



**SCIENTIFIC COUNCIL MEETING – JUNE 2005**

Spanish Research Report for 2004

by

F. González<sup>1</sup>, J. L. del Río<sup>1</sup>, A. Vázquez<sup>2</sup>, H. Murua<sup>3</sup>, E. Román<sup>1</sup>, M. Casas<sup>1</sup>, P. Duran<sup>1</sup> and G. Ramilo<sup>1</sup>

<sup>1</sup> Instituto Español de Oceanografía, Vigo, Spain

<sup>2</sup> Instituto de Investigaciones Marinas, Vigo, Spain

<sup>3</sup> AZTI TECNALIA, Pasaia, Spain

**SUBAREA 1 and 2**

**A. Status of the fisheries**

A total of 9 Spanish pelagic trawlers operated in NAFO Subarea 1 and 2, Div. 1F and 2J, during 2004, amounting 152 days of fishing effort, part of this effort was carried out within the ZEE of Greenland. Catches in Div. 1F and 2J were 885 tons of redfish (*Sebastes mentella*). Table 1 shows the effort and catches by quarter and Division of this fishery.

More complete information about this fishery can be found in NAFO SCR Doc. 05/15.

**(B) Research studies**

An experimental fishing survey with three Spanish commercial vessels was carried out in Subarea 1, inside the territorial waters of Greenland, from July to December 2004. The observers on board collected data of catches by species, effort and position by haul and took length distribution samples of the main species in the catches (*Reinhardtius hippoglossoides*, *Pandalus borealis*, *Gadus morhua*, *Hippoglossoides platessoides*, *Sebastes* spp, *Macrourus berglax* and Polar cod). Biological sampling of *Reinhardtius hippoglossoides*, *Pandalus borealis*, *Gadus morhua*, *Hippoglossoides platessoides* and *Macrourus berglax* were done. Otoliths of Greenland halibut and cod were also taken for age determination.

During this experimental fishing 826 hauls of approximately one hour of duration were carried out in Subarea 1 with a bottom trawl gear (between 42 and 60 mm cod-end). The main catches were Greenland halibut (73%), northern prawn (9%) and cod (5%). Table 2 shows the catches by species and Division and Table 3 presents the effort in hours by Division.

More complete information about this experimental fishing is available in NAFO SCS Doc. 05/33.

**SUBAREA 3**

**A. Status of the fisheries**

A total of 32 Spanish trawlers operated in NAFO Area, Div. 3LMNO, during 2004, amounting to a fishing effort of 5 123 days (81 264 hours), which implies a decrease of 25% in 2004 compared to 2003. Total catches for all species combined in Div. 3LMNO were 23 371 tons in 2004, compared to 34 919 tons in 2003.

All the effort information comes from the NAFO observers on board. In 2004 we had catch information from 4 787 fishing days while total effort was 5 123 (93% coverage). In 2003 we had had catch information from 6458 fishing days while total effort had been 6 873 days (94% coverage). Table 4 shows the effort (hours) by quarter and Division and the total effort in days, catch information and percentage by quarter of the effort where catch information was available. Table 5 presents the percentage of the effort by Division and mesh size.

These tables show that the Spanish fleet in NAFO Subarea 3 has three different fisheries characterized by different gears, objective species, deep and fishing area. The Spanish fleet effort 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 Div. 3L, most of the effort was performed 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 using 135 mm cod-end mesh size, targeting Greenland halibut, and the fishing effort carried out using 40 mm cod-end mesh size was directed to the shrimp fishery, in the latter fishery the two more important species in the by-catch, according to IEO scientific observers, were redfish (2.6 kg/h) and Greenland halibut (0.1 Kg/h). In Div. 3N and during the first half of the year, the fishing activity was performed 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 m, 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 estimation of the total catches in 2003 and 2004 were done through the information of NAFO observers on board. We know the total effort (Fishing days) by month and Division with the NAFO observers information, each year we have catch information by species and haul by haul in a high percentage of this total effort, the reason because we don't have catch information in 100% of the total effort is that same catch information is not available in computer format. The catch information we have is divided by species, Division, month and type of gear and in the months where the coverage is not 100% of the effort, we raise the catches we have information to the total effort by the factor "total effort/effort we have catches information" by Division and month.

The split by species of grenadiers catches in 2003 and 2004 were calculated based on the percentage observed by the IEO scientific observers and for wolfish based in the survey information (Flemish Cap, 3NO and 3L surveys).

The NAFO observers estimates of Spanish catches by species and Division in 2004 are presented in Table 6.

In addition to the NAFO observers (NAFO Scientific Observers Program), eight IEO scientific observers were onboard, comprising a total of 565 days, which implies a roughly 11% coverage of the total effort. 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 7.

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

Main catches of this species were taken as by-catch in the Greenland halibut fishery and skate fishery in Div. 3N. Very few catches were taken in Div. 3L and 3O.

There are only two length distribution samplings in Div. 3N with a few measured fish. Table 8 shows the results.

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

Most of the catches in Div. 3LN and 3M were by-catch of the Greenland halibut fishery. A small directed fishery for this species was carried out in Div. 3O.

Length distribution for Div. 3LN are shown in Table 9 and those for Div. 3M are presented in Table 10, in Div. 3O there are not length distribution samples.

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

Most catches were taken in Div. 3LNO as by-catch of the Greenland halibut and skate fisheries. Catches in Div. 3M only amounted 55 tons and were taken as by-catch of the Greenland halibut fishery.

Length distribution for Div. 3M and 3LNO are presented in Tables 11 and 12.

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

This species is taken as by-catch of the Greenland halibut fishery. Length distribution for Div. 3L and 3N are shown in Table 13.

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

Almost all of the catches were taken in Div. 3N, as by-catch of the skate fishery. There is only one length distribution sample in Div. 3N for 2004 catches that is present in Table 14.

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

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. Tables 15, 16 and 17 shows the length distribution of the Spanish total catches by Division. The total age composition, mean weight and mean length at age for Div. 3LMNO are presented in table 18. Most of the Greenland halibut catches corresponds to ages 4 to 7 as in the last years.

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

Catches comprise many species of skates, thus the catch of skates in Table 6 refers to *Raja spp.* The ratios among skates observed during the 2004 Spanish survey in Div. 3LNO and in Flemish Cap Survey, as well as those calculated from the Spanish scientific observers in Div. 3LMNO, are present in Table 19.

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 catches for Div. 3L and 3N are presented in Table 20. In Div. 3L only one sample with few individuals was available.

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

Roughhead grenadier is the main species in the by-catch of the Greenland halibut fishery, and most of the 2004 catches were taken in Div. 3LM. Table 21 shows the length distributions of Spanish total catch by Division and Table 22 the length distributions of Spanish total catch. Total catch age distributions, mean weight and mean length at age for Div. 3LMNO are presented in Table 23. Most of the Roughhead grenadier catches are based on ages 5 to 12.

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

Main catches in 2004 were taken in Div. 3LM. Total catches have considerably decreased in the last year, moving from 1 840 tons in 2003 to 461 ton in 2004. This decrease has not been uniform in all Division, the highest decrease was observed in Div. 3NO, with 1 468 tons in 2003 and 113 tons in 2004. The level of the catches of 2004 was more or less the same compared to that of before 2002. Length distribution of the catches of Div. 3O are presented in Table 24, in 2004 there is only one sample available.

