

**SCIENTIFIC COUNCIL MEETING – JUNE 2011****Spanish Research Report for 2010**

by

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All effort and catch information in this Report are based on information from NAFO observers on board. In 2010 information from 1095 days was available while total effort of the Spanish fleet in NAFO Regulatory Area was 1524 days (72% coverage). Estimates of the Spanish catches by species and Division in 2010 based on the information collected by the NAFO Observers are presented in Table 1.

In addition to NAFO observers, IEO scientific observers were on board 396 fishing days that it means 26 % of the Spanish total effort. All length, age and biological information presented in this paper are based on sampling carried out by IEO scientific observers: 444 samples were taken in 2010, with 58 222 individuals of different species examined (Table 2).

SUBAREA 1 and 2**A. Status of the fisheries**

Only one Spanish pelagic trawler using Gloria gear operated in NAFO Regulatory Area (NRA) Subarea 1 and 2 (Div. 1F) during 2010, amounting 8 fishing hours. Catches in NRA Div. 1F were 3.3 tons of pelagic redfish (*Sebastes mentella*).

More complete information about this fishery can be found in ICES North-Western Working Group Reports.

SUBAREA 3**A. Status of the fisheries**

A total of 15 Spanish trawlers operated in NAFO Regulatory Area, Div. 3LMNO, during 2010, amounting to 1 519 days (22 703 hours) of fishing effort. Table 3 presents the Spanish effort (Fishing hours) since 2003 in NAFO Regulatory Area (NRA) Subarea 3. In 2010, Spanish effort increased 7% in this Area in relation with 2009 effort. Total catches (Table 1) for all species combined in Div. 3LMNO were 13 308 tons in 2009, compared to 17 497 tons in 2010.

Table 4 shows the effort (hours) by quarter and Division and their percentage. Table 5 presents the percentage of the effort by Division and mesh size and Figure 1 shows the NAFO Observers holes position made with the different mesh sizes (footprint) by the Spanish fleet in 2010.

These tables and figure illustrate that the Spanish fleet has, at least, five different fisheries in NAFO Subarea 3 characterized by different mesh size, target species, depth and fishing area. The Spanish effort in NAFO area is mainly directed to Greenland halibut (mostly in Div. 3LM) using 135 mm cod-end mesh size at more than 700 m

depth, alternating with the skate fishery in the second half of the year (Div. 3NO) using 280 mm cod-end mesh size at less than 200 m depth, shrimp fishery (Div. 3LM) using 40 mm cod-end mesh size at 200-600 m depth, redfish (Div. 3O and Div. 3M) using 135 mm cod-end mesh size at 200-700 m depth and Cod in Division 3M using mesh size of 135 mm at 100-400 m. depth. This last is a traditional fishery that it was closed in 1999 and was reopen in 2010. 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 first 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 at more than 700 m depth targeting Greenland halibut and in less degree at less than 700 m depth targeting redfish and Cod. The 16% of the fishing effort in this Division was carried out using 40 mm cod-end mesh size directed to the shrimp fishery. In Div. 3N and during the first quarter of the year, fishing was performed using 135 and 280 mm cod-end mesh size, which indicates that the fleet targeted Greenland halibut in depth more than 700 m. and skate in depth less than 200 m. in similar proportion. However, during the others quarters most part of the effort moved to depths less than 200 m where the skate fishery took place using 280 mm mesh size. Fishing effort in Div. 3O was limited (4%) and targeted redfish, using mainly 135 mm mesh size (75%) and in less proportion skates using mainly 280 mm mesh size (25%).

In addition to NAFO observers (NAFO Observers Program), 9 IEO scientific observers were onboard the Spanish vessels, comprising a total of 396 observed fishing days, around 26% coverage of the total Spanish effort. Besides recording catches, discards, and effort, these observers carried out biological sampling of the main species taken in the catch. For Greenland halibut, roughhead grenadier, American plaice and Cod this includes recording weight at length, sex-ratio, maturity stages, performing stomach contents analyses, and collecting material for reproductive studies. Otoliths of these four species were also taken for age determination. In 2010, 444 length samples were taken, with 58 222 individuals of different species examined to obtain the length distributions (Table 2). Length and age distributions presented in this paper are based on sampling carried out by these observers. Parameters used for the length-weight relationships are shown by species in Table 6.

The Spanish activity en NAFO Regulatory Area (NRA) Subarea 3 in 2010 stock by stock was the following:

Cod

Div. 3NO: In Div. 3N, the most important part of the catches of this species were taken as by-catch in the skate fishery (280 mm mesh size) and in less degree in Greenland halibut fishery. Few catches were taken in Div. O. Table 7 shows the catch length distribution for Div. 3NO cod. All length distribution samples came from the skate fishery (280 mm mesh size) in Div. 3N. The bulk of the catches are comprised in the 39-54 cm range.

Div. 3M: Catches in Div. 3M were around 786 tons and were taken in the reopen direct fishery and in less degree as by-catch of the redfish and Greenland halibut fisheries. The legal mesh size of the Cod fishery is 130 mm. The length distribution of the Spanish catches are presented in Table 8 and we can see that most of the catches are comprised in the range of 50-80 cm.

Redfish

Div. 3LN: Most of the catches in Div. 3LN were taken as by-catch in the Greenland halibut fishery and very small part in the 3L Shrimp fishery. Table 9 shows the length distribution for Div. 3LN based on only six samples.

3M: In Div. 3M the redfish catches in 2010 have been 805 tons. In this Division a small part of the catches were taken as by-catch in the shrimp fishery. Table 10 shows the Spanish catches length distribution for redfish Division 3M and it can be observed that the bulk of the catches are in the 25-38 cm range.

Div. 3O: A directed fishery for this species took place in Div. 3O mostly in the second half of this year. Catches have reached 1294 ton in this Division, most of them with 135 mm mesh size and a small part with 280 mm mesh size. Catches length distribution for Div. 3O are presented in Table 11 and it can be observed that are smaller than the observed 3M and 3LN length distributions.

American plaice

Div. 3LNO: Most catches in Div. 3LNO were taken as by-catch of the skate and Greenland halibut fisheries. Length distributions for Div. 3LNO are presented in Table 12. Length distribution presents a poly modal distribution with signal of younger fish in the catches. The bulk of catches were in the range of 29-50 cm..

Div. 3M: Catches in Div. 3M only amounted 5 tons and were taken as by-catch of the Greenland halibut fishery. There is not available length distributions for Division 3M.

Witch flounder

Div. 2J and 3KL: Spanish catches for this stock in 2010 were 50 tons and were taken in the small part of NAFO Regulatory Area (NRA) of Div. 3L. Length distributions of catches are presented in Table 13 and are based only on one sample and probably are not representatives.

Div. 3M: This species in this Division is taken as by-catch in the Greenland halibut and redfish fishery. Catches this year were 145 tons and there is not management stock for this species in this Division. Spanish catches length distribution for this species and Division are presented in Table 14.

Div. 3NO This species in this Division is taken as by-catch in the Greenland halibut and skate fishery. This year, there was only length distribution samples for Witch flounder catch with 135 mm cod end. This length distribution was apply to all catches (135 and 280 mm mesh size) and results are showed in Table 15.

Yellowtail flounder

Div. 3LNO: Most of the catches were taken in Div. 3N as by-catch in the skate fishery. Length distributions for Yellowtail flounder Div. 3LNO are presented in Table 16, all length samples were taken in Division 3N. Most of the catches are in the 28-44 cm. length range.

