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Portuguese Research Report for 1997

by

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A. Status of the fisheries

In 1997 the Portuguese nominal catches proceeding from NAFO Regulatory Area recorded 9,000 ton (Tab. I) and are at the same level of 1996. Since 1991 the nominal catches have been decreasing continuously from 75,000 ton (1991) to 9 000 ton (1997), with a major drop from 1994 (30,156 ton) to 1995 (11,441 ton). The 1997 nominal catch is again the lowest on record for the modern history of the Portuguese Northwest Atlantic fisheries.

During 1997 the Portuguese fleet was composed only by stern trawlers (13 trawlers, one of them fishing shrimp during 40 days). Portuguese gillnetters didn't operate on Northwest Atlantic during 1997.

The nominal catches by division are at the same level of 1996. The species that dominated the catches in each division are the same as last year. Since 1994 Greenland halibut is the most important commercial species in Div. 3L and 3N, followed by roughhead grenadier and skates. This group of species corresponded in 1997 to 88% of the overall trawl catch in Div. 3L and 73% in Div. 3N. *In Div. 3M cod* continued to be the most important species in the Portuguese catches and in Div. 3O redfish represent 60% of the nominal catches.

The total trawl fishing effort in the NAFO Regulatory Area decreased from 1912 days in 1996 to 1428 days in 1997. These decreased was spread evenly by divisions 3M, 3N and 3O (about 100 days in each) and have been about 60 days in Div. 3L (Tab. II-A).

From the monitored fishing vessels Greenland halibut was the priority species for the Portuguese trawl fleet during 1997, accounting with 96.4% of the total directed effort (Tab. II-B, Fig. 1). As in 1995 and 1996, trawl fishing effort was mainly spent (75.7%) in Div. 3L.

B.Portuguese Annual Sampling Program

1. Catch and effort sampling.

The catch and effort data for 1997 Portuguese trawl fishery on NAFO Regulatory Area were obtained through the revision of skipper logbooks from two trawlers, kindly supplied by their owners. All the information has been recorded and put on file on a daily basis as regards round weight of the catch by species and on a tow basis as regards fishing effort, positions and depths. The conversion factors used in each vessel were also used to convert its processed landings in catches. In Div 3L and 3M effort data obtained through the revision of the 1997 logbooks available were processed in order to convert the 1997 Portuguese effort, reported in fishing days on the 1997 Portuguese STATLANT 21-B, into fishing hours. However this was not possible in Div. 3N and 3O due to the fact that sampling on these divisions has been confined to January and February on Div. 3N.

The daily catch and effort data from the logbooks were also used to estimate the directed effort and CPUE for each of the target species/stock, as well as the main by-catch species and depth range of the different fisheries, on a monthly basis. As mentioned before almost all fishing effort was directed to Greenland halibut (Tab. IV-A).

Following the September 1996 recommendation of the NAFO Scientific Council as regards of the availability of witch flounder fishery data, a table with the by-catch of this species on the Greenland halibut fishery is presented (Tab. IV-B).

Data regarding directed effort and catch rates are presented in Table II-B and Tab. IV-A to V-C, Fig. 1 and 2.

The additive model used in previous years to standardize the observed cpue's was upgrade to allow a vessel factor and use each single observation instead of a mean of monthly cpue's as before. This model is fully described in a previous paper (Ávila de Melo and Alpoim, 1995). Only the Greenland halibut cpue series was update with the 1997 observed cpue's. Since January 1988 till April 1995 each monthly observed cpue of this series was previously corrected for 130mm mesh size (Ávila de Melo and Alpoim, 1996). The 3M redfish cpue series (only till 1996) was also reviewed using the upgraded version of the additive model, but no correction has been introduced as regards mesh size.
In this analysis and for each of the stocks, any observation corresponding to a month and a trawler with less than 10 hours of directed effort on that stock was rejected. The cpues for each stock considered are presented in Tables V and Fig. 2, with the associated standard errors (+/- 2 standard errors in the Figures) and coefficients of variation.

1.1. Comments on catch and effort data (based on the vessels sampled)

1.1.1. Redfish in Div. 3M

Redfish trawl catch rates on Division 3M gradually declined from 1989 to 1991, most probably as an immediate consequence of the unusually high catches observed in late eighties and early nineties, oscillating with no apparent trend onwards (Tab.V-A). The wide oscillations of this index should be related to interannual changes in the distribution of the Flemish Cap redfish populations within the water column, with direct impact on the availability of the fish to the bottom trawl gear.

1.1.2. Greenland halibut in Div. 3L , 3M and 3N

In Division 3L catch rates declined prior to the boom of the deep water fishery (Tab.V-B, Fig. 2). However it is from 1990 to 1991, *i.e.* from the first to the second year of this new fishery in the Regulatory Area, that cpue's fell by half (0.326 ton/h to 0.135 ton/h). From 1991 to 1994 catch rates remained stable at a low level. Since then catch rates gradually increased reaching 0.251 ton/h in 1997. In Division 3N no trend is apparent on Greenland halibut trawl cpue's. As for Div. 3M a significant increase is observed from 1996 to 1997.

For the all three divisions combined (Tab.V-B, Fig. 2) the catch rates series follows the same pattern as the one for Div. 3L, since this is the division of Sub Area 3 with the highest concentration of Greenland halibut fishing effort. Division 3L has also recorded the highest Greenland halibut catch rates during the 1988-1997 period (Tab.V-C).

2. Biological Sampling

During 1997 biological sampling was obtained from one stern trawler fishing in Div.3L and 3M from February to November and from other stern trawler fishing in divisions 3L, 3M and 3N but only on January and February. Apart from cod, a priority species always to be sampled whenever it appeared in the catch, biological sampling was conducted for the two most abundant species in each haul, following the NAFO sampling recommendations.

Cod and witch flounder catches were sampled in Div.3L and 3M, American plaice, Greenland halibut, roughhead grenadier and redfish (*S. mentella*) were sampled in Divisions 3L, 3M and 3N (Tab. III). As usual information on age composition of cod and Greenland halibut catches, were obtained from those sampled catches. In the case of the Greenland halibut an age/length key for the three Divisions was compiled. Age composition for the 3M redfish (*S.mentella*) and 3M American plaice was obtained using the respective age/length keys of the July 97 EU survey (Vazquez, 1998).

Due to the deep-sea nature of the 1997 commercial bottom trawling, most of the redfish catches were in fact by-catch of the Greenland halibut fishery, dominated by *S. mentella* in all divisions sampled. *S.marinus* was not founded.

For the above-mentioned species, length and age structure of the catches, respective mean lengths and mean weights in the catch and mean length and mean weight at age by Division are presented from Tables VI to XXI and Fig. 3 to 24.

As 1996, all 1997 commercial sampling information is representative of the catch as a whole although sampling of redfish, Greenland halibut, American plaice, roughhead grenadier and witch flounder has been carried out by sex as in previous years. Mean length and weight at age are the mean of mean lengths and weights at age by sex, weighted by the abundance in the sampled catches of males and females at each age. For all species mean weight at age and mean weight in the catch are derived from the adopted length-weight relationships (appendix).

2.1. Comments on length and age composition of the 1997 trawl catches.

2.1.1. Cod Div. 3L

Information on cod trawl by-catch in Div.3L consists of 18 fish measured and are presented just for illustrative purposes in Tab. VI and Fig. 3.

2.1.2. Cod Div. 3M

Length and age information on cod trawl catches in Div.3M, presented in Tab. VII-A and VII-B and Fig. 4 and 5, are also from a small number of 43 fish measured in May, .

2.1.3. Redfish *(S.mentella)* **Div. 3L**

Information on length composition of the redfish (*S. mentella)* trawl by-catch is available for March, April, May and October, from depths between 687m and 1199m (Tab.VIII, Fig.6).

The catches were dominated by lengths between 25cm-33cm, with two modes at 26cm and 30cm. Mean length of the trawl catches was 29.5 cm.

2.1.4. Redfish (*S.mentella*) **Div. 3M**

Redfish (*S. mentella*) catches were sampled in January, April, May and September from depths between 251m and 1260m. On 1997 the bulk of the catch was between 24cm - 33cm, with the most abundant length groups around 25cm and between 30cm-33cm (Tab. IX-A, Fig.7), corresponding to ages from 6 to 14. The 1991 year class continued to be the most abundant in the commercial catch (Tab. IX-B, Fig.9).

2.1.5. Redfish (*S. mentella*) **Div. 3N**

Sampling from the first two month of the year (Tab. X, Fig. 8) suggest that lengths between 29cm to 34cm dominated the by-catch, with a clear mode at 33cm.

2.1.6. Greenland halibut Div. 3L

Greenland halibut trawl catches were intensively sampled during the period January-November (with the exception of June) covering a depth range of 682m-1252 m.

Lengths are spread between 18cm and 92cm with the most abundant lengths around 44cm (Tab.XI-A, Fig. 10). Mean length and the mean weight of the 1997 catch is similar to 1996 catches (45.1cm and 849g).

Age composition indicates a dominance of the age 6 followed by age 7 and 5. The 1991,1990 and 1992 year classes dominated the 1997 catches (Tab. XI-B, Fig. 12). The year classes of 1991 and 1990 were already dominant in the 1996 catch.

2.1.7. Greenland halibut Div. 3M

Biological information of the Greenland halibut catches in Div. 3M is available for January, March-May and July-October, from depths between 700m and 1260m.

As in Div. 3L the lengths are spread between the 16cm and 92cm (Tab XII-A, Fig. 11), but with the most abundant lengths groups around 40cm. The mean length and mean weight of the catches are smaller than in Div.3L (43cm and 750g).

The dominant year classes are the same of Div.3L, but in this division the 1990 and 1992 year classes are at the same level (Tab XII-B, Fig. 13).

2.1.8. Greenland halibut Div. 3N

Greenland halibut trawl catches were sampled only in January and February. Most of the lengths fell within 40cm to 48cm with a mean length of 45.5cm (Tab. XIII-A, Fig. 14).
The 1991 year class dominated the sampled catch followed by the 1990 year class (Tab. XIII-B, Fig. 15).

2.1.9. American plaice Div. 3L

Information on length composition of the American plaice by-catch is available from January to May (Tab. XIV, Fig. 16) from 687m to1199m depth.

Catches were dominated by lengths between 30cm and 44 cm (mean length and weight of 38.9cm and 616g).

2.1.10. American plaice Div. 3M

Information on length and age composition of the American plaice catches is available for the 2nd quarter (April and May), from depths between 165m and 1153m.

Length around 40cm and 48cm were the most abundant (Tab. XVI-A, Fig.17), corresponding respectively to the 1990 year class and ages between 9 and 11 (Tab.XVI-B, Fig.19).

2.1.11. American plaice Div. 3N

The length composition of the American plaice by-catch refers to January-February, from depths between 352m and 1167m.

Length composition presents a mode around 34 cm (Tab.XV, Fig. 18). The mean length decreased from 40cm in 1996 to 33.9cm in 1997.

2.1.12. Roughhead grenadier Div. 3L

Trawl catches of roughhead grenadier are a by-catch of the Greenland halibut fishery and so were also intensively sampled from January to November, from a depths between 682m and 1252m.

Anal lengths are spread between 8cm and 19cm with the most abundant lengths in the vicinity of 11cm (Tab.XVII, Fig. 20).

2.1.13. Roughhead grenadier Div. 3M

The length composition of roughhead grenadier caught in Div.3M at depths between 700m and 1640m is similar to Div.3L within a range of 7 to 27cm and a mode at 11 cm (Tab XVIII, Fig 21).

2.1.14. Roughhead grenadier Div. 3N

Information on length composition of roughhead grenadier is only available for February with the bulk of the catches lying between 16cm and 21cm (Tab. XIX, Fig. 22).

2.1.15. Witch flounder Div. 3L

Length composition of witch flounder is available for five months in the 2nd, 3rd and 4th quarters, for a depth range of 687m-1252m.

Most of this by-catch fell between 30cm and 46 cm (Tab. XX, Fig.23)

2.1.16. Witch flounder Div. 3M

Length composition of witch flounder by-catch is available for April and May for a depth range of 870m-1260m.

Length composition of trawl catches (Tab XXI, Fig. 24) is distributed between a range of lengths from 26cm to 56cm, with a dominance of the length classes between 36cm and 44cm.

3. Acknowledgements

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4. References

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TABLE I : PORTUGUESE NOMINAL TRAWL CATCHES (mt) IN NAFO AREA, 1997

SPECIES	DIVISION 3L	3M	3N	3O	TOTAL 1997
Cod		1432.0	28.3	85.2	1546
Redfish	47.7	82.8	100.7	893.8	1125
American plaice	55.4	51.6	188.4	93.3	389
Yellowtail(1)					
Witch flounder	140.0	59.6	89.6	57.8	347
Greenland halibut	2018.8	627.5	644.2	52.9	3343
Atlantic halibut	1.4	0.2	7.2	8.4	17
Roughhead grenadier(2)	325.9	73.1	341.4	21.9	762
Anarhichas spp.	57.4	59.3	47.8	20.0	185
Hadocck				39.2	39
Pollock					
Red hake	26.3	1.4	5.0	23.6	56
Capelin					
Skates	161.3	51.9	519.3	171.9	904
Monkfish					
Squid					
Shrimp		170.1			170
Unidentified	9.0	10.2	62.5	34.2	116
TOTAL	2843.2	2619.7	2034.4	1502.2	9000

(1) From the 1997 sampling, there were no yellowtail catches recorded .
(2) Reported as Roundnose grenadier in years before.

TABLE I : cont.

SPECIES \ YEAR	TOTAL 1997	TOTAL 1996	TOTAL 1995	TOTAL 1994	TOTAL 1993	TOTAL 1992	TOTAL 1991	TOTAL 1990	TOTAL 1989	TOTAL 1988
Cod	1546	1318	1353	2636	3651	5984	13357	15138	24129	12931
Redfish	1125	2152	2590	8609	9828	6581	12163	17810	18870	17072
American plaice	389	298	175	344	347	451	1288	714	1821	1791
Yellowtail(1)						1	10	11	5	
Witch flounder	347	236	375	573	289	849	1982	2254	16	12
Greenland halibut	3343	3308	1814	5967	8805	10539	13961	11170	3614	4194
Atlantic halibut	17	12	18	45	53	81	228	91		
Roughhead grenadier(2)	762	784	1402	2223	1969	2000	4486	3211	290	914
Anarhichas spp.	185	122	1401	3219	2302	1696	2843	1940		
Hadocck	39		2	10	10	166	83	17		
Pollock				13	41	28	421	11		
Red hake	56	124	230	267	366	466	1009	467		
Capelin								77		
Skates	904	788	2068	6238	7626	7017	23301	13569	663	1097
Monkfish			2		8	37	10	2		
Squid		3								
Shrimp	170									
Unidentified	116	22	14	12	238	325	174	852		
TOTAL	9000	9167	11441	30156	35532	36220	75314	67334	49408	38011

TABLE II - A : PORTUGUESE TRAWL EFFORT IN FISHING DAYS AND FISHING HOURS IN NAFO AREA IN 1997.

MONTH	DIVISION 3L		3M		3N		3O		TOTAL 1997		MONTH
	DAYS	HOURS	DAYS	HOURS	DAYS	HOURS	DAYS	HOURS	DAYS	HOURS	
JAN.	70	930.6	27	265.5	66	766.7			163		JAN.
FEB.	90	1282.0	25	256.3	16	128.7			131		FEB.
MAR.	110	1521.3	40	415.6					150		MAR.
APR.	84	1315.4	50	728.3	23		9		166		APR.
MAY	50	750.2	9	101.9	42		10		111		MAY
JUN.	5	75.9	10	119.2	46		23		84		JUN.
JUL.	11	170.1	28	383.8	16		35		90		JUL.
AUG.	23	343.7	26	226.3	8		10		67		AUG.
SEP.	43	629.0	25	322.2	4		4		76		SEP.
OCT.	95	1482.3	16	137.0	31		15		157		OCT.
NOV.	48	787.3	18	154.1	55		17		138		NOV.
DEC.			81	693.6	6		8		95		DEC.
TOTAL	629	9288	355	3804	313		131		1428		TOTAL

Note: Fishing hours and number of nets estimated from their monthly rates to fishing days observed in the trawlers and gillnetters sampled by the IPIMAR.
Monthly effort of gillnetters is given by the sum of nets per fishing day

TABLE II - A: cont.

MONTH	TOTAL 1996 OT		TOTAL 1996 GNS		TOTAL 1995 OT		TOTAL 1995 GNS		TOTAL 1994 OT		TOTAL 1994 GNS		TOTAL 1993 OT		TOTAL 1993 GNS		MONTH
	DAYS	HOURS	DAYS	NETS	DAYS	HOURS	DAYS	NETS	DAYS	HOURS	DAYS	NETS	DAYS	HOURS	DAYS	NETS	
JAN.	35	458			78	976			76	849			125	1480			JAN.
FEB.	55	821			126	1318			115	1060			209	2656			FEB.
MAR.	146	1937	16		149	1964	63	12448	173	1984	83	9890	278	3442	65	14640	MAR.
APR.	162	2546	7		48	713	70	15681	146	2042	58	10201	200	2695	78	13341	APR.
MAY	139	1868	32		84	1208	63	15919	136	2060	65	14335	224	3168	35	12198	MAY
JUN.	147	1717	42		110	1785	83	24258	105	1691	63	15388	144	1835	97	29083	JUN.
JUL.	106	1359	28		84	1389	66	20890	71	1277	50	13240	117	1755	137	33858	JUL.
AUG.	214	3202	35		200	2787	91	31301	102	1691	94	23876	266	3886	101	28358	AUG.
SEP.	169	2214	6		154	2146	64	25562	184	2935	108	28825	280	3769	43	15894	SEP.
OCT.	309	4403			150	1694	77	23351	209	3373	98	25803	277	3723	80	28745	OCT.
NOV.	227	3332			175	2405	35	4423	104	1466	49	1176	186	2000	75	27545	NOV.
DEC.	203	3349			67	699			132	1637	8	24000	190	2073	20	5873	DEC.
TOTAL	1912	27206	166		1425	19083	612	173833	1553	22065	676	166735	2496	32481	731	209536	TOTAL

TABLE II - A: cont.

