)	80.02(3)	21.30(2)
213	201-300	16.46(8)	13.16(7)	9.59(7)	22.94(8)	29.33(6)	34.19(10)	23.25(10)	20.50(5)	35.83(9)	19.67(9)	8.82(9)	5.85(8)	2.35(9)	2.26(8)	0.25(14)
214	201-300	38.97(6)	48.18(7)	22.01(6)	15.40(5)	60.10(5)	84.31(8)	44.63(8)	59.75(4)	66.83(6)	8.87(6)	13.75(6)	22.08(6)	5.97(6)	5.09(5)	0.77(15)
215	201-300	37.68(4)	22.03(8)	7.11(6)	18.50(4)	12.30(5)	38.28(9)	14.46(8)	42.00(3)	16.21(6)	14.85(5)	11.87(7)	9.01(7)	5.39(6)	7.04(6)	3.40(15)
216	301-400	102.83(2)	145.78(3)	181.36(4)	186.25(4)	63.25(2)	215.25(2)	102.67(3)	173.00(2)	81.75(2)	34.66(2)	51.15(2)	3.50(2)	12.55(2)	7.90(2)	3.09(3)
217	401-500	141.95(3)	168.28(2)	87.15(2)	156.00(2)	41.00(2)	58.25(2)	64.50(2)	-	145.00(2)	108.75(2)	41.50(2)	43.75(2)	6.03(2)	32.08(2)	4.33(3)
218	501-750	217.92(2)	238.14(2)	-	129.50(2)	156.50(2)	40.00(2)	39.00(2)	-	30.25(2)	82.25(2)	49.00(2)	58.50(2)	17.98(2)	42.15(2)	21.20(2)
219	751-1000	-	-	-	-	48.00(2)	-	103.00(2)	-	83.75(2)	286.25(2)	84.00(2)	45.25(2)	35.00(2)	93.92(2)	12.50(2)
-220	1001-1250	-	56.92(2)	-	-	-	-	-	-	-	-	-	-	-	-	-
-221	1251-1500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
222	301-400	115.32(4)	64.52(5)	76.69(4)	90.38(4)	55.75(2)	188.00(3)	131.50(3)	27.67(3)	34.00(2)	2.25(2)	33.00(2)	41.50(2)	8.00(2)	14.22(2)	0.97(3)
223	401-500	251.52(2)	84.82(2)	63.98(2)	136.00(2)	94.75(2)	88.00(2)	61.75(2)	113.75(2)	80.25(2)	127.00(2)	21.00(2)	63.50(2)	15.76(2)	23.43(2)	3.05(3)
224	501-750	173.65(2)	78.70(2)	122.47(2)	32.75(2)	115.00(2)	36.50(2)	50.50(2)	37.50(2)	28.00(2)	244.18(2)	63.50(2)	63.00(2)	2.60(2)	12.35(2)	6.60(2)
-225	1001-1250	39.95(2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-226	1251-1500	-	3.17(2)	-	-	-	-	-	-	-	-	-	-	-	-	-
227	401-500	115.32(4)	86.86(2)	27.47(2)	73.75(2)	43.50(2)	54.90(5)	38.50(4)	36.67(3)	37.13(4)	20.67(3)	36.75(4)	32.00(3)	52.37(4)	40.83(3)	12.77(6)
228	201-300	6.53(8)	2.19(3)	8.39(6)	18.40(5)	8.00(6)	9.25(10)	10.33(6)	16.50(7)	6.36(7)	10.41(6)	5.29(7)	2.60(5)	5.27(8)	8.53(6)	2.13(3)
229	301-400	39.03(4)	14.40(4)	23.82(4)	25.63(4)	30.50(2)	21.50(4)	36.50(4)	11.00(3)	13.00(3)	14.67(3)	5.93(3)	3.23(3)	3.08(3)	2.25(2)	7.07(3)
230	501-750	243.28(3)	80.74(2)	-	169.44(2)	60.25(2)	30.80(2)	93.00(2)	21.50(2)	26.25(2)	102.25(2)	68.00(2)	44.25(2)	43.28(2)	46.48(2)	30.95(2)
231	751-1000	64.24(2)	138.57(2)	-	186.50(2)	-	93.75(2)	51.25(2)	98.75(2)	119.75(2)	28.25(2)	38.50(2)	170.50(2)	-	124.75(2)	27.40(2)
-232	1001-1250	49.03(2)	27.21(2)	-	-	-	-	-	-	-	-	-	-	-	-	-
-233	1251-1500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
234	201-300	49.03(2)	98.53(5)	65.21(4)	79.00(4)	52.00(2)	98.00(3)	46.71(3)	90.70(2)	18.33(3)	12.75(2)	5.17(3)	20.25(2)	10.18(2)	4.90(2)	2.92(3)
235	401-500	117.59(4)	107.05(2)	83.99(2)	128.00(2)	39.00(2)	89.67(3)	252.50(2)	82.00(3)	85.00(2)	182.75(2)	118.75(2)	70.25(2)	145.25(2)	185.95(2)	12.83(3)
236	751-1000	98.06(2)	-	-	-	44.75(2)	66.75(2)	101.00(2)	53.00(2)	85.25(2)	223.90(2)	94.00(2)	13.00(2)	-	110.69(2)	110.75(2)
Estimated biomass (t) (surveyed area)		106,834	85,136	66,970	74,564	76,661	104,233	78,546	81,234	62,603	77,555	50,771	35,447	42,339	38,616	11,249
Estimated biomass (t) multiplicative model (excl. strata 220, 221, 225, 226, 232, 233)		109,184	86,732	75,280	84,311	79,715	107,864	78,546	89,273	62,603	77,555	50,771	35,450	46,920	38,616	11,249

Table 7. Average weight (kg) of Greenland halibut caught per set from fall research vessel surveys by the GADUS ATLANTICA in Division 3K. Numbers in parenthesis indicate the number of sets per stratum.