Greenland halibut

Subareas 2 and Div. 3KLMNO: Greenland halibut continues to be one of the main target species for the Spanish fleet in NAFO area. A great reduction of effort in this fishery has been carried out in the last years by the Spanish fleet to adapt to the NAFO Greenland halibut recovery plan. Most of the catches have been taken in the Flemish Pass area (Div. 3LM) at depths more than 700 meters. The mesh size used for this fishery was equal to or greater than 130 mm. In 2010 there were not length distributions samples in Div 3O. The length distributions of Div. 3N were apply to the Div. 3O catches. Tables 17 shows the length distributions of Spanish catches by Division (3L, 3M and 3NO) and the total length distributions of Spanish catches in Divisions 3KLMNO. Most of the catches were in the 38-60 cm length range and the mode of the length distribution was in 46 cm. Total age composition based in the commercial Spanish Age Length Key (ALK), mean weight and mean length at age for Div. 3KLMNO are presented in Table 18. Most of the Greenland halibut catches corresponds to ages 5 to 8, with a peak at ages 6-7.

Figure 2 presents the Spanish fleet standardised CPUE update with the 2010 data presented by Gonzalez-Costas and Gonzalez-Troncoso (2009). Results shows that the 2010 CPUE is at the same level of the last years values and in maximums of the historical series.

Thorny skate

Commercial catches of skates comprise a mix of skate species (*Raja radiata*, *Bathyraja spinicauda*, *Raja hyperborean*, *Raja senta*, etc). Thus the catch of skate in Table 1 refers to *Raja* spp. However, thorny skate dominates, comprising about 95% of the skate taken in the Spanish catches.

Div. 3LNO: Most of the catches were taken in Div. 3N at depths less than 200 meters, where a fishery directed to thorny skate took place mainly in the second semester of the year, using 280 mm mesh size. Skate catches in Div. 3L were much smaller than those in Div. 3NO and they were by-catch of the Greenland halibut fishery (135 mm cod-end). Table 19 shows the total catches length distributions by sex of Div. 3LNO, all samples were taken in Division 3NO.

Div. 3M: Skate catches in Div. 3M (96 tons) were much smaller than those in Div. 3NO and they were by-catch of the Greenland halibut, redfish and Cod fisheries. There is not available catches length distributions for Division 3M.

Roughhead grenadier

Subarea 2 and 3: Roughhead grenadier is the main species taken as by-catch in the Greenland halibut fishery. Most of the 2010 catches and all of the length distribution samples were taken in Div. 3LM. Individuals were measured

from tip of snout to base of first anal-fin ray (AFL) to the half centimetre below. Tables 20 shows the AFL length distributions, grouping in 1 cm intervals, of Spanish catches for Div. 3LMNO. Age distributions based on the Spanish Commercial Age Length Key (ALK), mean weight and mean length (AFL) at age of the total catch for Div. 3LMNO are presented in Table 21. Most of the Roughhead grenadier catches in 2010 were based on ages 6 to 11 with a mode in 8 years old. This age distribution is similar to the years before.

White hake

Div. 3LMNO: Catches in the last years are in the same level as before 2000. Catches of this species in 2010 (49 tons) were a small by-catch of different fisheries. In Div. 3LMN (18 tons) they are by-catch of the Greenland halibut fishery and in Div. 3O (31 tons) by-catch of the redfish fishery. There were not length distribution samplings available in 2010.

(B) Research studies

The Spanish bottom trawl survey in NAFO Regulatory area Div. 3NO was conducted from 30 May to 18 June 2010 on board R/V Vizconde de Eza using Campelen gear with a stratified design. A total of 95 valid hauls were carried out to a depth between 40 and 1 395 m. The results of the Spanish 3NO bottom trawl survey, including biomass indices with their errors and length distributions, as well as the calculated biomass based on conversion of length frequencies for Greenland halibut, American plaice, Atlantic cod, Yellowtail flounder, Thorny skate, White hake and Roughhead grenadier are presented as Scientific Council Research Documents. As in the years 1995 and 1996 few deeper strata were surveyed, the data obtained in those surveys are not representative for most of the species, so the data is presented since 1997 to 2009 for all the species, except for Yellowtail flounder, whose data are presented for the whole period, and for White hake, presented for the period 2001-2009 because before 2001 there are no data available. A total of 89 hydrographic profile samplings were made. The depth of profiles ranged between 37 and 1 450 m. Feeding habit studies of 25 species were made. A total of 3276 stomach contents were analyzed. Material for histological maturity, fecundity and growth studies of Cod, American plaice and Greenland halibut were taken.

In 2003 it was decided to extend the Spanish 3NO survey toward Div. 3L (Flemish Pass). In 2010, the bottom trawl survey in Flemish Pass (Div. 3L) was carry out on board R/V Vizconde de Eza using the usual survey gear (Campelen 1800) from July 25th to August 14th. The area surveyed was Flemish Pass to depths up 800 fathoms (1463 m) following the same procedure as in previous years. The number of hauls was 103 and 6 of them were nulls. Survey results, including abundance indices and length distributions of the main commercial species, are presented as Scientific Council Research documents. Survey results for Div. 3LNO of the northern shrimp (*Pandalus borealis*) were presented in SCR 10/63. Samples for histological (Greenland halibut, American plaice) and aging (Greenland halibut, American plaice, roughhead grenadier and cod) studies were taken. Feeding studies on Greenland halibut, American plaice, Atlantic cod and other species continued to be performed and 1559 stomach contents were analysed in depths of 119 to 1462 m. One hundred hydrographic profile samplings were made in a depth range of 115-1445 m.

In 2007 the Spanish administration obtained a license from Canadian Authorities to carry out a research survey inside of the Canadian waters in 3L Division. In 2010 this survey was not carried out.

The EU bottom trawl survey in Flemish Cap (Div. 3M) was carried out on board R/V Vizconde de Eza using the usual survey gear (Lofoten) from June 21th to July 22th 2010. The area surveyed was Flemish Cap Bank to depths up to 800 fathoms (1 460 m) following the same procedure as in previous years. The number of hauls was 158 and five of them were nulls. Survey results including abundance indices of the main commercial species and age distributions for cod, redfish, American plaice, roughhead grenadier and Greenland halibut are presented as Scientific Council Research documents. Flemish Cap survey results for northern shrimp (*Pandalus borealis*) were presented in SCR 10/66. Samples for histological assessment of sexual maturity of cod, redfish, Greenland halibut and Roughhead grenadier were taken. Oceanography studies continued to take place

NEREIDA Project: The main objective of NEREIDA project is focused on the implementation of the Ecosystem Approach to the fisheries management in order to identify Vulnerable Marine Ecosystems (VMEs) paying special attention to the cold water corals and sponges. The study is centered in NAFO Regulated Area and tries to give an

answer to the urgent request in order to define in a precise way those areas which are candidate to become VMEs. This demarcation is a necessary step in the decision making process for the protection of these areas. Participation of various countries members of the NAFO contracting parties will provide to the NEREIDA project a multidisciplinary approach as well as the application of technologies and working protocols which will mean an active collaboration between institutions and organisms involved (Instituto Español de Oceanografía, Secretaría General del Mar, Consejo Superior de Investigaciones Científicas, Polar Research Institute of Marine Fisheries and Oceanography, Centre for Environment Fisheries & Aquaculture Science, Geological Survey of Canada, Canadian Hydrographic Service and Ecosystem Research Division-Fisheries and Oceans Canada (Bedford Institute of Oceanography)).