MONTH	TOTAL 1992 OT		TOTAL 1992 GNS		TOTAL 1991 OT		TOTAL 1991 GNS		TOTAL 1990 OT		TOTAL 1990 GNS		TOTAL 1989 OT		TOTAL 1989 GNS		MONTH
	DAYS	HOURS	DAYS	NETS	DAYS	HOURS	DAYS	NETS	DAYS	HOURS	DAYS	NETS	DAYS	HOURS	DAYS	NETS	
JAN.	227	2513			99	949			123	1616	25	6241	351	4612			JAN.
FEB.	244	3187			184	1774			155	2255	16	3994	348	5063			FEB.
MAR.	215	2521	6	1810	326	4293	40	11759	418	5785	43	10735	382	5287			MAR.
APR.	417	4522	50	15083	732	9760	51	14992	523	7019	45	14648	375	5033	6	1760	APR.
MAY	321	3775	73	26273	647	8412	104	29428	448	5833	74	24087	383	4987	127	43917	MAY
JUN.	268	4112	145	67829	522	8172	42	16174	400	5780	81	29962	501	7239	161	63144	JUN.
JUL.	195	2658	128	61755	422	5986	71	31147	293	4647	164	61516	301	4774	112	44834	JUL.
AUG.	174	2458	101	42690	407	5266	153	93191	482	8271	126	47263	178	3054	176	73251	AUG.
SEP.	177	2452	118	35400	450	7330	69	33476	469	7663	39	14629	219	3578	52	19609	SEP.
OCT.	118	1208	37	11100	674	10833	84	36540	466	6431	67	15377	361	4982	36	13885	OCT.
NOV.	106	1085	14	4200	482	7137	87	32400	968	13358	30	9464	270	3726	22	8485	NOV.
DEC.	208	2170			352	4915	11	3300	281	3878	4	816	181	2498			DEC.
TOTAL	2670	32662	672	266141	5297	74829	712	302407	5026	72536	714	238732	3850	54833	692	268885	TOTAL

TABLE II - B : Breakdown of the 1997 Portuguese directed effort by species and division (%).

STERN TRAWL			
DIVISION	G.HALIBUT	ROUGHHEAD G	TOTAL/DIV.
3L	72.1	3.6	75.7
3M	22.0		22.0
3N	2.3		2.3
3O			
TOTAL/SPECIES	96.4	3.6	

TABLE III: Intensity of sampling during 1997, by gear, species, division and month.

A- STERN TRAWL

SPECIES	DIV.	MONTH	Nº OF SAMPLES	Nº FISH MEASURED	SAMPLING WEIGHT(Kg)	OTOLITHS Nº	LENGTH RANGE
COD	3L	MAR.	1	18	16	18	33-51cm
	3M	MAY	1	43	28	43	32-53 cm
REDFISH S.mentella	3L	MAR.	6	465	176	151	22-55 cm
		APR.	4	290	118	129	22-48 cm
		MAY	7	564	200	52	21-36 cm
		OCT.	1	32	15		
	3M	JAN.	2	157	92	38	29-44 cm
		APR.	4	268	99	144	21-42 cm
		MAY	2	125	42	89	21-38 cm
		SEP.	4	122	64	119	17-47 cm
	3N	JAN.	3	135	68	36	25-47 cm
		FEB.	2	107	35	38	23-38 cm
AMERICAN PLAICE	3L	JAN.	1	49	17	16	27-43 cm
		FEB.	1	57	46		
		MAR.	17	1277	641	234	21-57 cm
		APR.	11	716	454	222	22-56 cm
		MAY	6	347	305	135	30-56 cm
	3M	APR.	1	60	57		
		MAY	1	49	45	49	34-54 cm
	3N	JAN.	4	174	61	45	27-42 cm
		FEB.	2	118	39	38	25-48 cm

TABLE III: count.

A- STERN TRAWL

SPECIES	DIV.	MONTH	Nº OF SAMPLES	Nº FISH MEASURED	SAMPLING WEIGHT(Kg)	OTOLITHS Nº	OTOLITHS LENGTH RANGE
GREENLAND HALIBUT	3L	JAN.	16	2204	1886	270	27-83 cm
		FEB.	17	1662	1516	352	22-88 cm
		MAR.	40	3117	2787	424	21-98 cm
		APR.	33	2958	2816	521	18-92 cm
		MAY	29	2429	2544	411	24-104 cm
		JUL.	25	2085	1925	313	26-87 cm
		AUG.	43	4265	4194	414	26-90 cm
		SET.	39	3339	3418	352	28-93 cm
		OCT	50	4080	4124	452	28-93 cm
		NOV.	39	3198	3106	347	20-88 cm
	3M	JAN.	2	206	170	39	35-56 cm
		MAR.	20	1259	1215	245	33-88 cm
		APR.	13	1107	714	309	17-79 cm
		MAY	11	776	729	284	17-86 cm
		JUL.	5	327	420	103	33-93 cm
		AUG.	14	1128	1111	293	30-89 cm
		SET.	20	1591	1368	276	22-87 cm
		OCT	5	335	348	177	29-81 cm
	3N	JAN.	4	641	494	60	31-52 cm
		FEB.	2	108	86		
ROUGHHEAD GRENADIER	3L	JAN.	17	2190	955	226	10-34 cm
		FEB.	11	1114	431	187	11-33.5 cm
		MAR.	2	97	44	89	8-23.5 cm
		APR.	16	1255	722	307	7-36 cm
		MAY	15	1154	716	245	7.5-33.5 cm
		JUL.	13	997	490	211	7.5-32.5 cm
		AUG.	31	3255	1363	201	8-25.5 cm
		SEP.	25	2246	1002	232	7-32 cm
		OCT.	36	3064	1476	282	7-31 cm
		NOV.	26	2351	1140	264	7-32.5 cm
	3M	JAN.	2	259	97	32	14.5-21 cm
		APR.	6	461	200	207	7-29.5 cm
		MAY	5	352	168	148	8-25.5 cm
		JUL.	4	225	159	174	7.5-29.5 cm
		AUG.	9	759	341	177	8.5-33 cm
		SEP.	16	1344	580	228	7-27.5 cm
		OCT.	3	199	95	142	7-26 cm
	3N	FEB.	2	96	63	36	17-32 cm
WITCH FLOUNDER	3L	APR.	13	1062	536	181	28-59 cm
		MAY	12	892	432	176	25-60 cm
		AUG.	2	78	45	78	26-59 cm
		OCT.	4	111	48	108	27-53 cm
		NOV.	2	121	49		
	3M	APR.	5	355	183	131	29-56 cm
		MAY	4	225	106	93	30-56 cm

TABLE IV - A: Portuguese trawl fishery: cpue and bycatch by month and division, for 1997.

DIVISION	TARGET SPECIES	MONTH	DEPTH RANGE (m) MIN.	DEPTH RANGE (m) MAX.	C.P.U.E. (ton/hour)	MAIN BY-CATCH SPECIES	MAIN BY-CATCH %	TOTAL BYCATCH %
3L	G.HALIBUT	JAN.	780	1159	0.172	ROUGHHEAD G.	7.6	12.5
3L	G.HALIBUT	FEB.	759	1194	0.170	ROUGHHEAD G.	8.8	14.4
3L	G.HALIBUT	MAR.	704	1199	0.276	SKATES	3.5	13.4
3L	G.HALIBUT	APR.	743	1188	0.277	WITCH F.	9.9	24.5
						ROUGHHEAD G.	9.3	24.5
3L	G.HALIBUT	MAY	687	1190	0.193	ROUGHHEAD G.	24.6	43.9
3L	G.HALIBUT	JUL.	689	1160	0.195	ROUGHHEAD G.	12.6	14.5
3L	G.HALIBUT	AUG.	698	1026	0.212	ROUGHHEAD G.	10.6	13.0
3L	G.HALIBUT	SEP.	695	1187	0.151	ROUGHHEAD G.	16.4	21.1
3L	G.HALIBUT	OCT.	682	1188	0.160	ROUGHHEAD G.	16.2	19.2
3L	G.HALIBUT	NOV.	718	1252	0.163	ROUGHHEAD G.	26.1	29.7
3M	G.HALIBUT	JAN.	759	1043	0.135	ROUGHHEAD G.	7.0	22.7
						REDFISH	6.5	22.7
3M	G.HALIBUT	MAR.	801	1089	0.249	ROUGHHEAD G.	2.1	5.0
3M	G.HALIBUT	APR.	870	1079	0.436	WITCH F.	6.3	17.2
3M	G.HALIBUT	MAY	887	1260	0.350	ROUGHHEAD G.	12.6	24.4
3M	G.HALIBUT	JUL.	867	1050	0.174	ROUGHHEAD G.	14.4	17.5
3M	G.HALIBUT	AUG.	847	1062	0.181	ROUGHHEAD G.	14.6	17.2
3M	G.HALIBUT	SEP.	700	1055	0.177	ROUGHHEAD G.	13.3	17.0
3M	G.HALIBUT	OCT.	878	1020	0.114	ROUGHHEAD G.	12.4	12.4
3N	G.HALIBUT	JAN	567	1167	0.142	A.PLAICE	40.9	64.6
3N	G.HALIBUT	FEB.	850	1147	0.128	A.PLAICE	10.3	33.9
						SKATES	9.8	33.9
3L	ROUGHHEAD G.	JAN.	905	912	0.086	A.PLAICE	28.2	61.6
						G.HALIBUT	26.3	61.6
3L	ROUGHHEAD G.	MAY	884	1190	0.102	G.HALIBUT	45.3	65.6

TABLE IV - B : Portuguese Greenland halibut fishery: witch flounder bycatch by month and division, for 1997.

DIVISION	TARGET SPECIES	MONTH	DEPTH RANGE (m) MIN.	DEPTH RANGE (m) MAX.	C.P.U.E. (ton/hour)	WITCH FLOUNDER BY-CATCH (%)	TOTAL BY-CATCH (%)
3L	G.HALIBUT	SEP.	695	1187	0.151	0.1	21.1
3L	G.HALIBUT	OCT.	682	1188	0.160	0.3	19.2
3L	G.HALIBUT	NOV.	718	1252	0.163	1.0	29.7
3M	G.HALIBUT	JAN.	759	1043	0.135	4.1	22.7
3M	G.HALIBUT	MAR.	801	1089	0.249	0.4	5.0
3M	G.HALIBUT	APR.	870	1079	0.436	6.3	17.2
3M	G.HALIBUT	MAY	887	1260	0.350	7.8	24.4
3M	G.HALIBUT	JUL.	867	1050	0.174	0.2	17.5
3M	G.HALIBUT	AUG.	847	1062	0.181	0.0	17.2
3M	G.HALIBUT	SEP.	700	1055	0.177	0.1	17.0
3M	G.HALIBUT	OCT.	878	1020	0.114	0.0	12.4
3N	G.HALIBUT	JAN.	567	1167	0.142	4.7	64.6
3N	G.HALIBUT	FEB.	850	1147	0.128	3.7	33.9

TABLE V - A: REDFISH TRAWL CATCH RATES, 1988-96 : observed mean annual cpue's corrected for the month, division and vessel of each observation.

	3M			
	CPUE	ST.ERROR	C.V.	
1988	0.577	0.094	28.3	1988
1989	0.705	0.067	39.0	1989
1990	0.623	0.052	45.0	1990
1991	0.477	0.053	43.2	1991
1992	0.689	0.103	44.7	1992
1993	0.318	0.210	114.0	1993
1994	0.875	0.191	43.6	1994
1995	0.459	0.083	44.1	1995
1996	0.663	0.210	44.7	1996

TABLE V - C: GREENLAND HALIBUT TRAWL CATCH RATES , 1988-97 : mean cpue's by division corrected for the year, month and vessel of each observation.

	CPUE	ST.ERROR	C.V.	
3L	0.240	0.013	46.1	3L
3M	0.168	0.010	29.0	3M
3N	0.180	0.010	41.2	3N
3LMN	0.208	0.008	47.2	3LMN

TABLE V - B: GREENLAND HALIBUT TRAWL CATCH RATES, 1988-97 : mean annual cpue's corrected for the month, division and vessel of each observation.

	3L			3M			3N			3LMN			
	CPUE	ST.ERROR	C.V.	CPUE	ST.ERROR	C.V.	CPUE	ST.ERROR	C.V.	CPUE	ST.ERROR	C.V.	
1988	0.410	0.085	35.7							0.428	0.102	41.1	1988
1989	0.378	0.048	37.8							0.349	0.055	47.4	1989
1990	0.326	0.033	34.6	0.180			0.184			0.301	0.031	38.9	1990
1991	0.135	0.035	58.7				0.170	0.032	32.6	0.126	0.024	53.5	1991
1992	0.117	0.031	85.0				0.198	0.024	42.5	0.154	0.024	74.6	1992
1993	0.133	0.028	29.6				0.161	0.017	36.7	0.144	0.015	39.2	1993
1994	0.116	0.049	59.9				0.178	0.010	13.2	0.145	0.019	36.2	1994
1995	0.159	0.028	50.4	0.140	0.013	21.5	0.166	0.015	24.3	0.170	0.016	43.2	1995
1996	0.235	0.026	39.4	0.144	0.018	38.4	0.202	0.017	22.5	0.211	0.012	31.2	1996
1997	0.251	0.024	31.5	0.211	0.016	20.9	0.180	0.036	28.1	0.245	0.022	41.5	1997

TABLE VI: COD DIV.3L, 1997:
length composition of the trawl catches.

LENGTH GROUP	MAR. = YEAR 97	LENGTH GROUP
33	111.1	33
36	55.6	36
39	111.1	39
42	166.7	42
45	388.9	45
48	111.1	48
51	55.6	51
TOTAL	1000	
No. SAMPLES	1	
SAMPLING WEIGHT(kg)	16	
No.F.MEASURED	18	
MEAN LENGTH(cm)	43.7	
MEAN WEIGHT (g)	733.9	
DEPTH RANGE (m)	704/883	

TABLE VII - A: COD DIV.3M, 1997:
length composition of the trawl catches.

LENGTH GROUP	MAY = YEAR 97	LENGTH GROUP
30	46.5	30
33	255.8	33
36	186.0	36
39	162.8	39
42	69.8	42
45	139.5	45
48	46.5	48
51	93.0	51
TOTAL	1000	
No. SAMPLES	1	
SAMPLING WEIGHT(kg)	28	
No.F.MEASURED	43	
MEAN LENGTH(cm)	40.1	
MEAN WEIGHT (g)	655.7	
DEPTH RANGE (m)	165/276	

TABLE VII - B : COD, DIVISION 3M, 1997:
age composition (‰), mean length (cm) and mean weight (Kg) at age of the trawl catches.

AGE	MAY = YEAR 1997 AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE
3	395.3	34.7	0.402	3
4	372.1	40.4	0.640	4
5	69.8	45.0	0.869	5
6	139.5	50.0	1.197	6
7	23.3	52.0	1.339	7
TOTAL	1000			
No FISH AGED	43			

TABLE VIII: RED-FISH (S.mentella), DIV. 3L, 1997: length composition of the trawl catches.

LENGTH GROUP	MAR.	APR.	MAY	OCT.	1st Q.	2nd Q.	4th Q.	YEAR 1997	LENGTH GROUP
19				31.3			31.3	0.1	19
20									20
21			6.3			5.0		3.2	21
22	1.4	5.1	7.2		1.4	6.8		4.8	22
23	19.1	27.5	16.0		19.1	18.5		18.7	23
24	44.4	37.2	53.3	31.3	44.4	49.9	31.3	47.8	24
25	93.9	91.7	138.9		93.9	128.7		115.9	25
26	74.5	84.9	106.2	62.5	74.5	101.6	62.5	91.7	26
27	73.5	57.3	136.6	62.5	73.5	119.6	62.5	102.9	27
28	66.3	72.6	71.6	31.3	66.3	71.8	31.3	69.7	28
29	118.4	88.1	105.4	93.8	118.4	101.7	93.8	107.7	29
30	117.3	97.6	107.1	250.0	117.3	105.0	250.0	109.7	30
31	110.3	140.7	84.7	125.0	110.3	96.7	125.0	101.7	31
32	102.0	104.9	63.5	93.8	102.0	72.4	93.8	83.1	32
33	69.2	74.7	48.7	31.3	69.2	54.3	31.3	59.6	33
34	39.0	40.1	19.6		39.0	24.0		29.4	34
35	34.7	36.6	13.0		34.7	18.1		24.0	35
36	16.0	19.9	6.0	31.3	16.0	9.0	31.3	11.6	36
37	8.3	11.7	0.5	31.3	8.3	2.9	31.3	4.9	37
38	1.7	3.1		31.3	1.7	0.7	31.3	1.1	38
39	1.4		5.0		1.4	3.9		3.0	39
40									40
41			0.3	31.3		0.2	31.3	0.2	41
42	0.6		5.0	31.3	0.6	3.9	31.3	2.8	42
43	6.8	3.1	5.3	31.3	6.8	4.8	31.3	5.6	43
44									44
45	0.6				0.6			0.2	45
46	0.6				0.6			0.2	46
47									47
48		3.1				0.7		0.4	48
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	6	4	7	1	6	11	1	18	
SAMPLING WEIGHT(Kg)	176	118	200	15	176	318	15	510	
No.F.MEASURED	465	290	564	32	465	854	32	1351	
MEAN LENGTH(cm)	30.0	30.1	28.9	31.6	30.0	29.1	31.6	29.5	
MEAN WEIGHT (g)	407	412	364	489	407	374	489	386	
DEPTH RANGE (m)	704/1199	743/1188	687/1088	689/1006	704/1199	687/1188	689/1006	687/1199	

TABLE IX - A: RED-FISH (S.mentella), DIV. 3M, 1997: length composition of the trawl catches.