Stratum	Depth (m)	Gadus 12, 15 1978	Gadus 27, 29 1979	Gadus 42, 44 1980	Gadus 58, 59 1981	Gadus 71, 72 1982	Gadus 86, 87, 88 1983	Gadus 101, 102, 103 1984	Gadus 116, 117, 118 1985	Gadus 131, 132, 133 1986	Gadus 145, 146, 147 1987	Gadus 159, 160, 161 1988	Gadus 174, 175, 176 1989	Gadus 190, 191, 192 1990	Gadus 208, 209, 210 1991
-618	101-200							1.50(5)	4.43(6)	0.20(5)	0.07(7)	0.03(6)	0.33(8)	0.00(4)	0.0(5)
-619	101-200							1.90(7)	0.57(7)	0.22(5)	0.06(8)	0.01(7)	0.27(8)	0.00(5)	0.0(4)
620	201-300	66.73(12)	29.39(10)	28.31(12)	25.72(10)	22.33(9)	19.25(10)	13.08(13)	14.68(14)	12.74(9)	5.96(14)	9.52(12)	1.59(15)	1.13(9)	2.04(14)
621	*201-300*	*126.48(12)*	*114.39(11)*	*48.40(13)*	*32.77(11)*	*14.68(14)*	*31.87(12)*	*18.32(14)*	*30.53(15)*	*5.01(14)*	*8.16(12)*	*6.77(10)*	*8.35(17)*	0.98(11)	2.44(5)
622	401-500	143.11(2)	119.44(3)	43.75(2)	132.50(2)	120.83(3)	224.00(2)	143.75(4)	60.38(4)	563.76(2)	207.12(3)	221.33(3)	148.27(3)	385.48(2)	61.47(3)
623	301-400	159.51(6)	33.53(4)	83.17(6)	83.33(4)	146.20(5)	217.17(6)	270.00(5)	67.50(6)	179.62(4)	136.80(5)	135.70(5)	82.06(6)	35.77(5)	31.56(6)
624	201-300	9.36(7)	10.60(4)	5.13(4)	3.75(2)	5.25(4)	2.38(4)	5.00(4)	4.97(4)	3.60(2)	5.80(3)	2.30(3)	3.30(3)	3.60(4)	3.18(2)
625	301-400	17.56(6)	14.24(5)	14.50(6)	31.50(4)	8.75(2)	66.33(3)	42.95(5)	55.60(5)	39.00(3)	52.63(4)	30.58(4)	7.04(4)	34.64(4)	15.63(3)
626	301-400	60.74(7)	42.18(5)	139.90(5)	58.20(5)	120.40(5)	101.75(4)	217.75(6)	124.69(5)	155.00(4)	66.30(5)	95.10(5)	98.92(5)	23.49(4)	25.35(3)
627	401-500	71.67(2)	41.73(3)	68.50(2)	189.75(6)	124.43(7)	220.83(6)	300.56(8)	140.36(7)	263.60(5)	136.85(6)	145.15(5)	243.56(6)	115.92(5)	63.20(3)
628	301-400	43.18(7)	35.75(5)	68.21(6)	16.33(6)	12.92(6)	36.08(6)	27.21(7)	81.96(6)	60.38(4)	42.46(5)	40.30(5)	29.90(4)	17.46(5)	6.33(3)
629	301-400	20.57(6)	13.38(2)	26.10(5)	31.33(3)	68.50(2)	65.67(3)	31.13(4)	22.00(4)	54.00(3)	79.67(3)	100.50(2)	66.27(3)	15.55(2)	6.20(4)
630	301-400	27.23(2)	10.78(4)	21.37(4)	117.25(2)	-	67.75(2)	7.73(3)	33.16(4)	30.75(2)	56.50(3)	56.33(3)	39.35(3)	28.04(2)	28.55(3)
631	*401-500*	*45.42(2)*	*23.30(3)*	*34.50(3)*	*68.60(5)*	*38.00(2)*	*66.70(5)*	*105.30(5)*	*70.86(7)*	*67.58(4)*	*108.75(6)*	*76.52(6)*	*111.82(7)*	*34.94(6)*	*112.37(6)*
632	201-300	3.20(7)	2.83(4)	11.69(4)	6.25(2)	7.50(3)	3.43(3)	-	8.57(3)	2.25(2)	2.00(2)	0.80(2)	1.58(2)	7.20(2)	1.63(10)
633	301-400	8.10(9)	9.05(10)	16.10(10)	9.98(8)	7.93(7)	12.38(12)	12.05(10)	14.46(12)	19.70(8)	19.61(11)	13.24(8)	22.34(10)	11.99(11)	12.02(25)
634	201-300	6.31(9)	9.44(8)	5.29(7)	5.41(7)	14.09(11)	6.60(5)	5.93(7)	4.68(9)	3.72(5)	9.05(11)	3.45(6)	2.69(7)	3.18(7)	2.37(25)
635	201-300	6.69(9)	6.12(8)	19.25(6)	12.00(5)	17.10(5)	7.83(6)	10.19(8)	4.21(7)	11.02(6)	11.08(6)	4.54(5)	6.99(7)	1.71(6)	0.26(4)
636	201-300	5.58(7)	4.67(7)	11.79(7)	12.75(6)	21.85(10)	4.05(6)	7.40(8)	4.34(8)	3.40(4)	1.70(7)	3.97(6)	3.52(5)	2.03(7)	1.24(3)
637	201-300	3.93(9)	4.15(7)	6.00(6)	8.25(6)	9.71(7)	14.80(5)	4.97(6)	13.50(7)	10.95(4)	9.08(6)	3.96(8)	3.37(5)	5.42(5)	1.99(6)
638	301-400	15.15(8)	13.24(9)	11.11(9)	21.31(8)	20.39(15)	18.05(11)	12.55(10)	34.52(11)	25.45(4)	18.68(10)	11.00(8)	11.49(11)	27.57(9)	8.49(25)
639	301-400	5.13(9)	7.83(4)	6.58(6)	7.38(6)	19.05(10)	11.71(7)	2.41(8)	4.69(8)	7.33(6)	3.60(7)	3.23(6)	2.76(8)	4.57(7)	4.19(3)
640	401-500	32.91(2)	-	59.25(2)	36.00(2)	21.50(2)	-	13.75(2)	18.50(3)	10.25(2)	20.25(2)	6.25(2)	9.01(2)	16.48(2)	12.00(3)
641	501-750	5.45(2)	26.77(2)	31.75(2)	21.80(2)	24.50(4)	61.33(3)	62.50(3)	22.69(4)	-	25.90(3)	-	-	*39.92(2)*	*8.30(2)*
642	751-1000	18.63(2)	-	33.25(2)	9.33(3)	33.33(6)	-	81.35(6)	33.50(5)	-	27.70(5)	-	-	45.20(3)	38.05(2)
-643	1001-1250	7.49(2)	12.94(2)	-	-	-	-	-	-	-	-	-	-	-	-
-644	1251-1500	15.22(2)	4.99(2)	-	-	-	-	-	-	-	-	-	-	-	-
645	401-500	18.61(2)	-	12.00(2)	21.75(2)	17.67(3)	3.25(2)	54.25(2)	41.83(3)	-	25.50(2)	11.40(2)	3.23(2)	20.40(2)	3.87(3)
646	501-750	59.24(2)	88.96(2)	51.50(2)	63.25(2)	15.50(2)	91.25(2)	100.50(2)	66.50(3)	-	30.00(2)	-	-	10.40(2)	27.70(3)
647	751-1000	160.23(2)	48.13(2)	89.25(2)	82.50(2)	39.50(2)	-	-	114.72(3)	-	-	-	-	95.70(2)	24.85(3)
-648	1001-1250	15.45(2)	-	-	-	-	-	-	-	-	-	-	-	-	-
-649	1251-1500	10.91(2)	-	-	-	-	-	-	-	-	-	-	-	-	-
Estimated biomass (t) (surveyed area)		99,134	66,330	70,668	78,098	70,870	97,790	111,612	78,804	106,386	76,482	68,270	68,878	60,354	36,035
Estimated biomass (t) multiplicative model (excl. strata 618,619, 643, 644, 648, 649)		96,896	65,670	70,668	78,098	72,567	105,647	115,399	78,355	113,507	79,475	73,265	73,154	60,354	36,035

Table 1. Average weight (kg) of Greenland halibut per set from fall research vessel surveys in Division 3L. Numbers in parentheses indicate number of sets per stratum.