Geographically, the study area covers between the 200 miles of the Canadian EEZ and the 700-2000 m isobaths in High Seas of the Atlantic Northwestern. Total survey area during 2009 was divided into three parts, each part covered by a different survey:

- 1st Survey (NEREIDA 0509) covered east of Flemish Cap
- 2nd Survey (NEREIDA 0609) covered west and north of Flemish Cap
- 3rd Survey (NEREIDA 0709) covered the Flemish Pass

In order to complete the study area, the time series started in 2009 continued in the summer of 2010 with three new surveys:

- 1st Survey (NEREIDA 0610) covered the south of Flemish Cap and the Beothuk area.
- 2nd Survey (NEREIDA 0710) covered the east part of the Grand Banks.
- 3rd Survey (NEREIDA 0810) covered the south part of the Grand Banks.

Table 22 shows a summary of all the activities carried out during the NEREIDA 2010 surveys. It also shows the total prospected area in square kilometres and Table 23 shows a summary of all the samplings carried out during 2009 and 2010 surveys. It also shows the total prospected area in square kilometres.

Information derived from these surveys is very useful to adopt solutions that guarantee the development and sustainable use of fisheries resources as well as the location and identification of sensible and vulnerable zones within the NAFO Regulated Area.

SUBAREA 6

A. Status of the fisheries

One Spanish trawler operated in NAFO Regulatory Area, Div. 6G using a midwater trawl gear, during 2010, amounting to 4 days (66 hours) of fishing effort. The most important species in catches was the *Beryx splendens*. There is not available biological information of these catches. Other species present in catches were *Epigonus telescopus* (Table 1).

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Table 1. Spanish Catches (ton) in NAFO Area in 2010 by species and Division, based on NAFO Observers information.

Code	English_name	Scientific_name	1F	3L	3M	3N	3O	6G	Total
GHL	Greenland halibut	Reinhardtius hippoglossoides	3	2271	979	502	65		3817
SKA	Raja rays nei	Raja spp		76	96	2910	263		3345
COD	Atlantic cod	Gadus morhua		31	786	208	40		1064
RED	Atlantic redfishes nei	Sebastes spp		71	805	144	1294		2318
PLA	Amer. Plaice	Hippoglossoides platessoides		43	5	255	64		367
YEL	Yellowtail flounder	Limanda ferruginea		0		325	23		348
PRA	Northern prawn	Pandalus borealis		266	298				564
RHG	Roughhead grenadier	Macrourus berglax		206	115	79	8		407
WIT	Witch flounder	Glyptocephalus cynoglossus		50	145	99	68		361
RNG	Roundnose grenadier	Coryphaenoides rupestris		119	166	15	1		301
NZB	Marlin-spike grenadier	Nezumia bairdi				0			0
ANT	Blue antimora	Antimora rostrata		3	4	1			8
BYS	Splendid alfonsino	Beryx splendens						52	52
BYS	Boreal Shark	Somniosus microcephalus		34	27	6	1		69
CAA	Atlantic wolffish	Anarhichas lupus				1			1
ANG	American angler	Lophius americanus				4	6		10
HAL	Atlantic halibut	Hippoglossus hippoglossus		7	1	10	12		31
CAB	Northern wolffish	Anarhichas denticulatus		36	18	47	7		108
HKW	White hake	Urophycis tenuis		8	9	1	31		49
HKR	Red hake	Urophycis chuss		77	43	12	1		133
EPI	Black cardinal fish	Epigonus telescopus						3	3
Others	Others			3	1	3	2		10
Total (tons)				3300	3499	4622	1886	55	13362

Table 2. Samples and individuals sampled by the IEO Scientific Observers by species, mesh size and NAFO Division in 2010.

Species	Mesh Size	Datos	NAFO Division					Total
			1F	3L	3M	3N	3O	
American Plaice	130 mm	Samples		1		1	1	3
		Sampled Ind.		153		105	112	370
	280 mm	Samples				26		26
		Sampled Ind.				2656		2656
Blue Antimora	130 mm	Samples	8	1	2			11
		Sampled Ind.	567	47	304			918
Cod	130 mm	Samples		34				34
		Sampled Ind.		8445				8445
	280 mm	Samples				21		21
		Sampled Ind.				1354		1354
Greenland Halibut	130 mm	Samples	125	30	23			178
		Sampled Ind.	18380	4306	2557			25243
Grenadiers	130 mm	Samples	10	1	1			12
		Sampled Ind.	922	63	107			1092
Red Hake	130 mm	Samples	3	2				5
		Sampled Ind.	174	144				318
Redfish	100 mm	Samples	1					1
		Sampled Ind.	100					100
	40 mm	Samples		2				2
		Sampled Ind.		139				139
	130 mm	Samples	2	11	4	8		25
		Sampled Ind.	165	1353	337	891		2746
Rockling	130 mm	Samples	9		1			10
		Sampled Ind.	727		27			754
Roughhead Grenadier	130 mm	Samples	36	8	7			51
		Sampled Ind.	4504	1112	762			6378
Roundnose Grenadier	130 mm	Samples	4	3				7
		Sampled Ind.	413	285				698
Shrimp	40 mm	Samples	2	10				12
		Sampled Ind.	310	1795				2105
Skate	280 mm	Samples				23	1	24
		Sampled Ind.				2403	166	2569
Witch Flounder	130 mm	Samples	1	2	8			11
		Sampled Ind.	120	200	810			1130
Yellowtail Flounder	130 mm	Samples			1			1
		Sampled Ind.			122			122
	280 mm	Samples			10			10
		Sampled Ind.			1085			1085
Total Samples			1	201	104	128	10	444
Total Individuals Sampled			100	26435	17889	12629	1169	58222

Table 3. Fishing effort (hours) of the Spanish fleet in 2010 in Divisions 3LMNO by year.

3LMNO	2003	2004	2005	2006	2007	2008	2009	2010
Effort (Hours)	106821	76028	60128	44044	25163	21408	21250	22703

Table 4. Fishing effort (hours) of the Spanish fleet in 2010, by quarter and Division, as well as percentage of effort by quarter and Division.

Division	units	1st Q	2nd Q	3rd Q	4th Q	Total	%
3L	Hours	3823	1987	2542	1690	10042	44%
3M	Hours	2058	1658	365	145	4225	19%
3N	Hours	655	881	2687	3226	7450	33%
3O	Hours	125	353	351	157	986	4%
	Total Hours	6660	4879	5945	5218	22703	100%
	%	29%	21%	26%	23%	100%	

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

Div.	Mesh Size	1st Q	2nd Q	3rd Q	4th Q	Total
3L	<90 mm	8%	0%	0%	0%	3%
	100-200 mm	92%	100%	100%	100%	97%
	>200 mm					
3M	<90 mm	20%	10%	16%	15%	16%
	100-200 mm	80%	90%	84%	85%	84%
	>200 mm					
3N	<90 mm					
	100-200 mm	61%	64%	32%	42%	43%
	>200 mm	39%	36%	68%	58%	57%
3O	<90 mm					
	100-200 mm	91%	55%	93%	72%	75%
	>200 mm	9%	45%	7%	28%	25%

Table 6. Parameters of the length-weight relationship ($W(g) = a \cdot L(cm)^b$) by species.