LENGTH GROUP	JAN.	APR.	MAY	SEP.	1st Q.	2nd Q.	3rd Q.	YEAR 1997	LENGTH GROUP
17				8.2			8.2	0.2	17
18									18
19				73.8			73.8	2.1	19
20				90.2			90.2	2.5	20
21		1.9	6.2	65.6		3.5	65.6	4.9	21
22		15.4	12.4	41.0		14.3	41.0	13.7	22
23		21.2	70.2	32.8		38.8	32.8	34.9	23
24		87.8	123.9	16.4		100.8	16.4	88.7	24
25		130.3	115.4	8.2		125.0	8.2	109.7	25
26		103.4	146.0	24.6		118.7	24.6	104.7	26
27		89.1	51.5	16.4		75.6	16.4	66.6	27
28		76.3	43.0	24.6		64.3	24.6	57.0	28
29	7.0	89.6	59.4	41.0	7.0	78.7	41.0	70.8	29
30	43.9	79.2	106.4	49.2	43.9	89.0	49.2	83.5	30
31	25.4	73.4	96.2	41.0	25.4	81.6	41.0	75.1	31
32	134.0	77.2	81.5	65.6	134.0	78.7	65.6	83.7	32
33	220.2	82.0	67.4	73.8	220.2	76.7	73.8	90.4	33
34	193.8	23.3	10.2	41.0	193.8	18.6	41.0	36.0	34
35	160.8	17.3		16.4	160.8	11.1	16.4	25.6	35
36	105.2	6.7		16.4	105.2	4.3	16.4	14.3	36
37	40.5	4.8		49.2	40.5	3.1	49.2	8.0	37
38	31.1	4.8	10.2	8.2	31.1	6.8	8.2	9.1	38
39	25.4	1.9		8.2	25.4	1.2	8.2	3.7	39
40				41.0			41.0	1.2	40
41		6.7		8.2		4.3	8.2	4.0	41
42		1.0		41.0		0.6	41.0	1.7	42
43				16.4			16.4	0.5	43
44	12.7			32.8	12.7		32.8	2.1	44
45				16.4			16.4	0.5	45
46				16.4			16.4	0.5	46
47				16.4			16.4	0.5	47
48									48
49									49
50									50
51									51
52									52
53									53
54									54
55									55
56									56
57									57
58									58
59									59
60									60
61		6.8				4.3		3.8	61
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	2	4	2	4	2	6	4	12	
SAMPLING WEIGHT(Kg)	92	99	42	64	92	141	64	297	
No.F.MEASURED	157	268	125	122	157	393	122	672	
MEAN LENGTH(cm)	34.6	29.2	28.2	30.8	34.6	28.8	30.8	29.5	
MEAN WEIGHT (g)	611	387	340	521	611	370	521	398	
DEPTH RANGE (m)	801/1089	870/1068	251/1260	700/1045	801/1089	251/1260	700/1045	251/1260	

TABLE IX - B: REDFISH (S.mentella), DIV. 3M, 1997: age composition (‰), mean length (cm) and mean weight (Kg) at age of the trawl catches.

AGE	JAN.			APR.			MAY			SEP.			AGE
	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	
3										1.6	17.5	0.078	3
4				0.1	21.5	0.145				42.6	19.5	0.108	4
5				15.0	22.6	0.167	21.3	22.6	0.167	212.8	20.9	0.133	5
6				225.7	25.1	0.228	303.3	24.8	0.222	81.3	23.5	0.191	6
7				182.9	26.7	0.277	180.6	26.5	0.270	33.7	26.9	0.282	7
8	8.7	30.0	0.393	153.1	28.5	0.334	105.8	28.6	0.337	55.9	28.8	0.344	8
9	34.7	30.5	0.417	98.3	30.2	0.396	104.0	30.4	0.405	52.9	30.3	0.403	9
10	89.9	32.5	0.501	102.1	31.6	0.456	116.9	31.5	0.451	75.4	31.9	0.465	10
11	111.7	33.1	0.523	64.1	32.4	0.492	58.3	32.1	0.482	53.2	32.9	0.510	11
12	201.1	34.0	0.570	53.1	33.4	0.542	37.9	33.2	0.532	57.0	33.8	0.557	12
13	75.2	34.0	0.568	22.0	33.2	0.534	23.8	33.1	0.528	21.1	33.5	0.543	13
14	268.7	35.0	0.632	48.4	34.3	0.594	35.6	33.4	0.545	48.1	35.1	0.642	14
15	41.7	36.0	0.685	4.6	34.8	0.604	1.0	33.5	0.532	9.0	35.4	0.651	15
16	61.6	36.4	0.706	4.5	36.2	0.697				25.1	36.9	0.737	16
17	33.1	37.1	0.728	3.1	37.2	0.750	0.6	34.5	0.580	23.3	37.3	0.752	17
18	15.8	37.0	0.746	4.0	37.9	0.794	5.7	38.1	0.817	5.1	37.7	0.795	18
19+	57.7	39.9	0.943	18.8	47.9	1.772	5.1	38.5	0.845	201.8	43.2	1.192	19+
TOTAL	1000			1000			1000			1000			

TABLE IX - B: count.

AGE	1st Q.			2nd Q.			3rd Q.			YEAR 1997			AGE
	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	
3							1.6	17.5	0.078	0.05	17.5	0.078	3
4				0.1	21.5	0.145	42.6	19.5	0.108	1.3	19.6	0.110	4
5				17.3	22.6	0.167	212.8	20.9	0.133	21.1	22.1	0.157	5
6				253.6	25.0	0.225	81.3	23.5	0.191	224.4	24.9	0.225	6
7				182.1	26.6	0.275	33.7	26.9	0.282	160.4	26.6	0.275	7
8	8.7	30.0	0.393	136.1	28.5	0.335	55.9	28.8	0.344	121.6	28.6	0.336	8
9	34.7	30.5	0.417	100.4	30.2	0.399	52.9	30.3	0.403	92.7	30.3	0.400	9
10	89.9	32.5	0.501	107.5	31.6	0.454	75.4	31.9	0.465	104.9	31.7	0.458	10
11	111.7	33.1	0.523	62.0	32.3	0.489	53.2	32.9	0.510	66.5	32.5	0.495	11
12	201.1	34.0	0.570	47.7	33.4	0.539	57.0	33.8	0.557	62.7	33.5	0.549	12
13	75.2	34.0	0.568	22.6	33.2	0.532	21.1	33.5	0.543	27.6	33.4	0.542	13
14	268.7	35.0	0.632	43.8	34.0	0.580	48.1	35.1	0.642	65.6	34.4	0.602	14
15	41.7	36.0	0.685	3.3	34.7	0.596	9.0	35.4	0.651	7.2	35.5	0.648	15
16	61.6	36.4	0.706	2.9	36.2	0.697	25.1	36.9	0.737	9.2	36.4	0.706	16
17	33.1	37.1	0.728	2.2	37.0	0.733	23.3	37.3	0.752	5.8	37.1	0.732	17
18	15.8	37.0	0.746	4.6	38.0	0.804	5.1	37.7	0.795	5.7	37.7	0.789	18
19+	57.7	39.9	0.943	13.9	46.7	1.650	201.8	43.2	1.192	23.4	44.2	1.371	19+
TOTAL	1000			1000			1000			1000			
No FISH AGED										522*			

(*) based on 97 EC survey, due to the lack of commercial age length key

TABLE X: RED-FISH (S.mentella), DIV. 3N, 1997:
length composition of the trawl catches.

LENGTH GROUP	JAN.	FEB.	1st Q. = YEAR 97	LENGTH GROUP
23		5.5	0.6	23
24		21.9	2.4	24
25	4.0	5.5	4.2	25
26				26
27	12.1	102.9	21.9	27
28	20.1	72.7	25.8	28
29	48.7	139.9	58.5	29
30	76.7	137.0	83.2	30
31	72.9	219.7	88.7	31
32	210.5	189.5	208.2	32
33	348.5	37.0	314.9	33
34	117.3	46.6	109.7	34
35	32.5		29.0	35
36	16.2	10.9	15.6	36
37	24.3		21.7	37
38	4.0	10.9	4.7	38
39				39
40				40
41				41
42				42
43				43
44				44
45				45
46				46
47	12.2		10.9	47
TOTAL	1000	1000	1000	
No. SAMPLES	3	2	5	
SAMPLING WEIGHT(Kg)	68	35	103	
No.F.MEASURED	135	107	242	
MEAN LENGTH(cm)	33.0	30.8	32.8	
MEAN WEIGHT (g)	536	430	525	
DEPTH RANGE (m)	352/1124	850/1117	352/1124	

TABLE XI - A: GREENLAND HALIBUT, DIV. 3L, 1997: length composition of the trawl catches.

LENGTH GROUP	JAN.	FEB.	MAR.	APR.	MAY	JUL.	AUG.	SEP.	OCT.	NOV.	1st Q.	2nd Q.	3rt Q.	4th Q.	YEAR 1997	LENGTH GROUP
18				0.6								0.4			0.1	18
20			0.3	0.5						0.9	0.2	0.3		0.4	0.2	20
22				0.1		1.1	0.2					0.1	0.4		0.1	22
24			0.8	1.4	0.6						0.4	1.1			0.4	24
26	1.0		3.0	3.7	2.4	1.7	0.5		0.5	0.8	2.0	3.2	0.6	0.6	1.7	26
28	1.0	0.6	9.5	12.2	4.6	10.7	3.2	1.1	1.9	0.9	5.9	9.4	4.5	1.4	5.7	28
30	2.4	1.3	19.5	29.7	16.9	17.2	6.6	0.9	2.5	3.1	12.1	25.0	7.7	2.8	13.0	30
32	7.6	5.9	32.7	53.5	31.4	31.2	16.4	4.6	5.5	9.6	21.8	45.4	16.9	7.4	24.9	32
34	10.3	10.1	80.8	94.9	59.0	53.5	37.4	15.5	17.7	23.4	51.0	81.7	35.5	20.4	50.4	34
36	21.3	14.6	116.7	125.8	92.6	75.4	70.6	33.1	44.8	39.5	75.1	113.6	61.7	42.3	76.9	36
38	44.6	24.2	116.2	104.3	97.9	91.4	85.2	63.2	68.0	72.8	81.9	102.0	80.8	70.2	85.4	38
40	84.0	69.4	133.7	116.4	130.4	98.2	107.3	106.4	108.3	107.0	109.8	121.6	104.7	107.7	111.6	40
42	171.0	140.8	109.4	89.8	112.6	90.5	105.4	121.6	130.9	137.3	129.4	98.2	106.0	133.9	115.0	42
44	217.0	249.4	90.4	87.1	114.4	86.6	93.8	125.8	128.6	145.1	150.3	97.1	100.7	136.3	119.1	44
46	194.1	209.2	80.3	72.7	93.0	98.4	96.2	135.7	119.8	110.0	131.3	80.2	107.4	115.2	106.8	46
48	95.8	100.3	51.4	52.8	65.8	68.2	80.6	85.9	90.2	101.9	71.0	57.6	78.9	95.7	73.8	48
50	50.9	52.6	39.4	41.6	56.6	67.3	80.2	98.5	81.7	75.9	44.6	47.1	81.9	79.0	61.4	50
52	32.9	38.9	21.0	26.3	31.0	53.6	59.6	64.0	52.1	56.2	27.2	28.0	59.3	54.0	40.8	52
54	28.0	29.4	14.8	19.2	23.2	47.6	47.7	43.3	38.7	38.2	20.7	20.6	46.5	38.4	30.6	54
56	26.7	14.4	18.4	14.2	11.5	33.9	32.3	31.6	28.9	25.3	19.4	13.2	32.5	27.2	22.4	56
58	4.1	9.9	14.2	9.8	12.3	22.8	27.9	18.2	22.3	16.8	11.1	10.7	24.0	19.7	15.9	58
60	2.2	7.6	11.9	6.5	10.3	15.0	14.0	16.2	14.7	11.6	8.9	7.9	14.9	13.2	10.9	60
62	1.0	8.2	7.4	5.4	5.8	8.6	7.0	8.8	9.0	6.3	6.2	5.5	7.9	7.7	6.7	62
64	1.8	4.1	5.2	7.3	4.4	7.5	6.2	2.9	8.4	3.8	4.2	6.2	5.6	6.3	5.6	64
66		1.8	3.2	4.1	4.7	5.0	3.1	4.5	6.2	3.0	2.2	4.3	4.0	4.7	3.8	66
68	0.5	1.9	3.1	3.8	1.4	3.3	3.2	3.9	5.0	2.2	2.3	2.9	3.4	3.7	3.0	68
70	0.5		2.8	2.9	2.2	1.8	2.6	3.0	2.6	1.0	1.7	2.6	2.5	1.9	2.2	70
72		0.3	2.8	2.7	2.3	2.4	2.3	3.3	1.9	0.9	1.7	2.6	2.6	1.4	2.1	72
74	0.5	1.2	1.5	1.8	2.0	2.6	1.8	1.7	2.5	1.3	1.2	1.8	1.9	2.0	1.7	74
76	0.6	0.7	3.2	2.0	2.8	1.7	2.1	1.3	2.6	1.3	2.1	2.3	1.8	2.0	2.1	76
78			2.3	1.1	2.2	1.5	1.6	1.2	1.1	1.3	1.4	1.5	1.5	1.2	1.4	78
80		0.4	1.6	1.4	1.6	0.7	1.8	1.7	0.7	0.9	1.0	1.5	1.5	0.8	1.2	80
82	0.2	1.4	0.6	1.5	0.9		0.8	0.2	1.7	0.9	0.7	1.3	0.4	1.3	0.9	82
84		0.7	0.7	1.1	0.6		0.8	0.9	0.5	0.7	0.5	0.9	0.6	0.6	0.7	84
86			0.5	0.4	1.0	0.7	0.7	0.2	0.4		0.3	0.6	0.6	0.2	0.5	86
88		0.5	0.2	1.1	0.2		0.4	0.2		0.4	0.2	0.8	0.2	0.2	0.4	88
90				0.04	0.9		0.7	0.3				0.3	0.4		0.2	90
92			0.3	0.2	0.4			0.2	0.4		0.2	0.3	0.1	0.2	0.2	92
94																94
96																96
98																98
100																100
102																102
104					0.1							0.03			0.01	104
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	16	17	40	33	29	25	43	39	50	39	73	62	107	89	331	
SAMPLING WEIGHT(Kg)	1886	1516	2787	2816	2544	1925	4194	3418	4124	3106	6190	5360	9537	7230	28317	
No.F.MEASURED	2204	1662	3117	2958	2429	2085	4265	3339	4080	3198	6983	5387	9689	7278	29337	
MEAN LENGTH(cm)	45.8	46.6	43.4	42.8	44.2	45.5	46.4	47.4	47.1	46.3	44.5	43.3	46.4	46.7	45.1	
MEAN WEIGHT (g)	822	889	765	743	810	882	934	969	959	896	803	768	930	930	849	
DEPTH RANGE (m)	780/1159	759/1194	704/1199	743/1188	687/1190	689/1160	698/1026	695/1187	682/1188	718/1252	704/1199	687/1190	689/1187	682/1252	682/1252	

TABLE XI - B: GREENLAND HALIBUT , DIV.3L, 1997. age composition (‰), mean length (cm) and mean weight (Kg) at age of the trawl catches.

AGE	JAN.			FEB.			MAR.			APR.			MAY			AGE
	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	
2							0.3	21.0	0.058	1.1	19.9	0.049				2
3	1.7	29.7	0.190	0.9	31.3	0.223	9.9	29.6	0.186	14.9	29.7	0.191	7.4	29.9	0.193	3
4	15.5	35.2	0.337	12.1	35.4	0.340	95.2	34.7	0.319	116.7	34.3	0.307	71.4	34.6	0.318	4
5	99.8	40.5	0.533	82.0	41.0	0.556	225.8	38.1	0.436	235.5	37.5	0.416	195.6	38.3	0.445	5
6	352.1	43.9	0.694	333.7	44.3	0.716	313.7	41.6	0.586	291.4	41.4	0.580	316.9	42.1	0.610	6
7	369.4	46.4	0.833	372.0	46.5	0.839	189.7	45.6	0.791	180.0	45.8	0.805	222.0	46.0	0.816	7
8	103.0	50.6	1.117	116.3	50.0	1.069	69.8	50.4	1.105	71.0	50.5	1.110	90.4	50.3	1.091	8
9	34.3	55.1	1.468	36.9	55.1	1.474	29.1	55.8	1.538	28.9	55.1	1.478	33.0	55.0	1.466	9
10	11.2	56.9	1.644	18.1	58.6	1.825	19.1	59.3	1.892	15.7	59.0	1.863	18.1	58.6	1.819	10
11	9.8	57.8	1.740	14.9	60.3	2.030	18.5	61.0	2.104	15.3	61.4	2.164	16.6	60.8	2.094	11
12	1.5	66.3	2.795	6.3	64.9	2.602	14.1	67.6	3.020	13.2	67.3	2.950	13.4	67.6	3.017	12
13	0.6	70.0	3.355	3.2	70.5	3.503	6.4	71.9	3.709	6.6	72.0	3.733	6.2	72.2	3.763	13
14	0.7	72.9	3.779	1.9	75.2	4.278	4.9	74.6	4.118	5.4	74.5	4.126	4.3	75.7	4.351	14
15	0.4	76.9	4.529	1.4	81.2	5.421	3.2	77.4	4.658	3.4	79.2	5.031	4.0	81.6	5.593	15
16	0.0	83.0	5.746	0.3	85.5	6.378	0.3	87.8	6.993	0.6	87.1	6.793	0.4	88.0	7.047	16
17				0.1	89.0	7.257	0.0	89.0	7.257	0.2	89.0	7.257	0.1	99.3	10.712	17
TOTAL	1000			1000			1000			1000			1000			

TABLE XI - B: count.