Stratum	Depth (m)	ATC 323, 324, 325 1981	ATC 333, 334 1982	W.T. 7, 8, 9 1983	W.T. 16, 17, 18 1984	W.T. 37, 38, 39 1985	A.N. 72 1986	W.T. 65 1987	W.T. 78 1988	W.T. 87 1989	W.T. 101 1990	W.T. 1991
328	51–100	–	–	–	0.20(4)	0.09(8)	0.52(6)	0.25(4)	0.06(7)	0.10(7)	0.01(5)	0.00(3)
341	51–100	0.50(3)	0.19(4)	0.80(4)	0.50(5)	0.26(7)	0.04(7)	0.62(9)	0.31(8)	0.26(8)	0.18(6)	0.00(3)
342	51–100	1.33(3)	2.83(3)	0.87(4)	0.00(2)	0.73(3)	0.20(3)	0.00(3)	0.23(3)	0.17(3)	0.56(2)	0.01(2)
343	51–100	0.88(4)	–	0.53(3)	0.00(4)	0.08(3)	0.02(3)	0.00(3)	0.00(3)	0.27(3)	0.09(3)	0.00(3)
344	101–150	6.94(4)	1.00(3)	4.34(6)	0.18(6)	2.46(9)	4.63(7)	2.88(4)	3.20(7)	6.89(7)	1.13(6)	0.34(2)
345	151–200	20.75(4)	8.67(6)	9.25(8)	39.60(7)	36.61(9)	6.26(4)	18.00(2)	23.07(7)	12.43(7)	24.62(5)	2.07(4)
346	151–200	9.00(3)	11.63(4)	17.50(5)	27.33(6)	35.80(5)	26.06(3)	22.50(4)	16.00(5)	25.75(4)	32.63(3)	12.73(15)
347	101–150	1.83(3)	3.02(4)	2.58(6)	0.17(6)	0.76(4)	2.94(4)	0.13(2)	20.30(5)	15.10(5)	3.94(2)	0.01(4)
348	51–100	0.42(6)	2.08(5)	0.30(11)	0.11(11)	0.61(14)	0.88(5)	0.43(9)	0.44(10)	0.29(9)	0.26(11)	0.00(4)
349	51–100	0.09(7)	0.03(5)	0.43(9)	0.10(14)	0.07(10)	0.09(9)	0.24(10)	0.00(9)	0.04(10)	0.06(7)	0.00(5)
350	31–50	0.00(6)	0.00(2)	0.00(8)	0.00(12)	0.00(9)	0.00(11)	0.00(9)	0.00(10)	0.00(10)	0.00(8)	0.00(16)
363	31–50	0.00(4)	0.00(3)	0.00(3)	0.00(8)	0.00(10)	0.00(7)	0.00(9)	0.00(10)	0.00(9)	0.00(8)	0.00(17)
364	51–100	0.49(9)	0.25(11)	0.87(11)	0.00(10)	0.05(18)	0.14(5)	0.53(14)	0.27(14)	0.35(11)	0.21(12)	0.01(4)
365	51–100	2.88(4)	2.75(4)	1.30(5)	0.30(4)	0.12(8)	1.08(5)	3.18(6)	0.30(5)	0.90(5)	0.31(4)	0.01(3)
366	101–150	5.00(3)	9.58(6)	6.00(4)	6.23(11)	18.09(9)	10.90(4)	8.11(7)	20.64(7)	11.50(7)	6.81(6)	0.28(21)
368	151–200	21.50(2)	28.75(2)	–	17.75(2)	29.00(2)	6.66(2)	9.00(2)	21.75(2)	27.25(2)	184.63(2)	9.81(6)
369	101–150	13.25(2)	13.00(4)	14.00(6)	5.19(7)	13.33(6)	6.36(3)	9.25(4)	3.64(5)	4.08(5)	12.40(4)	4.76(9)
370	51–100	0.00(4)	0.50(6)	0.44(6)	0.39(7)	1.52(9)	2.30(2)	0.25(6)	0.01(7)	0.04(6)	0.73(5)	0.00(3)
371	31–50	0.01(4)	0.00(5)	0.00(5)	0.00(7)	0.00(7)	0.04(3)	0.00(5)	0.00(6)	0.00(4)	0.00(5)	0.01(3)
372	31–50	0.00(5)	0.00(7)	0.00(4)	0.00(13)	0.00(17)	0.01(9)	0.00(13)	0.00(13)	0.00(12)	0.00(10)	0.00(26)
384	31–50	–	0.00(4)	0.00(3)	0.00(6)	0.00(8)	0.08(5)	0.00(6)	0.00(6)	0.00(5)	0.00(4)	0.00(18)
385	51–100	0.26(8)	2.19(8)	3.20(5)	0.50(12)	1.24(12)	4.67(8)	2.44(9)	0.00(13)	0.17(11)	0.72(7)	0.00(5)
386	101–150	37.00(3)	21.75(4)	–	12.69(8)	37.50(5)	8.34(4)	6.13(4)	4.86(5)	10.90(5)	11.57(4)	5.70(3)
387	151–200	67.50(2)	43.67(3)	–	49.00(3)	42.25(4)	8.00(2)	26.33(3)	12.75(4)	15.33(3)	12.00(3)	24.53(5)
388	151–200	–	2.33(3)	–	24.00(2)	24.75(2)	–	17.25(2)	19.00(2)	15.50(2)	4.18(2)	12.73(3)
389	101–150	–	7.88(4)	–	19.25(6)	26.80(5)	9.80(4)	11.25(4)	8.88(4)	10.25(2)	6.28(3)	4.60(3)
390	51–100	0.00(3)	3.50(4)	0.07(3)	0.00(3)	2.72(7)	3.62(6)	1.06(8)	0.00(8)	0.57(7)	0.52(6)	2.17(3)
391	101–150	–	2.75(2)	21.50(2)	18.75(2)	29.75(7)	8.25(2)	4.10(2)	2.40(2)	13.00(2)	6.03(2)	17.25(3)
392	151–200	–	14.00(2)	15.25(2)	26.50(2)	25.00(2)	18.00(2)	8.25(2)	13.25(2)	12.00(2)	10.73(2)	22.10(3)
729	201–300	–	–	–	70.75(2)	30.50(2)	17.92(2)	–	–	–	22.60(2)	25.55(3)
730	301–400	–	–	–	12.25(2)	6.75(2)	–	–	–	–	–	15.27(2)
731	201–300	–	–	–	41.75(2)	15.00(2)	–	–	–	–	18.20(2)	7.18(3)
732	301–400	–	–	–	12.63(2)	21.00(2)	–	–	–	–	16.25(2)	4.10(2)
733	201–300	–	–	–	12.75(4)	35.83(3)	–	–	–	–	14.33(2)	26.42(3)
734	301–400	–	–	–	17.67(3)	37.00(2)	–	–	–	–	18.40(2)	13.18(2)
735	201–300	–	33.00(2)	–	42.00(3)	29.25(2)	47.50(2)	–	–	–	–	14.38(3)
736	301–400	–	30.00(2)	–	–	70.00(2)	52.53(2)	–	–	–	19.20(2)	15.83(2)
Estimated biomass (t) (surveyed area)		12,722	11,649	6,634	17,548	23,924	10,610	9,821	10,851	10,518	16,055	7,324
Estimated biomass (t) multiplicative model (all strata included)		17,310	14,528	14,368	17,923	23,924	13,669	13,064	13,526	13,351	16,589	7,324

Table 10. Stratified mean weight per set of Greenland halibut in NAFO Division 2G (nos. in parentheses are nos. of successful sets).

