



**SCIENTIFIC COUNCIL MEETING – JUNE 2004**

Spanish Research Report for 2003

by

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**SUBAREA 1**

A experimental fishing survey with Spanish commercial vessel was carried out in Subarea 1, inside the territorial waters of Greenland, from October to December 2003. The observer onboard collected data of catches by species, effort and position by haul and took length distribution samples of the following species: *Reinhardtius hippoglossoides*, *Macrourus berglax*, *Gadus morhua*, *Pandalus borealis*, *Hippoglossoides platessoides* and *Sebastes spp.* Biological sampling of *Reinhardtius hippoglossoides*, *Gadus morhua*, *Hippoglossoides platessoides*, *Gadus ogac* and *Amblyraja radiata* was done. Otoliths of Greenland halibut and Cod were also taken for age determination.

During this experimental fishing 124 hauls were carried out with a bottom trawl gear (40 mm cod end) and 10 more hauls with a semipelagic trawl (40 mm cod end). The main catches were Greenland halibut (88%) and Northern prawn (6%) for the bottom trawl gear and Northern prawn (74%) for the pelagic one. Table 1 shows the catches by species and division and Table 3 presents the effort in hours by division and their percentage by gear and Division.

Table 6 presents the total catches length distributions of redfish by Division and Table 14 shows the total catches length distribution by Divisions of Greenland halibut. Complete information about this experimental fishing is available in NAFO SCR Doc. 04/--

**SUBAREA 3**

**A. Status of the fisheries**

A total of 31 Spanish trawlers operated in NAFO Area, Div. 3LMNO, during 2003, amounting a fishing effort of 6,873 days (115,412 hours), which implies an increase of the 2003 effort, of almost 1000 fishing days, in comparison with year 2002 (5,903 days). Total catches for all species combined were 34,919 tons in 2003 and 30,244 tons in 2002. Total effort and catches were estimated based upon the information of the EU observers on board. The best estimates of Spanish catches in 2003 are presented in Table 1 by species and Division. Table 2 shows total catches for the main species by Division and quarter. Table 4 shows the effort (hours) by quarter and Division as well as the percentage of the effort by mesh size.

The Spanish fishery in NAFO area is mainly directed to Greenland halibut (mainly in Div. 3LM), alternating with the skate fishery in the second half of the year (Div. 3NO), shrimp fishery (Div. 3LM), and other species (Div. 3NO).

In the Div. 3L, most of the effort was performed at depths greater than 600 m and using cod-end mesh size of 135 mm, indicating that the fleet targeted Greenland halibut. In the second quarter of the year a small part of the effort was directed to the shrimp fishery. Regarding Div. 3M, most of the effort was carried out in the strata more than 600 meters depth and using 135 mm cod-end mesh size, targeting Greenland halibut, and the fishing effort carried out in strata from 200 to 600 meters depth was directed to the shrimp fishery using 40 mm cod-end mesh size. In Div. 3N and during the first half of the year, the fishing activity was performed at depths greater than 600 metres using 135 mm cod-end mesh size, which indicates that the fleet targeted Greenland halibut. However, since July a part of the fleet using 280 mm mesh size moved to depths less than 200 metres, where the skate fishery took place. Fishing effort in Div. 3O was limited and targeting several species using both 135 and 280 mm mesh size; the main species caught in this Division were white hake and redfish with the 135 mm mesh size and skates with 280 mm mesh size.

In addition to the observers from the NAFO Scientific Observers Program, four observers from the Spanish Scientific Sampling Program were onboard, comprising a total of 252 days, which implies coverage of roughly 4% of the total effort. This low percentage has caused that samplings didn't cover some species and divisions. Besides recording catches, discards, and effort, these observers carried out biological sampling on Greenland halibut and main species taken as by-catch. This includes recording weight at length, sex-ratio, maturity stages, and stomach analysis, and collecting material for reproductive studies on Greenland halibut, roughhead grenadier, and American plaice. Otoliths of those three species were also taken for age determination. Length and age distributions presented in this paper are based on the samplings carried out by these observers. Parameters used for the length-weight relationships are shown by species in Table 4.

#### **Cod (Div. 3NO; Div. 3M)**

Spanish catches for this specie by Division and quarter are presented in Table 2. Main catches were taken as by-catch in the Greenland halibut fishery in Div. 3NO, the skate fishery in Div. 3N, and the White hake and redfish fisheries in Div. 3O. Very few catches were taken in Div. 3LM.

Samplings for length distribution was not carried out on this species in 2003.

#### **Redfish (Div. 3LN; Div. 3M; Div. 3O)**

Table 2 shows the catches for this species taken by the Spanish fleet by division and quarter in 2003. Most of the catches in Div. 3LN and 3M were by-catch of the Greenland halibut fishery. Catches in Div. 3M have increased from 159 tons in 2002 to 552 tons in 2003. A small directed fishery for this species was carried out in Div. 3O.