AGE	JUL			AUG.			SEP.			OCT.			NOV.			AGE
	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	
2	1.5	24.1	0.093	0.4	24.3	0.096				0.2	27.0	0.134	1.1	22.3	0.074	2
3	28.5	31.6	0.234	13.2	32.6	0.261	4.1	34.1	0.303	6.1	33.0	0.274	7.3	33.0	0.272	3
4	109.3	35.5	0.344	82.5	36.4	0.372	42.5	37.4	0.407	50.4	37.1	0.398	54.7	36.9	0.388	4
5	173.3	39.2	0.477	170.0	39.6	0.493	136.1	40.6	0.532	146.1	40.4	0.524	151.5	40.4	0.525	5
6	233.4	43.2	0.661	250.2	43.4	0.669	284.3	44.0	0.698	284.8	43.8	0.687	296.4	43.8	0.687	6
7	187.1	47.3	0.892	201.5	47.5	0.904	244.9	47.4	0.900	237.4	47.2	0.884	242.0	47.2	0.882	7
8	102.4	51.3	1.163	113.8	51.3	1.164	126.8	51.0	1.141	114.5	50.9	1.136	116.0	50.9	1.130	8
9	60.5	55.0	1.467	64.4	55.0	1.465	62.4	54.6	1.433	57.1	54.9	1.459	53.6	54.5	1.422	9
10	54.7	57.9	1.748	54.1	57.8	1.731	51.1	57.7	1.732	50.4	58.4	1.799	42.1	57.5	1.709	10
11	28.0	61.6	2.176	26.2	61.4	2.153	25.2	61.8	2.201	28.3	62.2	2.242	19.7	61.3	2.136	11
12	13.4	66.4	2.850	13.1	67.4	3.038	13.3	67.2	2.970	14.5	67.3	2.983	9.3	66.3	2.872	12
13	4.1	70.7	3.497	4.8	73.6	4.058	4.4	71.8	3.736	4.8	71.9	3.718	2.8	71.6	3.666	13
14	2.5	75.8	4.327	3.2	77.2	4.594	3.0	76.0	4.382	3.5	76.6	4.502	1.8	76.9	4.527	14
15	0.8	77.4	4.621	1.8	81.4	5.474	1.7	80.9	5.391	1.6	81.7	5.564	1.2	82.4	5.692	15
16	0.1	79.0	4.871	0.6	86.2	6.586	0.4	85.7	6.465	0.3	82.2	5.573	0.4	84.3	6.112	16
17	0.2	82.7	5.736	0.2	82.5	5.685	0.1	80.9	5.318	0.1	82.3	5.646	0.1	79.0	4.871	17
TOTAL	1000			1000			1000			1000			1000			

TABLE XI - B: count.

AGE	1st Q.			2nd Q.			3rd Q.			4th Q.			YEAR 1997			AGE
	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	
2	0.2	21.0	0.058	0.7	19.9	0.049	0.6	24.1	0.094	0.6	23.0	0.084	0.4	22.1	0.074	2
3	6.3	29.6	0.188	12.2	29.7	0.191	14.8	32.3	0.251	6.7	33.0	0.273	14.2	31.5	0.234	3
4	60.9	34.7	0.321	100.1	34.4	0.310	78.4	36.2	0.367	52.4	37.0	0.393	83.4	35.5	0.345	4
5	169.1	38.7	0.460	220.8	37.8	0.425	161.6	39.7	0.498	148.6	40.4	0.525	180.0	39.0	0.472	5
6	326.2	42.7	0.638	300.8	41.7	0.591	255.2	43.5	0.676	290.2	43.8	0.687	286.0	43.0	0.650	6
7	266.0	46.1	0.817	195.4	45.9	0.810	209.6	47.4	0.900	239.5	47.2	0.883	218.1	46.7	0.852	7
8	86.5	50.3	1.098	78.1	50.4	1.102	114.5	51.2	1.157	115.2	50.9	1.133	96.2	50.7	1.119	8
9	31.8	55.4	1.507	30.4	55.1	1.473	62.9	54.9	1.457	55.5	54.7	1.443	44.4	54.8	1.454	9
10	17.1	58.8	1.842	16.6	58.8	1.845	53.4	57.8	1.736	46.5	58.0	1.761	32.3	58.1	1.764	10
11	15.9	60.4	2.040	15.8	61.1	2.137	26.4	61.6	2.172	24.3	61.8	2.202	20.6	61.1	2.126	11
12	9.7	67.2	2.958	13.3	67.4	2.975	13.2	67.1	2.972	12.1	66.9	2.944	12.7	66.9	2.926	12
13	4.5	71.7	3.670	6.5	72.1	3.744	4.5	72.4	3.845	3.9	71.8	3.700	5.3	71.8	3.709	13
14	3.4	74.6	4.120	5.0	74.9	4.197	3.0	76.6	4.480	2.7	76.7	4.510	3.7	75.3	4.269	14
15	2.2	77.9	4.750	3.6	80.1	5.259	1.6	80.7	5.333	1.4	82.0	5.616	2.2	79.8	5.160	15
16	0.2	87.2	6.819	0.5	87.4	6.867	0.4	85.5	6.433	0.3	83.3	5.859	0.4	86.1	6.550	16
17	0.0	89.0	7.257	0.2	91.3	8.022	0.2	82.3	5.637	0.1	81.1	5.360	0.2	86.0	6.615	17
TOTAL	1000			1000			1000			1000			1000			

TABLE XII - A: GREENLAND HALIBUT, DIV. 3M, 1997: length composition of the trawl catches.

LENGTH GROUP	JAN.	MAR.	APR.	MAY	JUL.	AUG.	SEP.	OCT.	1st Q.	2nd Q.	3rt Q.	4th Q.	YEAR 1997	LENGTH GROUP
16			1.0	2.1						1.3			0.8	16
18			2.1	2.1						2.1			1.3	18
20			4.8	2.1						4.1			2.4	20
22			4.9	6.6						5.4			3.2	22
24			4.8	22.0			0.6			9.7	0.3		5.9	24
26		1.0	23.8	16.7			1.7		0.9	21.8	1.0		13.5	26
28		3.7	53.1	42.3		1.0	1.6	7.5	3.2	50.0	1.2	7.5	31.0	28
30		9.9	48.1	28.7	6.5	7.1	5.2	9.0	8.7	42.6	5.9	9.0	28.4	30
32		12.4	63.9	35.1	17.4	15.1	16.0	16.0	10.8	55.7	15.9	16.0	39.4	32
34	3.5	30.8	92.5	55.1	36.8	33.5	29.2	43.1	27.5	81.8	31.4	43.1	61.6	34
36	7.0	47.6	125.1	71.0	82.2	58.9	66.7	43.7	42.6	109.7	66.1	43.7	89.4	36
38	58.0	60.8	108.4	65.1	55.3	78.1	81.9	112.5	60.4	96.1	77.8	112.5	87.5	38
40	135.5	107.4	127.2	74.7	62.4	91.4	108.1	100.8	110.8	112.3	97.9	100.8	108.1	40
42	208.5	128.4	84.7	83.8	108.5	98.1	125.6	124.5	138.2	84.4	115.3	124.5	99.4	42
44	154.5	151.0	70.8	80.6	88.7	125.9	120.4	93.2	151.4	73.6	118.5	93.2	94.7	44
46	183.5	142.5	64.1	93.4	95.0	93.6	130.4	112.0	147.5	72.4	115.2	112.0	92.9	46
48	129.5	95.4	40.7	62.5	114.4	94.4	82.8	109.5	99.6	46.9	89.9	109.5	65.3	48
50	32.5	68.1	29.0	59.3	73.1	77.3	80.2	58.3	63.7	37.6	78.5	58.3	51.9	50
52	41.5	41.5	21.6	58.6	55.7	57.2	62.0	39.9	41.5	32.1	59.8	39.9	40.7	52
54	23.0	21.7	10.1	23.4	34.2	47.0	38.2	44.6	21.9	13.9	40.4	44.6	22.4	54
56	23.0	17.5	5.8	33.5	23.8	34.0	17.6	33.6	18.2	13.7	23.3	33.6	17.1	56
58		16.5	3.9	20.7	36.7	28.0	9.0	15.5	14.5	8.6	17.9	15.5	11.9	58
60		13.3	5.1	4.0	9.0	18.6	5.9	3.8	11.7	4.8	10.2	3.8	7.0	60
62		10.4	2.2	5.5	12.9	6.2	6.4	4.9	9.1	3.1	7.1	4.9	4.9	62
64		3.9	0.5	14.6	13.3	4.4	2.6	4.9	3.5	4.6	4.3	4.9	4.4	64
66		2.1		6.8	6.7	1.4	1.1	2.5	1.8	1.9	1.9	2.5	1.9	66
68		0.8	0.1	3.7	2.2	3.4	1.5	3.6	0.7	1.1	2.2	3.6	1.4	68
70		0.6		2.5	6.7	2.6	0.2	4.5	0.5	0.7	1.7	4.5	1.0	70
72		1.5		2.2	12.8	1.9		4.5	1.3	0.6	2.0	4.5	1.1	72
74		2.1		3.7	6.7	1.2	0.7	2.0	1.8	1.1	1.5	2.0	1.3	74
76		0.7	0.6	3.4	15.1	5.7	1.8		0.6	1.4	4.5		2.1	76
78		3.6	1.0	0.4	8.7	2.7	1.3	3.6	3.2	0.8	2.6	3.6	1.6	78
80		1.1		8.7	8.6	3.5	0.9	1.8	1.0	2.5	2.6	1.8	2.3	80
82		2.6		4.6	4.5	3.1			2.3	1.3	1.4		1.4	82
84		0.7				2.3			0.6		0.7		0.3	84
86				0.4		1.2	0.2			0.1	0.5		0.2	86
88		0.5				0.9			0.5		0.3		0.1	88
90														90
92					2.2						0.2		0.1	92
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	2	20	13	11	5	14	20	5	22	24	39	5	90	
SAMPLING WEIGHT(Kg)	170	1215	714	729	420	1111	1368	348	1385	1443	2899	348	6076	
No.F.MEASURED	206	1259	1107	776	327	1128	1591	335	1465	1883	3046	335	6729	
MEAN LENGTH(cm)	45.5	46.0	39.7	44.2	48.5	47.1	45.4	45.7	45.9	41.0	46.3	45.7	43.0	
MEAN WEIGHT (g)	797	886	555	879	1152	992	836	879	875	647	919	879	750	
DEPTH RANGE (m)	759/1043	801/1089	870/1079	887/1260	867/1050	847/1062	700/1055	878/1020	759/1089	870/1260	700/1062	878/1020	700/1260	

TABLE XII - B: GREENLAND HALIBUT, DIV.3M, 1997: age composition (‰), mean length (cm) and mean weight (Kg) at age of the trawl catches

AGE	JAN.			MAR.			APR.			MAY			AGE
	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	
2							6.9	19.8	0.049	5.3	18.6	0.040	2
3				3.4	30.0	0.194	51.9	27.9	0.156	62.0	26.7	0.134	3
4	8.8	38.0	0.422	44.3	34.9	0.325	157.3	32.7	0.266	113.9	33.0	0.274	4
5	113.3	41.4	0.566	130.3	39.5	0.492	257.1	37.2	0.404	142.7	37.8	0.427	5
6	374.0	43.7	0.680	312.2	43.3	0.666	283.7	41.2	0.567	230.0	42.4	0.629	6
7	350.9	46.3	0.830	280.5	46.5	0.841	160.0	45.5	0.791	193.1	46.8	0.865	7
8	94.9	49.6	1.044	120.2	50.1	1.079	50.7	50.2	1.087	108.3	51.2	1.162	8
9	32.9	54.1	1.375	42.9	55.1	1.481	14.9	54.7	1.438	55.3	55.6	1.529	9
10	16.4	55.9	1.531	23.7	58.9	1.846	7.2	57.8	1.741	28.8	58.9	1.860	10
11	8.6	56.5	1.589	19.4	60.5	2.055	6.3	59.0	1.859	23.2	62.1	2.294	11
12				11.3	67.1	2.954	2.7	65.2	2.697	14.0	69.8	3.328	12
13				5.5	72.6	3.855	0.7	69.6	3.376	9.7	74.6	4.148	13
14				2.8	76.6	4.507	0.4	75.9	4.311	7.9	75.1	4.208	14
15				2.9	80.5	5.254	0.3	77.8	4.643	5.4	79.5	5.047	15
16				0.4	85.0	6.250				0.5	83.4	5.843	16
17				0.1	89.0	7.257							17
TOTAL	1000			1000			1000			1000			

TABLE XII - B: count.

AGE	JUL			AUG.			SEP.			OCT.			AGE
	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	
2							1.1	26.0	0.119				2
3	10.1	33.5	0.284	11.0	33.0	0.270	11.3	32.5	0.259	16.9	32.5	0.258	3
4	76.1	36.1	0.361	71.9	36.4	0.371	74.3	36.6	0.377	83.5	36.1	0.364	4
5	140.4	39.3	0.481	151.6	39.8	0.500	168.8	39.9	0.505	176.2	39.8	0.499	5
6	228.0	43.9	0.696	251.4	43.6	0.681	290.4	43.6	0.681	265.6	43.5	0.675	6
7	215.7	47.6	0.908	218.0	47.4	0.896	234.2	47.3	0.889	216.7	47.2	0.884	7
8	114.4	51.1	1.150	116.0	51.2	1.154	114.2	50.9	1.129	103.4	50.7	1.121	8
9	57.6	55.2	1.491	64.1	54.9	1.464	48.5	54.0	1.383	51.4	54.5	1.425	9
10	51.7	58.9	1.859	55.5	57.6	1.708	34.2	56.9	1.646	45.0	57.3	1.682	10
11	34.0	63.7	2.464	27.1	61.4	2.161	12.7	60.8	2.081	19.6	62.2	2.271	11
12	32.9	71.2	3.580	15.0	69.2	3.340	6.2	65.7	2.788	13.0	68.8	3.192	12
13	16.9	76.7	4.493	7.0	74.3	4.122	2.2	73.2	3.924	4.4	72.3	3.747	13
14	13.1	77.4	4.609	5.9	78.8	4.909	1.3	77.2	4.565	2.5	73.5	3.876	14
15	7.3	81.0	5.427	3.8	83.1	5.826	0.4	80.5	5.224	1.3	77.0	4.516	15
16	1.1	80.5	5.202	1.0	84.5	6.134	0.1	79.0	4.871	0.3	79.0	4.871	16
17	0.7	79.0	4.871	0.4	82.6	5.696	0.1	81.1	5.348	0.3	79.0	4.871	17
TOTAL	1000			1000			1000			1000			

TABLE XII - B: count.

AGE	1st Q.			2nd Q.			3rd Q.			4th Q.			YEAR 1997			AGE
	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	
2				6.5	19.5	0.046	0.7	26.0	0.119				5.1	21.0	0.064	2
3	3.0	30.0	0.194	54.7	27.5	0.149	11.1	32.8	0.265	16.9	32.5	0.258	47.7	28.9	0.178	3
4	39.9	35.0	0.328	145.0	32.8	0.268	73.8	36.4	0.373	83.5	36.1	0.364	124.3	34.1	0.306	4
5	128.3	39.7	0.500	224.5	37.3	0.409	160.3	39.8	0.501	176.2	39.8	0.499	194.8	38.4	0.450	5
6	319.8	43.3	0.668	268.4	41.5	0.582	271.5	43.6	0.683	265.6	43.5	0.675	260.6	42.6	0.634	6
7	289.1	46.5	0.839	169.4	45.9	0.815	227.2	47.3	0.893	216.7	47.2	0.884	189.9	46.6	0.852	7
8	117.1	50.1	1.076	67.1	50.7	1.121	114.8	51.0	1.139	103.4	50.7	1.121	84.1	50.7	1.117	8
9	41.7	55.0	1.471	26.4	55.3	1.492	54.3	54.5	1.425	51.4	54.5	1.425	36.4	54.6	1.435	9
10	22.8	58.6	1.818	13.3	58.5	1.814	42.7	57.4	1.700	45.0	57.3	1.682	24.7	57.8	1.736	10
11	18.1	60.3	2.027	11.1	60.8	2.118	19.5	61.6	2.190	19.6	62.2	2.271	14.6	61.1	2.134	11
12	9.9	67.1	2.954	5.9	68.3	3.122	11.9	68.8	3.247	13.0	68.8	3.192	8.5	67.9	3.100	12
13	4.8	72.6	3.855	3.3	73.8	4.023	5.3	74.9	4.208	4.4	72.3	3.747	4.0	73.7	4.018	13
14	2.5	76.6	4.507	2.5	75.1	4.218	4.0	78.0	4.736	2.5	73.5	3.876	2.9	76.6	4.481	14
15	2.6	80.5	5.254	1.8	79.3	4.998	2.2	82.1	5.617	1.3	77.0	4.516	2.0	80.0	5.145	15
16	0.4	85.0	6.250	0.1	83.4	5.843	0.5	82.9	5.760	0.3	79.0	4.871	0.3	83.7	5.949	16
17	0.1	89.0	7.257				0.3	81.1	5.367	0.3	79.0	4.871	0.1	82.3	5.662	17
TOTAL	1000			1000			1000			1000			1000			

TABLE XIII - A: GREENLAND HALIBUT, DIV. 3N, 1997:
length composition of the trawl catches.