Depth Range	Stratum	Gadus 13 1978	Gadus 24 1979	Gadus 57 1981	Gadus 143 1987	Gadus 156 1988	AN 161 1991
≤ 200	909	23.12(13)	3.87(12)	5.94(8)	-	-	0.08(10)
	910	52.69(8)	6.54(8)	8.06(8)	-	-	0.00(2)
	925	66.74(5)	15.66(4)	13.83(3)	-	-	-
201-300	901	48.33(9)	52.86(7)	51.58(6)	10.50(4)	17.97(5)	2.97(7)
	911	7.25(4)	10.89(4)	6.67(3)	2.81(3)	0.15(2)	1.48(2)
	924	8.17(2)	11.96(3)	19.50(2)	4.50(2)	1.50(5)	-
	926	-	-	-	-	10.87(3)	-
	908	7.72(2)	20.28(3)	6.38(3)	2.34(5)	3.80(4)	0.93(3)
301-400	902	-	-	-	23.10(3)	2.35(2)	-
	912	-	-	-	11.50(2)	0.10(2)	-
	923	306.18(2)	-	77.50(2)	3.75(2)	12.00(2)	-
	927	-	-	-	29.86(5)	6.28(4)	-
401-500	903	-	93.29(2)	73.25(2)	18.79(2)	12.35(2)	2.25(2)
	913	-	-	-	27.00(2)	21.75(2)	-
	922	303.04(2)	-	84.50(2)	-	-	-
	928	-	-	-	48.17(3)	11.50(3)	-
501-750	904	-	265.44(3)	114.00(4)	47.25(3)	25.21(3)	-
	914	-	-	-	33.88(2)	75.00(2)	-
	921	-	660.11(2)	-	12.75(2)	17.50(2)	-
	929	-	145.96(4)	240.67(3)	52.60(5)	35.50(4)	-
751-1000	905	-	-	-	-	179.50(2)	-
	915	-	-	-	-	193.50(2)	-
	920	-	-	-	261.17(4)	187.75(2)	-
1001-1250	906	-	-	-	2.42(2)	25.50(2)	-
	916	-	-	-	-	10.19(2)	-
	919	-	-	-	-	24.20(2)	-
1251-1500	907	-	-	-	-	-	-
	917	-	-	-	-	-	-
	918	-	-	-	-	-	-
Biomass (t)		37187	35484	37746	16076	15307	420

Table 1. Stratified mean weight (kg) per set of Greenland halibut in NAFO Division 2H (Nos. in parentheses are nos. of successful sets).

Depth Range (m)	Stratum	Gadus 13 1978	Gadus 24 1979	Gadus 57 1981	Gadus 143 1987	Gadus 156 1988	AN 161 1991
≤ 200	930	1.12(4)	1.75(6)	5.00(8)	0.06(9)	0.26(10)	1.89(3)
	954	3.13(5)	4.04(5)	1.92(6)	0.21(11)	0.23(10)	0.00(3)
	956	4.84(3)	1.01(6)	3.63(4)	0.38(10)	1.68(10)	0.24(5)
	957	16.07(5)	2.05(6)	7.25(6)	1.25(11)	1.35(14)	0.23(6)
201-300	931	15.44(3)	1.18(3)	35.83(3)	1.33(4)	0.83(3)	4.80(2)
	943	19.29(2)	0.16(2)	28.75(2)	1.85(4)	8.30(4)	0.15(2)
	950	-	-	-	-	-	-
	953	267.33(2)	22.09(3)	72.38(4)	10.53(3)	4.97(3)	28.77(2)
	955	11.35(2)	11.20(3)	7.83(3)	1.92(4)	4.53(4)	0.50(2)
	958	-	10.21(2)	4.25(2)	0.10(3)	2.30(3)	1.90(2)
301-400	932	-	-	-	3.60(2)	3.75(2)	3.85(2)
	944	46.00(6)	45.75(9)	102.11(9)	4.59(10)	5.94(8)	1.85(4)
	949	-	-	-	-	-	-
	952	-	197.76(2)	92.50(2)	34.33(3)	65.00(3)	5.80(2)
	959	-	87.47(3)	54.33(3)	13.17(3)	36.50(2)	2.75(2)
401-500	933	-	-	-	-	3.70(2)	2.30(2)
	942	-	270.81(2)	148.50(2)	8.67(3)	6.40(2)	4.75(2)
	945	-	259.08(3)	134.92(6)	37.04(5)	63.32(5)	17.05(2)
	948	-	-	-	-	-	-
	951	77.41(2)	316.66(2)	102.27(3)	78.75(2)	57.50(2)	24.95(2)
	960	-	436.29(2)	48.00(2)	44.17(3)	8.17(3)	1.25(2)
501-750	934	-	636.31(2)	-	58.50(2)	10.00(3)	-
	941	-	-	-	38.00(2)	75.27(2)	-
	946	460.47(4)	721.41(5)	187.71(7)	193.10(8)	110.25(6)	-
	947	-	660.80(2)	109.25(4)	255.17(3)	223.25(2)	-
	961	-	285.26(3)	63.53(3)	27.50(2)	36.00(3)	-
751-1000	935	-	-	-	46.86(2)	42.00(2)	-
	940	-	-	-	40.13(2)	30.00(2)	-
	962	-	-	-	49.85(3)	72.50(2)	-
1001-1250	936	-	-	-	10.18(2)	237.75(2)	-
	939	-	-	-	21.81(2)	42.50(2)	-
	963	-	-	-	57.81(2)	78.75(2)	-
1251-1500	937	-	-	-	-	-	-
	938	-	-	-	-	-	-
	964	-	-	-	-	-	-
Biomass (t)		38605	86231	34005	23330	22008	2293

TABLE 10 . ABUNDANCE (000s) OF G. HALIBUT AT AGE FROM CANADIAN RV IN DIV. 2J3KL.