## **(B) Research studies**

The bottom trawl survey of NAFO Regulatory area in Div. 3NO was conducted in June 2004 on board R/V *Vizconde de Eza* using a Campelen gear with a stratified design. A total of 122 hauls were carried out up to a depth of 1 450 m. The results of the Spanish 3NO bottom trawl survey for all the period studied (1995-2004), including biomass indices with their errors and length distributions, as well as the calculated biomass based on conversion of the length frequencies are presented in SCR 05/25, SCR 05/26, SCR 05/27 and SCR 05/28 for American plaice and yellowtail flounder; Atlantic cod and Thorny skate; Greenland halibut; roughhead grenadier and white hake and compared to the estimates based on CPUE's ratios.

In 2003 it was decided to extend toward Div. 3L the Spanish 3NO survey. In the last year a total of 50 valid hauls, in 24 stratum in Flemish Pass area Div. 3L (Fig. 1), were made by the R/V *Vizconde de Eza* with the usual survey gear (Campelen) up to 1464 meters depth. The results of this extension will be present in the future.

The EU bottom trawl survey on Flemish Cap (Div. 3M) was carried out from June 25<sup>th</sup> to August 2<sup>nd</sup> 2004. In the present year the area surveyed was extended up to depths of 800 fathoms (1 400 m) following the same procedure as in previous years and increasing the number of hauls foreseen (195). R/V *Vizconde de Eza* replaced R/V *Cornide de Saavedra* in 2003 as survey vessel, so, in order to maintain the data series obtained, the comparative fishing trials initiated in 2003 were continued in the 2004 survey to calculate the appropriate factors between the two vessels. In the last year a total of 124 valid hauls were made by the R/V *Vizconde de Eza* with the usual survey gear (Lofoten) up to 730 m depth, 61 of those hauls were paired in with the R/V *Cornide de Saavedra*.

The correction factors for the main species were estimated (SCR 05/29) and the indexes in the series from 1988 to 2002 were changed to the scale of the new vessel. 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 05/35, as well as in SCR 05/36 for Roughhead grenadier and SCR 05/47 for Redfish. Data of shrimp was presented in SCR 04/77. 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.

## **OTHER SUBAREAS**

### **Research studies**

During last Quarter of year 2004, a two month experimental fishing survey was carried out in NAFO Regulatory Area (**Div. 6EFGH and 4XWVs**) with one polyvalent Spanish trawler, using "*Gloria*" pelagic gear (60-135 mm cod-end) and bottom gear (130 mm cod-end). The observer on board collected data, among others, on catches by species, effort, depth and position, haul by haul and took length distribution samples of the main species in the catches (*Beryx splendens*, *Epigonus telescopus*, *Aphanopus carbo*). Biological sampling of the above mentioned species were done, and otoliths were taken. During the survey, a total of 119 hauls were carried out (76% of the trawling hours with pelagic gear and 24% with bottom gear). *B. splendens* was the main caught species (38% of the total catch for pelagic gear and 93% for bottom gear). More information about this experimental survey is available in NAFO SCS Doc. 05/32.

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**Table 1.** Fishing effort (days) of the Spanish fleet, by quarter and Division and redfish catches (tons) by quarter and Division in NAFO SA 1 and 2.

Div.	Effort (days)				Total
	Q1	Q2	Q3	Q4	
<b>1F</b>			129	13	142
<b>2J</b>			10	0	10

Div.	Redfish Catches (tons)				Total
	Q1	Q2	Q3	Q4	
<b>1F</b>			753	76	829
<b>2J</b>			56		56

**Table 2.** Spanish experimental fishing survey catches in NAFO Subarea 1 in 2004 by species and Division.

Code	Scientific name	English name	Total Catches (t)						Total
			1A	1B	1C	1D	1E	1F	
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	83	58	45	85	1	0	271
PRA	<i>Pandalus borealis</i>	Northern prawn	3	29	1	1	0	0	34
COD	<i>Gadus morhua</i>	Atlantic cod	0	0	0	10	8	0	19
PLA	<i>Hippoglossoides platessoides</i>	American plaice	0	2	0	2	2	0	5
RED	<i>Sebastes</i> spp	Atlantic redfishes nei	1	2	0	1	2	0	5
HAL	<i>Hippoglossus hippoglossus</i>	Atlantic halibut	0	0	0	3	0	0	4
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	0	0	0	2	0	0	2
RJG	<i>Amblyraja hyperborea</i>	Arctic skate	2	0	0	0	0	0	2
ANT	<i>Antimora rostrata</i>	Blue antimora	0	0	0	1	0	0	2
POC	<i>Boreogadus saida</i>	Polar cod	0	1	0	0	0	0	1
GDE	<i>Gaidropsarus ensis</i>	Threadfin rockling	0	0	1	0	0	0	1
RJR	<i>Amblyraja radiata</i>	Starry ray	0	0	0	1	0	0	1
CRQ	<i>Chionoecetes opilio</i>	Queen crab	0	0	0	1	0	0	1
CFB	<i>Centroscyllium fabricii</i>	Black dogfish	0	0	0	1	0	0	1
Others	131 Species		2	6	1	12	1	0	22
TOTAL			91	98	49	119	14	0	371

**Table 3.** Spanish experimental fishing survey effort in NAFO Subarea 1 in 2004 by month and Division.

Div.	Units	Jun	Jul	Aug	Oct	Nov	Dec	TOTAL
1A	Hours	108	104	42				253
1B	Hours	47	50	49	47	35	1	229
1C	Hours	44	40	9				92
1D	Hours	26	25	60	72	77		259
1E	Hours			22	37	15		74
1F	Hours			1				1
Total hours		224	218	183	155	127	1	908

**Table 4.** Fishing effort (hours) of the Spanish fleet in 2004, by quarter and Division, as well as total effort, effort with catch information and percentage of the effort with catch information by quarter.

Div.	units	1° Q	2° Q	3° Q	4° Q	Total	%
3L	Hours	14029	9051	10525	9929	43534	54%
3M	Hours	9961	6997	3682	2501	23142	28%
3N	Hours	2119	2287	5912	3724	14042	17%
3O	Hours	101	56	241	148	546	1%
	<b>Total Hours</b>	26211	18391	20360	16302	81264	100%
	<b>Total Days</b>	1605	1142	1377	999	5123	
	<b>Observed Days</b>	1515	1142	1262	868	4787	
	<b>Observed/Total</b>	94%	100%	92%	87%	93%	

**Table 5-.** Percentage of the effort in SA 3 by mesh size, quarter and Division.

Div.	Mesh Size	1° Q	2° Q	3° Q	4° Q	Total
3L	<90 mm	1%	0%	0%	0%	0%
	100-200 mm	99%	100%	100%	100%	100%
	>200 mm	0%	0%	0%	0%	0%
3M	<90 mm	1%	11%	17%	42%	11%
	100-200 mm	99%	89%	83%	58%	89%
	>200 mm	0%	0%	0%	0%	0%
3N	<90 mm	0%	0%	0%	0%	0%
	100-200 mm	91%	99%	58%	71%	74%
	>200 mm	9%	1%	42%	29%	26%
3O	<90 mm	0%	0%	0%	0%	0%
	100-200 mm	100%	100%	98%	100%	99%
	>200 mm	0%	0%	2%	0%	1%