Length distribution by month in Div. 3M are shown in Table 7 and those for Div. 3LN and 3O are presented in Tables 8 and 9.

#### **American plaice (Div. 3LNO; Div. 3M)**

Spanish catches in 2003 are shown in Table 2. Most catches were taken in Div. 3LNO as by-catch of the Greenland halibut and skate fisheries. Catches in Div. 3M only amounted 51 tons and were taken as by-catch of the Greenland halibut fishery.

Length distribution by month for Div. 3M and 3LNO are presented in Tables 10 and 11.

#### **Witch flounder (Div. 2J and 3KL; Div. 3NO)**

Table 2 shows the Spanish catches by quarter and Division. This species is taken as by-catch of the Greenland halibut fishery. Catches were only taken in Div. 3L.

Length distribution by month for Div. 3L and 3NO are shown in Tables 12 and 13.

### **Yellowtail flounder (Div. 3LNO)**

Table 2 presents the Spanish catches by quarter and Division. Almost all of the catches were taken in Div. 3N, as by-catch of the skate fishery. Catches decreased from 90 tons in 2002 to 60 tons in 2003.

There is not length distribution for 2003 catches.

### **Greenland halibut (Subareas 2 and 3).**

Spanish catches by quarter and Division are presented in Table 2. Greenland halibut is the main target species for the Spanish fleet in NAFO area, and most of the catches were taken in the Flemish Pass area (Div. 3LM). The mesh size used for this fishery was equal or greater than 135 mm. The Spanish catches of this species have decreased in the last years, from 16,626 tons in 2001 to 14,521 tons in 2003; the decline occurred mainly in Div. 3L.

Table 15 shows the length distribution of the Spanish total catches by Division. They were calculated by quarters for Div. 3L and 3M, but they were calculated for the whole year in Div. 3NO since the quarterly sampling coverage was insufficient. The corresponding age composition, mean weight and mean length at age are presented in table 16. Most of the Greenland halibut catches corresponds to ages 4 to 7.

### **Thorny skate (Div. 3LNO; Div. 3M)**

Spanish catches by quarter and Division are presented in Table 2. Catches comprise many species, so the ratios among skates observed during the 2003 Spanish survey in Div. 3LM, as well those calculated from the Spanish scientific observers in Div. 3NO, were used to split the catch by species. These ratios and the catches by species and Divisions are present in Tables 16 and 17.

Most of the catches were taken in Div. 3N where a directed fishery to thorny skate took place mainly in the second semester of the year with a 280 mm mesh size. The skate catches in Div. 3LM were smaller than those in Div. 3NO and they were by-catch of the Greenland halibut fishery (135 mm cod-end).

The length distributions of the Spanish sampling by month for Div. 3L are presented in Table 19. No samples were available for Div. 3MNO.

### **Roughhead grenadier (Subarea 2 and 3)**

Table 2 shows the Spanish catches by quarter and Division. Roughhead grenadier is the main species in the by-catch of the Greenland halibut fishery, and most of the 2003 catches were taken in Divisions 3LN. Catches in Divisions 3LMO were very similar to those of 2002, but catches in Division 3N were 100% more than in 2002.

Table 20 shows the length distributions of Spanish total catch by Division. They were calculated by semester for Div. 3L and 3M, and then the semester length distribution from these two Divisions combined was applied to the semester catches of Div. 3N and 3O.

The corresponding age composition, mean weight and mean length at age by Division are presented in Table 21. Total catch at age, mean weight and mean length at age for Div. 3LMNO are presented in Table 22. Most of the Roughhead grenadier catches are based on ages 4 to 13.

### **White hake (Div. 3LMNO)**

Table 2 presents the Spanish catches by quarter and Division. Main catches were taken in Div. 3O during the second and third quarter last year. Total Catches have considerably increased in the last three years, moving from 315 tons in 2001 to 1840 ton in 2003. This increase has not been uniform in all Divisions: the highest increase was observed in Div. 3O, with 47 tons in 2001 and 1136 tons in 2003. Length distribution of the catches is not available for last year. . A detailed information about this species will be provided in the NAFO SCR Doc. 04/--

## **(B) Research studies**

The bottom trawl survey of NAFO Regulatory area in Div. 3NO was conducted in May and June 2003 on board R/V *Vizconde de Eza* using a Campelen gear with a stratified design. A total of 118 hauls were carried out up to a depth of 1450 meters. Ten of those hauls were made in parallel with the Canadian R/V *Wilfred Templeman*, using also a Campelen gear. The results of the Spanish 3NO bottom trawl survey for all the period studied (1995-2002), including abundance and biomass indices, with their errors, and length distributions, as well as the calculated abundance and biomass based on conversion of the length frequencies are presented in SCR 04/09, SCR 04/10, SCR 04/11, SCR 04/12 and SCR 04/-- for American plaice, yellowtail flounder, Greenland halibut, cod, and thorny skate and compared to the estimates based on CPUE's ratios.