Species	a	b
Greenland halibut	0.003485	3.2141
Redfish	0.012549	3.0206
Roughhead grenadier	0.12288	2.8756
Witch flounder	0.0021969	3.301899
American plaice	0.0033298	3.2754745
Cod	0.007425	3.0429
Roundnose grenadier	0.20400	2.9636
Yellowtail Flounder	0.0052283	3.1284802
Skate	0.0082085	3.041765
<i>S. mentella</i>	0.02473	2.8376
White Hake	0.00540	3.0938

Table 7. Length distribution of 3NO Spanish Cod catches.

Cod Length (cm)	Division 3NO			Total
	Males	Females	Ind.	
18	0	8	0	8
19	0	0	0	0
20	0	0	8	8
21	8	8	8	23
22	8	8	15	30
23	0	0	0	0
24	0	0	8	8
25	15	15	0	31
26	8	0	0	8
27	8	0	0	8
28	8	0	0	8
29	15	8	0	23
30	15	15	0	30
31	136	54	0	190
32	23	70	0	93
33	54	54	0	108
34	992	128	0	1121
35	1082	205	0	1287
36	234	1068	0	1303
37	1444	1118	0	2563
38	1484	1940	0	3424
39	2582	2895	0	5478
40	2784	1681	0	4465
41	1172	4702	0	5874
42	4774	6140	0	10914
43	7523	6238	0	13761
44	9276	8756	0	18031
45	7700	5344	0	13044
46	6651	9152	0	15803
47	9325	10457	0	19782
48	2576	2792	0	5368
49	3954	5090	0	9044
50	5164	3752	0	8916
51	2261	5086	0	7347
52	1981	5208	0	7189
53	1497	1279	0	2776
54	1753	1308	0	3061
55	1568	1853	0	3422
56	671	3114	0	3785
57	779	2056	0	2836
58	1021	449	0	1470
59	1154	1624	0	2777
60	2270	1673	0	3943
61	1869	305	0	2174
62	652	565	0	1217
63	149	1071	0	1220
64	735	987	0	1722

65	1389	438	0	1827
66	493	1023	0	1516
67	761	1450	0	2211
68	1244	741	0	1985
69	151	815	0	966
70	908	698	0	1605
71	1680	460	0	2140
72	1043	245	0	1288
73	290	230	0	519
74	23	30	0	53
75	222	726	0	948
76	8	90	0	97
77	229	0	0	229
78	282	8	0	290
79	8	23	0	31
80	15	121	0	136
81	8	8	0	15
82	0	112	0	112
83	8	24	0	31
84	8	15	0	23
85	15	15	0	31
86	8	0	0	8
87	0	15	0	15
88	31	15	0	46
89	0	275	0	275
90	0	0	0	0
91	0	0	0	0
92	8	0	0	8
93	0	0	0	0
94	0	0	0	0
95	0	0	0	0
96	0	8	0	8
97	0	0	0	0
98	0	0	0	0
99	0	8	0	8
100	15	244	0	260
101	8	8	0	15
102	0	229	0	229
103	0	0	0	0
104	0	0	0	0
105	0	0	0	0
106	0	0	0	0
107	0	8	0	8
108	0	0	0	0
109	0	0	0	0
110	8	0	0	8
111	0	0	0	0
112	0	0	0	0
113	0	0	0	0
114	0	0	0	0

115	8	0	0	8
Total	96242	106356	38	202636
Ind. Sampled				1354
Samples				21
Catch (ton)				247

Table 8. Length distribution of 3M Spanish Cod catches.

Cod	3M			
Length (cm)	Males	Females	Ind.	Total
35	0	52	0	52
36	52	140	0	191
37	140	294	0	434
38	301	470	0	771
39	355	264	0	619
40	513	553	0	1066
41	900	568	0	1467
42	549	638	0	1188
43	440	237	0	677
44	454	437	0	890
45	747	514	0	1261
46	1525	1218	0	2742
47	1216	993	0	2209
48	2035	1625	0	3660
49	2122	1753	0	3875
50	3005	2780	0	5784
51	3914	2606	0	6520
52	6214	3690	0	9905
53	6759	5543	0	12302
54	8764	7611	0	16375
55	7744	8987	0	16730
56	9765	8887	0	18652
57	8658	10447	0	19105
58	7820	8291	0	16111
59	7396	8368	0	15765
60	6744	7594	0	14338
61	5819	5462	0	11281
62	5577	5078	0	10655
63	5662	6295	0	11957
64	4609	5299	0	9908
65	4831	5528	0	10359
66	5905	5806	0	11710
67	5310	6403	0	11713
68	4587	5419	0	10006
69	4350	4646	0	8996
70	3550	5154	0	8705
71	2426	4176	0	6602
72	2718	3518	0	6236
73	1793	3692	0	5485
74	1782	2533	0	4314
75	1873	2338	0	4211
76	1242	1643	0	2885
77	1339	1275	0	2614
78	950	1215	0	2166

79	849	900	0	1749
80	915	586	0	1500
81	817	961	0	1778
82	1097	728	0	1824
83	559	1423	0	1982
84	477	1110	0	1588
85	552	1040	0	1591
86	475	1214	0	1689
87	299	884	0	1183
88	341	987	0	1327
89	282	673	0	955
90	416	739	0	1155
91	173	421	0	594
92	318	548	0	866
93	256	466	0	722
94	224	566	0	790
95	144	415	0	560
96	122	557	0	679
97	261	270	0	532
98	168	382	0	550
99	127	187	0	313
100	103	314	0	416
101	0	232	0	232
102	67	494	0	562
103	50	340	0	390
104	0	256	0	256
105	238	93	0	331
106	11	71	0	82
107	0	76	0	76
108	29	55	0	84
109	24	98	0	123
110	0	37	0	37
111	37	78	0	115
112	0	49	0	49
113	0	115	0	115
114	0	24	0	24
115	0	39	0	39
TOTAL	161886	177465	0	339351
Ind. Sampled				8445
Samples				34
Catch (ton)				786

Table 9. Redfish 3LN stock Spanish catches length distribution.

Redfish Length (cm)	Males	3LN Females	Ind.	Total
15				
16				
17	4616	0	0	4616
18	15531	2308	0	17839
19	55231	51210	0	106441
20	98879	78863	0	177741
21	38524	84048	0	122573
22	23037	54606	0	77643
23	16069	12292	0	28360
24	10528	8738	0	19266
25	4790	23544	0	28333
26	6336	22962	0	29298
27	3069	19716	0	22786
28	8744	38450	0	47194
29	621	207	0	828
30	11513	0	0	11513
31	9847	11720	0	21567
32	5634	7849	0	13484
33	5565	11622	0	17187
34	17186	14696	0	31881
35	13760	25244	0	39004
36	11131	14105	0	25236
37	9365	6570	0	15935
38	1970	11553	0	13523
39	0	4876	0	4876
40	0	0	0	0
41	1556	0	0	1556
42	207	0	0	207
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	207	0	0	207
TOTAL	373917	505177	0	879094
Ind. Sampled				502
Samples				6
Catch (ton)				214

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

Redfish	3M		Ind.	Total
Length (cm)	Males	Females		
10				
11	0	0	369	369
12	0	0	1106	1106
13	505	505	1106	2116
14	758	437	921	2116
15	942	563	369	1873
16	1058	1437	0	2495
17	2194	2563	0	4757
18	1321	1815	0	3136
19	689	1000	0	1689
20	311	12834	0	13145
21	6506	17737	0	24243
22	7430	38215	0	45645
23	8263	24711	0	32974
24	3731	18875	0	22607
25	18519	35073	0	53592
26	30325	37806	0	68131
27	29674	75876	0	105550
28	95171	55043	0	150214
29	111814	113019	0	224834
30	251992	84207	0	336199
31	92095	157487	0	249583
32	44624	109289	0	153913
33	76439	50024	0	126464
34	72555	41949	0	114504
35	43523	18519	0	62042
36	5301	58923	0	64224
37	27063	63710	0	90773
38	5301	22044	0	27345
39	5301	5301	0	10602
40	21762	21762	0	43523
41	0	0	0	0
42	0	0	0	0
43	5301	0	0	5301
44				
45				
TOTAL	970468	1070726	3870	2045063
Ind. Sampled				1492
Samples				13
Catch (ton)				805

Table 11. Redfish 3O stock Spanish catches length distribution.