**Table 6.** Spanish catches in NAFO Subarea 3 in 2004 by species and Division.

Total Catches (t)			Division				Total
Code	Scientific name	English name	3L	3M	3N	3O	
GHL	Reinhardtius hippoglossoides	Greenland halibut	4746	1986	1013	28	7773
SKA	Raja spp	Raja rays nei	867	336	5117	21	6340
RHG	Macrourus berglax	Roughhead grenadier	1341	1019	535	13	2908
PRA	Pandalus borealis	Northern prawn	155	1049	0		1204
RED	Sebastes spp	Atlantic redfishes nei	288	267	151	327	1033
PLA	Hippoglossoides platessoides	American plaice	269	55	337	10	672
HKR	Urophycis chuss	Red hake	343	202	69	4	618
WIT	Glyptocephalus cynoglossus	Witch flounder	210	231	155	12	607
HKW	Urophycis tenuis	White hake	191	157	79	33	461
RNG	Coryphaenoides rupestris	Roundnose grenadier	216	70	54	4	345
YEL	Limanda ferruginea	Yellowtail flounder	224		106	0	330
DGX	Squalidae	Dogfish sharks nei	119	50	116	12	297
CAB	Anarhichas denticulatus	Northern wolffish	167	73	52	2	293
HAL	Hippoglossus hippoglossus	Atlantic halibut	18	4	53	3	79
GSK	Somniosus microcephalus	Greenland shark	31	5	30		66
SKH	Selachimorpha(Pleurotremata)	Various sharks nei	25	16	7		48
ROL	Gaidropsarus spp	Rocklings nei	2	44			46
CAS	Anarhichas minor	Spotted wolffish	33	1	5	0	40
ANT	Antimora rostrata	Blue antimora	10	18	4		33
ANG	Lophius americanus	American angler	0	1	10	4	15
GRO	Osteichthyes	Groundfishes nei	8	5	1	0	14
SPW	Physeter catodon	Sperm whale	8	4			12
ODN	Odontoceti	Toothed whales nei			11		11
COD	Gadus morhua	Atlantic cod	0		9	0	10
CRA	Brachyura	Marine crabs nei	2	1	4		6
RAT	Hydrolagus coliei	Spotted ratfish	0		3	2	5
CAP	Mallotus villosus	Capelin	5				5
CAA	Anarhichas lupus	Atlantic wolffish	2	1	0	0	3
Others	56 Species		57	23	13	5	98
TOTAL			9337	5618	7934	482	23370

**Table 7.** Length-weight parameters by species.

Species	a	b
Greenland halibut	0.00740	3.0310
Redfish	0.01900	2.9060
Roughhead grenadier	0.11390	2.8921
Witch flounder	0.00220	3.2995
American plaice	0.00600	3.1127
Cod	0.00800	3.0400
Roundnose grenadier	0.20400	2.9636
Yellowtail Flounder	0.00710	3.0903
Skate	0.01115	2.9471
<i>S. mentella</i>	0.02473	2.8376
White Hake	0.00540	3.0938



Table 8. Length distribution of the Spanish cod catches in Div. 3N.

<b>Cod Length (cm)</b>	<b>3N Total</b>
<b>46</b>	232
<b>47</b>	0
<b>48</b>	464
<b>49</b>	0
<b>50</b>	0
<b>51</b>	232
<b>52</b>	0
<b>53</b>	232
<b>54</b>	232
<b>55</b>	232
<b>56</b>	0
<b>57</b>	0
<b>58</b>	464
<b>59</b>	0
<b>60</b>	232
<b>61</b>	232
<b>62</b>	0
<b>63</b>	0
<b>64</b>	0
<b>65</b>	701
<b>66</b>	232
<b>67</b>	0
<b>68</b>	469
<b>69</b>	232
<b>70</b>	0
<b>71</b>	232
<b>72</b>	0
<b>73</b>	232
<b>TOTAL</b>	4647
<b>Ind Sampled</b>	20
<b>Samples</b>	2
<b>Catch (ton)</b>	9

**Table 9.** Length distribution of the Spanish redfish catches by Division.

Redfish Length (cm)	3L			3N			3LN		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
11	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0
17	869	379	1248	0	0	0	869	379	1248
18	619	1288	1907	450	0	450	1069	1288	2357
19	2107	1288	3395	6010	0	6010	8116	1288	9404
20	2077	2236	4313	3959	1601	5559	6035	3837	9873
21	3405	2736	6140	0	3959	3959	3405	6694	10099
22	2656	1687	4343	0	5402	5402	2656	7090	9745
23	2855	4513	7368	4859	900	5759	7715	5413	13128
24	9046	9715	18760	450	0	450	9496	9715	19211
25	14317	18341	32658	900	1351	2251	15218	19692	34909
26	35264	37221	72485	5309	3594	8904	40574	40815	81389
27	46706	47754	94461	5388	7553	12941	52094	55308	107402
28	44659	52687	97346	21916	16764	38680	66575	69451	136026
29	46606	55852	102458	31255	35379	66634	77862	91230	169092
30	37840	46107	83947	16292	20858	37151	54132	66965	121098
31	22045	25270	47315	15006	25132	40138	37051	50402	87453
32	19190	21436	40626	16957	13491	30448	36146	34927	71074
33	16883	19919	36802	11412	17343	28754	28295	37261	65556
34	16434	16813	33247	13405	4044	17450	29839	20858	50697
35	13958	16524	30482	3594	9247	12841	17552	25770	43323
36	9765	14817	24581	4859	16207	21066	14624	31023	45647
37	3315	8047	11362	900	17871	18772	4215	25919	30134
38	2057	5671	7728	0	450	450	2057	6121	8178
39	589	3764	4353	0	0	0	589	3764	4353
40	1727	1847	3574	450	1601	2051	2177	3448	5625
41	1338	489	1827	0	1601	1601	1338	2090	3428
42	349	679	1028	0	0	0	349	679	1028
43	2157	958	3115	0	0	0	2157	958	3115
44	1677	0	1677	0	0	0	1677	0	1677
45	120	609	729	0	0	0	120	609	729
46	0	180	180	0	0	0	0	180	180
47	349	749	1098	0	0	0	349	749	1098
<b>TOTAL</b>	<b>360979</b>	<b>419576</b>	<b>780556</b>	<b>163373</b>	<b>204347</b>	<b>367719</b>	<b>524352</b>	<b>623923</b>	<b>1148275</b>
<b>Ind Sampled</b>			<b>3647</b>			<b>321</b>			<b>3968</b>
<b>Samples</b>			<b>25</b>			<b>4</b>			<b>29</b>
<b>Catch (ton)</b>			<b>288</b>			<b>151</b>			<b>439</b>

**Table 10.** Redfish 3M stock Spanish catches length distribution.

<b>Redfish</b>	<b>3M</b>		
	<b>Males</b>	<b>Females</b>	<b>Total</b>
<b>11</b>	167	167	335
<b>12</b>	1954	1228	3182
<b>13</b>	893	363	1256
<b>14</b>	167	167	335
<b>15</b>	167	3210	3377
<b>16</b>	698	3042	3740
<b>17</b>	5722	2875	8597
<b>18</b>	16664	0	16664
<b>19</b>	43543	37821	81364
<b>20</b>	27242	0	27242
<b>21</b>	2875	8067	10942
<b>22</b>	24953	0	24953
<b>23</b>	8067	5387	13454
<b>24</b>	2680	10746	13426
<b>25</b>	13454	19008	32462
<b>26</b>	26600	27242	53843
<b>27</b>	27438	43096	70534
<b>28</b>	43068	33913	76982
<b>29</b>	15268	37737	53005
<b>30</b>	44241	10662	54903
<b>31</b>	4633	7787	12421
<b>32</b>	12114	34499	46613
<b>33</b>	11472	44687	56159
<b>34</b>	28638	27438	56076
<b>35</b>	2400	45888	48288
<b>36</b>	19287	7034	26321
<b>37</b>	4438	7146	11584
<b>38</b>	4801	0	4801
<b>39</b>	0	0	0
<b>40</b>	0	2233	2233
<b>41</b>	0	0	0
<b>42</b>	0	0	0
<b>43</b>	0	0	0
<b>44</b>	0	0	0
<b>45</b>	0	0	0
<b>46</b>	0	0	0
<b>47</b>	0	0	0
<b>TOTAL</b>	393645	421446	815091
<b>Ind Sampled</b>			348
<b>Samples</b>			5
<b>Catch (ton)</b>			267