LENGTH GROUP	JAN.	FEB.	1st Q. = YEAR 97	LENGTH GROUP
28	4.2		2.7	28
30	3.9		2.5	30
32	1.7		1.1	32
34	28.7	7.5	21.1	34
36	37.2	19.0	30.7	36
38	63.7	15.0	46.3	38
40	124.5	141.5	130.6	40
42	160.0	278.3	202.3	42
44	178.5	94.5	148.5	44
46	123.2	137.4	128.3	46
48	97.0	162.6	120.4	48
50	55.2	72.1	61.2	50
52	42.4	19.0	34.0	52
54	45.8	34.0	41.6	54
56	33.9	7.5	24.5	56
58		11.6	4.1	58
TOTAL	1000	1000	1000	
No. SAMPLES	4	2	6	
SAMPLING WEIGHT(Kg)	494	86	580	
No.F.MEASURED	641	108	749	
MEAN LENGTH(cm)	45.2	45.7	45.4	
MEAN WEIGHT (g)	796	807	800	
DEPTH RANGE (m)	352/1167	850/1147	352/1167	

TABLE XIII - B: GREENLAND HALIBUT , DIV.3N, 1997: age composition (‰), mean length (cm) and mean weight (Kg) at age of the trawl catches.

AGE	JAN.			FEB.			1st Q.=YEAR 1997			AGE
	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	
3	2.1	29.7	0.186				1.3	29.7	0.186	3
4	24.6	35.2	0.336	7.8	37.0	0.387	18.6	35.5	0.344	4
5	128.4	39.9	0.504	99.1	41.3	0.563	118.0	40.3	0.522	5
6	346.9	43.2	0.659	393.4	43.6	0.676	363.5	43.3	0.666	6
7	321.7	46.3	0.832	343.3	46.7	0.853	329.5	46.5	0.840	7
8	110.7	51.5	1.182	111.6	50.3	1.092	111.1	51.1	1.149	8
9	45.5	54.8	1.435	29.8	55.2	1.478	39.9	54.9	1.446	9
10	10.8	55.1	1.462	9.9	56.3	1.577	10.4	55.5	1.501	10
11	9.3	56.1	1.550	5.1	56.0	1.547	7.8	56.1	1.550	11
TOTAL	1000			1000			1000			
No FISH AGED							1116			

TABLE XIV: AMERICAN PLAICE, DIV. 3L, 1997: length composition of the trawl catches.

LENGTH GROUP	JAN.	FEB.	MAR.	APR.	MAY	1st Q.	2nd Q.	YEAR 1997	LENGTH GROUP
20			1.7			1.4		0.7	20
22			1.7	1.0		1.4	0.5	1.0	22
24			17.1	4.6		14.0	2.6	8.8	24
26	20.4		28.8	8.6		26.6	4.9	16.7	26
28	61.2		56.4	20.6		55.1	11.8	35.3	28
30	142.9	17.5	106.4	69.9	5.0	108.6	42.1	78.1	30
32	244.9	17.5	114.7	144.5	8.4	130.0	86.2	110.0	32
34	346.9	52.6	117.2	127.7	19.5	148.1	81.3	117.6	34
36	61.2	52.6	144.0	178.9	44.1	128.8	121.2	125.3	36
38	61.2	175.4	99.6	117.6	83.3	96.7	102.9	99.6	38
40	40.8	193.0	95.5	84.8	136.5	91.0	107.0	98.3	40
42	20.4	105.3	73.7	115.3	131.3	67.1	122.2	92.3	42
44		105.3	52.5	50.7	121.1	46.8	80.8	62.4	44
46		122.8	30.2	34.2	114.3	29.1	68.5	47.1	46
48		87.7	25.7	20.0	161.3	24.2	80.5	49.9	48
50		35.1	17.3	11.1	103.7	15.4	50.7	31.6	50
52		17.5	13.1	6.8	51.9	11.4	26.1	18.1	52
54		17.5	3.1	3.6	16.4	3.2	9.1	5.9	54
56			1.3	0.3	3.3	1.0	1.6	1.3	56
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	1	1	17	11	6	19	17	36	
SAMPLING WEIGHT(Kg)	17	46	641	454	305	704	759	1463	
No.F.MEASURED	49	57	1277	716	347	1383	1063	2446	
MEAN LENGTH(cm)	34.2	42.7	37.3	38.0	45.1	37.0	41.0	38.9	
MEAN WEIGHT (g)	394	787	543	563	925	530	718	616	
DEPTH RANGE (m)	780/1159	1072/1180	704/1199	770/1188	687/1190	704/1199	687/1190	687/1199	

TABLE XV: AMERICAN PLAICE, DIV. 3N, 1997:
length composition of the trawl catches.

LENGTH GROUP	JAN.	FEB.	1st Q. = YEAR 97	LENGTH GROUP
24		10.9	0.9	24
26	19.6	61.7	23.0	26
28	94.3	131.7	97.4	28
30	154.5	140.8	153.4	30
32	225.0	254.5	227.4	32
34	289.5	160.7	278.9	34
36	109.5	83.6	107.4	36
38	77.8	66.2	76.8	38
40	23.6	37.3	24.7	40
42	6.2	30.9	8.3	42
44		10.9	0.9	44
46				46
48		10.9	0.9	48
TOTAL	1000	1000	1000	
No. SAMPLES	4	2	6	
SAMPLING WEIGHT(Kg)	61	39	100	
No.F.MEASURED	174	118	292	
MEAN LENGTH(cm)	33.9	33.7	33.9	
MEAN WEIGHT (g)	385	388	386	
DEPTH RANGE (m)	352/1167	850/1027	352/1167	

TABLE XVI-A: AMERICAN PLAICE, DIV. 3M, 1997:
length composition of the trawl catches.

LENGTH GROUP	APR.	MAY	2nd Q. = YEAR 97	LENGTH GROUP
34	50.0	81.6	67.1	34
36	33.3	81.6	59.5	36
38	100.0	122.4	112.2	38
40	233.3	122.4	173.3	40
42	83.3	122.4	104.5	42
44	33.3	40.8	37.4	44
46	100.0	61.2	79.0	46
48	166.7	142.9	153.8	48
50	100.0	122.4	112.2	50
52	66.7	81.6	74.8	52
54	16.7	20.4	18.7	54
56	16.7		7.6	56
TOTAL	1000	1000	1000	
No. SAMPLES	1	1	2	
SAMPLING WEIGHT(Kg)	57	45	102	
No.F.MEASURED	60	49	109	
MEAN LENGTH(cm)	44.9	44.3	44.6	
MEAN WEIGHT (g)	970	940	954	
DEPTH RANGE (m)	870/1071	165/1153	165/1153	

TABLE XVI - B: AMERICAN PLAICE, DIV. 3M, 1997: age composition (‰), mean length (cm) and mean weight (Kg) at age of the trawl catches.

AGE	APR.			MAY			2nd Q.=YEAR 1997			AGE
	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	AGE COMP.	MEAN LENGTH	MEAN WEIGHT	
5	15.2	36.1	0.457	25.8	35.5	0.435	20.9	35.7	0.443	5
6	63.4	39.7	0.633	67.1	39.2	0.609	65.4	39.5	0.620	6
7	249.6	41.5	0.740	259.7	40.6	0.692	255.1	41.0	0.713	7
8	56.1	41.1	0.706	60.5	40.4	0.670	58.5	40.7	0.686	8
9	142.8	44.8	0.950	135.7	44.5	0.939	138.9	44.6	0.944	9
10	111.2	46.2	1.043	104.8	46.6	1.069	107.7	46.4	1.057	10
11	185.4	46.6	1.075	169.4	46.5	1.069	176.7	46.6	1.072	11
12	60.5	49.0	1.247	56.3	49.5	1.284	58.2	49.3	1.267	12
13	12.7	49.4	1.254	11.8	49.5	1.265	12.2	49.5	1.259	13
14	39.8	51.6	1.455	46.9	51.7	1.464	43.7	51.6	1.460	14
15	15.1	52.3	1.508	18.5	52.3	1.508	17.0	52.3	1.508	15
16+	48.2	52.9	1.570	43.6	51.7	1.456	45.7	52.3	1.511	16+
TOTAL	1000.0			1000.0			1000.0			
No FISH AGED							421(*)			

(*) based on 97 EC survey, due to the lack of commercial age length key

TABLE XVII: ROUGHHEAD GRENADIER, DIV. 3L, 1997: length composition of the trawl catches.

LENGTH GROUP	JAN.	FEB.	MAR.	APR.	MAY	JUL.	AUG.	SEP.	OCT.	NOV.	1st Q.	2nd Q.	3rt Q.	4th Q.	YEAR 1997	LENGTH GROUP
7				2.8	9.3		2.0	1.2	1.1	4.4		7.2	1.3	3.1	3.6	7
8			104.5	34.1	28.6	5.0	9.2	5.7	17.5	12.0	25.5	30.4	7.0	14.2	18.3	8
9			67.5	76.1	65.4	19.0	19.2	28.1	44.7	39.8	16.5	68.8	22.7	41.8	43.0	9
10	1.5		84.3	123.9	140.5	124.4	107.7	113.7	119.0	134.6	21.2	135.2	113.4	128.4	117.6	10
11			269.3	208.2	205.5	242.6	268.2	263.7	241.4	231.6	65.8	206.3	261.4	235.5	219.4	11
12	2.2		168.4	177.3	120.7	228.7	226.1	246.6	241.5	211.6	41.9	138.8	234.9	223.5	184.9	12
13	49.3	10.4	60.4	81.0	108.0	135.7	148.8	150.2	134.6	127.5	37.3	99.4	146.8	130.3	117.4	13
14	151.4	105.4	121.3	86.0	104.4	71.7	86.0	97.8	78.8	54.2	126.6	98.5	88.0	64.0	86.6	14
15	181.4	198.1	53.9	59.5	74.6	60.8	59.2	52.6	44.1	72.0	156.6	69.8	56.8	60.9	70.5	15
16	180.1	231.3	20.1	45.2	31.5	52.5	38.1	24.5	30.3	38.2	160.5	35.9	35.4	35.1	45.8	16
17	142.2	161.6	30.2	31.4	36.2	19.9	16.7	4.1	12.9	27.2	122.2	34.7	12.2	21.5	31.5	17
18	125.5	142.0	20.1	23.2	26.5	4.9	10.9	8.2	9.3	19.2	106.0	25.4	8.6	15.2	24.2	18
19	72.2	110.0		11.4	7.3	6.5	4.0	1.2	11.0	9.9	68.9	8.6	3.3	10.4	12.7	19
20	37.9	14.6		3.0	3.5	5.1	2.8		4.1	4.6	19.8	3.3	2.1	4.4	4.7	20
21	15.0	10.1		0.9	3.6	2.9			0.3	0.9	9.5	2.8	0.6	0.7	2.0	21
22	3.8	8.9		7.3	1.9	3.4	1.3		0.8		4.8	3.6	1.2	0.3	2.0	22
23	13.3	5.3		6.9	3.5			0.7	1.6	4.2	7.0	4.6	0.3	3.2	3.1	23
24	11.5			6.1	10.0	2.1		1.3	0.8	2.2	4.3	8.7	0.9	1.7	3.9	24
25	9.8	2.4		10.9	7.9	6.8				1.1	4.6	8.8	1.3	0.7	3.7	25
26	2.9			2.7	9.1	3.2			1.8	1.3	1.1	7.1	0.6	1.5	3.0	26
27				2.1	2.3	1.7			2.3	1.7		2.2	0.3	1.9	1.4	27
28						3.2		0.2	1.3	0.9			0.7	1.1	0.5	28
29								0.2	0.7				0.1	0.3	0.1	29
30																30
31																31
32										0.6				0.4	0.1	32
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	17	11	2	16	15	13	31	25	36	26	30	31	69	62	192	
SAMPLING WEIGHT(Kg)	955	431	44	722	716	490	1363	1002	1476	1140	1430	1438	2854	2617	8339	
No.F.MEASURED	2190	1114	97	1255	1154	997	3255	2246	3064	2351	3401	2409	6498	5415	17723	
MEAN LENGTH(cm)	17.0	17.1	12.3	13.1	13.2	13.1	12.8	12.6	12.7	12.9	15.9	13.2	12.8	12.8	13.2	
MEAN WEIGHT (g)	496	488	204	266	273	253	222	212	228	242	421	271	224	236	259	
DEPTH RANGE (m)	780/1159	759/1103	753/1199	770/1188	687/1190	689/1160	698/1026	695/1187	682/1188	718/1252	753/1199	687/1190	689/1187	682/1252	682/1252	

TABLE XVIII: ROUGHHEAD GRENADIER, DIV. 3M, 1997: length composition of the trawl catches.

LENGTH GROUP	JAN.	APR.	MAY	JUL.	AUG.	SEP.	OCT.	1st Q.	2nd Q.	3rt Q.	4th Q.	YEAR 1997	LENGTH GROUP
7							12.0				12.0	0.3	7
8		31.8	19.6	10.0	2.3	1.4			23.9	2.5		12.1	8
9		65.6	31.4		6.6	56.7	80.7		43.5	33.6	80.7	38.7	9
10		182.7	141.4	96.0	130.8	179.3	89.9		156.0	154.3	89.9	151.0	10
11		227.4	248.7	136.1	268.4	249.7	205.1		241.2	245.8	205.1	238.8	11
12		178.3	176.4	137.9	225.7	154.7	267.0		177.1	178.4	267.0	177.2	12
13	7.8	101.5	96.6	110.5	109.6	134.3	201.8	7.8	98.3	123.3	201.8	112.2	13
14	219.5	80.3	120.0	74.6	90.4	75.5	51.2	219.5	106.0	80.7	51.2	93.6	14
15	222.5	44.1	59.6	108.6	76.1	61.1	16.0	222.5	54.1	70.9	16.0	64.3	15
16	168.2	53.5	58.1	62.5	43.9	32.9	22.2	168.2	56.5	39.6	22.2	48.8	16
17	148.8	17.4	14.0	80.9	8.6	36.3	24.0	148.8	15.2	30.6	24.0	25.3	17
18	110.8	14.2	24.2	51.3	19.9	10.3	8.0	110.8	20.6	17.5	8.0	20.2	18
19	65.9				13.2	4.6	12.0	65.9		7.2	12.0	5.0	19
20	29.5			30.1	4.4	0.3		29.5		4.5		2.8	20
21	11.6			26.0				11.6		2.4		1.4	21
22				10.0						0.9		0.5	22
23	7.8	3.2		20.1		3.0		7.8	1.1	3.5		2.4	23
24			10.2	10.0			10.1		6.6	0.9	10.1	3.7	24
25	7.8			10.0				7.8		0.9		0.6	25
26				15.1						1.4		0.7	26
27				10.0						0.9		0.5	27
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	2	6	5	4	9	16	3	2	11	29	3	45	
SAMPLING WEIGHT(Kg)	97	200	168	159	341	580	95	97	368	1080	95	1640	
No.F.MEASURED	259	461	352	225	759	1344	199	259	813	2328	199	3599	
MEAN LENGTH(cm)	16.7	12.4	12.9	15.1	12.9	12.6	12.6	16.7	12.7	13.0	12.6	12.9	
MEAN WEIGHT (g)	462	208	235	400	231	218	221	462	225	240	221	236	
DEPTH RANGE (m)	759/1043	870/1079	887/1260	867/1050	847/1062	700/1055	878/1020	759/1043	870/1260	700/1062	878/1020	700/1260	

TABLE XIX: ROUGHHEAD GRENADIER, DIV. 3N, 1997
length composition of the trawl catches.

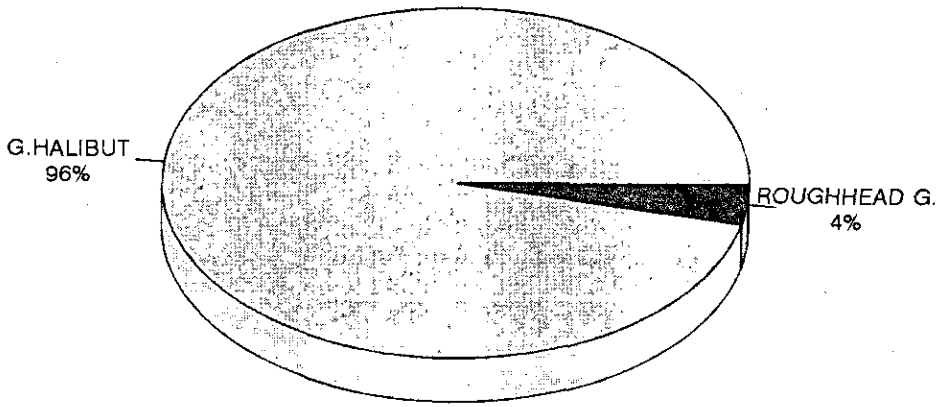
LENGTH GROUP	FEB. = YEAR 97	LENGTH GROUP
15	31.1	15
16	170.2	16
17	246.1	17
18	337.6	18
19	92.0	19
20	92.0	20
21	31.1	21
TOTAL	1000	
No. SAMPLES	2	
SAMPLING WEIGHT(Kg)	63	
No.F.MEASURED	96	
MEAN LENGTH(cm)	18.2	
MEAN WEIGHT (g)	576	
DEPTH RANGE (m)	850/1147	

TABLE XX: WITCH FLOUNDER, DIV. 3L, 1997: length composition of the trawl catches.