AGE	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
1	2538	2805	2994	7563	2137	1004	1452	7460	13005	1491	4025	3407	547	5814
2	25686	22523	8911	22486	5991	5905	7148	18147	22185	8685	12436	10414	5347	6726
3	54708	28846	15315	30875	23971	19036	21435	20024	32997	47694	28404	35816	14506	11368
4	55914	25789	22680	21226	31204	31465	36094	36224	55685	35752	50345	69334	68019	37832
5	57650	35886	35995	34277	31061	40182	72180	44886	45213	35854	58938	77935	65410	38273
6	45141	38805	42154	38854	29062	34742	36931	37715	57886	33486	39603	56524	48199	27416
7	28923	18843	27942	26647	32070	38908	30683	22359	45327	33956	29733	32108	28837	9020
8	13379	7378	9511	11458	32617	31538	21712	12761	12676	20722	9257	9627	6828	2155
9	6983	3316	4207	5281	13535	11559	10222	6293	3306	7621	2525	2884	1839	475
10	5112	3179	3229	2824	5375	3040	4132	3498	1430	2156	809	675	718	231
11	4237	2102	3601	2255	2801	2049	1869	1592	960	1085	542	558	488	104
12	2541	1843	2393	1030	1790	1497	1216	1218	961	642	309	161	267	61
13	1611	1520	1551	579	1276	1089	964	517	441	504	267	56	160	14
14	476	762	858	276	1306	713	804	636	411	200	210	73	115	5
15	335	493	326	155	835	306	427	330	213	151	151	77	49	0
16	243	426	182	19	325	81	294	210	62	100	81	23	27	2
17	130	153	53	0	51	0	140	161	0	10	38	0	0	0
1+	305808	194676	181903	205606	215406	223118	249703	214030	292759	230091	237671	299674	241357	139497
2+	303070	191871	178909	198043	213269	222112	248251	206570	279754	228600	233646	296267	240810	133683
3+	277384	169349	169998	175557	207278	216207	241102	188424	257569	219915	221210	285853	235463	126957
4+	222676	140503	154683	144682	183307	197171	219668	168400	224572	172222	192806	250036	220957	115588
5+	166762	114704	132003	123456	152103	165706	183574	132176	168887	136470	142462	180703	152937	77757
6+	109112	78818	96008	89179	121042	125523	111394	87290	123674	100616	83524	102768	87528	39483
7+	63972	40014	53854	50525	91980	90782	72463	49576	65788	67129	43921	46244	39329	12067
8+	35048	21171	25912	23878	59910	51874	41780	27217	20461	33173	14188	14136	10491	3048
9+	21669	13793	16401	12420	27293	20336	20067	14456	7785	12451	4931	4508	3664	893
10+	14686	10477	12194	7139	13758	8776	9846	8163	4479	4830	2407	1624	1825	417
11+	9574	7298	8965	4315	8383	5736	5714	4665	3049	2673	1597	949	1107	186
12+	5337	5197	5364	2060	5583	3687	3844	3073	2088	1608	1056	391	619	82
13+	2796	3354	2971	1030	3793	2189	2629	1855	1128	965	747	230	352	21
14+	1185	1834	1420	451	2516	1100	1665	1338	686	461	480	174	192	7
15+	708	1072	561	174	1211	387	860	702	275	261	270	101	76	2

Table 12. Stratified mean number per set at age of Greenland halibut in NAFO Division 2G from post-stratified surveys in 1978, 1979, and 1981 and stratified-random surveys in 1987, 1988, and 1991.

Age (Years)	Gadus 13 1978	Gadus 24 1979	Gadus 57 1981	Gadus 143 1987	Gadus 156 1988	AN 161 1991
1	0.0	1.19	0.45	2.03	0.15	0.12
2	3.76	1.14	1.17	2.20	0.42	0.34
3	2.64	2.40	1.52	1.10	0.52	0.31
4	3.28	3.35	2.30	0.90	0.57	0.60
5	4.24	3.89	3.12	0.85	0.38	0.49
6	4.53	3.36	3.82	1.82	0.57	0.42
7	5.05	3.62	4.74	4.14	1.21	0.12
8	4.92	4.38	2.89	5.28	2.23	0.00
9	4.07	3.20	1.93	3.13	1.55	0.00
10	2.35	1.36	1.02	2.03	0.53	0.00
11	1.22	0.53	0.55	0.91	0.30	0.00
12	0.41	0.32	0.20	0.30	0.13	0.00
13	0.22	0.11	0.03	0.35	0.19	0.00
14	0.09	0.12	0.02	0.10	0.09	0.00
15	0.05	0.09	0.00	0.09	0.03	0.00
16	0.04	0.06	0.00	0.01	0.02	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.01	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	36.87	29.13	23.83	25.27	8.89	2.40

Table __. Stratified mean number per set at age of Greenland halibut in NAFO Division 2H from post-stratified surveys in 1978, 1979, and 1981 and stratified-random surveys in 1987, 1988, and 1991.

Age (Years)	Gadus 13 1978	Gadus 24 1979	Gadus 57 1981	Gadus 143 1987	Gadus 156 1988	AN 161 1991
1	0.0	2.40	0.76	2.36	2.41	0.38
2	5.33	14.72	3.99	12.63	14.08	0.68
3	9.52	23.90	3.92	5.89	16.21	1.40
4	15.64	25.46	2.52	2.07	8.04	4.89
5	12.94	18.35	3.44	3.98	3.14	2.43
6	8.97	10.64	3.78	11.77	2.43	1.58
7	6.09	8.88	4.55	8.49	5.51	0.61
8	4.50	8.75	3.50	2.42	7.71	0.16
9	4.42	7.46	2.28	1.01	2.02	0.04
10	3.12	3.99	1.21	0.30	0.55	0.01
11	2.22	2.20	0.72	0.16	0.26	0.00
12	1.09	1.39	0.29	0.08	0.16	0.00
13	0.69	0.63	0.09	0.06	0.13	0.00
14	0.36	0.63	0.05	0.06	0.12	0.00
15	0.24	0.28	0.01	0.02	0.08	0.00
16	0.09	0.15	0.00	0.01	0.02	0.00
17	0.02	0.03	0.00	0.01	0.00	0.00
18	0.00	0.02	0.00	0.00	0.00	0.00
19	0.00	0.02	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	75.24	129.90	31.11	51.34	62.91	12.19

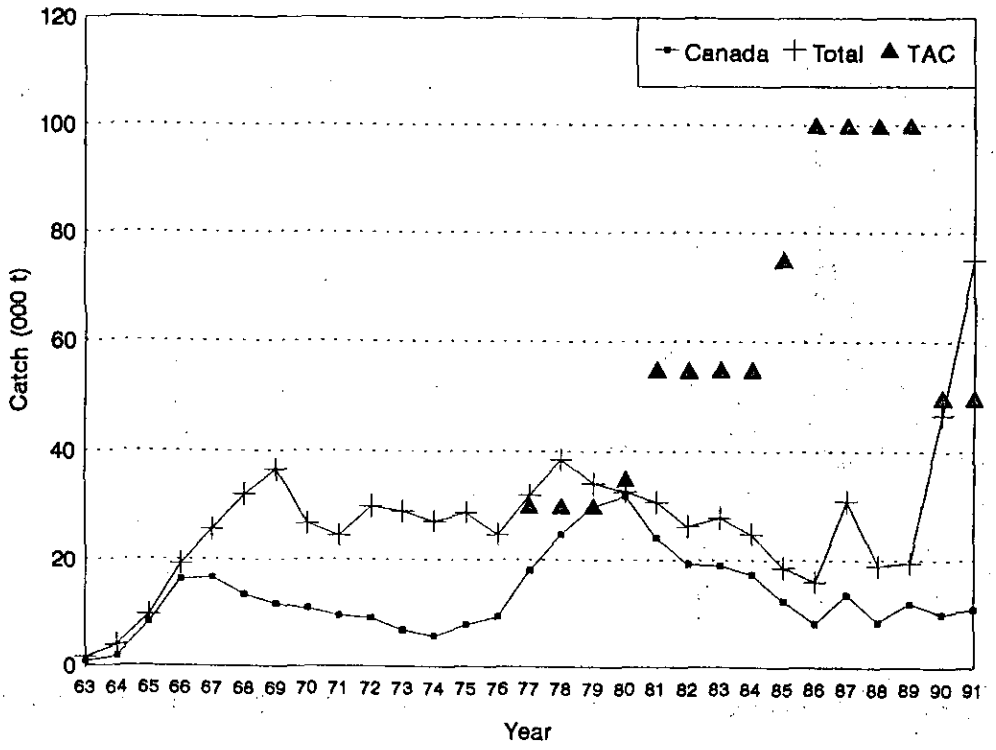

Fig.1. Catches and TACs of G. halibut in SA 2 + Div. 3KL.
Totals for 1990 and 1991 include 3M and include catch estimates.