**Table 11.** American plaice 3M stock Spanish catches length distribution.

<b>American plaice</b>	<b>3M</b>		
	<b>Males</b>	<b>Females</b>	<b>Total</b>
<b>25</b>	0	0	0
<b>26</b>	0	0	0
<b>27</b>	0	0	0
<b>28</b>	0	974	974
<b>29</b>	0	0	0
<b>30</b>	0	0	0
<b>31</b>	0	0	0
<b>32</b>	0	0	0
<b>33</b>	0	0	0
<b>34</b>	0	0	0
<b>35</b>	0	0	0
<b>36</b>	0	0	0
<b>37</b>	472	1980	2452
<b>38</b>	974	4401	5375
<b>39</b>	472	3929	4401
<b>40</b>	974	3929	4904
<b>41</b>	1446	5910	7356
<b>42</b>	1446	0	1446
<b>43</b>	472	2452	2923
<b>44</b>	1918	1477	3395
<b>45</b>	472	5407	5878
<b>46</b>	0	472	472
<b>47</b>	0	3395	3395
<b>48</b>	0	1446	1446
<b>49</b>	0	2892	2892
<b>50</b>	0	2421	2421
<b>51</b>	0	4307	4307
<b>52</b>	0	1949	1949
<b>53</b>	0	4307	4307
<b>54</b>	0	1446	1446
<b>55</b>	0	472	472
<b>56</b>	0	0	0
<b>57</b>	0	0	0
<b>58</b>	0	0	0
<b>59</b>	0	0	0
<b>60</b>	0	0	0
<b>TOTAL</b>	8645	53566	62210
<b>Ind. Sampled</b>			95
<b>Samples</b>			2
<b>Catch (ton)</b>			55

**Table 12.** American plaice 3LNO stock Spanish catches length distribution by Division.

American plaice Length (cm)	3L			3NO				3LNO				
	Males	Females	Ind.	Total	Males	Females	Ind.	Total	Males	Females	Ind.	Total
19	0	0		0	0	391	0	391	0	391	0	391
20	213	0		213	0	69	0	69	213	69	0	282
21	0	85		85	0	391	0	391	0	476	0	476
22	77	306		383	299	575	0	874	376	881	0	1257
23	85	468		553	0	529	0	529	85	997	0	1082
24	196	1743		1939	0	2254	0	2254	196	3997	0	4193
25	1122	2687		3809	644	1817	0	2461	1766	4504	0	6270
26	2576	6691		9268	2070	5313	0	7383	4646	12005	0	16651
27	3358	12856		16214	9201	15411	0	24612	12559	28267	0	40826
28	4855	15423		20278	13939	12973	0	26912	18794	28396	0	47190
29	5909	16801		22710	11110	16446	0	27556	17019	33247	0	50266
30	8460	22242		30702	14790	32225	1403	48418	23250	54467	1403	79120
31	5748	24717		30464	12168	36733	690	49591	17915	61450	690	80055
32	8162	30541		38703	16883	43427	0	60310	25045	73968	0	99013
33	8341	24802		33142	31765	37699	0	69464	40106	62501	0	102607
34	7032	30728		37759	24290	52604	690	77584	31321	83332	690	115343
35	6164	26443		32607	26452	62357	0	88809	32616	88800	0	121415
36	4974	31025		35999	14537	49982	0	64519	19511	81008	0	100518
37	3860	28347		32207	19275	47291	0	66566	23135	75638	0	98773
38	2916	32700		35617	7659	63921	0	71581	10576	96621	0	107197
39	2687	36799		39485	6325	34456	0	40782	9012	71255	0	80267
40	1939	49442		51380	23162	56699	0	79861	25101	106140	0	131241
41	2109	52188		54297	22817	19850	0	42668	24926	72038	0	96964
42	1114	56975		58089	6716	55273	0	61989	7830	112247	0	120078
43	1233	56014		57247	27556	16193	0	43749	28789	72207	0	100996
44	859	47240		48098	7705	33858	0	41564	8564	81098	0	89662
45	689	42495		43184	7682	63553	0	71236	8371	106048	0	114419
46	434	35192		35625	437	42415	0	42852	871	77606	0	78477
47	85	26613		26698	8419	65209	0	73628	8504	91822	0	100325
48	187	18416		18603	391	61552	0	61943	578	79968	0	80546
49	43	13281		13323	345	49361	0	49706	388	62642	0	63029
50	0	9548		9548	230	53731	0	53961	230	63280	0	63510
51	0	6071		6071	115	18700	0	18815	115	24771	0	24886
52	0	4753		4753	345	48234	0	48579	345	52987	0	53332
53	0	2687		2687	46	38780	0	38826	46	41467	0	41513
54	0	1837		1837	1173	25785	0	26958	1173	27621	0	28794
55	0	1071		1071	0	34318	0	34318	0	35389	0	35389
56	0	442		442	1173	11018	0	12191	1173	11460	0	12633
57	0	247		247	46	28062	0	28108	46	28308	0	28354
58	0	255		255	0	9477	0	9477	0	9732	0	9732
59	0	0		0	0	34203	0	34203	0	34203	0	34203
60	0	264		264	0	2185	0	2185	0	2449	0	2449
61	0	0		0	230	8074	0	8304	230	8074	0	8304
62	0	0		0	230	15986	0	16216	230	15986	0	16216
63	0	0		0	230	15894	0	16124	230	15894	0	16124
64	0	0		0	0	230	0	230	0	230	0	230
65	0	0		0	0	15641	0	15641	0	15641	0	15641
66	0	0		0	0	15894	0	15894	0	15894	0	15894
67	0	0		0	0	0	0	0	0	0	0	0
68	0	0		0	0	7820	0	7820	0	7820	0	7820
69	0	0		0	0	0	0	0	0	0	0	0
70	0	0		0	0	7820	0	7820	0	7820	0	7820
71	0	0		0	230	0	0	230	230	0	0	230
<b>TOTAL</b>	<b>85424</b>	<b>770431</b>		<b>855855</b>	<b>320686</b>	<b>1372681</b>	<b>2783</b>	<b>1696151</b>	<b>406110</b>	<b>2143112</b>	<b>2783</b>	<b>2552006</b>
<b>Ind. Sampled</b>				<b>5801</b>				<b>2281</b>				<b>8082</b>
<b>Samples</b>				<b>33</b>				<b>14</b>				<b>47</b>
<b>Catch (ton)</b>				<b>269</b>				<b>347</b>				<b>616</b>

