

**SCIENTIFIC COUNCIL MEETING – JUNE 2013****Spanish Research Report for 2012**

by

F. González-Costas¹, D. González-Troncoso¹, G. Ramilo¹, E. Román¹, J. Lorenzo¹, M. Casas¹, C. Gonzalez¹, A. Vázquez², and M. Sacau¹.

¹ Instituto Español de Oceanografía, Vigo, Spain

² Instituto de Investigaciones Marinas, Vigo, Spain

Spanish catch information used in this Report is based on the Provisional STATLANT 21 A contributed by the Spanish Administration. Table 1 presents the catches by species and Division in 2012 based on this information. The split of catches between the different gears and the effort information in this Report are based on information from NAFO observers on board. In 2012 information from 1674 days was available while total effort of the Spanish fleet in NAFO Regulatory Area was 1,678 days (around 100% coverage).

In addition to NAFO observers, IEO scientific observers were on board 350 fishing days that it means 21 % of the Spanish total effort. All length, age and biological information presented in this paper is based on sampling carried out by IEO scientific observers: 540 samples were taken in 2012, with 65,864 individuals of different species examined (Table 2).

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

A total of 14 Spanish trawlers operated in Div. 3LMNO NAFO Regulatory Area during 2012, amounting to 1,652 days (25,410 hours) of fishing effort. Table 3 presents the Spanish effort (fishing hours) since 2003 in NAFO Regulatory Area (NRA) Subarea 3. Total catches (Table 1) for all species combined in Div. 3LMNO were 14,770 tons in 2012.

Table 4 shows the effort (hours) by quarter, Division and their percentage by depth. Table 5 presents the percentage of the effort by Division and mesh size and Figure 1 shows the Spanish fleet footprint in 2012 by mesh sizes based on the NAFO Observers information.

These effort tables and figure show that the Spanish fleet carry out different fisheries in NAFO Subarea 3 characterized by different mesh size, target species, depth and fishing area. The Spanish fishery in NAFO Subarea 3 in 2012 has the same patten described by Gonzalez (2012): Spanish fleet had the following fisheries in NAFO Division 3LMNO: 1) In Divisions 3LMNO at more than 600 meters depth with demersal 130 mm mesh size gear with Greenland halibut as target species. 2) In Divisions 3LMNO, mainly in Div 3O and 3M with demersal 130 mm mesh size gear in the 200-600 strata. The target species is the redfish. 3) In Divisions 3NO with demersal 130 mm mesh size at depth less than 200 meters there is a mix fishery with different catch composition in Div. 4) In Divisions 3NO with 280 mm mesh size at less than 200 meters depth. The target species is the skates. 5) In Division 3LM with 40 mm mesh size at depth between 300-500 meters. The target species of this fishery is the shrimp. 6) In Division 3M at depth between 150-550 meters targeting cod with 130 mm mesh size gear.

Effort and fisheries by Division were: in Div. 3L, most of the effort was performed at more than 700 meters depth using cod-end mesh size of 135 mm, indicating that the fleet targeted Greenland halibut. A small part of the effort

(8%) was carried out at depth between 200-600 meters targeting redfish and in less degree shrimp. 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 depths less than 700 m targeting redfish and cod. In Div. 3N and during the first half of the year, most of the effort was carried out using 135 mm and in less degree with 280 mm cod-end mesh size, which indicates that the fleet targeted mainly Greenland halibut in depth more than 700 m and in less proportion skate in depth less than 200 m. However, during the second half of the year 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 (3%) and targeting redfish in depth between 200-600 meters using 135 mm mesh size (98%) and in less proportion skates using mainly 280 mm mesh size (2%) in depth less than 200 meters.

In addition to NAFO observers (NAFO Observers Program), 9 IEO scientific observers were onboard Spanish vessels, comprising a total of 350 observed fishing days, around 21% 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 2012, 540 length samples were taken, with 65 864 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. Length-weight relationships parameters used to calculate the Sum Of Products (SOP) of the length distribution are shown by species in Table 6.

The Spanish activity en NAFO Regulatory Area (NRA) Subarea 3 in 2012 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. 3O. Table 7 shows the catch length distribution for Div. 3NO cod. All length distribution samples came from Div. 3N. The bulk of the catches are comprised in the 45-70 cm range. It can be observed an important number of individuals with length more than 78 cm.

Div. 3M: Catches in Div. 3M were 1,682 tons and were taken in the reopen direct fishery. The legal mesh size of the Cod fishery is 130 mm. In 2012 only trawlers operated in this fishery. The total length distributions of the Spanish catches are presented in Table 8 and we can observe that most of the catches are comprised in the range of 50-104 cm.