The EU bottom trawl survey on Flemish Cap (Div. 3M) was carried out in June and July 2003. R/V *Vizconde de Eza* has replaced C/V *Cornide de Saavedra* in 2003 as survey vessel, so, in order to maintain the data series obtained, comparative fishing trials were done during last year and they will continue in the 2004 survey to calculate the appropriate factors between two vessels. A total of 114 valid hauls were made by the vessel *Vizconde de Eza* with the usual survey gear (Lofoten) up to 730 meters depth. 59 of those hauls were paired with the *Cornide de Saavedra* R/V. Survey results including abundance indices of the main commercial species and age distributions for cod, redfish, American plaice and Greenland halibut are presented in SCR 04/.., as well as in SCR 04/-- for Roughhead grenadier. Data on shrimp was presented in SCR 03/80. Feeding studies on the main species were continued, and samples for histological assessment on sexual maturity of cod, redfish, Greenland halibut and Roughhead grenadier were also taken.

## **REFERENCES**

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- H. Murua; "A Review on Roughhead Grenadier (*Macrourus berglax*) Biology and Population Structure on Flemish Cap (NAFO Division 3M), 1991-2003 Based on EU Flemish Cap Bottom Survey Data, Serial No. N - NAFO SCR Doc. 03/--

**Table 1-.** Spanish catches by species and Divisions in the NAFO Area in 2003.

Species	Code	Division				Total (tons)
		1A	1B	1C	1D	
Greenland halibut	GHL	65.225	8.096	0.005	1.890	75.217
Northern prawn	PRA	0.000	5.230	0.003	0.000	5.233
Skates (NS)	SKA	1.505	0.175	0.003	0.006	1.689
Atlantic redfishes	RED	0.000	0.542	0.000	0.001	0.543
American plaice	PLA	0.000	0.521	0.008	0.000	0.529
Gaidropsarus ensis	GDE	0.204	0.023	0.000	0.016	0.244
Atlantic cod	COD	0.000	0.203	0.019	0.000	0.221
Roughhead grenadier	RHG	0.015	0.022	0.000	0.117	0.154
Atlantic wolffish	CAA	0.000	0.098	0.014	0.001	0.113
Spotted wolffish	CAS	0.035	0.060	0.001	0.000	0.095
Others	OTH	0.056	1.483	0.038	0.095	1.672
Total		67.042	16.453	0.090	2.126	85.712

  

Species	Code	Division				Total (tons)
		3L	3M	3N	3O	
Greenland halibut	GHL	7891	3530	2999	102	14521
Skates (NS)	SKA	823	402	5714	164	7103
Roughhead grenadier	RHG	1317	726	1198	24	3266
Atlantic redfishes	RED+REG	316	552	310	692	1870
White hake	HKW	154	218	332	1136	1840
American plaice	PLA	303	51	736	110	1200
Northern prawn	PRA	136	845	6	0	987
Witch flounder	WIT	255	258	349	68	929
Roundnose grenadier	RNG	137	557	7	0	700
Red hake	HKR	294	171	135	15	615
Dogfish sharks (NS)	DGX	114	74	220	14	422
Northern wolffish	CAB	101	93	23	1	218
Atlantic wolffish	CAA	68	4	119	7	197
Atlantic halibut	HAL	33	4	126	14	178
Groundfishes (NS)	GRO	61	29	62	22	175
Various sharks	SKH	49	26	38	0	113
American angler	ANG	0	0	15	64	81
Blue antimora	ANT	47	24	2	0	73
Yellowtail flounder	YEL	1	0	60	0	62
Spotted wolffish	CAS	32	3	7	0	42
Haddock	HAD	0	0	3	26	29
Saithe(=Pollock)	POK	0	0	13	16	29
Atlantic cod	COD	0	0	9	15	25
Red hake	HKS	10	0	1	9	20
Aquatic invertebrates	INV	1	5	7	0	13
Others	OTH	98	50	57	5	210
Total		12243	7622	12548	2505	34919