Redfish Length (cm)	Males	3O Females	Ind.	Total
15				
16	4588	28908	862	34357
17	6986	53049	869	60904
18	109135	34837	431	144403
19	368587	273545	0	642132
20	558632	660841	0	1219473
21	693326	529454	0	1222780
22	455227	539570	0	994797
23	216339	510063	0	726402
24	182519	292915	0	475434
25	286852	60200	0	347052
26	235796	193676	0	429472
27	160543	327375	0	487918
28	124587	354638	0	479225
29	160419	124587	0	285006
30	88990	71664	0	160655
31	53394	53394	0	106789
32				
33				
34				
35				
36				
37				
38				
39				
40				
TOTAL	3705921	4108716	2162	7816799
Ind. Sampled				891
Samples				8
Catch (ton)				1294

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

American Plaice Length (cm)	Division 3LNO			Total
	Males	Females	Ind.	
10				
11	0	0	0	0
12	0	0	0	0
13	4852	0	0	4852
14	19410	0	0	19410
15	7279	7279	0	14557
16	7279	19410	2426	29114
17	7297	19410	0	26707
18	7279	0	0	7279
19	7279	4871	0	12149
20	19410	4871	0	24280
21	4852	0	0	4852
22	7279	7560	0	14838
23	7581	7279	0	14859
24	5041	22302	0	27343
25	643	10175	0	10818
26	4893	7715	0	12608
27	448	3805	0	4253
28	6252	2258	0	8510
29	15519	2822	0	18341
30	5437	6556	0	11993
31	11621	7080	0	18702
32	9210	18674	0	27885
33	12082	24970	0	37052
34	12064	23189	0	35254
35	4825	22630	0	27455
36	5851	18022	0	23872
37	8474	13788	0	22262
38	4182	18527	0	22709
39	677	16264	0	16940
40	661	23468	0	24129
41	735	22065	0	22800
42	133	25875	0	26007
43	18	26851	0	26869
44	1079	26407	0	27486
45	2082	17010	0	19092
46	1394	15273	0	16667
47	290	9795	0	10084
48	16	6780	0	6795
49	0	5747	0	5747
50	16	7393	0	7409
51	0	7367	265	7631
52	38	5831	0	5870
53	0	4013	0	4013
54	16	3897	0	3913
55	0	3157	0	3157

56	16	1705	0	1721
57	0	2916	0	2916
58	16	2896	0	2912
59	0	1199	0	1199
60	16	1959	0	1975
61	0	344	0	344
62	32	447	0	479
63	0	492	0	492
64	16	104	0	119
65	0	399	0	399
66	0	160	0	160
67	16	170	0	185
68	16	138	0	154
69	0	16	0	16
70	0	25	0	25
71	0	0	0	0
72	0	0	0	0
73	0	18	0	18
74				
75				
Total	213617	513371	2691	729679
Ind. Sampled				3026
Samples				29
Catch (ton)				362

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

Witch flounder Length (cm)	3L		Ind.	Total
	Males	Females		
15				
16				
17	0	0	5020	5020
18	0	0	30121	30121
19	0	0	35141	35141
20	0	0	15060	15060
21	0	10040	25101	35141
22	0	15060	0	15060
23	0	40161	0	40161
24	0	55222	25101	80323
25	35141	65262	5020	105423
26	30121	95383	5020	130524
27	15060	60242	0	75302
28	0	5020	0	5020
29	0	15060	0	15060
30	0	0	0	0
31	5020	0	0	5020
32	0	0	0	0
33	0	0	0	0
34	0	5020	0	5020
35	0	0	0	0
36	0	5020	0	5020
37				
38				
39				
40				
TOTAL	85343	371492	145585	602419
Ind. Sampled				120
Samples				1
Catch (ton)				50

Table 14. Witch flounder Spanish catches length distribution for Div. 3M.

Witch flounder		3M			
Length (cm)	Males	Females	Ind.	Total	
35	0	2188	0	2188	
36	2498	9372	0	11870	
37	10921	9992	0	20913	
38	7184	14678	0	21862	
39	10611	16701	0	27312	
40	12015	20128	0	32143	
41	3592	24195	0	27787	
42	10466	9207	0	19673	
43	6874	9517	0	16391	
44	6400	13274	0	19673	
45	1094	7803	0	8898	
46	4376	6090	0	10466	
47	4686	3282	0	7968	
48	3592	6564	0	10156	
49	1094	5306	0	6400	
50	3282	0	0	3282	
51	0	2808	0	2808	
52					
53					
54					
55					
TOTAL	88685	161105	0	249790	
Ind. Sampled				200	
Samples				2	
Catch (ton)				145	

Table 15. Witch flounder Spanish catches length distribution for Div. 3NO.

Witch flounder	3NO			
Length (cm)	Males	Females	Ind.	Total
25				
26				
27	0	729	0	729
28	0	642	0	642
29	8	341	0	349
30	0	0	0	0
31	0	0	0	0
32	414	0	0	414
33	1843	651	0	2493
34	2593	1378	0	3971
35	6057	1910	0	7966
36	14245	8943	0	23188
37	8834	14475	0	23308
38	13982	17891	0	31873
39	12290	26683	0	38973
40	7890	25192	0	33081
41	4866	30124	0	34990
42	6885	12221	0	19106
43	4558	20297	0	24855
44	795	11818	0	12612
45	2821	12435	0	15256
46	2412	11606	0	14018
47	1206	6538	0	7743
48	797	5214	0	6011
49	613	5747	0	6360
50	0	1498	0	1498
51	0	2390	0	2390
52	0	16	0	16
53	0	2567	0	2567
54	0	856	0	856
55	0	0	0	0
56	0	1711	0	1711
57				
58				
59				
60				
TOTAL	93107	223872	0	316979
Ind. Sampled				810
Samples				8
Catch (ton)				167

Table 16. Yellowtail flounder Spanish catches length distribution for Div. 3LNO.