**Table 13.** Witch flounder Spanish catches length distribution for Div. 3L and 3N.

Witch Flounder Length (cm)	3L			3N		
	Males	Females	Total	Males	Females	Total
19	0	0	0	0	392	392
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0
25	0	627	627	0	783	783
26	0	0	0	0	0	0
27	1372	686	2058	0	1930	1930
28	0	711	711	0	1539	1539
29	2168	1245	3413	392	3441	3833
30	1465	3269	4734	1539	4588	6127
31	3328	3294	6622	1539	1539	3078
32	6580	6428	13008	5512	1539	7050
33	7588	5208	12796	11219	16815	28034
34	9476	12330	21807	12646	21935	34581
35	8816	15277	24093	17822	43366	61188
36	16819	16615	33434	23026	31000	54026
37	14337	9705	24042	20956	19109	40065
38	10611	16124	26735	11051	20396	31447
39	24220	22484	46704	4588	16703	21291
40	12576	21180	33756	9876	9149	19025
41	15608	22010	37617	8142	21683	29825
42	9299	25330	34628	755	18298	19053
43	8011	17970	25982	364	13933	14297
44	5987	20037	26024	0	10772	10772
45	2066	15015	17081	0	7890	7890
46	3743	13948	17691	364	5400	5763
47	2405	10747	13152	0	6687	6687
48	1821	5996	7817	0	2238	2238
49	263	4099	4361	0	1091	1091
50	686	5682	6368	0	1315	1315
51	1939	1397	3337	0	979	979
52	0	0	0	0	2294	2294
53	0	1643	1643	0	392	392
54	0	1313	1313	0	755	755
55	0	686	686	0	727	727
56	0	0	0	0	0	0
57	0	0	0	0	0	0
58	0	0	0	0	0	0
59	686	0	686	0	0	0
<b>TOTAL</b>	171870	281055	452925	129790	288678	418468
<b>Ind Sampled</b>			942			451
<b>Samples</b>			7			5
<b>Catch (ton)</b>			210			155

**Table 14.** Yellowtail flounder Spanish catches length distribution for Div. 3N.

<b>Yellowtail flounder</b>	<b>3N</b>		
	<b>Males</b>	<b>Females</b>	<b>Total</b>
<b>24</b>	869	0	869
<b>25</b>	0	0	0
<b>26</b>	0	0	0
<b>27</b>	869	0	869
<b>28</b>	869	0	869
<b>29</b>	4388	0	4388
<b>30</b>	5257	2629	7886
<b>31</b>	3519	869	4388
<b>32</b>	7017	2629	9646
<b>33</b>	11405	7017	18422
<b>34</b>	6147	8776	14924
<b>35</b>	5257	9646	14903
<b>36</b>	7017	8776	15793
<b>37</b>	869	15793	16662
<b>38</b>	3519	21940	25459
<b>39</b>	3519	9646	13164
<b>40</b>	0	10536	10536
<b>41</b>	869	8776	9646
<b>42</b>	869	7017	7886
<b>43</b>	0	6147	6147
<b>44</b>	0	6147	6147
<b>45</b>	0	2629	2629
<b>46</b>	0	2629	2629
<b>47</b>	0	2629	2629
<b>48</b>	0	0	0
<b>49</b>	0	869	869
<b>TOTAL</b>	62261	135099	197361
<b>Ind Sampled</b>			225
<b>Samples</b>			1
<b>Catch (ton)</b>			106

**Table 15.** Greenland halibut Spanish catches length distribution for Div. 3L and 3M.

Greenland halibut Length (cm)	3L				3M			
	Males	Females	Ind.	Total	Males	Females	Ind.	Total
23	427	0	0	427	0	0	0	0
25	0	277	0	277	0	0	0	0
26	1680	0	0	1680	0	0	0	0
27	1371	1424	0	2795	0	0	0	0
28	5589	3920	0	9509	416	0	0	416
29	13498	5776	0	19274	1319	443	0	1762
30	20389	16437	0	36826	319	806	0	1124
31	41573	27568	59	69199	3949	3223	0	7171
32	55172	49349	96	104617	3895	6206	0	10102
33	60020	59322	101	119443	4480	5640	0	10119
34	82287	73076	139	155501	11297	11279	0	22576
35	99182	85369	149	184701	14989	11199	0	26188
36	129753	127273	0	257025	22523	22381	0	44904
37	147176	156013	80	303270	27029	34838	0	61867
38	174013	210679	96	384788	29481	40282	0	69764
39	176605	206434	160	383199	47693	51252	0	98944
40	186253	249425	176	435854	37361	63549	0	100910
41	176040	245297	27	421364	47816	73155	0	120971
42	173021	239292	112	412425	55528	78219	0	133746
43	139331	229937	107	369375	50853	70994	0	121847
44	142584	210583	75	353242	54049	74695	0	128744
45	127609	205325	48	332981	46604	83876	0	130479
46	93961	195373	176	289510	45886	80290	0	126177
47	96772	160835	91	257697	44939	81795	0	126735
48	77103	150435	48	227586	36148	77811	0	113959
49	65290	134504	0	199794	42965	67648	0	110613
50	59962	108196	0	168157	34174	54341	0	88515
51	46367	101113	0	147480	27720	54456	0	82176
52	42655	95342	0	137998	31580	55147	0	86727
53	32186	83503	0	115689	16113	48312	0	64425
54	29242	67268	0	96510	15520	39565	0	55085
55	17258	50506	0	67764	8597	31208	0	39804
56	11082	42879	0	53962	8880	28649	0	37529
57	7739	42639	0	50378	5454	26418	0	31872
58	7035	32069	0	39103	3302	19265	0	22567
59	3125	32341	0	35466	3125	25666	0	28791
60	3440	20170	0	23610	1355	14555	0	15909
61	1973	18277	0	20250	513	12589	0	13103
62	1984	14176	0	16160	1682	9110	0	10792
63	1232	14202	0	15434	425	6180	0	6605
64	747	10448	0	11194	301	2364	0	2665
65	597	7456	0	8053	1461	5392	0	6852
66	645	5664	0	6309	0	4887	0	4887
67	107	5851	0	5957	62	4294	0	4356
68	75	4389	0	4464	319	2514	0	2833
69	128	4171	0	4299	0	5418	0	5418
70	0	5365	0	5365	0	1912	0	1912
71	0	2923	0	2923	0	3586	0	3586
72	75	2891	0	2965	0	3904	0	3904
73	123	2133	0	2256	195	1062	0	1257
74	176	2283	0	2459	0	1682	0	1682
75	0	1899	0	1899	0	593	0	593
76	0	2960	0	2960	0	894	0	894
77	0	2091	0	2091	0	1877	0	1877
78	0	1584	0	1584	0	1222	0	1222
79	0	907	0	907	0	788	0	788
80	0	1925	0	1925	0	478	0	478
81	0	795	0	795	0	1673	0	1673
82	0	1243	0	1243	0	0	0	0
83	0	1259	0	1259	0	1496	0	1496
84	0	832	0	832	0	398	0	398
85	0	816	0	816	0	1231	0	1231
86	0	875	0	875	0	18	0	18
87	0	75	0	75	0	505	0	505
88	0	144	0	144	0	336	0	336
89	0	661	0	661	0	513	0	513
90+	0	2549	0	2549	0	1266	0	1266
<b>TOTAL</b>	<b>2554651</b>	<b>3840789</b>	<b>1739</b>	<b>6397179</b>	<b>790313</b>	<b>1415345</b>	<b>0</b>	<b>2205658</b>
<b>Ind Sampled</b>				<b>36136</b>				<b>5905</b>
<b>Samples</b>				<b>215</b>				<b>39</b>
<b>Catch (ton)</b>				<b>4746</b>				<b>1986</b>