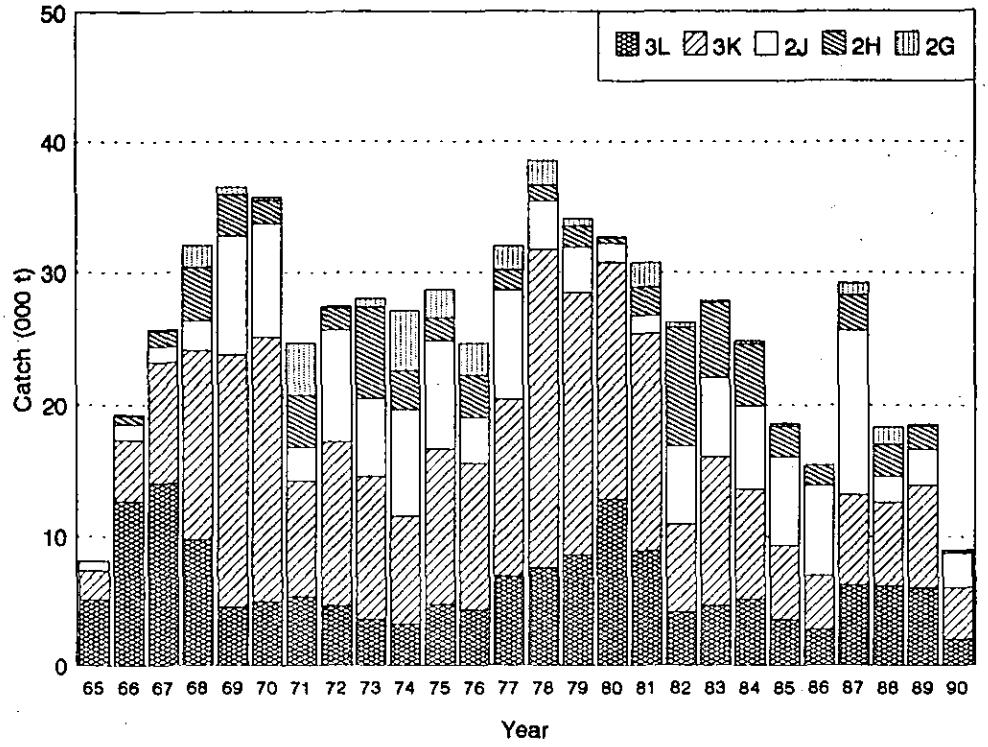

Fig.2.Nominal catches of G. halibut, by Division, for Subarea 2 + Div. 3KL. Values for 1990 exclude estimated catches.

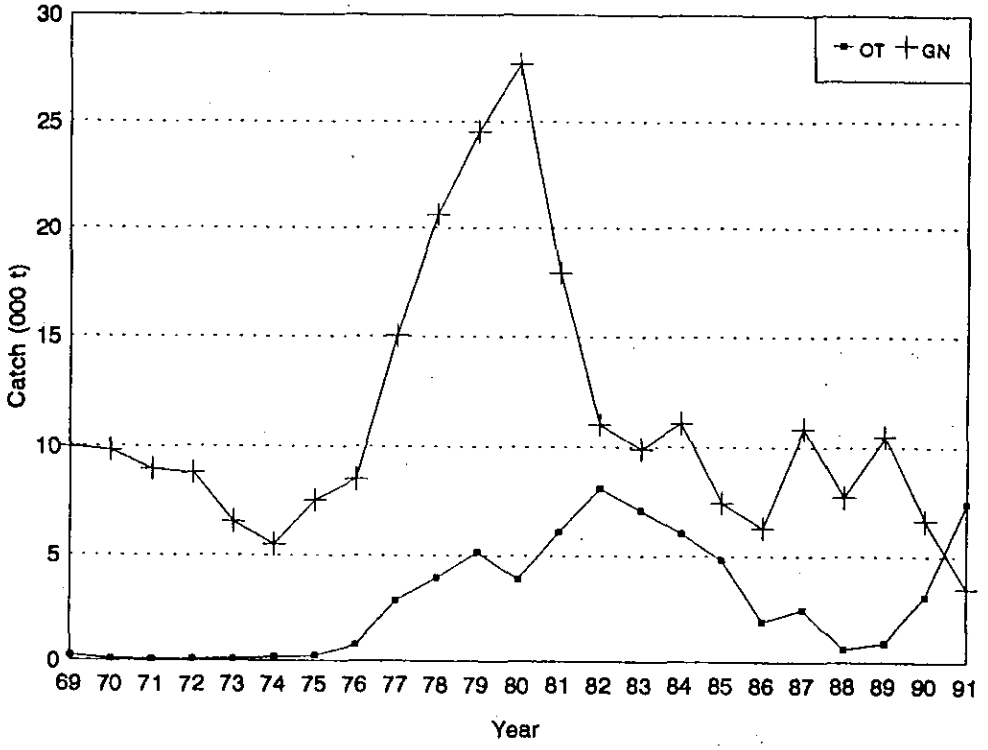

Fig.3. Canadian catches of G.halibut by otter trawls and gillnets from 1969-91 in Div.2GHJ+3KL.