**Table 2-.** Spanish catches of main species by Division and quarter in SA 3 in 2003 .

Code	Species	Division	1° Q	2° Q	3° Q	4° Q	Total (tons)
GHL	Greenland halibut	3L	2241	1753	1442	2455	7891
		3M	753	1047	535	1195	3530
		3N	345	711	967	976	2999
		3O	17	14	19	52	102
SKA	Skates (NS)	3L	216	430	86	91	823
		3M	76	209	31	86	402
		3N	268	787	1763	2896	5714
		3O	24	44	87	8	164
RHG	Roughhead grenadier	3L	287	427	275	329	1317
		3M	142	302	76	206	726
		3N	216	608	208	166	1198
		3O	3	9	7	4	24
RED	Atlantic redfishes	3L	94	138	34	51	316
		3M	216	238	24	75	552
		3N	34	94	82	101	310
		3O	184	97	193	219	692
HKW	White hake	3L	36	46	43	28	154
		3M	66	105	16	31	218
		3N	8	37	255	31	332
		3O	152	309	608	67	1136
PLA	American plaice	3L	90	106	11	95	303
		3M	17	27	1	6	51
		3N	59	91	151	435	736
		3O	27	19	49	15	110
PRA	Northern prawn	3L	0	0	96	39	136
		3M	14	160	456	216	845
		3N	0	0	0	6	6
WIT	Witch flounder	3L	75	85	24	70	255
		3M	53	153	14	38	258
		3N	59	89	90	111	349
		3O	10	16	29	13	68
YEL	Yellowtail flounder	3L	1	0	0	0	1
		3M	0	0	0	0	0
		3N	6	0	28	26	60
COD	Atlantic cod	3L	0	0	0	0	0
		3M	0	0	0	0	0
		3N	0	0	5	4	9
		3O	6	5	5	0	15

**Table 3-.** Fishing effort of the Spanish fleet in hours, by quarter and Division, as well as the percentage of the effort by mesh size in SA 1.

Division	units	Oct	Nov	Dec	Total	%
1A	Hours	49			49	31
1B	Hours	4	93	7	104	66
1C	Hours			2	2	1
1D	Hours			3	3	2
Total Hours		53	93	12	157	100

Division	Mesh Size	Oct	Nov	Dec	Total
1A	40 mm demersal	100			100
	40 mm Semipelagic				
1B	40 mm demersal	100	90	100	91
	40 mm Semipelagic		10		9
1C	40 mm demersal			100	100
	40 mm Semipelagic				
1D	40 mm demersal			100	100
	40 mm Semipelagic				

**Table 4-.** Fishing effort of the Spanish fleet in hours, by quarter and Division, as well as the percentage of the effort by mesh size in SA 3.

Division	units	1° Q	2° Q	3° Q	4° Q	Total	%
3L	Hours	13807	12629	10323	15163	51921	45
3M	Hours	6584	9789	6528	10203	33104	29
3N	Hours	3081	6368	8817	10230	28496	25
3O	Hours	252	375	898	365	1891	2
Total Hours		23724	29161	26566	35961	115412	100

Division	Mesh Size	1° Q	2° Q	3° Q	4° Q	Total
3L	<90 mm	0	0	3	1	1
	100-200 mm	100	100	97	99	99
	>200 mm	0	0	0	0	0
3M	<90 mm	1	4	22	11	9
	100-200 mm	99	96	78	89	91
	>200 mm	0	0	0	0	0
3N	<90 mm	0	0	0	0	0
	100-200 mm	99	99	87	67	85
	>200 mm	1	1	13	33	15
3O	<90 mm	0	0	0	0	0
	100-200 mm	98	94	99	99	98
	>200 mm	2	6	1	1	2

**Table 5-.** Parameters of the length-weight relationships of main species.

<b>Species</b>	<b>a</b>	<b>b</b>
Greenland halibut	0.007	3.031
Redfish	0.019	2.906
Roughhead grenadier	0.114	2.892
Witch flounder	0.004	3.186
Cod	0.008	3.040
American plaice	0.004	3.186
Yellowtail flounder	0.007	3.090
Thorny skate	0.011	2.947

**Table 6-.** Redfish: length distributions of the total catch in Subarea 1.

<b>Redfish</b>	Division	
	Length (cm)	
	1B	Total SAI
5	2	2
6	119	119
7	71	71
8	5	5
9	790	790
10	6462	6462
11	9006	9006
12	2940	2940
13	590	590
14	1474	1474
15	605	605
16	525	525
17	165	165
18	93	93
19	98	98
20	67	67
21	52	52
22	41	41
23	10	10
24	5	5
25	10	10
26	41	41
27	21	21
28	41	41
29	0	0
30	5	5
31	0	0
32	16	16
33	0	0
34	0	0
35	0	0
36	5	5
37	0	0
38	0	0
39	0	0
40	5	5
41	5	5
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TOTAL	23269	23269
Fish Measured	1218	1218
Samples	13	13
Sample Catches	177	177
Total Catches (kg)	543	543