Yellowtail flounder Length (cm)	3LNO			Total
	Males	Females	Ind.	
15				
16	0	0	263	263
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	263	0	263
21	0	365	0	365
22	0	403	0	403
23	0	709	0	709
24	38	3679	38	3755
25	586	1414	38	2039
26	4081	5497	0	9578
27	6402	4877	38	11317
28	12608	10104	0	22712
29	12813	12469	0	25282
30	23517	9050	0	32567
31	33649	25947	0	59596
32	31838	30767	0	62605
33	37381	28620	0	66001
34	38737	39791	0	78528
35	17008	59604	0	76612
36	22093	85332	0	107424
37	13368	65655	0	79023
38	3216	57413	0	60629
39	2674	56634	0	59309
40	1201	50158	0	51359
41	0	31331	0	31331
42	0	32740	0	32740
43	1211	24015	0	25226
44	555	16026	0	16581
45	555	5506	0	6062
46	0	4126	0	4126
47	0	0	0	0
48	0	1211	0	1211
49	0	1211	0	1211
50				
Total	263530	664921	377	928828
Ind. Sampled				1051
Samples				9
Catch (ton)				348

Table 17. 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
24	159	0	0	159	0	0	0	0
25	0	0	0	0	0	0	0	0
26	382	222	0	604	0	0	0	0
27	85	0	0	85	0	0	0	0
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	1161	166	0	1327	236	0	0	236
31	166	176	0	343	0	0	0	0
32	1391	1762	0	3154	456	0	0	456
33	2531	950	216	3697	219	0	0	219
34	1137	2187	0	3324	235	252	0	487
35	4873	2591	0	7463	1329	975	0	2304
36	10849	7034	0	17883	2459	1773	0	4232
37	9645	11603	0	21248	5061	1295	0	6356
38	16604	18218	0	34822	3956	5387	0	9343
39	20092	30619	0	50710	4851	8765	0	13616
40	26035	39681	0	65715	8773	11277	0	20050
41	32509	45203	0	77712	11276	12804	0	24080
42	42824	68793	0	111617	12590	17818	0	30408
43	53604	83526	0	137130	18559	21208	0	39768
44	59399	98280	0	157680	18474	27715	0	46188
45	64536	99711	0	164247	19095	25767	0	44862
46	62409	111024	0	173433	23524	26283	0	49807
47	60949	108499	0	169448	22126	34713	0	56840
48	55608	102805	96	158510	23597	33266	292	57156
49	50494	93000	0	143494	20298	26386	0	46684
50	51121	99006	0	150127	20686	34339	0	55025
51	39763	80364	0	120126	27514	29742	505	57761
52	30352	77815	0	108167	18929	25368	0	44296
53	27859	70095	0	97954	13064	31604	0	44668
54	18308	62343	0	80651	11106	24318	0	35423
55	13909	54161	0	68070	9502	25712	0	35214
56	10250	47799	0	58050	5295	19564	505	25364
57	5544	39247	0	44791	4157	19153	0	23309
58	2986	28463	0	31449	2939	16442	0	19381
59	1069	23762	0	24830	206	16442	0	16648
60	859	19472	0	20331	2224	12160	0	14384
61	420	16592	0	17012	0	11429	0	11429
62	174	11653	0	11827	1568	10144	0	11712
63	255	6962	0	7218	0	5926	0	5926
64	187	6668	0	6855	0	5635	0	5635
65	50	5186	0	5236	0	3441	0	3441
66	0	4015	0	4015	261	4014	0	4276
67	0	4109	0	4109	0	2697	0	2697
68	0	2524	0	2524	0	2351	0	2351

69	0	2308	0	2308		0	2033	0	2033
70	0	1669	0	1669		0	2031	0	2031
71	0	2538	0	2538		0	1055	0	1055
72	0	1139	0	1139		0	0	0	0
73	0	327	0	327		0	893	0	893
74	0	658	0	658		0	450	0	450
75	0	320	0	320		0	164	0	164
76	0	331	0	331		0	164	0	164
77	0	353	0	353		0	480	0	480
78	0	497	0	497		0	374	0	374
79	0	180	0	180		0	272	0	272
80	0	137	0	137		0	272	0	272
81	0	232	0	232		0	616	0	616
82	0	146	0	146		0	176	0	176
83	0	233	0	233		0	506	0	506
84	0	119	0	119		0	0	0	0
85	0	72	0	72		0	406	0	406
86	0	390	0	390		0	0	0	0
87	0	0	0	0		0	0	0	0
88	0	0	0	0		0	164	0	164
89	0	0	0	0		0	0	0	0
90	0	0	0	0		0	0	0	0
91	0	0	0	0		0	236	0	236
92	0	0	0	0		0	0	0	0
93	0	0	0	0		0	0	0	0
94	0	0	0	0		0	0	0	0
95	0	0	0	0		0	179	0	179
96	0	0	0	0		0	0	0	0
97	0	0	0	0		0	0	0	0
98	0	0	0	0		0	0	0	0
99	0	0	0	0		0	0	0	0
100	0	0	0	0		0	0	0	0
101	0	0	0	0		0	0	0	0
102	0	0	0	0		0	0	0	0
103	0	0	0	0		0	164	0	164
104									
105									
Total	780549	1597936	312	2378797		314561	566802	1303	882666
Ind. Sampled				18380					4306
Samples				125					30
Catch (ton)				2271					979

Table 17 (cont.). Greenland halibut Spanish catches length distribution for Div. 3NO and total 3LMNO..

Greenland halibut Length (cm)	3NO				Total 3LMNO			
	Males	Females	Ind.	Total	Males	Females	Ind.	Total
24	0	0	0	0	159	0	0	159
25	0	0	0	0	0	0	0	0
26	0	0	0	0	382	222	0	604
27	0	0	0	0	85	0	0	85
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	238	0	0	238	1635	166	0	1801
31	460	0	0	460	626	176	0	803
32	238	987	0	1225	2085	2749	0	4834
33	1492	304	0	1797	4242	1255	216	5712
34	811	498	0	1309	2183	2937	0	5120
35	2026	482	0	2508	8228	4047	0	12275
36	2429	1046	0	3475	15737	9853	0	25590
37	1578	2589	0	4167	16284	15487	0	31771
38	5358	3929	0	9288	25919	27534	0	53453
39	6169	5915	0	12084	31111	45300	0	76411
40	10766	11147	0	21913	45573	62105	0	107678
41	10492	14817	0	25310	54277	72825	0	127102
42	15761	25343	0	41104	71174	111955	0	183129
43	14665	25344	0	40010	86829	130079	0	216907
44	15064	27643	0	42706	92937	153637	0	246575
45	17626	27778	0	45404	101257	153256	0	254512
46	15303	37013	0	52316	101236	174320	0	275556
47	9716	23744	0	33460	92791	166957	0	259749
48	14534	28260	0	42795	93739	164332	389	258460
49	9762	25668	0	35430	80554	145053	0	225608
50	9850	24501	0	34351	81657	157846	0	239502
51	10310	29420	0	39730	77586	139526	505	217618
52	4811	30881	0	35692	54092	134063	0	188155
53	5498	19470	0	24969	46422	121169	0	167591
54	4780	18496	0	23277	34194	105157	0	139351
55	3107	17378	0	20485	26518	97250	0	123768
56	1210	15448	0	16658	16755	82811	505	100071
57	1053	13222	0	14275	10754	71622	0	82376
58	904	10620	0	11524	6830	55525	0	62354
59	601	6420	0	7020	1875	46623	0	48499
60	68	8919	0	8987	3151	40551	0	43702
61	122	5463	0	5585	542	33484	0	34025
62	0	3488	0	3488	1742	25285	0	27027
63	122	2425	0	2547	377	15314	0	15691
64	0	2914	0	2914	187	15217	0	15404
65	0	1433	0	1433	50	10060	0	10110
66	0	1352	0	1352	261	9381	0	9642
67	0	595	0	595	0	7401	0	7401
68	0	971	0	971	0	5846	0	5846
69	0	496	0	496	0	4838	0	4838