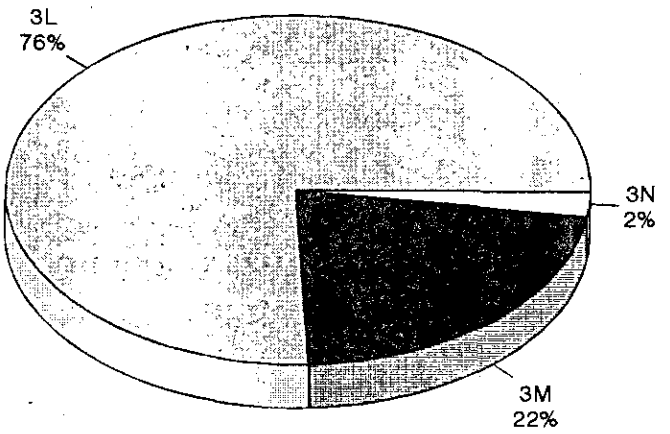
LENGTH GROUP	APR.	MAY	AUG.	OCT.	NOV.	2nd Q.	3rd Q.	4th Q.	YEAR 1997	LENGTH GROUP
24	1.7	2.5				2.1			2.0	24
26	1.6	2.5	13.0	24.5	35.0	2.0	13.0	32.4	3.6	26
28	8.9	7.3	12.7	12.1	25.2	8.2	12.7	22.0	8.9	28
30	27.2	39.3	51.7	62.4	50.4	33.0	51.7	53.3	34.1	30
32	51.1	53.1	51.7	96.2	43.4	52.1	51.7	56.1	52.3	32
34	70.3	102.2	140.6	133.7	193.0	85.8	140.6	178.7	90.6	34
36	125.6	117.6	178.9	164.0	162.2	121.8	178.9	162.7	124.0	36
38	137.3	133.0	64.0	110.5	127.3	135.2	64.0	123.2	134.3	38
40	145.0	158.1	38.3	106.6	95.1	151.3	38.3	97.9	148.1	40
42	133.4	137.2	26.0	87.5	106.3	135.2	26.0	101.8	133.0	42
44	118.4	111.8	89.6	73.2	106.3	115.2	89.6	98.3	114.2	44
46	67.3	63.7	115.6	46.2	32.2	65.6	115.6	35.6	64.3	46
48	35.0	17.1	38.0	29.3	8.4	26.3	38.0	13.4	25.8	48
50	35.0	25.4	51.7	23.4		30.4	51.7	5.6	29.3	50
52	25.5	18.5	51.3	30.4		22.2	51.3	7.4	21.6	52
54	9.8	7.9	38.0		15.4	8.9	38.0	11.7	9.2	54
56	4.3	2.4	26.0			3.4	26.0		3.3	56
58	1.7		13.0			0.9	13.0		0.9	58
60	0.9	0.3				0.6			0.5	60
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	13	12	2	4	2	25	2	6	33	
SAMPLING WEIGHT(Kg)	536	432	45	48	49	968	45	97	1110	
No.F.MEASURED	1062	892	78	111	121	1954	78	232	2264	
MEAN LENGTH(cm)	41.3	40.5	41.8	39.0	38.4	40.9	41.8	38.6	40.8	
MEAN WEIGHT (g)	524	490	582	438	409	507	582	416	503	
DEPTH RANGE (m)	770/1188	687/1190	773/980	689/1188	718/1252	687/1190	773/980	689/1252	687/1252	

TABLE XXI: WITCH FLOUNDER, DIV. 3M, 1997:
length composition of the trawl catches.

LENGTH GROUP	APR.	MAY	2nd Q. = YEAR 97	LENGTH GROUP
26	3.5		1.7	26
28	2.8	11.8	7.5	28
30	20.9	27.2	24.2	30
32	20.9	68.0	45.7	32
34	71.8	88.5	80.6	34
36	94.8	124.8	110.6	36
38	145.5	127.2	135.9	38
40	134.3	144.6	139.7	40
42	186.0	130.1	156.6	42
44	113.5	149.4	132.4	44
46	72.6	59.2	65.6	46
48	62.4	14.4	37.2	48
50	28.3	18.2	23.0	50
52	24.7	30.7	27.8	52
54	8.4		4.0	54
56	9.7	5.9	7.7	56
TOTAL	1000	1000	1000	
No. SAMPLES	5	4	9	
SAMPLING WEIGHT(Kg)	183	106	289	
No.F.MEASURED	355	225	580	
MEAN LENGTH(cm)	42.1	40.7	41.4	
MEAN WEIGHT (g)	552	497	523	
DEPTH RANGE (m)	870/1079	887/1260	870/1260	

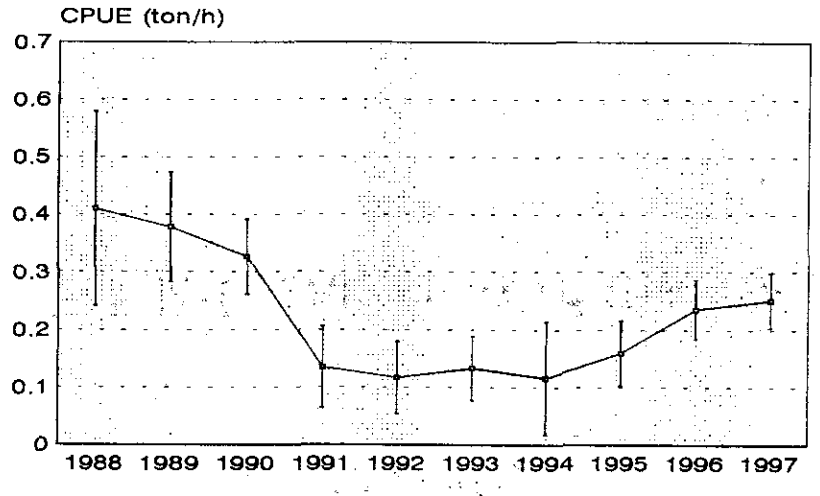


SPECIES

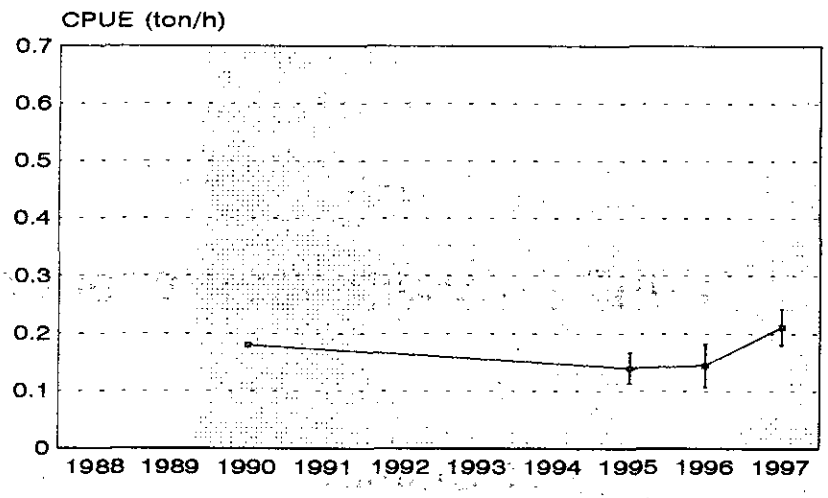


DIVISIONS

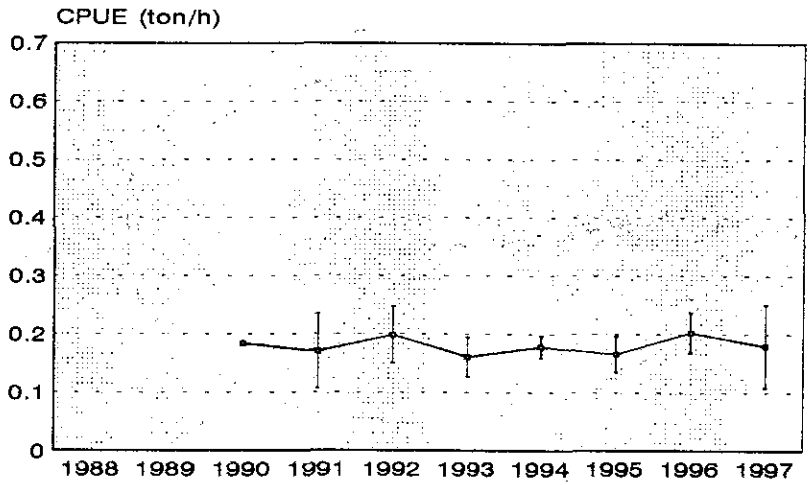
Fig.1: Breakdown of the 1997 Portuguese trawl directed effort.



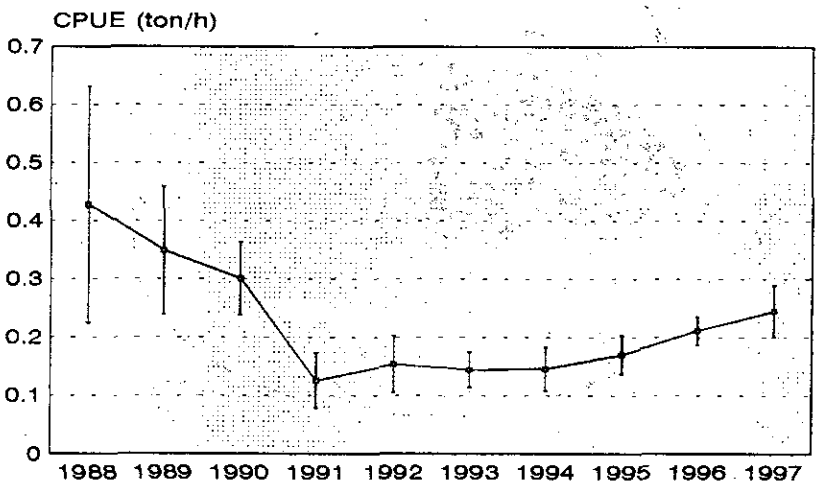
Div. 3L



Div. 3M



Div. 3N



Div. 3LMN

Fig 2: Greenland halibut trawl catch rates by division, 1988 - 1997.

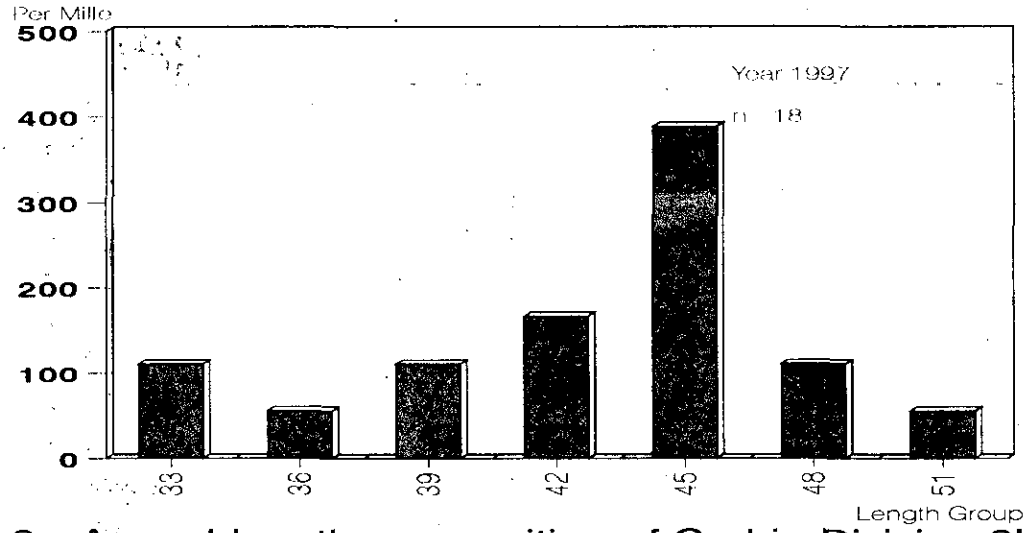


Fig. 3 - Annual length composition of Cod in Division 3L, trawl fishery in 1997.

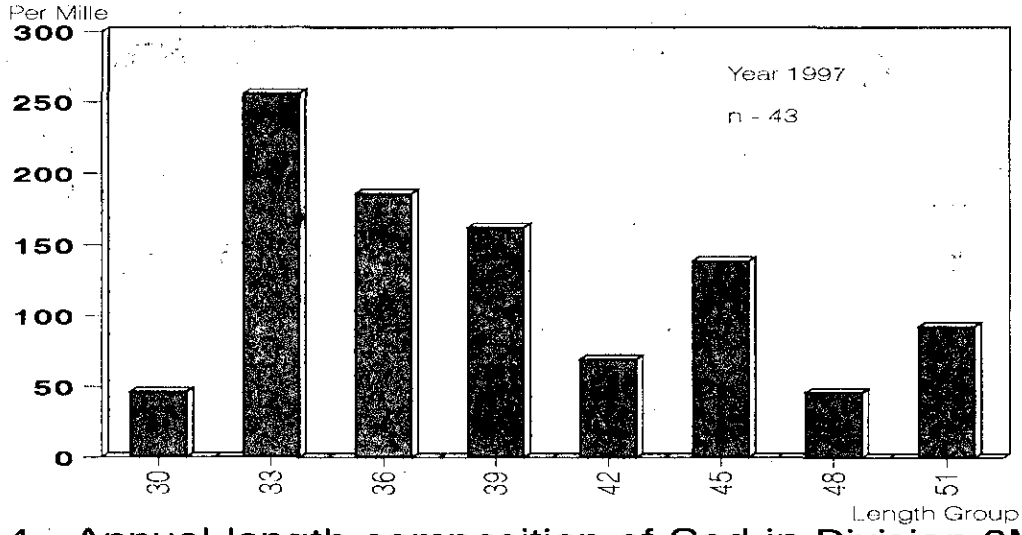


Fig. 4 - Annual length composition of Cod in Division 3M, trawl fishery in 1997.

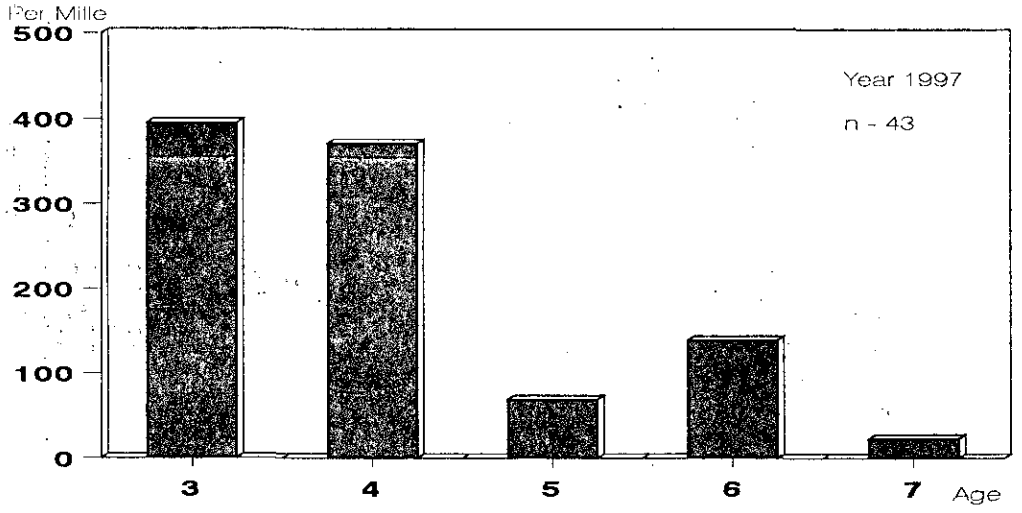


Fig. 5 - Annual age composition of Cod in Division 3M, trawl fishery in 1997.

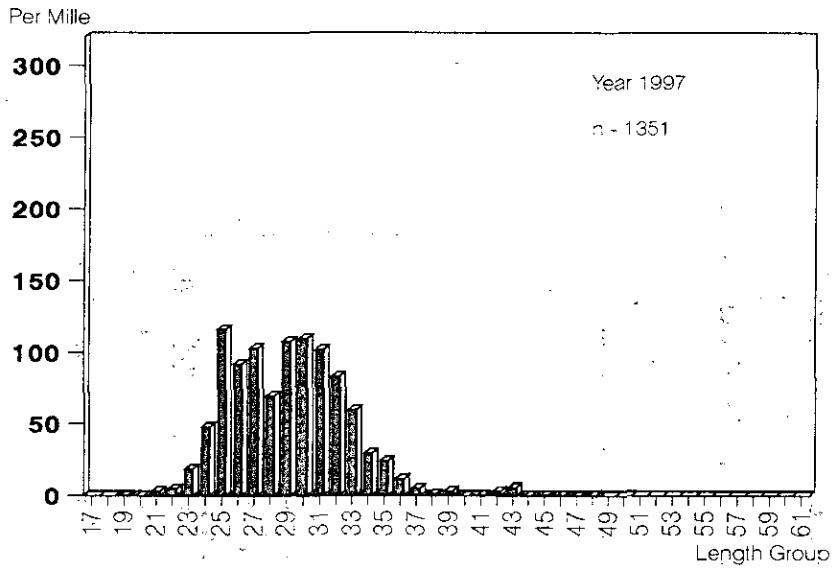


Fig. 6 - Annual length composition of Redfish, S.mentella in Division 3L, trawl fishery in 1997.