**Table 7-.** Redfish: length distributions of sampled catches in Division 3M.

Redfish	Division 3M			
	Length (cm)	May	Jun	
13	0	0		
14	0	0		
15	0	0		
16	0	0		
17	20	0		
18	20	0		
19	0	0		
20	0	0		
21	0	0		
22	0	0		
23	60	4		
24	119	24		
25	318	90		
26	377	171		
27	655	131		
28	774	61		
29	596	106		
30	218	69		
31	218	65		
32	238	65		
33	179	65		
34	179	53		
35	79	33		
36	40	8		
37	40	16		
38	0	0		
39	0	0		
40	0	4		
41	0	0		
42	0	0		
43	0	0		
44	0	0		
45	0	0		
46	0	0		
47	0	0		
48	0	0		
49	0	0		
50	0	0		
51	0	0		
TOTAL			4130	965
Fish measured			208	237
Samples			1	1
Raised Catches (kg)			1256	328

**Table 8-.** Redfish: length distributions of sampled catches in Division 3LN.

Redfish	Division 3L					
	Length (cm)	May	Jun	Dec		
13	0	0	9			
14	0	0	9			
15	0	0	0			
16	3	0	0			
17	0	0	0			
18	0	0	0			
19	0	0	0			
20	3	0	9			
21	3	12	0			
22	3	32	0			
23	15	109	27			
24	104	225	45			
25	497	507	63			
26	754	719	89			
27	747	803	197			
28	530	669	224			
29	411	494	215			
30	432	612	152			
31	286	514	81			
32	519	605	81			
33	351	542	72			
34	270	480	36			
35	137	501	54			
36	83	268	0			
37	65	185	18			
38	48	81	0			
39	0	56	9			
40	15	24	0			
41	3	0	0			
42	0	0	0			
43	0	12	0			
44	14	17	0			
45	0	0	0			
46	0	32	0			
47	0	0	0			
48	0	0	0			
49	0	0	0			
50	0	0	0			
51	0	5	0			
TOTAL				5293	7504	1390
Fish measured				553	1126	155
Samples				5	5	1
Raised Catches (kg)				1816	2887	416

**Table 9-.** Redfish: length distributions of sampled catches in Division 3O.

<b>Redfish</b>	<b>Division 3O</b>
Length (cm)	Jul
9	0
10	0
11	0
12	0
13	0
14	91
15	202
16	448
17	875
18	1431
19	2397
20	2442
21	1887
22	1358
23	742
24	353
25	193
26	111
27	99
28	39
29	20
30	20
31	20
32	0
33	0
34	0
35	0
36	0
37	0
38	0
39	0
40	0
41	0
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TOTAL	12728
Fish Measured	465
Samples	3
Raised catches (kg)	1505

**Table 10-.** American plaice: length distributions of sampled catches in Division 3M.

<b>American plaice</b>	<b>Division 3M</b>
Length (cm)	May
34	3
35	3
36	1
37	1
38	0
39	6
40	0
41	3
42	4
43	3
44	1
45	1
46	0
47	0
48	1
49	1
50	0
51	0
52	0
53	0
54	0
55	0
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TOTAL	28
Fish Measured	21
Samples	1
Raised Catches (kg)	19

**Table 11-** American plaice: length distributions of sampled catches in Division 3LNO.

<b>American plaice</b>	<b>Division 3L</b>
Length (cm)	May
34	0
35	0
36	0
37	5
38	5
39	24
40	0
41	10
42	0
43	10
44	5
45	0
46	10
47	14
48	14
49	19
50	14
51	10
52	24
53	10
54	0
55	10
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TOTAL	184
Fish Measured	38
Samples	1
Raised Catches (kg)	197

**Table 12-.** Witch flounder: length distributions of sampled catches in Division 3L.

Witch flounder	Division 3L	
Length (cm)	Apr	Jun
21	0	2
22	0	0
23	0	0
24	0	0
25	0	2
26	0	0
27	18	0
28	9	0
29	37	7
30	82	7
31	165	5
32	320	9
33	275	0
34	137	2
35	137	2
36	137	2
37	82	5
38	101	2
39	82	7
40	55	5
41	101	2
42	37	5
43	64	2
44	27	0
45	37	5
46	27	2
47	18	2
48	18	0
49	0	0
50	0	0
51	0	0
52	0	0
53	0	0
54	0	0
55	0	0
56	0	0
57	9	0
TOTAL	1975	75
Fish Measured	216	33
Samples	1	1
Raised Catches (kg)	930	39

**Table 13-.** Witch flounder: length distributions of sampled catches in Division 3NO.

<b>Witch flounder</b>	<b>Division 3O</b>
Length (cm)	Jan
21	0
22	0
23	0
24	0
25	0
26	0
27	1
28	1
29	3
30	12
31	19
32	33
33	38
34	46
35	31
36	14
37	5
38	3
39	0
40	2
41	2
42	0
43	0
44	0
45	0
46	0
47	0
48	0
49	0
50	0
51	0
52	0
53	0
54	0
55	0
56	0
57	0
<hr/>	
TOTAL	210
Fish Measured	193
Samples	1
Raised Catches (kg)	78