Redfish

Div. 3LN: Spanish catches in 2012 were 75 tons. Most of the catches were taken in Div. 3N in the reopened fishery for this stock. Table 9 shows the length distribution for Div. 3LN, most of the catches were between 19-30 cm with the mode in 22 cm.

3M: In Div. 3M the redfish catches in 2012 have been 512 tons and most of them were catch in a direct 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 24-39 cm range. This length distribution of catches in Din 3M are bigger than the observed in Div.3NO.

Div. 3O: A directed fishery for this species took place in Div. 3O. Catches have reached 1,414 tons in this Division, most of them with 135 mm mesh size. Catches length distribution for Div. 3O are presented in Table 11 and it can be observed that are smaller (15-30 cm) than the observed 3M and more similar to the 3LN length distributions.

American plaice

Div. 3LNO: Spanish catches in 2012 in Div. 3LNO were 420 tons. Most of the catches were taken as by-catch of the skate (317 tons) and in less degree in Greenland halibut fishery (103 tons). Length distributions in the skate fishery have a bigger length range than in the Greenland halibut fishery. Table 12 presents the total length distribution for Div. 3LNO. It can be observed a clear different length between sexes, males are smaller than females. The bulk of catches were in the range of 25-50 cm.

Div. 3M: Catches in Div. 3M only amounted 33 tons and were taken as by-catch of the Greenland halibut fishery. There is available only one length distributions sample with very small number of fish measured for Division 3M. This sample probably is not representative of the total length distribution catches.

Witch flounder

Div. 2J and 3KL: Spanish catches for this stock in 2012 were 40 tons and were taken in the small part of NAFO Regulatory Area (NRA) of Div. 3L as by-catch of the Greenland halibut fishery. Length distributions of catches are presented in Table 13 and are based on four samples. The length distribution SOP for this Division is very low and it is a signal of some problems with the samples that it could be not representative of the total catches.

Div. 3M: This species in this Division was taken as by-catch in the Cod and redfish fishery. Catches this year were 64 tons and there is not management stock for this species in this Division. In 2012 there were four catch length distribution samples with very small number of measured fish. The length distribution SOP for this Division is very low and it is a signal of some problems with the samples that they could be not representative of the total catches.

Div. 3NO: Spanish catches for this stock in 2012 were 177 tons. Most of the catches were taken as by-catch in the Redfish and Greenland halibut fisheries and in less degree in the skate fishery. Table 14 shows the total Spanish length distribution for this species. The 3NO catches length distributions for this stock are bigger than the observed in Division 3L.

Yellowtail flounder

Div. 3LNO: In 2012 the yellowtail flounder Spanish catches were 389 tons. Most of the catches were taken in Div. 3NO in the skate fishery (314 tons) as by-catch. There were not catches in Div. 3L. Length distributions for yellowtail flounder in Div. 3LNO are presented in Table 15, all length samples were taken in Division 3N. Most of the catches are in the 30-45 cm length range. Females are more abundant and bigger than males in the catches.

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. In 2012 Spanish catches were 4,546 tons; most of them have been taken in the Flemish Pass area (Div. 3LM) at depths more than 700 m. The mesh size used for this fishery was equal to or greater than 130 mm. Tables 16 shows the length distributions of Spanish catches by Division (3L, 3M and 3NO) and the total length distributions of Spanish catches in Divisions 3LMNO. Most of the catches were in the 35-65 cm length range and the mode of the length distribution was in 50 cm. This year the catches length distributions present a peak around 31 cm that it could be a signal of a good recruitment incorporating to the fishery. Total age composition based in the commercial Spanish Age Length Key (ALK), mean weight and mean length at age for Div. 3LMNO are presented in Table 17. Most of the Greenland halibut catches corresponds to ages 4 to 10, with a peak at ages 6-7. This age catch age distribution is similar to the last years.

Figure 2 presents the Spanish fleet standardised CPUE updated with the 2012 data presented by Gonzalez-Costas and Gonzalez-Troncoso (2009). Results show that CPUE has decreased in the last years but it is still high compare with the level before 2007.

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: Spanish skate catches in 2012 were 3,237 tons. 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 (26 tons) were much smaller than those in Div. 3NO and they were by-catch of the Greenland halibut fishery (135 mm cod-end). Table 18 shows the total catches length distributions by sex of Div. 3LNO, all catches length samples were with 280 mm mesh size and they were taken in Division 3N. These length distributions were applied to the catches made with 135 mm mesh size. Most of the catches were in the 30-83 cm length range.