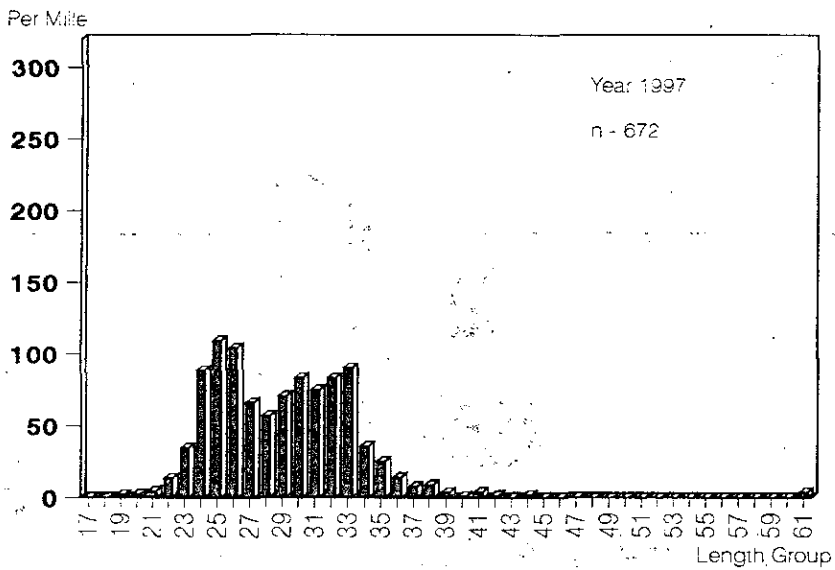


Fig. 7 - Annual length composition of Redfish, S.mentella in Division 3M, trawl fishery in 1997.

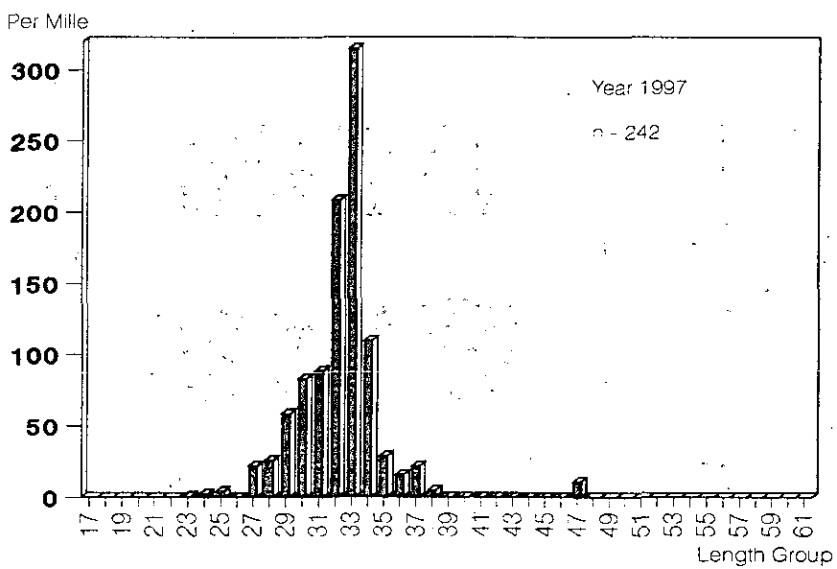


Fig. 8 - Annual length composition of Redfish, S.mentella in Division 3N, trawl fishery in 1997.

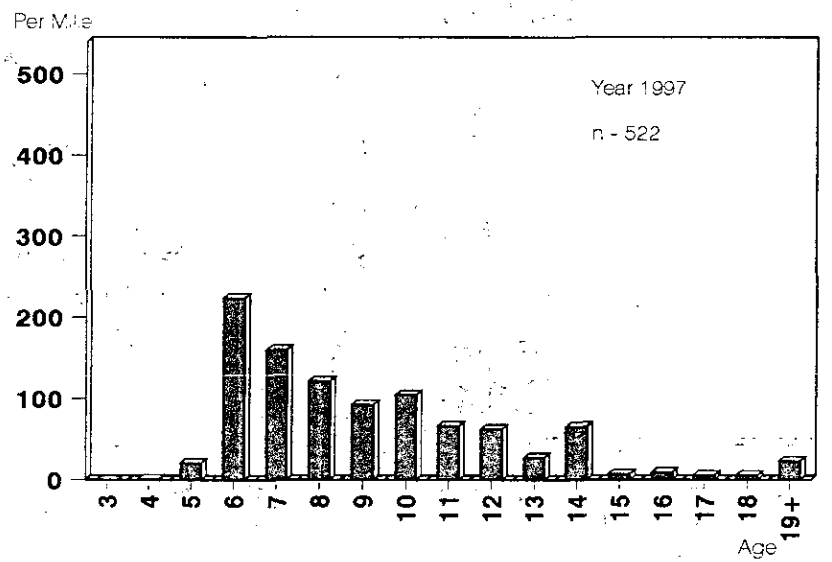


Fig. 9 - Annual age composition of Redfish S.mentella in Division 3M, trawl fishery in 1997.

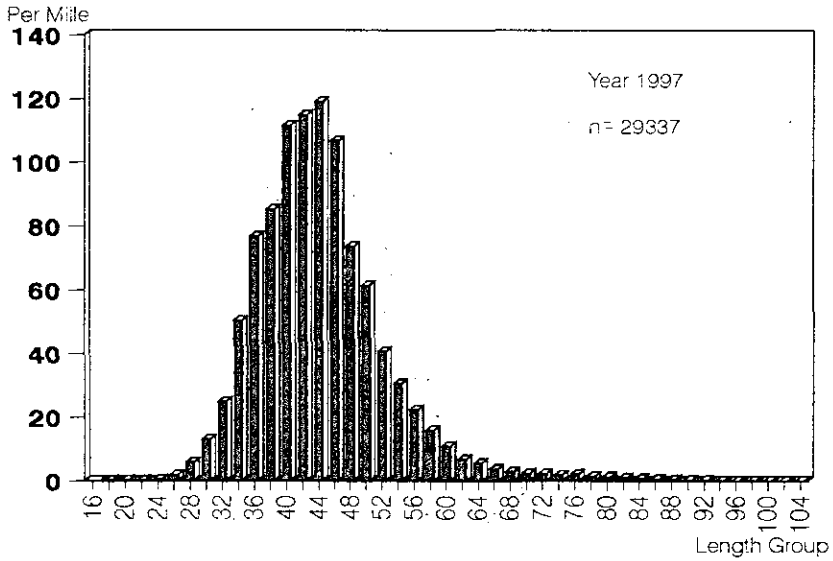


Fig.10 - Annual length composition of Greenland halibut, in Division 3L, trawl fishery in 1997.

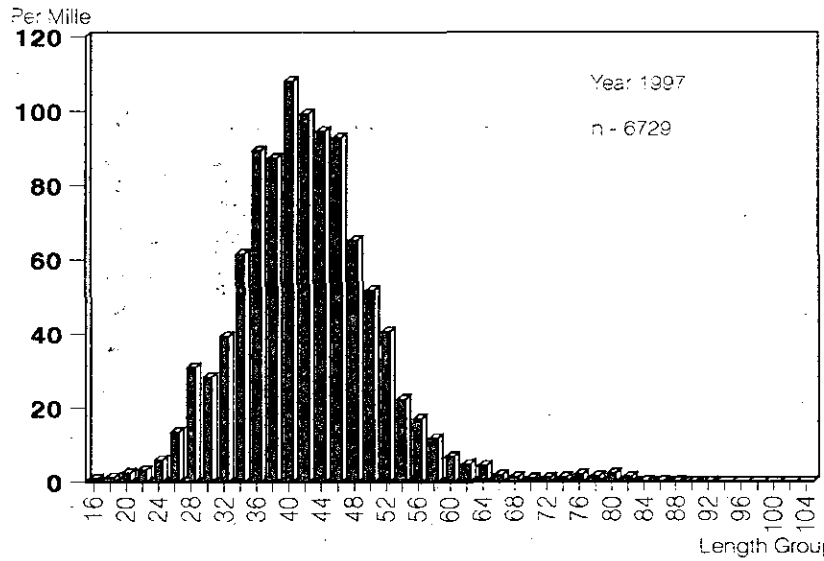


Fig.11 - Annual length composition of Greenland halibut, in Division 3M, trawl fishery in 1997.

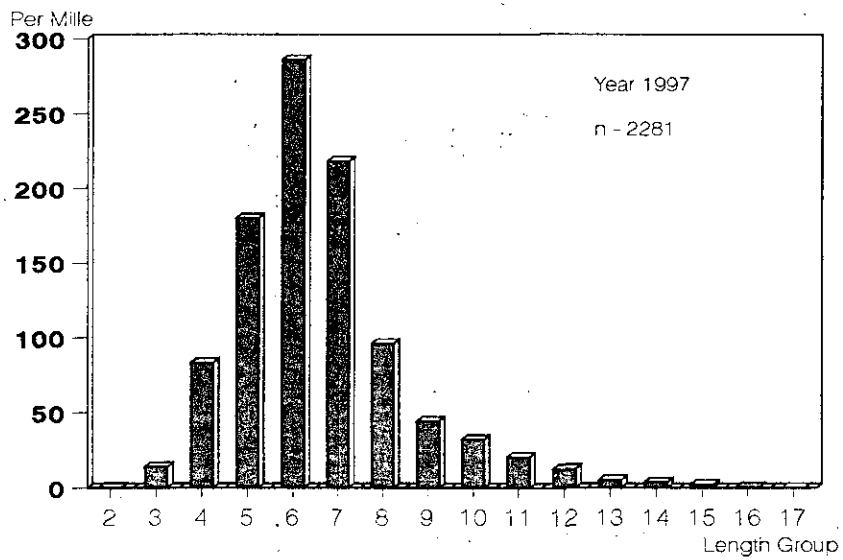


Fig.12 - Annual age composition of Greenland halibut, in Division 3L, trawl fishery in 1997.

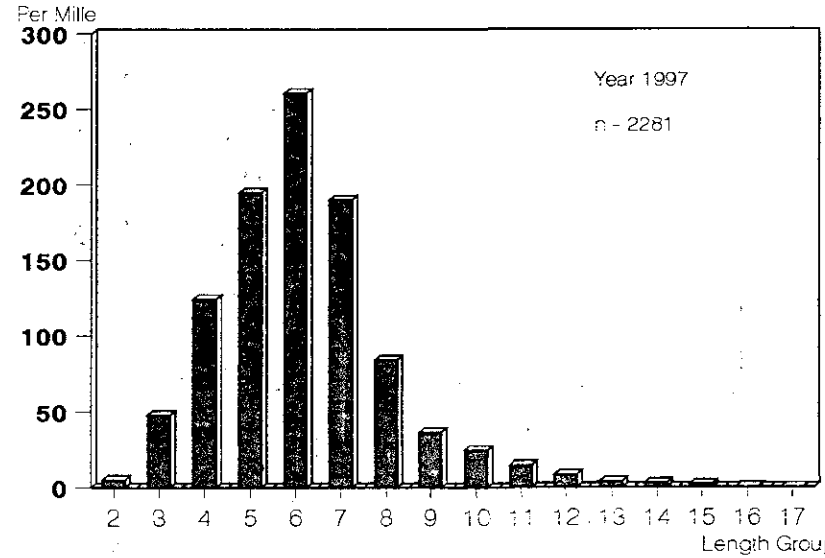


Fig.13 - Annual age composition of Greenland halibut, in Division 3M, trawl fishery in 1997.

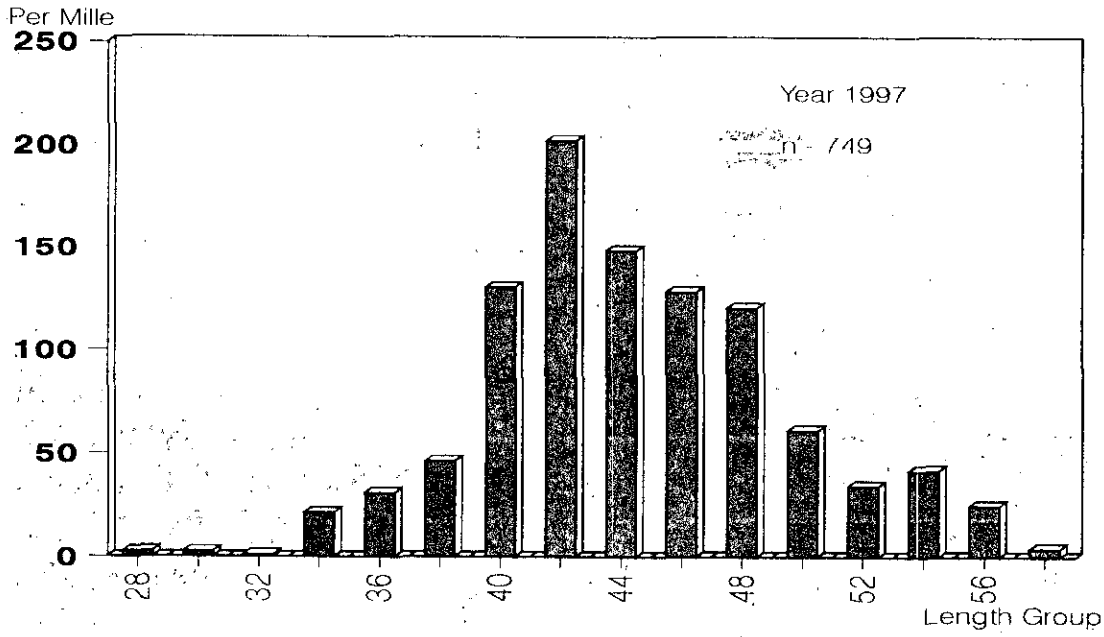


Fig.14 - Annual length composition of Greenland halibut, in Division 3N, trawl fishery in 1997.

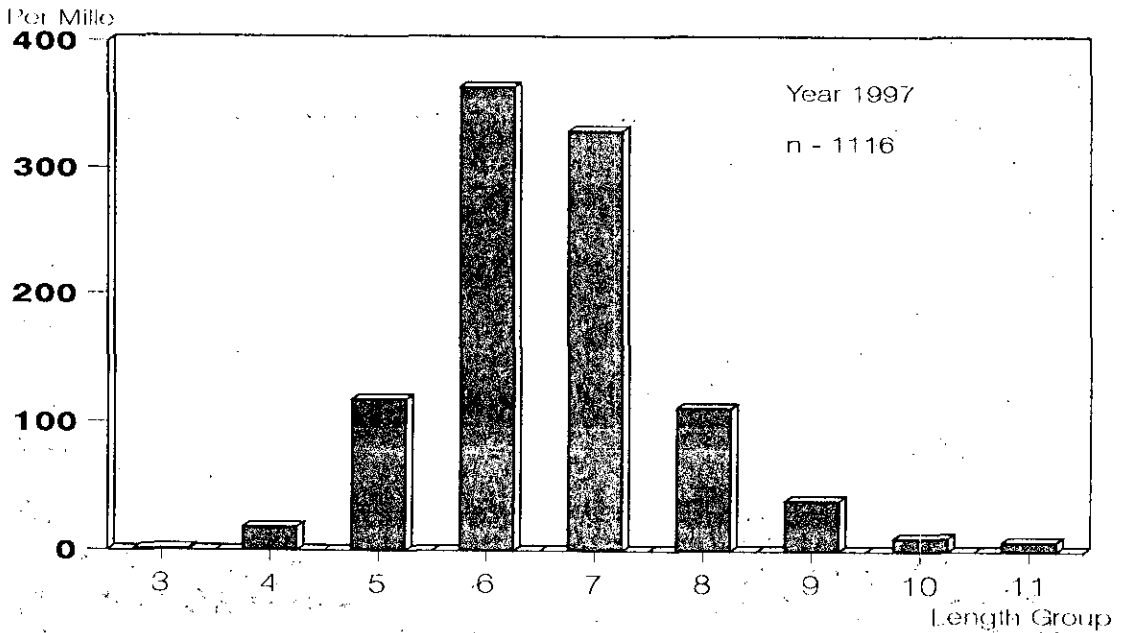


Fig.15 - Annual age composition of Greenland halibut, in Division 3N, trawl fishery in 1997.

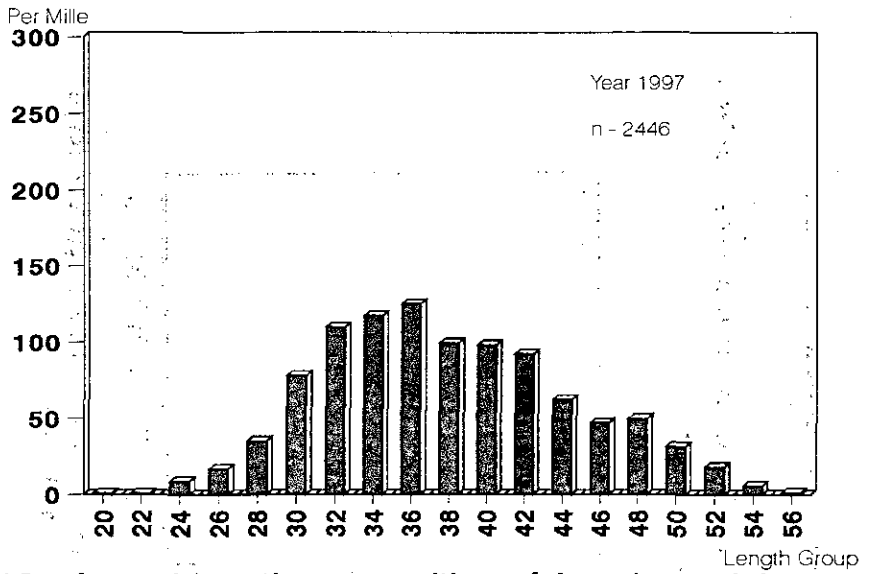


Fig.16 - Annual length composition of American plaice, in Division 3L, trawl fishery in 1997.