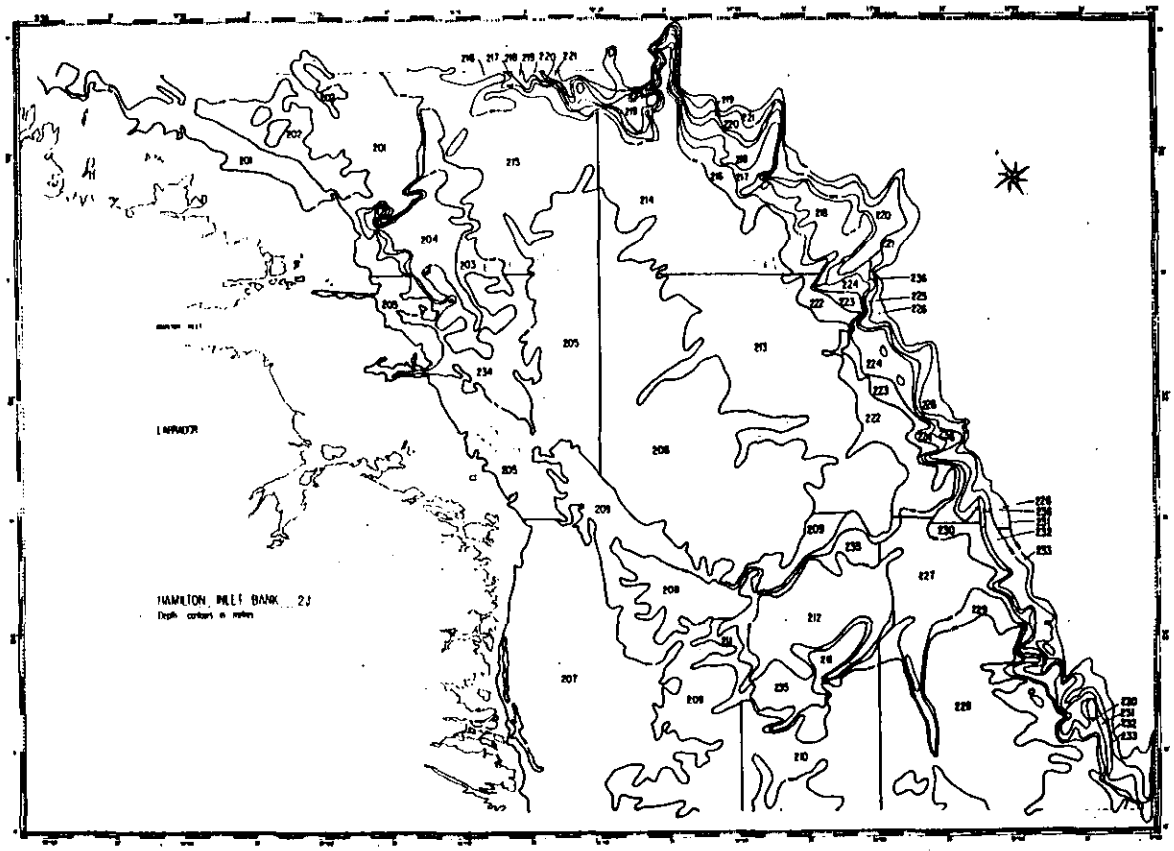

Figure 4. Area of stratification for RV surveys in Div. 2J.

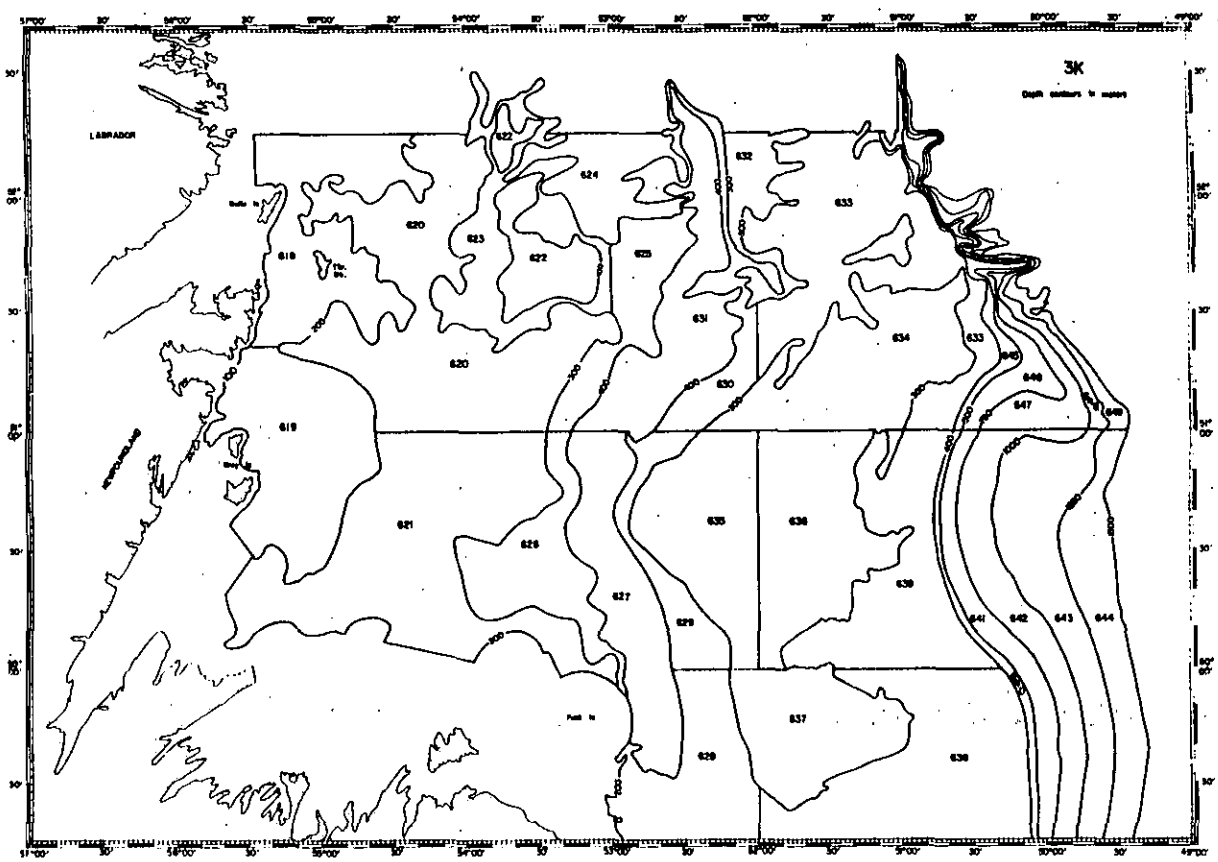

Figure 5. Area of stratification for RV surveys in Div. 3K.

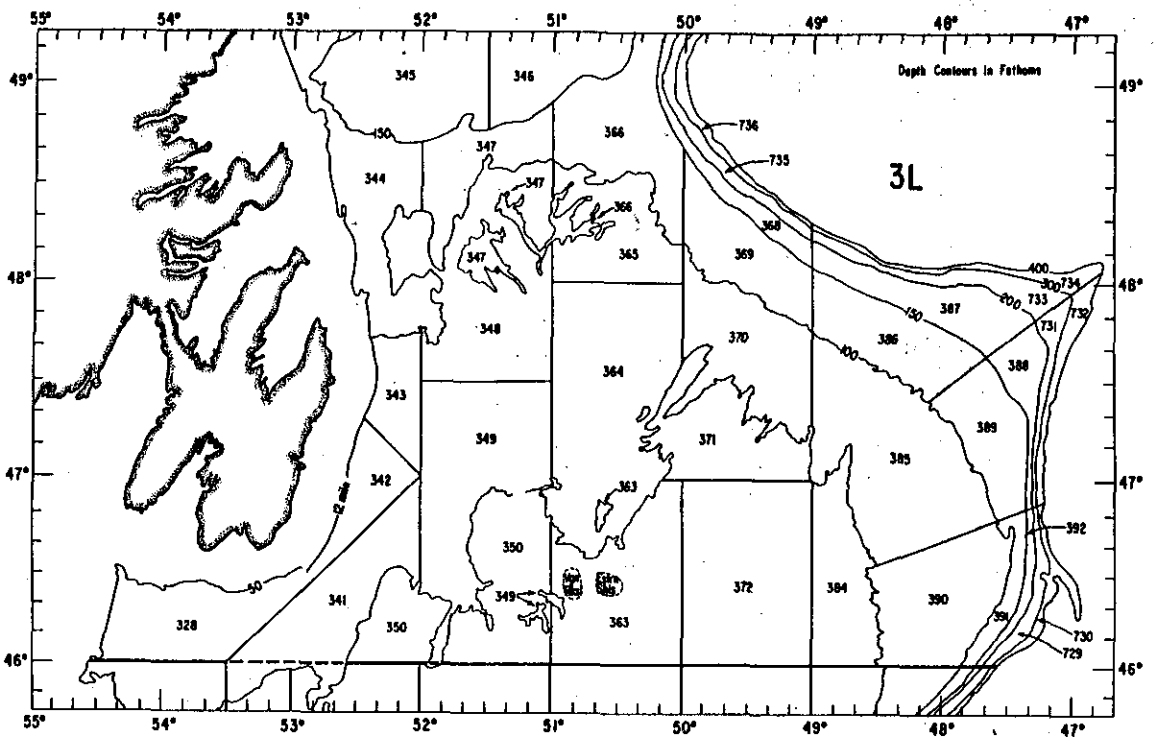

Figure 6. Area of stratification for RV surveys in Div. 3L.