**Table 16.** Greenland halibut Spanish catches length distribution for Div. 3N and 3O.

Greenland halibut Length (cm)	3N				3O			
	Males	Females	Ind.	Total	Males	Females	Ind.	Total
23	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0
26	187	0	0	187	0	0	0	0
27	194	0	0	194	0	0	0	0
28	1116	210	0	1326	0	0	0	0
29	1062	541	0	1602	0	0	0	0
30	1357	4313	0	5670	0	0	0	0
31	5834	4826	0	10660	0	0	0	0
32	7117	7436	132	14685	0	0	0	0
33	9785	12250	148	22183	0	0	0	0
34	12367	13339	0	25707	0	0	0	0
35	11702	14417	0	26119	0	0	0	0
36	13826	22809	0	36635	0	0	0	0
37	14529	24964	0	39493	0	0	0	0
38	20561	30471	0	51032	18	0	0	18
39	20079	39205	0	59285	49	35	0	84
40	20806	33990	148	54944	0	18	0	18
41	26255	53393	144	79792	32	81	0	113
42	25559	43262	0	68821	67	162	0	229
43	20892	50285	74	71251	218	190	0	408
44	20390	47151	0	67541	99	380	0	478
45	16719	42912	0	59631	35	246	0	281
46	13802	35511	0	49313	158	450	0	609
47	15019	35009	0	50029	141	454	0	595
48	11325	31171	0	42496	426	693	0	1119
49	9695	26411	0	36106	348	552	0	901
50	12177	29207	0	41383	489	1140	0	1629
51	8288	22961	0	31248	222	1003	0	1224
52	7358	21751	0	29110	602	922	0	1523
53	10030	20293	0	30323	348	946	0	1295
54	2897	17578	0	20476	401	1164	0	1566
55	4690	14141	0	18831	401	693	0	1094
56	4581	14397	0	18979	186	799	0	985
57	3170	11974	0	15144	190	545	0	735
58	2104	13542	0	15646	352	672	0	1024
59	1948	10458	0	12406	243	556	0	799
60	1334	7922	0	9256	32	281	0	313
61	1283	7817	0	9100	116	271	0	387
62	832	4854	0	5686	35	288	0	324
63	852	5114	0	5966	18	271	0	288
64	747	3955	0	4702	14	77	0	91
65	412	2816	0	3228	0	130	0	130
66	202	2450	0	2652	0	18	0	18
67	346	2291	0	2637	0	88	0	88
68	121	2610	0	2730	0	18	0	18
69	101	2232	0	2333	0	35	0	35
70	0	1505	0	1505	0	18	0	18
71	0	1388	0	1388	0	99	0	99
72	0	1509	0	1509	0	18	0	18
73	0	832	0	832	0	32	0	32
74	0	1388	0	1388	0	18	0	18
75	0	1346	0	1346	0	63	0	63
76	66	614	0	681	0	67	0	67
77	0	1388	0	1388	0	109	0	109
78	0	560	0	560	0	141	0	141
79	0	474	0	474	0	63	0	63
80	0	618	0	618	0	35	0	35
81	0	1108	0	1108	0	49	0	49
82	0	214	0	214	0	32	0	32
83	0	401	0	401	0	84	0	84
84	0	354	0	354	0	0	0	0
85	0	513	0	513	0	14	0	14
86	0	579	0	579	0	63	0	63
87	0	401	0	401	0	49	0	49
88	0	167	0	167	0	0	0	0
89	0	237	0	237	0	18	0	18
90+	0	922	0	922	0	18	0	18
<b>TOTAL</b>	<b>363719</b>	<b>808758</b>	<b>646</b>	<b>1173123</b>	<b>5238</b>	<b>14167</b>	<b>0</b>	<b>19406</b>
<b>Ind Sampled</b>				<b>8596</b>				<b>755</b>
<b>Samples</b>				<b>45</b>				<b>4</b>
<b>Catch (ton)</b>				<b>1013</b>				<b>28</b>

**Table 17.** Greenland halibut Subarea 2 Div. 3LMNO stock Spanish catches length distribution.

Greenland halibut Length (cm)	3LMNO			Total
	Males	Females	Ind.	
23	427	0	0	427
24	0	0	0	0
25	0	277	0	277
26	1867	0	0	1867
27	1565	1424	0	2989
28	7121	4130	0	11251
29	15879	6759	0	22638
30	22065	21556	0	43621
31	51355	35616	59	87030
32	66185	62991	228	129404
33	74285	77212	249	151746
34	105951	97695	139	203784
35	125873	110985	149	237008
36	166101	172463	0	338564
37	188735	215815	80	404629
38	224073	281432	96	505602
39	244426	296926	160	541512
40	244420	346982	324	591726
41	250143	371925	171	622239
42	254174	360934	112	615221
43	211294	351407	181	562882
44	217122	332809	75	550006
45	190966	332358	48	523373
46	153808	311624	176	465608
47	156871	278093	91	435055
48	125001	260110	48	385159
49	118298	229115	0	347413
50	106801	192883	0	299684
51	82596	179533	0	262129
52	82195	173163	0	255357
53	58677	153054	0	211731
54	48060	125576	0	173637
55	30946	96547	0	127493
56	24730	86724	0	111454
57	16552	81577	0	98129
58	12793	65547	0	78340
59	8442	69020	0	77462
60	6160	42929	0	49089
61	3886	38954	0	42841
62	4534	28428	0	32961
63	2526	25767	0	28293
64	1808	16844	0	18653
65	2470	15793	0	18264
66	848	13019	0	13866
67	515	12523	0	13038
68	514	9531	0	10045
69	229	11856	0	12085
70	0	8800	0	8800
71	0	7995	0	7995
72	75	8321	0	8396
73	317	4060	0	4377
74	176	5371	0	5547
75	0	3901	0	3901
76	66	4535	0	4602
77	0	5465	0	5465
78	0	3506	0	3506
79	0	2232	0	2232
80	0	3057	0	3057
81	0	3626	0	3626
82	0	1488	0	1488
83	0	3240	0	3240
84	0	1584	0	1584
85	0	2574	0	2574
86	0	1535	0	1535
87	0	1029	0	1029
88	0	648	0	648
89	0	1430	0	1430
90+	0	4755	0	4755
<b>TOTAL</b>	<b>3713922</b>	<b>6079060</b>	<b>2384</b>	<b>9795366</b>
<b>Ind Sampled</b>				<b>51392</b>
<b>Samples</b>				<b>303</b>
<b>Catch (ton)</b>				<b>7773</b>

**Table 18.** Greenland halibut Subarea 2 Div. 3LMNO stock Spanish catches ages distribution, mean weight (gr) and mean length (cm) by age.

Greenland halibut 3LMNO									
Ages	Abundance				Ages	Mean Weight (gr)			
	Males	Females	Ind.	Total		Males	Females	Ind.	Total
1					1				
2	948	111		1059	2	141	136		141
3	74812	74774	115	149702	3	273	267	289	270
4	426292	385838	547	812677	4	373	362	332	368
5	1359131	1758634	964	3118729	5	537	543	512	541
6	1300433	1984288	705	3285426	6	753	767	720	761
7	451142	1212315	54	1663511	7	1164	1134	868	1142
8	68732	289968		358699	8	1458	1495		1488
9	12844	106226		119071	9	1764	1777		1776
10	7427	62553		69980	10	1982	1966		1968
11	6192	52569		58761	11	2145	2159		2157
12	4531	55852		60383	12	2361	2553		2539
13	1406	44028		45434	13	2901	2979		2977
14	18	25552		25570	14	3790	3628		3628
15	13	14189		14202	15	3790	4406		4406
16		6889		6889	16		5509		5509
17		2438		2438	17		6037		6037
18		1815		1815	18		7015		7015
19		1022		1022	19		7969		7969
20					20				

Mean length (cm)				
Ages	Males	Females	Ind.	Total
1				
2	25.7	25.5		25.7
3	31.9	31.8	32.7	31.9
4	35.3	35.1	34.1	35.2
5	39.9	40.1	39.3	40.0
6	44.6	45.0	44.1	44.8
7	51.7	51.2	47.0	51.3
8	55.7	56.2		56.1
9	59.4	59.6		59.6
10	61.8	61.6		61.6
11	63.4	63.5		63.5
12	65.4	67.0		66.9
13	69.9	70.4		70.4
14	76.5	75.1		75.1
15	76.5	80.2		80.2
16		86.5		86.5
17		89.0		89.0
18		93.7		93.7
19		97.7		97.7
20				

**Table 19.** Percentage of the different skates species in the Spanish (3NO and 3L) and UE (3M) surveys catches and in the commercial catches.