Div. 3M: Skate catches in Div. 3M (91 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 this species in 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 2012 catches and most 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. Spanish catches in 2012 were 621 tons. Table 19 shows the AFL length distributions, grouping in 1 cm intervals, of Spanish catches for Div. 3LMNO. Most of the catches were in the 10-26 AFL length range, with a clear mode in 16 cm and a clear length difference between sexes, males are smaller than females.

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 20. Most of the Roughhead grenadier catches in 2011 were based on ages 4 to 12 with a clear mode in 8 years old. This age distribution is similar to the years before.

White hake

Div. 3NO: Catches in the last years are in the same level as before 2000. Catches of this species in 2012 in Div 3LMNO (88 tons) were a small by-catch of different fisheries. Catches in Div. 3LM (27 tons) are mostly a by-catch of the Greenland halibut fishery. In Division 3NO (65 tons), a small part of the catches were taken with the 280 mesh size in Division 3N and in Div. 3O (61 tons) are by-catch of the redfish fishery. Table 21 shows the total catches length distributions by sex of Div. 3NO. Most of the catches were in the 30-47 cm length range.

(B) Research studies

The Spanish bottom trawl survey in NAFO Regulatory Area Div. 3NO was conducted from 3rd to 21st of June 2012 on board the R/V *Vizconde de Eza*. The gear was a Campelen otter trawl with 20 mm mesh size in the cod-end. A total of 122 valid hauls and 122 hydrographic stations were taken within a depth range of 45-1450 m according to a stratified random design. Furthermore, a stratified sampling by length class and sex was used to sample gonads and otoliths of Atlantic cod, American plaice and Greenland halibut for histological maturity, fecundity and growth studies. The results of this 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, redfish, witch flounder, roughhead grenadier, thorny skate and white hake are presented as Scientific Council Research Documents. In addition, age distributions are presented for Greenland halibut and Atlantic cod.

In 2003 it was decided to extend the Spanish 3NO survey toward Div. 3L (Flemish Pass). In 2012, 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 30th to August 18th. 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 105 and 7 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 12/61. Samples for histological (Greenland halibut, American plaice, roughhead grenadier) and aging (Greenland halibut, American plaice, roughhead grenadier and cod) studies were taken. Feeding studies on demersal species (*Gadus morhua*, *Hippoglossoides platessoides*, *Reinhardtius hippoglossoides*, *Notacanthus chemnitzii*, *Hydrolagus affinis* and *Harriotta Raleighana*) were performed and 1534 stomach contents were analysed in depths of 112 to 1329 m. Ninety-four hydrographic profile samplings were made in a depth range of 105-1369 m.

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 24th to July 26th 2012. The area surveyed was Flemish Cap Bank to depths up to 800 fathoms (1460 m) following the same procedure as in previous years. The number of hauls was 179 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 12/53. 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:

Generation of encounter thresholds: The IEO and DFO worked in collaboration for applying a geospatial model to generate encounter thresholds for small gorgonian corals. A biomass layer for the small gorgonian corals was created using the EU-Spain in Div. 3LNO and EU-Spain-Portugal in Div 3M trawl survey data for the period 2006-2010. The 2011 VMS fishing trawl lines were also used to give some information on the impact of using 0,2 kg threshold on the fishing activities.

Box core samples: A further 12 Box Core samples in the Flemish Cap area have been analysed by Cefas in collaboration with IEO bringing the total samples analysed to 40 from a total of 360 samples collected. The results show again the importance of the current closed areas in protecting the highest densities and biomass of VME indicative taxa in the Flemish Pass and Sackville Spur areas.

Scientific trawl and rock dredge samples: Work on sponges was carried out (50 spp have been identified so far). Other groups (corals, hydroids, echinoderms and molluscs) are already complete. Still to do are arthropods, annelids, bryozoa, brachiopoda, sipuncula, nemertina and others. The identification work is hopefully going to be completed by the end of 2013.

The processing of the NEREIDA samples and data is entirely dependent on a continuation of the programme in 2013 with support from the European Commission as provisionally agreed during the NAFO 34th Annual meeting (2012). Given the short time-line the timely approval of EC support is therefore essential.

SUBAREA 6**A. Status of the fisheries**

One Spanish trawler operated in NAFO Regulatory Area, Div. 6G using a midwater trawl gear, during 2012, amounting to 22 days (165 hours) of fishing effort. The most important species in catches was the *Beryx splendens*. Other species present in catches were *Ruvettus pretiosus*, *Aphanopus carbo* and *Epigonus telescopus* (Table 1).

Tables 22, 23 and 24 present the Spanish catches length distribution in Division 6G for *Beryx splendens*, *Epigonus telescopus* and *Hopplosethus mediterraneus* respectively.

REFERENCES

Casas, J. M. 2012. Northern Shrimp (*Pandalus borealis*) on Flemish Cap Surveys 2012. NAFO SCR Doc.12/53, Serial No. N6115.