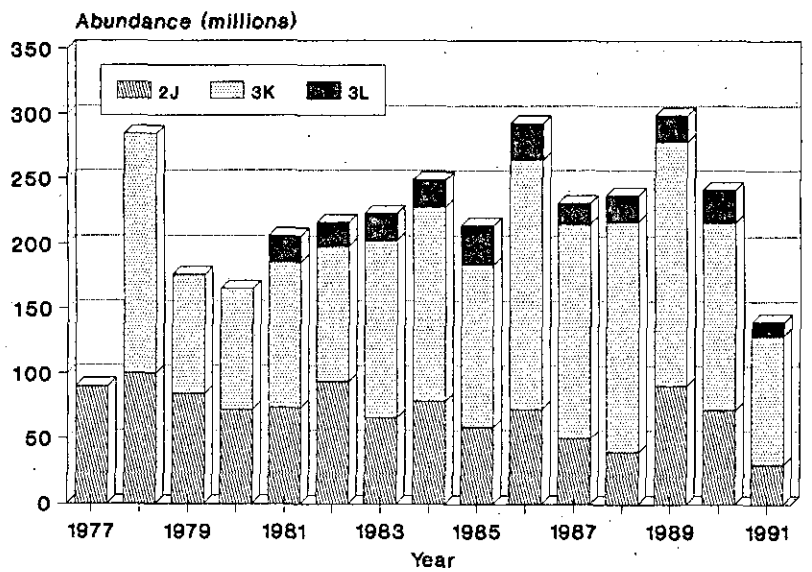

Fig. 7. Abundance of Greenland Halibut from Canadian RV surveys in Div. 2J3KL.

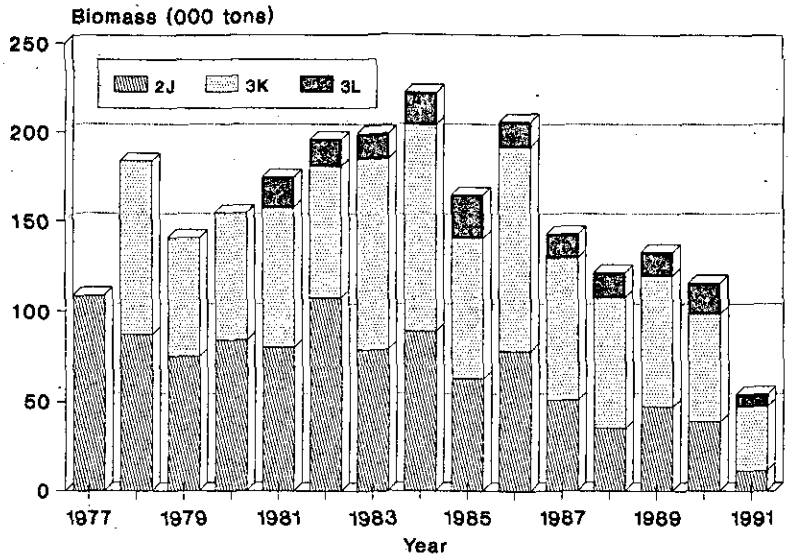

Fig. 8 . Biomass of Greenland Halibut from Canadian RV surveys in Div. 2J3KL.

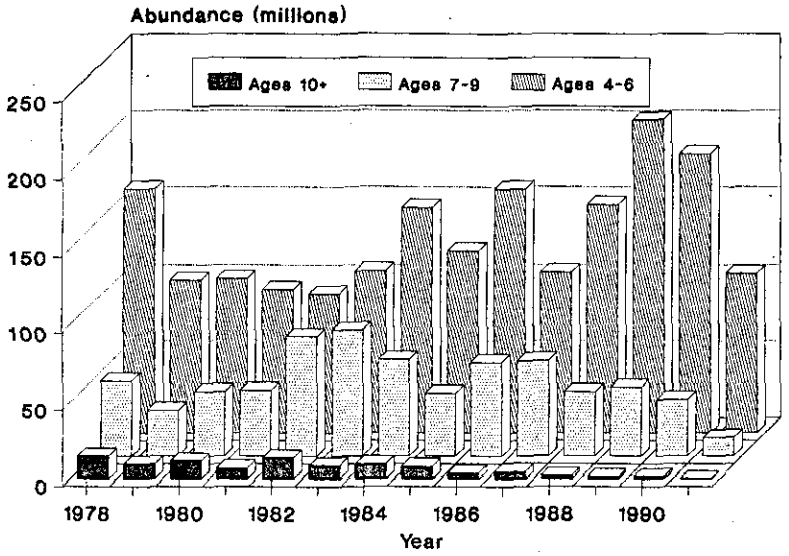

Fig. 9 . Abundance of G. Halibut by age groups from Canadian RV in Div. 2J3KL.

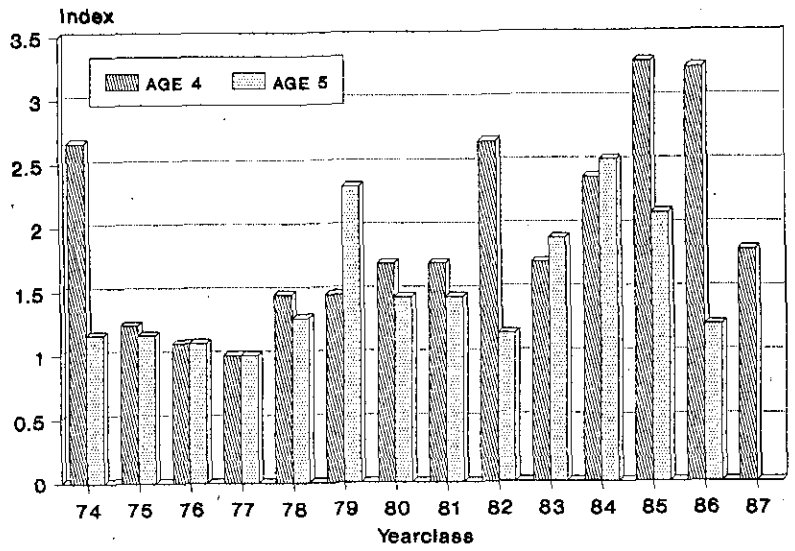

Fig. 10. Relative yearclass strength of ages 4 and 5 from Canadian RV in 2J3KL.