<b>Surveys</b>				
<b>Code</b>	<b>Scientific name</b>	<b>3L</b>	<b>3M</b>	<b>3NO</b>
RJR	<i>Raja radiata</i>	86%	63%	95%
RJQ	<i>Bathyraja spinicauda</i>	8%	17%	2%
RJG	<i>Raja hyperborea</i>	4%	16%	3%
RJS	<i>Raja senta</i>	0%	2%	0%
RJY	<i>Raja fyllae</i>	0%	0%	0%
RJT	<i>Raja ocellata</i>	0%	0%	0%
JRH	<i>Raja bathyphila</i>	1%	0%	0%
RJK	<i>Raja lintea</i>	0%	2%	0%

<b>IEO Observers</b>					
<b>Code</b>	<b>Scientific name</b>	<b>3L</b>	<b>3M</b>	<b>3N</b>	<b>3O</b>
RJR	<i>Raja radiata</i>	27%	45%	99%	100%
RJQ	<i>Bathyraja spinicauda</i>	65%	35%	1%	0%
RJG	<i>Raja hyperborea</i>	8%	20%	0%	0%
RJS	<i>Raja senta</i>	1%	0%	0%	0%

**Table 20.** Skates Spanish catches length distribution for Div. 3L and 3N.

Skates Length (cm)	3L			3N		
	Males	Females	Total	Males	Females	Total
28	0	0	0	1303	0	1303
31	0	0	0	2606	0	2606
32	0	0	0	1746	261	2007
33	0	0	0	2319	417	2736
34	0	0	0	3179	912	4091
35	0	0	0	704	2658	3362
36	0	0	0	5368	5186	10554
37	0	0	0	2476	4430	6906
38	0	0	0	7688	8678	16366
39	0	0	0	9773	6385	16157
40	0	0	0	9799	9773	19571
41	0	0	0	8001	15923	23923
42	0	26212	26212	14776	9955	24731
43	0	0	0	4196	23507	27702
44	0	0	0	19493	30204	49697
45	0	0	0	22647	19024	41671
46	0	0	0	34243	24262	58506
47	0	0	0	23246	19650	42895
48	0	0	0	41697	31116	72813
49	26212	0	26212	38335	35286	73621
50	0	0	0	35338	44329	79667
51	26212	26212	52423	41280	26165	67444
52	0	26212	26212	42296	38882	81178
53	0	0	0	30647	33305	63952
54	26212	0	26212	52460	20223	72683
55	26212	0	26212	34243	23950	58193
56	0	26212	26212	46883	37214	84097
57	26212	0	26212	33774	32862	66637
58	0	0	0	31663	29214	60877
59	52320	0	52320	40003	21239	61242
60	0	0	0	51026	25774	76800
61	0	0	0	38205	24054	62258
62	0	0	0	32002	24549	56551
63	0	0	0	33149	26086	59235
64	26212	0	26212	31611	23950	55561
65	0	0	0	29500	25096	54597
66	0	0	0	42166	23585	65750
67	0	0	0	31533	24028	55561
68	0	0	0	33566	23194	56760
69	0	0	0	11753	26790	38543
70	0	0	0	34426	21943	56369
71	26212	0	26212	28693	15324	44016
72	0	0	0	29266	13291	42557
73	0	0	0	26946	14724	41671
74	0	0	0	17330	12066	29396
75	0	0	0	24054	13525	37579
76	0	0	0	26634	5733	32367
77	26212	0	26212	23063	3909	26973
78	26212	0	26212	19728	4978	24705
79	0	0	0	25435	1538	26973
80	0	0	0	22725	2580	25305
81	0	0	0	21656	3883	25539
82	0	0	0	18373	1642	20014
83	0	0	0	7688	704	8391
84	0	0	0	6776	521	7297
85	0	0	0	10711	573	11284
86	0	0	0	2710	3075	5785
87	0	0	0	1876	261	2137
88	0	0	0	2658	0	2658
89	0	0	0	0	417	417
90	0	0	0	1016	0	1016
92	0	0	0	1798	0	1798
94	0	0	0	547	0	547
95	0	0	0	2241	0	2241
<b>TOTAL</b>	<b>288225</b>	<b>104847</b>	<b>393071</b>	<b>1333043</b>	<b>922800</b>	<b>2255842</b>
<b>Ind Sampled</b>			<b>15</b>			<b>3626</b>
<b>Samples</b>			<b>1</b>			<b>20</b>
<b>Catch (ton)</b>			<b>867</b>			<b>5117</b>

**Table 21.** Roughhead grenadier Spanish catches length distribution by Division

Roughhead g Length (cm)	3L			3M			3NO		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
23	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	66	66
25	4555	2811	7366	8491	1910	10401	133	116	249
26	3449	8043	11492	8586	5957	14543	332	1244	1576
27	9409	13625	23034	14694	6714	21408	431	415	846
28	28067	24210	52277	26609	18344	44953	3999	3385	7384
29	43376	24439	67815	41398	31677	73075	4663	4447	9110
30	55666	44004	99670	47601	42816	90417	9093	8894	17987
31	70736	51490	122225	67950	64999	132949	12329	16892	29221
32	123451	69281	192732	91608	91022	182630	20128	17406	37534
33	160618	98843	259461	131909	91627	223536	37932	26068	64000
34	185127	124308	309436	173155	112581	285737	55820	42313	98133
35	191636	138970	330605	169127	126444	295571	64399	47623	112022
36	159273	145757	305030	113773	121735	235507	38048	50543	88592
37	77703	105710	183413	65699	89169	154868	21638	46445	68082
38	54061	99680	153741	28500	60272	88771	9923	46959	56882
39	24888	80832	105720	13106	54636	67742	6422	28076	34498
40	13087	74394	87480	2572	49416	51988	2871	23961	26831
41	4266	34177	38443	0	27914	27914	1709	20128	21837
42	2960	37596	40556	0	23791	23791	50	17489	17539
43	2761	31466	34227	0	17701	17701	498	16792	17290
44	797	16665	17462	0	14600	14600	0	12926	12926
45	1116	21858	22974	0	3990	3990	216	13905	14121
46	518	12748	13266	0	10704	10704	0	9591	9591
47	488	11273	11761	0	6449	6449	0	12893	12893
48	488	11063	11552	0	5371	5371	0	9276	9276
49	159	13037	13196	0	5976	5976	0	7168	7168
50	0	6887	6887	0	10061	10061	0	5758	5758
51	159	2821	2980	0	1853	1853	0	4912	4912
52	0	2811	2811	0	3120	3120	0	3352	3352
53	0	2801	2801	0	2893	2893	0	581	581
54	0	1615	1615	0	0	0	0	1211	1211
55	0	1714	1714	0	284	284	0	0	0
56	0	419	419	0	586	586	0	0	0
57	0	110	110	0	284	284	0	199	199
58	0	0	0	0	586	586	0	133	133
<b>TOTAL</b>	<b>1218815</b>	<b>1315455</b>	<b>2534270</b>	<b>1004778</b>	<b>1105483</b>	<b>2110261</b>	<b>290632</b>	<b>501168</b>	<b>791800</b>
<b>Ind Sampled</b>			<b>7712</b>			<b>2956</b>			<b>4568</b>
<b>Samples</b>			<b>44</b>			<b>17</b>			<b>23</b>
<b>Catch (ton)</b>			<b>1341</b>			<b>1019</b>			<b>548</b>