**Table 14 -** Greenland halibut: length distributions of the total catch in Subarea 1.

Greenland halibut	Division				
Length (cm)	1A	1B	1C	1D	Total
20-21	0	70		0	73
22-23	0	105		0	105
24-25	0	284		0	295
26-27	0	784		0	853
28-29	0	1059		0	1174
30-31	76	997		0	1153
32-33	295	1390		0	1835
34-35	44	1407		0	1636
36-37	1038	1568		0	2744
38-39	2645	1442		38	4280
40-41	4657	1770		57	6867
42-43	8085	1512		133	9885
44-45	10603	1249		344	12206
46-47	8410	902		325	9603
48-49	10660	556		325	11418
50-51	7294	348		114	7638
52-53	5521	299		191	5953
54-55	3675	139		229	3930
56-57	1136	133		57	1322
58-59	559	47		38	623
60-61	336	34		57	429
62-63	336	31		0	363
64-65	277	10		0	282
66-67	0	10		0	34
68-69	108	0		0	106
70-71	0	10		0	10
72-73	251	0		0	246
74-75	0	20		0	20
76-77	0	0		0	0
78-79	0	0		0	0
80-81	0	0		0	0
82-83	0	0		0	0
84-85	22	0		0	22
86-87	0	10		0	10
TOTAL	66028	16186		1908	85115
Fish Measured	505	1511		100	2116
Samples	5	15		1	21
Sample Catches	18455	4777		700	23932
Total Catches (kg)	65225	8096		1890	75217

**Table 15 -.** Greenland halibut: length distributions of the total catch in Division 3LMNO.

Greenland halibut Length (cm)	Division				
	3L	3M	3N	3O	Total
22-23	5377	0	0	0	5377
24-25	32881	0	0	0	32881
26-27	65832	0	0	0	65832
28-29	79141	1314	0	0	80455
30-31	181655	5672	7990	271	195588
32-33	348970	10394	7990	271	367624
34-35	559723	42489	17909	606	620728
36-37	776295	86137	87064	2948	952445
38-39	1027012	168864	223998	7585	1427459
40-41	1160551	254257	365890	12390	1793089
42-43	1294923	380221	623639	21118	2319901
44-45	1162357	450945	789640	26739	2429681
46-47	1015358	454866	575423	19485	2065132
48-49	841828	436825	358589	12143	1649384
50-51	665559	410165	287918	9750	1373392
52-53	518453	291989	198099	6708	1015249
54-55	343056	221936	101667	3443	670101
56-57	221634	158494	65574	2220	447923
58-59	127914	93499	66125	2239	289777
60-61	78786	51386	31823	1078	163072
62-63	61221	25372	7990	271	94854
64-65	33021	27801	7990	271	69082
66-67	13655	28103	0	0	41759
68-69	11605	13675	0	0	25280
70-71	9970	7852	0	0	17822
72-73	7552	10826	0	0	18379
74-75	3771	6424	0	0	10195
76-77	7980	3241	0	0	11222
78-79	2242	5086	0	0	7328
80-81	4669	4162	0	0	8831
82-83	5188	2902	0	0	8090
84-85	4655	3756	0	0	8411
86-87	1597	2566	0	0	4163
88-89	913	0	0	0	913
90-91	0	0	0	0	0
92-93	352	0	0	0	352
<hr/>					
TOTAL	10675698	3661220	3825317	129534	18291768
Fish Measured	14663	4849	712	0	20224
Samples	79	29	6	0	114
Total Catches (ton)	7891	3530	2999	102	14521

**Table 16-.** Greenland halibut: numbers, mean length and mean weight at age of the Spanish catches in Divisions 3LMNO.

Greenland halibut AGE	3L			3M			3N		
	Numbers	M. L.	M. W.	Numbers	M. L.	M. W.	Numbers	M. L.	M. W.
1									
2	91900	26.1	147	246	29.6	212			
3	431643	31.8	269	17843	33.2	301	11576	32.5	282
4	1491264	35.9	383	158946	37.3	428	178485	37.9	449
5	3062312	40.5	550	717157	41.7	597	1070035	42.0	608
6	2956777	44.9	747	1168371	45.7	784	1536064	45.1	752
7	1878012	50.6	1063	1057291	50.9	1085	789359	50.2	1038
8	446103	55.2	1373	298167	55.3	1387	154733	55.2	1382
9	110856	59.0	1681	75127	58.9	1669	52481	59.0	1675
10	85175	61.9	1938	50780	62.1	1957	20057	61.2	1871
11	45028	63.4	2087	37341	64.2	2167	10885	62.5	1997
12	37956	68.3	2621	40414	68.3	2617	1642	63.3	2065
13	17598	73.2	3232	20048	72.4	3127			
14	10889	78.9	4036	10879	78.6	3988			
15	7243	84.1	4890	6680	83.4	4752			
16	1757	84.5	4930	1482	84.3	4899			
17	1185	87.4	5487	448	85.0	5022			
18									
Total	10675698			3661220			3825317		