70	0	657	0	657	0	4357	0	4357
71	0	214	0	214	0	3807	0	3807
72	0	414	0	414	0	1553	0	1553
73	0	0	0	0	0	1219	0	1219
74	0	238	0	238	0	1346	0	1346
75	0	0	0	0	0	484	0	484
76	0	169	0	169	0	663	0	663
77	0	0	0	0	0	833	0	833
78	0	398	0	398	0	1269	0	1269
79	0	238	0	238	0	691	0	691
80	0	176	0	176	0	585	0	585
81	0	0	0	0	0	847	0	847
82	0	0	0	0	0	322	0	322
83	0	0	0	0	0	739	0	739
84	0	0	0	0	0	119	0	119
85	0	0	0	0	0	479	0	479
86	0	0	0	0	0	390	0	390
87	0	0	0	0	0	0	0	0
88	0	0	0	0	0	164	0	164
89	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0
91	0	0	0	0	0	236	0	236
92	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0	0
95	0	0	0	0	0	179	0	179
96	0	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0
101	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0
103	0	0	0	0	0	164	0	164
104								
105								
Total	196926	478923	0	675849	1292036	2643661	1615	3937312
Ind. Sampled				2557				25243
Samples				23				178
Catch (ton)				5567				3817

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

Abundance					Mean Weight (g)				
Age	Males	Females	Ind.	Total	Age	Males	Females	Ind.	Total
1	0	0	0	0	1				
2	372	0	0	372	2	119			119
3	1072	222	0	1294	3	189	131		179
4	10020	8914	95	19028	4	309	308	278	308
5	170807	191425	122	362354	5	502	531	278	517
6	527710	761601	136	1289447	6	718	703	931	709
7	484533	1001120	949	1486601	7	1042	1034	1146	1037
8	67481	319436	245	387162	8	1244	1361	1426	1341
9	19959	139985	70	160014	9	1416	1535	1491	1520
10	7825	127729	0	135554	10	1786	1869		1864
11	2029	35177	0	37206	11	2029	2233		2222
12	106	24945	0	25052	12	2489	2494		2494
13	123	15920	0	16043	13	2493	2789		2787
14	0	8295	0	8295	14		3177		3177
15	0	5011	0	5011	15		4099		4099
16	0	1772	0	1772	16		4460		4460
17	0	1060	0	1060	17		5183		5183
18	0	670	0	670	18		6677		6677
19	0	379	0	379	19		8198		8198
20	0	0	0	0	20				

Mean Length (cm)				
Age	Males	Females	Ind.	Total
1				
2	25.7			25.7
3	29.6	26.5		29.1
4	34.5	34.5	33.5	34.5
5	40.1	40.8	33.5	40.4
6	44.8	44.6	48.8	44.7
7	50.4	50.2	51.9	50.3
8	53.2	54.8	55.6	54.5
9	55.5	56.9	56.5	56.8
10	59.7	60.6		60.5
11	62.2	64.0		63.9
12	66.3	66.2		66.2
13	66.3	68.5		68.5
14		71.3		71.3
15		77.1		77.1
16		79.3		79.3
17		83.1		83.1
18		89.9		89.9
19		95.4		95.4
20				

Table 19. Skates Spanish catches length distribution by sex for Div. 3LNO.

Skates Length (cm)	3LNO			Total
	Males	Females	Ind.	
21				
22				
23				
24	622	1176	0	1798
25	1062	0	0	1062
26	0	0	0	0
27	43	0	0	43
28	1916	56	0	1971
29	1980	0	0	1980
30	1018	2747	0	3765
31	2092	1274	0	3366
32	2807	2367	0	5174
33	2490	4372	0	6863
34	4122	2830	0	6952
35	601	3970	0	4571
36	3444	3297	0	6741
37	4635	3654	0	8289
38	4357	4227	0	8584
39	2721	7360	0	10081
40	11708	10731	0	22440
41	9352	12800	0	22152
42	13052	10522	0	23574
43	5978	12309	0	18287
44	15519	9559	0	25077
45	14058	10105	0	24163
46	13897	11723	0	25620
47	12906	20039	0	32945
48	17942	10794	0	28735
49	14796	15820	0	30615
50	13645	14906	0	28550
51	16238	14903	0	31142
52	15031	18226	0	33257
53	16703	18345	0	35048
54	14975	21280	0	36255
55	13913	13696	0	27609
56	20341	20394	0	40735
57	15518	12741	0	28260
58	12501	19679	0	32180
59	15835	11257	0	27093
60	18160	21244	0	39404
61	26076	11532	0	37607
62	16502	23508	0	40009
63	21252	14857	0	36109
64	16195	13817	0	30012
65	19946	14624	0	34570
66	14414	13625	0	28039
67	14154	15617	0	29770

68	11224	12001	0	23225
69	21978	14759	0	36737
70	20710	14341	0	35050
71	17733	21344	0	39077
72	20682	23782	0	44463
73	28644	15125	0	43769
74	19029	12256	0	31285
75	21017	10589	0	31606
76	24525	4986	0	29511
77	17032	7364	0	24396
78	14826	2703	0	17529
79	14665	2630	0	17295
80	14276	2329	0	16605
81	6211	3534	0	9745
82	7134	99	0	7232
83	7447	0	0	7447
84	8634	56	0	8690
85	2641	654	0	3294
86	1570	0	0	1570
87	0	0	0	0
88	1228	0	0	1228
89	0	0	0	0
90	346	622	0	968
91	199	0	0	199
92	0	0	0	0
93	0	0	0	0
94	396	0	0	396
95				
Total	746661	605157	0	1351818
Ind. Sampled				2569
Samples				24
Catch (ton)				3249

Table 20. Roughhead grenadier Spanish catches length distribution measured as preanal fin lengths (AFL) for Divisions 3LMNO.

Roughhead G. Length (cm)	3LMNO			Total
	Males	Females	Ind.	
5				
6	0	8	0	8
7	281	0	0	281
8	131	27	0	158
9	578	503	0	1081
10	2993	1010	0	4004
11	6108	3647	0	9755
12	16179	13352	0	29531
13	31238	20616	0	51854
14	43063	39760	0	82823
15	55466	33815	0	89282
16	64999	33081	0	98081
17	44658	36125	0	80784
18	23353	43046	0	66399
19	19894	28015	0	47909
20	9492	23944	0	33436
21	5501	22430	0	27931
22	2371	16969	0	19341
23	903	14827	0	15730
24	176	14125	0	14301
25	88	13370	0	13458
26	285	11368	0	11653
27	0	11854	0	11854
28	0	5956	0	5956
29	0	1843	0	1843
30	0	2806	0	2806
31	0	2442	0	2442
32	0	1763	0	1763
33	0	1802	0	1802
34	0	885	0	885
35	0	485	0	485
36	0	0	0	0
37	0	61	0	61
38	0	212	0	212
39	0	27	0	27
40	0	0	0	0
Total	327759	400177	0	727937
Ind. Sampled				6378
Samples				51
Catch (ton)				407

Table 21. Roughhead grenadier Div. 3LMNO Spanish catches ages distribution, mean weight (g) and mean length (AFL cm) by age.