**Table 22.** Roughhead grenadier Spanish catches length distribution for Div. 3LMNO.

Roughhead grenadier Length (cm)	3LMNO		Total
	Males	Females	
23	0	0	0
24	0	66	66
25	13179	4837	18016
26	12366	15245	27611
27	24535	20753	45288
28	58675	45939	104614
29	89437	60563	150000
30	112360	95714	208074
31	151014	133381	284395
32	235187	177709	412896
33	330460	216538	546998
34	414103	279203	693305
35	425162	313036	738198
36	311094	318035	629129
37	165040	241323	406363
38	92484	206911	299394
39	44415	163544	207959
40	18529	147771	166300
41	5975	82218	88193
42	3010	78876	81886
43	3259	65960	69218
44	797	44191	44988
45	1332	39753	41085
46	518	33043	33561
47	488	30615	31103
48	488	25710	26198
49	159	26181	26341
50	0	22706	22706
51	159	9586	9745
52	0	9283	9283
53	0	6275	6275
54	0	2826	2826
55	0	1998	1998
56	0	1005	1005
57	0	592	592
58	0	719	719
<b>TOTAL</b>	<b>2514225</b>	<b>2922106</b>	<b>5436331</b>
<b>Ind Sampled</b>			<b>15236</b>
<b>Samples</b>			<b>84</b>
<b>Catch (ton)</b>			<b>2908</b>

**Table 23.** Roughhead grenadier Div. 3LMNO Spanish catches ages distribution, mean weight (gr) and mean length (cm) by age.

3LMNO Roughhead grenadier								
Age	Abundance			Age	Mean Wegtht (gr)			Total
	Males	Females	Total		Males	Females	Total	
1				1				
2				2				
3	42674	40633	83307	3	64	64	64	
4	105001	59177	164177	4	122	121	122	
5	149376	230095	379470	5	178	193	187	
6	283231	191107	474338	6	232	278	250	
7	350390	382758	733148	7	310	330	320	
8	626771	517760	1144531	8	398	463	427	
9	386393	438812	825205	9	449	567	512	
10	294973	278422	573395	10	552	742	644	
11	95575	205695	301270	11	587	773	714	
12	128130	186025	314155	12	672	1069	907	
13	31516	145328	176843	13	797	1222	1146	
14	12719	82060	94779	14	887	1426	1353	
15	858	52890	53748	15	1884	2019	2017	
16	4500	44149	48649	16	1041	2354	2232	
17	238	24514	24751	17	2102	2349	2347	
18	1512	21060	22572	18	1097	2481	2388	
19	146	9769	9915	19	2016	2552	2544	
20	223	6009	6232	20	1495	2558	2520	
21		3529	3529	21		3769	3769	
22		335	335	22		4384	4384	
23		335	335	23		4384	4384	
24		1646	1646	24		4807	4807	

Age	Mean Length		
	Males	Females	Total
1			
2			
3	8,8	8,9	8,9
4	11,1	11,1	11,1
5	12,6	13,0	12,8
6	13,8	14,6	14,1
7	15,3	15,7	15,5
8	16,7	17,6	17,1
9	17,4	18,9	18,2
10	18,8	20,7	19,7
11	19,1	21,0	20,4
12	20,0	23,4	22,0
13	21,2	24,6	24,0
14	22,0	25,7	25,2
15	28,7	29,3	29,3
16	23,2	30,9	30,2
17	29,6	30,4	30,4
18	23,5	31,6	31,0
19	29,3	31,6	31,6
20	26,2	31,8	31,6
21		36,5	36,5
22		38,5	38,5
23		38,5	38,5
24		39,7	39,7



**Table 24.** White hake Spanish catches length distribution for Div. 30

<b>White Hake Length (cm)</b>	<b>Males</b>	<b>30 Females</b>	<b>Total</b>
32	0	132	132
33	0	0	0
34	0	0	0
35	0	132	132
36	0	132	132
37	0	0	0
38	0	0	0
39	0	0	0
40	0	132	132
41	132	0	132
42	0	395	395
43	0	0	0
44	132	132	265
45	132	0	132
46	0	0	0
47	263	0	263
48	0	132	132
49	528	263	791
50	0	0	0
51	660	0	660
52	791	132	923
53	923	132	1055
54	1451	1188	2639
55	791	395	1186
56	263	395	658
57	1451	0	1451
58	791	791	1581
59	263	528	791
60	660	263	923
61	263	132	395
62	263	1188	1451
63	132	132	265
64	132	923	1055
65	0	395	395
66	132	528	660
67	0	395	395
68	0	395	395
69	0	0	0
70	0	263	263
71	0	263	263
72	0	263	263
73	0	132	132
74	0	0	0
75	0	132	132
76	0	0	0
77	0	0	0
78	0	0	0
79	0	0	0
80	0	0	0
81	0	0	0
82	0	132	132
<b>TOTAL</b>	<b>10154</b>	<b>10553</b>	<b>20707</b>
<b>Ind Sampled</b>	<b>77</b>	<b>80</b>	<b>157</b>
<b>Samples</b>			<b>1</b>
<b>Catch (ton)</b>			<b>33</b>

### Sampled Strata

Stratum	Depth range. (m)	Total Hauls	Valid Hauls
385	93 - 183	2	2
390	93 - 183	3	3
389	183 - 274	2	2
391	183 - 274	2	2
387	274 - 366	2	2
388	274 - 366	2	1
392	274 - 366	2	2
729	366 - 549	2	2
731	366 - 549	2	2
733	366 - 549	4	3
730	549 - 732	3	2
732	549 - 732	3	2
734	549 - 732	3	3
741	732 - 915	3	3
745	732 - 915	3	3
748	732 - 915	2	2
742	915 - 1098	2	1
746	915 - 1098	3	3
749	915 - 1098	2	2
743	1098 - 1280	2	2
747	1098 - 1280	3	3
750	1098 - 1280	2	2
744	1281 - 1464	2	1
751	1281 - 1464	2	0
Total	93 - 1464	58	50

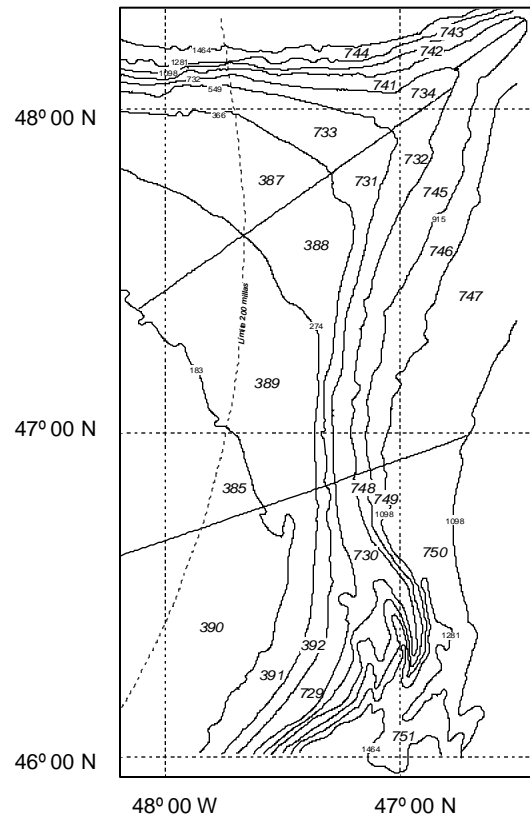


Fig. 1. New strata with their depth range and 2004 number of hauls per stratum, of the Spanish Survey in Div. 3L.