Greenland halibut AGE	3O			Total 3LMNO		
	Numbers	M. L.	M. W.	Numbers	M. L.	M. W.
1						
2				92146	26.1	147
3	392.0	32.5	282	461454	31.9	270
4	6043.9	37.9	449	1834739	36.2	393
5	36233.7	42.0	608	4885738	41.0	570
6	52014.5	45.1	752	5713226	45.1	756
7	26729.4	50.2	1038	3751391	50.6	1064
8	5239.6	55.2	1382	904243	55.2	1379
9	1777.1	59.0	1675	240241	59.0	1676
10	679.2	61.2	1871	156691	61.9	1936
11	368.6	62.5	1997	93622	63.6	2108
12	55.6	63.3	2065	80068	68.2	2607
13				37646	72.8	3176
14				21769	78.8	4012
15				13923	83.8	4824
16				3239	84.4	4916
17				1633	86.7	5359
18						
Total	129534			18291768		

**Table 17-.** Ratios used to split skate's catch by species.

Code	Specie	3L Survey	3M survey	Obs 3NO
RJR	Thorny skate (Starry Ray)	0.90	0.76	0.96
RJQ	Spinytail skate (Spinetail Ray)	0.09	0.14	0.01
RJG	Arctic skate	0.00	0.06	0.03
RJS	Smooth skate	0.00	0.03	0.00
RJY	Round skate	0.00	0.00	0.00

**Table 18-.** Catches (tons) of skates species by Division.

Code	Specie	3L	3M	3N	3O	Total
RJR	Thorny skate (Starry Ray)	741	307	5482	157	6687
RJQ	Spinytail skate (Spinetail Ray)	77	58	56	2	192
RJG	Arctic skate	0	23	152	4	179
RJS	Smooth skate	3	13	19	1	35
RJY	Round skate	3	2	5	0	10
SKA	Total Skates (ton)	823	402	5714	164	7103

**Table 19 -** Thorny skate: length distributions of sampled catches in Division 3LNO.

Thorny skate	Division 3L		
Length (cm)	Apr	May	Jun
34	0	9	0
35	0	18	0
36	9	9	0
37	0	14	0
38	0	18	0
39	0	50	0
40	0	9	3
41	22	14	3
42	0	18	0
43	9	23	0
44	48	49	0
45	53	32	0
46	31	30	0
47	35	30	0
48	57	53	0
49	57	29	6
50	48	20	0
51	35	23	6
52	26	21	0
53	22	17	0
54	0	3	0
55	22	14	3
56	31	0	3
57	18	23	0
58	9	9	0
59	0	5	0
60	13	0	0
61	18	5	0
62	13	3	0
63	22	12	0
64	0	0	0
65	22	11	0
66	9	0	0
67	0	0	0
68	0	0	0
69	0	0	3
70	0	0	0
71	0	3	0
72	22	0	0
73	0	0	0
74	0	0	0
75	9	0	0
<hr/>			
TOTAL	660	574	27
Fish Measured	60	131	9
Samples	2	2	1
Raised Catches (kg)	1010	667	43

**Table 20-.** Roughhead grenadier: length distribution of the total catch in Division 3LMNO.

Roughhead grenadier Length (cm)	Division				Total
	3L	3M	3N	3O	
6	289	0	174	76	539
7	1965	933	1378	998	5275
8	8134	3889	6386	3515	21923
9	19396	10646	14988	10125	55155
10	36211	11721	26972	14873	89776
11	60717	20934	45565	24818	152034
12	80086	35225	62059	38218	215587
13	108677	50013	89397	51044	299131
14	257522	90084	197079	116843	661528
15	344980	122211	268146	153528	888865
16	424481	160263	333633	194167	1112545
17	396851	123503	294177	174106	988637
18	300866	117086	238205	144529	800686
19	204305	115809	183977	111150	615241
20	117248	84888	122501	68671	393308
21	81814	61382	84091	49982	277269
22	44599	44068	55558	30078	174304
23	38229	31989	41432	25539	137189
24	28430	27663	34795	20390	111277
25	23179	16524	25296	14456	79456
26	13281	14016	18932	9766	55995
27	15694	10376	15634	9710	51414
28	11008	9422	13184	7402	41016
29	8376	6891	9220	5265	29751
30	14801	7830	13590	8496	44718
31	7037	4283	7484	3830	22634
32	4144	3433	4754	2643	14973
33	2849	1244	2456	1571	8120
34	2272	3199	3449	2150	11070
35	3598	1145	2778	1769	9290
36	2430	1297	2049	1394	7170
37	0	1473	1307	568	3348
38	0	491	436	189	1116
39	0	295	261	114	670
40	0	0	0	0	0
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TOTAL	2663469	1194225	2221343	1301972	7381010
Fish Measured	3887	2671	0	0	6558
Samples	19	14	0	0	33
Total Catches (ton)	1317	726	1198	24	3266