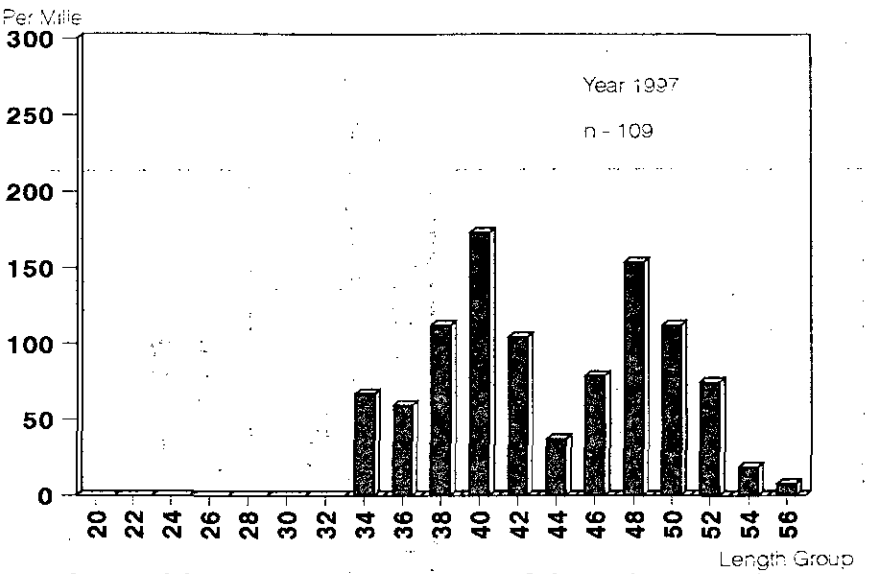


Fig.17 - Annual length composition of American plaice, in Division 3M, trawl fishery in 1997.

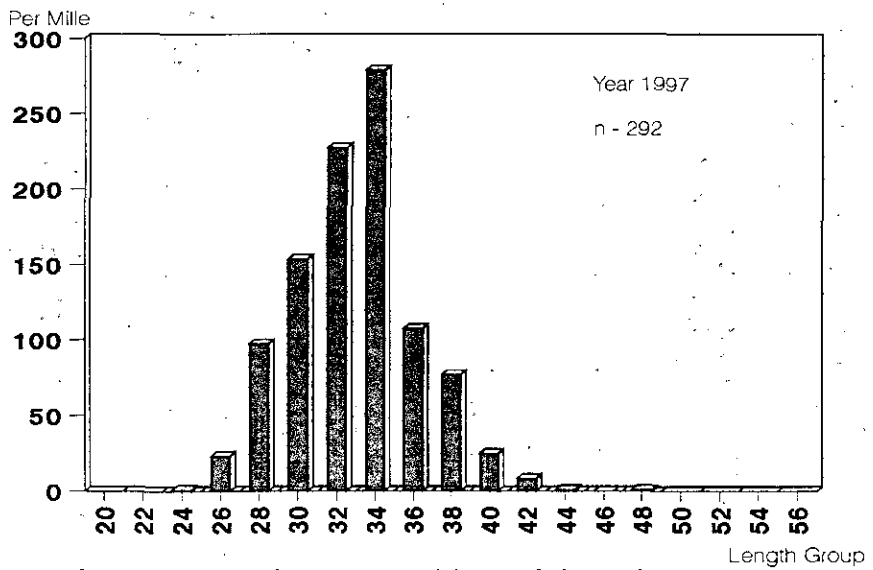


Fig.18 - Annual length composition of American plaice, in Division 3N, trawl fishery in 1997.

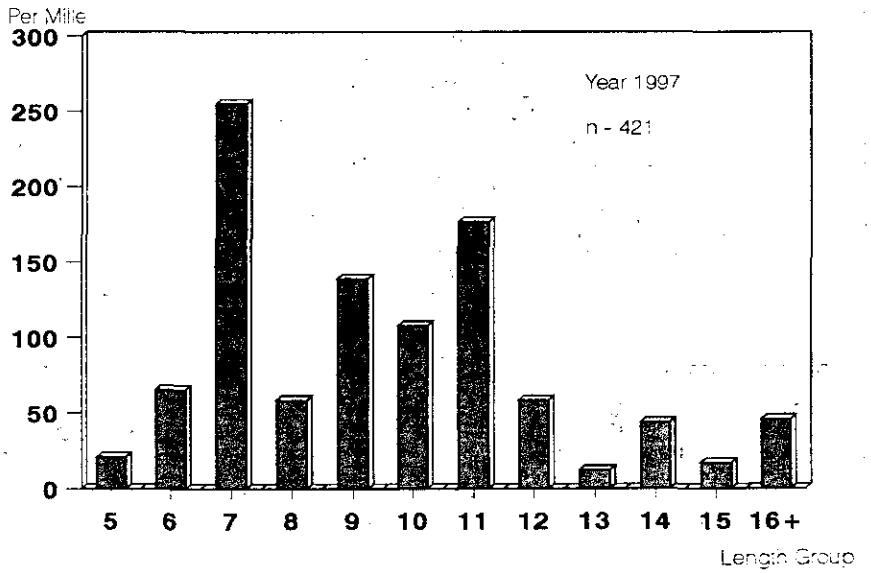


Fig.19 - Annual age composition of American plaice, in Division 3M, trawl fishery in 1997.

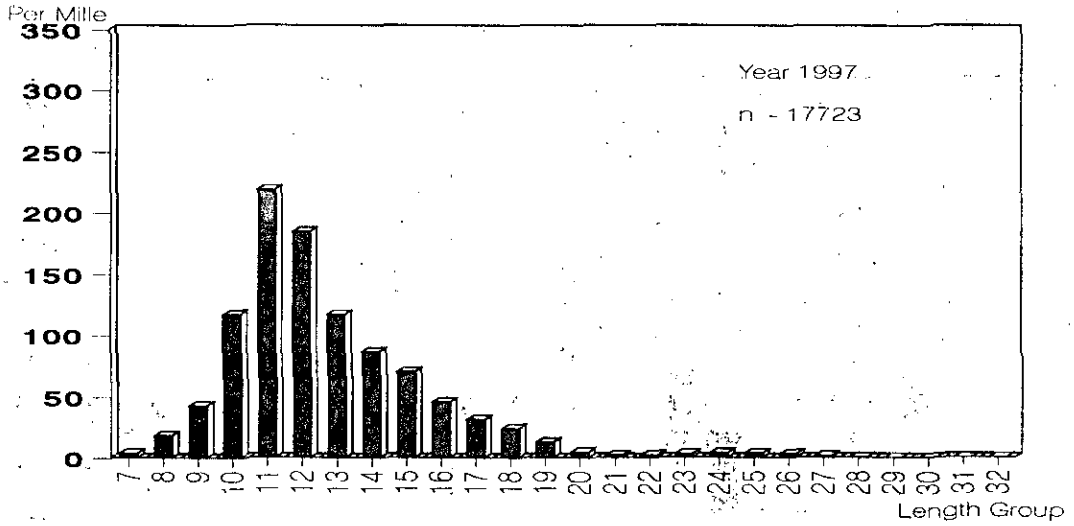


Fig.20 - Annual length composition of Roughhead grenadier in Division 3L, trawl fishery in 1997.

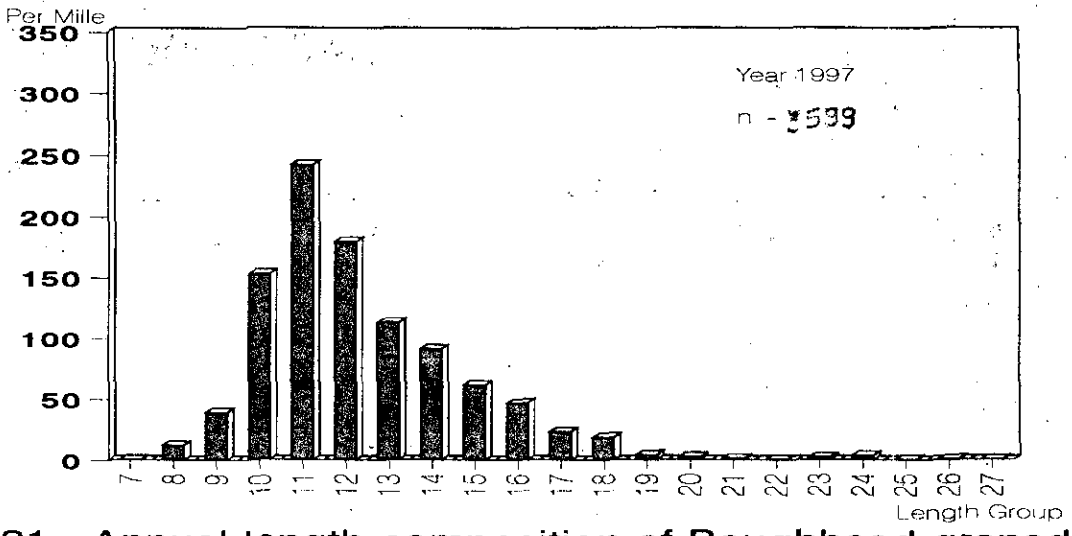


Fig.21 - Annual length composition of Roughhead grenadier in Division 3M, trawl fishery in 1997.

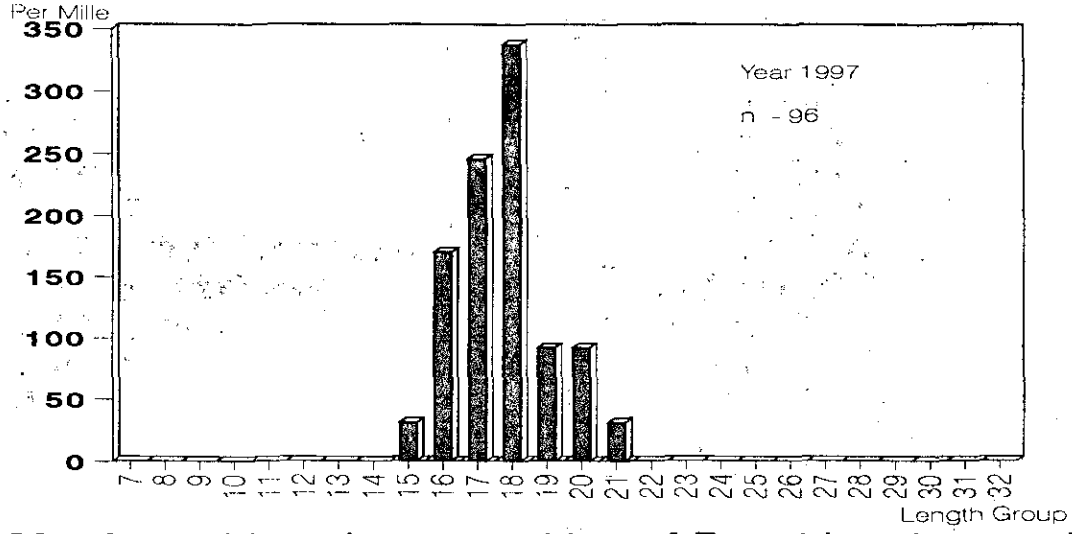


Fig.22 - Annual length composition of Roughhead grenadier in Division 3N, trawl fishery in 1997.

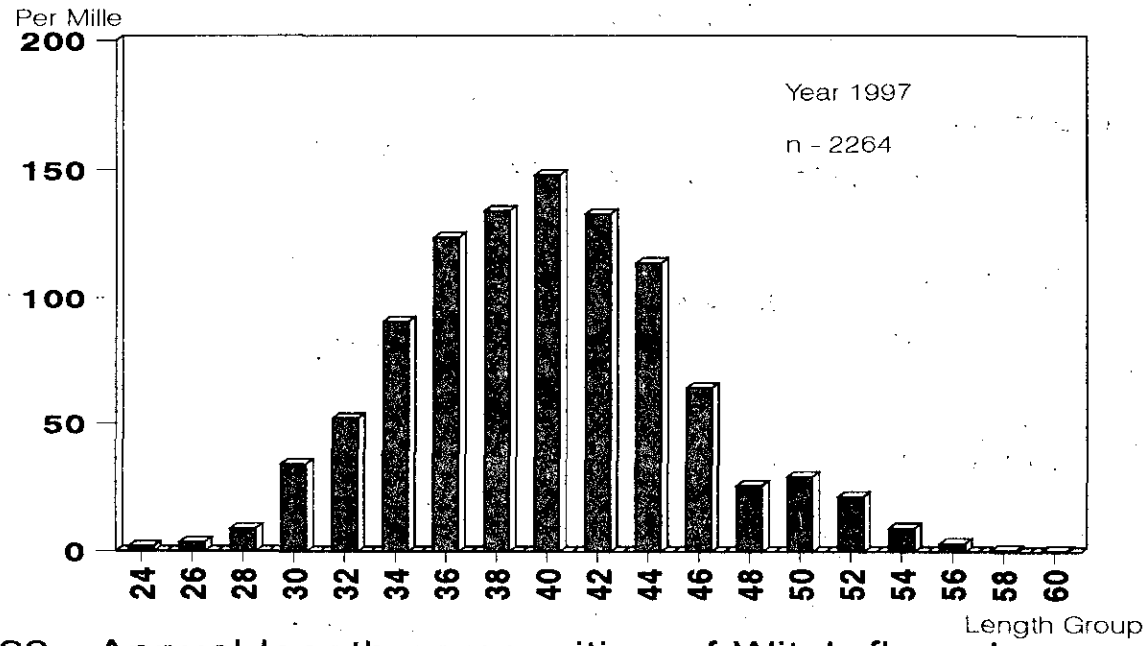


Fig.23 - Annual length composition of Witch flounder, in Division 3L, trawl fishery in 1997.

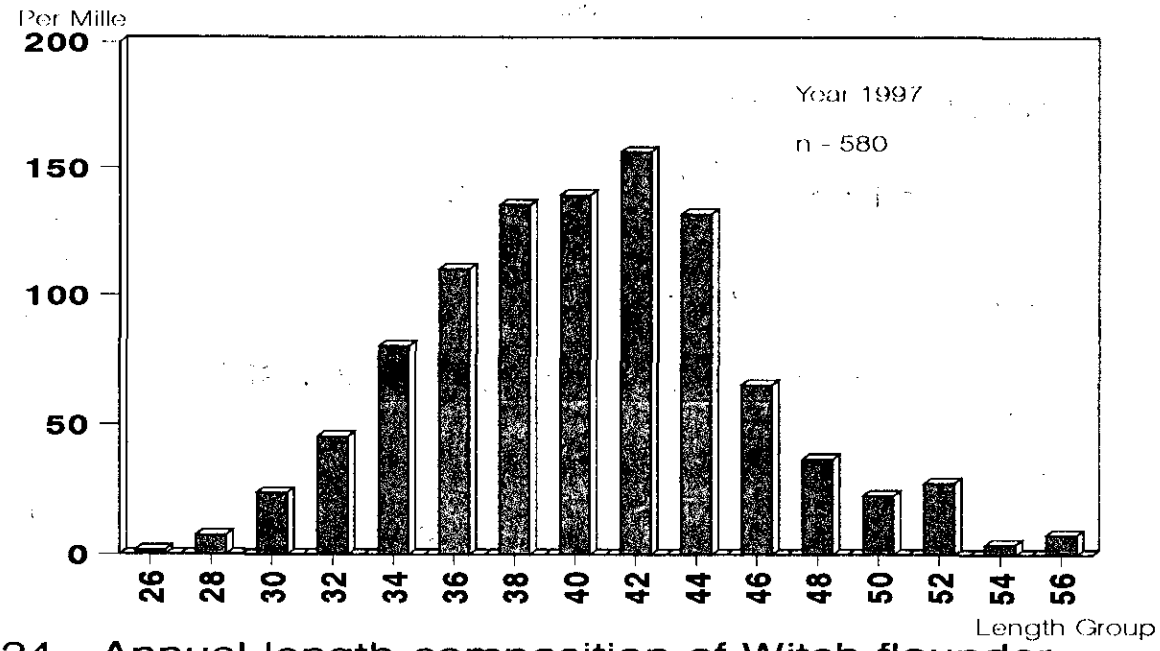


Fig.24 - Annual length composition of Witch flounder, in Division 3M, trawl fishery in 1997.

APPENDIX

COD, divisions 3L

$\log w = -5.2106+3.0879 \log l$ (Hodder, 1964)

COD, division 3M

$w = 0.009230 * l^{3.0079}$ (Vazquez, 1997)

REDFISH, divisions 3L, 3M and 3N

males $w = 0.01659 * l^{2.9548}$

females $w = 0.01372 * l^{3.0210}$ (Power and Atkinson, 1990)

AMERICAN PLAICE, divisions 3L and 3N

$\text{Log } w = -5.080+3.041 \log l$ (Pitt, 1978)

AMERICAN PLAICE, divisions 3M

$w = 0.004553 * l^{3.2115}$ (Vazquez, 1997)

GREENLAND HALIBUT, divisions 3L, 3M and 3N

$w = 0.002184 * l^{3.3454}$ (Bowering and Stansbury, 1984)

WITCH FLOUNDER, divisions 3L and 3M

$w = 0.001083 * l^{3.497}$ (Bowering and Stansbury, 1984)