Age	Abundance			Age	Mean Weight (g)		
	Males	Females	Total		Males	Females	Total
3	201	8	209	3	40	27	40
4	1388	530	1918	4	87	78	84
5	9422	9108	18531	5	145	153	149
6	42792	30254	73046	6	207	217	211
7	66314	48642	114957	7	293	284	289
8	116516	85030	201546	8	383	404	392
9	56841	81901	138742	9	501	570	542
10	20200	42582	62782	10	643	779	735
11	9961	22279	32240	11	739	948	883
12	3327	28110	31437	12	890	1188	1156
13	710	21552	22262	13	1122	1443	1432
14	69	15739	15808	14	1499	1731	1730
15	18	4192	4210	15	1507	1864	1862
16	0	3024	3024	16		2321	2321
17	0	3328	3328	17		2572	2572
18	0	1838	1838	18		2712	2712
19	0	618	618	19		2956	2956
20	0	389	389	20		3045	3045
21	0	89	89	21		3248	3248
22	0	230	230	22		3989	3989
23	0	662	662	23		3596	3596
24	0	71	71	24		4453	4453

Age	Mean Length (AFL cm)		
	Males	Females	Total
3	7.5	6.5	7.5
4	9.7	9.4	9.6
5	11.7	11.9	11.8
6	13.2	13.4	13.3
7	14.9	14.7	14.8
8	16.4	16.6	16.5
9	17.9	18.8	18.4
10	19.6	20.9	20.5
11	20.6	22.4	21.9
12	21.9	24.2	24.0
13	23.7	26.0	25.9
14	26.4	27.7	27.7
15	26.4	28.3	28.3
16		30.7	30.7
17		31.7	31.7
18		32.3	32.3
19		33.4	33.4
20		33.7	33.7
21		34.5	34.5
22		37.0	37.0
23		35.7	35.7
24		38.5	38.5

Table 22. Summary of all the activities carried out during the NEREIDA 2010 surveys. It also shows the total prospected area in square kilometres.

	BC		RD		CTD	Geology	Prospected Area (km ²)
	Valid	Null	Valid	Null			
1 st Survey NEREIDA 0610	42	8	14	0	57 (1 null)	139 lines	10142
	50		14				
2 nd Survey NEREIDA 0710	59	8	22	0	79	193 lines	11198
	67		22				
3 rd Survey NEREIDA 0810	58	16	9	0	62	180 lines	9304
	74		9				
TOTAL	188		45		198	512 lines	30644 km ²

Table 23. Summary of all the samplings carried out during 2009 and 2010 surveys. It also shows the total prospected area in square kilometres.

	BC	RD	CTD	Geology	Prospected Area (km ²)
TOTAL	368	105	414	1022 lines	68950 km²

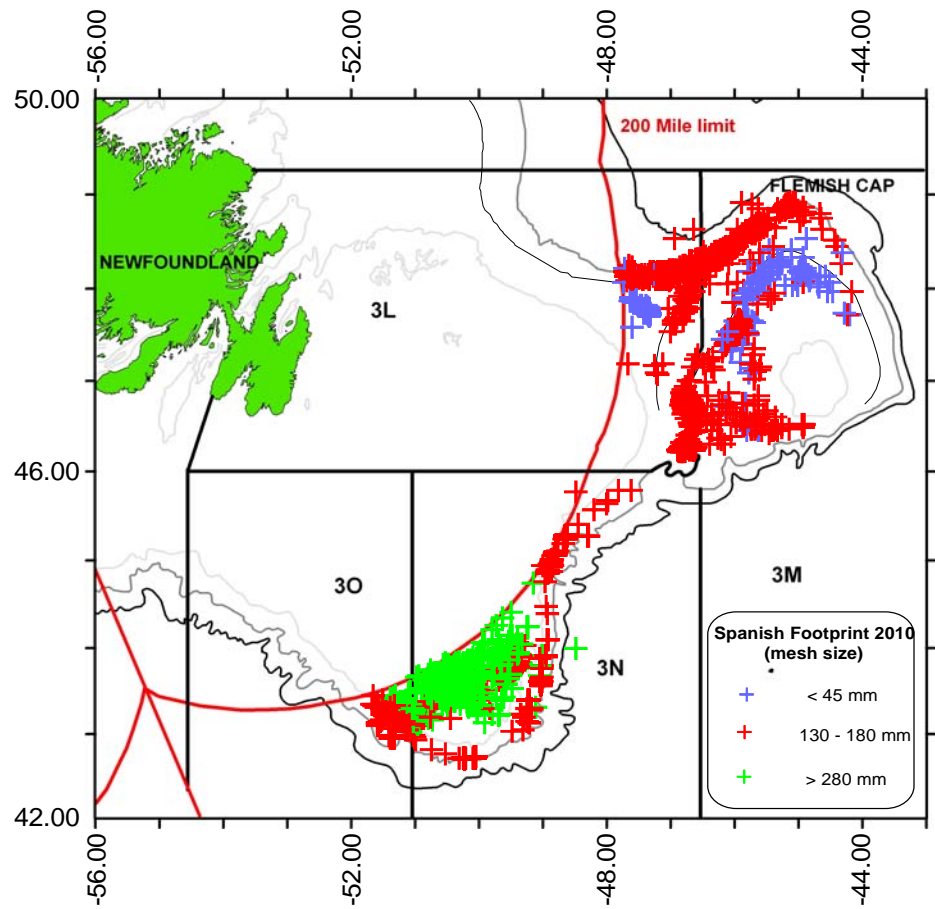


Figure 1. Spanish Fishery 2010 footprint by mesh size based in NAFO Observers data.

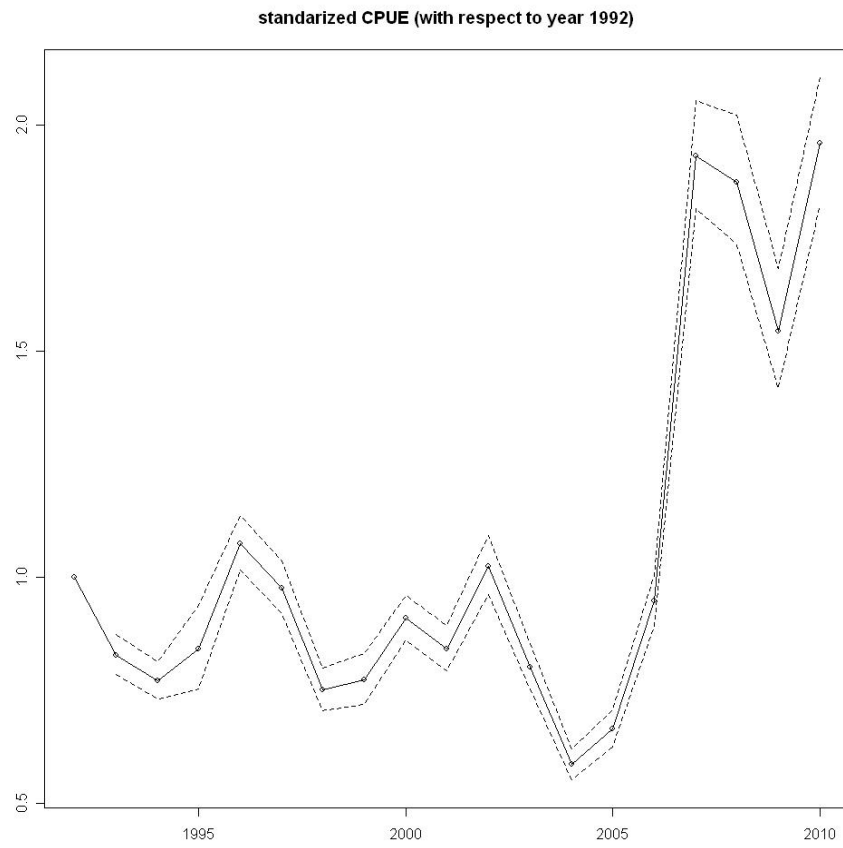


Figure 2. Spanish fleet standardized CPUE with model presented by Gonzalez-Costas and Gonzalez-Troncoso (2009) update with the 2009 data.