**Table 21-.** Roughhead grenadier: numbers at age, mean length and mean weight of the Spanish catch by Division.

Age	3L			3M			3N			3O		
	Numb.	M. L.	M. W.	Numb.	M. L.	M. W.	Numb.	M. L.	M. W.	Numb.	M. L.	M. W.
3	36777	9.0	73	16481	9.0	73	27686	9.1	74	17106	9.0	73
4	83763	11.0	126	30662	11.0	126	63474	11.0	126	35543	11.0	126
5	74580	12.3	171	31654	12.3	173	58132	12.3	171	34720	12.3	171
6	160617	13.6	230	62556	13.6	228	125199	13.6	230	73512	13.6	230
7	434989	14.8	294	157764	14.8	293	337893	14.8	294	196579	14.8	294
8	749105	16.5	399	267775	16.5	403	580507	16.5	400	338490	16.5	401
9	482249	17.5	474	189118	17.7	485	381140	17.6	477	228447	17.6	478
10	255048	19.0	593	136445	19.3	621	227063	19.1	605	134967	19.1	604
11	129960	21.1	810	97675	21.3	823	136551	21.2	817	78802	21.2	818
12	113141	22.0	914	90750	22.2	940	123208	22.1	930	71829	22.1	930
13	49451	22.6	995	41394	22.9	1042	56804	22.8	1032	32082	22.8	1026
14	22454	26.1	1509	18631	25.6	1414	25416	25.9	1465	14744	25.9	1472
15	12940	28.6	1918	10940	28.0	1803	15503	28.2	1849	8580	28.3	1862
16	31331	27.8	1802	23746	27.8	1814	34314	27.8	1812	19746	27.8	1810
17	15561	30.6	2330	10044	30.7	2355	15731	30.6	2343	9366	30.6	2349
18	4054	33.8	3089	1873	33.6	3066	3497	33.6	3051	2182	33.8	3096
19	4407	33.2	2938	3620	33.8	3112	5102	33.4	3020	2979	33.5	3040
20	2080	33.9	3130	1674	34.6	3346	2341	34.3	3278	1441	34.2	3237
21	156	36.5	3832	74	36.5	3832	160	36.5	3832	69	36.5	3832
22	649	35.0	3397	540	37.5	4167	809	36.5	3853	437	36.2	3764
23	156	36.5	3832	74	36.5	3832	160	36.5	3832	69	36.5	3832
24	0			736	37.0	3985	654	37.0	3985	284	37.0	3985
25	0			0			0			0		
Total	2663469			1194225			2221343			1301972		

**Table 22-.** Roughhead grenadier: numbers at age, mean length and mean weight of the Spanish catches in Divisions 3LMNO.

<b>Roughhead grenadier</b>	<b>Total 3LMNO</b>		
	<b>Age</b>	<b>Numb.</b>	<b>M. L. M. W.</b>
<b>3</b>		<b>98050</b>	9.0 73
<b>4</b>		<b>213441</b>	11.0 126
<b>5</b>		<b>199085</b>	12.3 171
<b>6</b>		<b>421884</b>	13.6 229
<b>7</b>		<b>1127225</b>	14.8 294
<b>8</b>		<b>1935877</b>	16.5 400
<b>9</b>		<b>1280954</b>	17.6 477
<b>10</b>		<b>753523</b>	19.1 604
<b>11</b>		<b>442988</b>	21.2 816
<b>12</b>		<b>398928</b>	22.1 928
<b>13</b>		<b>179730</b>	22.8 1023
<b>14</b>		<b>81245</b>	25.9 1467
<b>15</b>		<b>47963</b>	28.3 1860
<b>16</b>		<b>109137</b>	27.8 1809
<b>17</b>		<b>50702</b>	30.6 2343
<b>18</b>		<b>11606</b>	33.7 3075
<b>19</b>		<b>16108</b>	33.5 3022
<b>20</b>		<b>7536</b>	34.2 3244
<b>21</b>		<b>459</b>	36.5 3832
<b>22</b>		<b>2434</b>	36.2 3785
<b>23</b>		<b>459</b>	36.5 3832
<b>24</b>		<b>1674</b>	37.0 3985
<b>25</b>		<b>0</b>	
<b>Total</b>		<b>7381010</b>	