González-Costas, F. 2012. Spanish fisheries in NAFO Subarea 3. NAFO SCR Doc. 12/021, Serial No. N6045.

González-Costas, F. and D. González-Troncoso, 2009. Spanish 2006-2008 Fisheries Footprint, scientific Observers and surveys coverage and update of the Standardized CPUE Indices for Greenland Halibut. NAFO SCR Doc. 09/022, Serial Number N5657.

Table 1. Spanish Catches (tons) in NAFO Area in 2012 by species and Division, based on the provisional STATLANT 21 A.

Code	English_name	Scientific_name	Provisional STATLANT 21A					Total
			3L	3M	3N	3O	6G	
GHL	Greenland halibut	<i>Reinhardtius hippoglossoides</i>	2469.3	1273.2	779.5	24.3		4546.2
SKA	Raja rays nei	<i>Raja spp</i>	26.1	91.4	3170.0	40.8		3328.4
RED	Atlantic redfishes nei	<i>Sebastes spp</i>	6.2	511.8	68.8	1414.6		2001.4
COD	Atlantic cod	<i>Gadus morhua</i>	2.7	1682.0	257.4	35.4		1977.6
RHG	Roughhead grenadier	<i>Macrourus berglax</i>	286.3	271.6	59.7	3.0		620.7
RNG	Roundnose grenadier	<i>Coryphaenoides rupestris</i>	95.0	212.0	153.1	1.2		461.1
PLA	Amer. Plaice	<i>Hippoglossoides platessoides</i>	36.5	33.4	341.0	42.6		453.5
YEL	Yellowtail flounder	<i>Limanda ferruginea</i>		1.4	357.6	31.6		390.6
BYS	Splendid alfonsino	<i>Beryx splendens</i>					297.6	297.6
WIT	Witch flounder	<i>Glyptocephalus cynoglossus</i>	40.3	64.5	137.2	40.3		282.3
DGH	Dogfishes nei	<i>Squalidae, Scyliorhinidae</i>	82.9	19.1	34.4	3.9		140.3
CAT	Wolffishes nei	<i>Anarhichas spp</i>	70.1	29.7	38.4	1.5		139.7
HKW	White hake	<i>Urophycis tenuis</i>	9.3	13.9	3.9	60.9		87.9
HAL	Atlantic halibut	<i>Hippoglossus hippoglossus</i>	6.5	13.1	42.7	8.8		71.1
HKR	Red hake	<i>Urophycis chuss</i>	42.8	20.6	2.5	0.0		65.8
ANT	Blue antimora	<i>Antimora rostrata</i>	11.9	30.3	0.7	0.2		43.2
HAD	Haddock	<i>Melanogrammus aeglefinus</i>	0.0	16.5	19.8	4.0		40.3
PRA	Northern prawn	<i>Pandalus borealis</i>	33.8					33.8
GDE	Threadfin rockling	<i>Gaidropsarus ensis</i>	17.2	10.5	0.6			28.3
GDT	Arctic rockling	<i>Gaidropsarus argentatus</i>	18.0	3.7	3.8			25.5
HKS	Silver hake	<i>Merluccius bilinearis</i>	0.2			18.2		18.4
GPE	Longfin hake	<i>Phycis chesteri</i>	0.6			6.0		6.6
ANG	American angler	<i>Lophius americanus</i>			3.9	0.4		4.3
OIL	Oilfish	<i>Ruvettus pretiosus</i>					2.1	2.1
SQI	Northern shortfin squid	<i>Illex illecebrosus</i>				1.1		1.1
EPI	Black cardinal fish	<i>Epigonus telescopus</i>					0.9	0.9
ALC	Baird's slickhead	<i>Alepocephalus bairdii</i>	0.0	0.0	0.3			0.3
BSF	Black scabbardfish	<i>Aphanopus carbo</i>	0.0	0.0			0.1	0.1
	Others		0.0	0.0	0.2	0.8	0.5	1.5
Total (tons)			3255.6	4298.6	5475.7	1739.7	301.2	15070.8

Table 2. Samples and individuals sampled by the IEO Scientific Observers by species, mesh size and NAFO Division in 2012.

Code	Species	English_name	Catch/Disc.	Division	Mesh size	Samples	Ind.
ANT	<i>Antimora rostrata</i>	Blue antimora	C	3L	130 mm	3	265
ANT	<i>Antimora rostrata</i>	Blue antimora	C	3M	130 mm	3	266
ANT	<i>Antimora rostrata</i>	Blue antimora	C	3N	130 mm	1	63
API	<i>Apristurus sp</i>	Apristurus sp	C	3M	130 mm	1	81
COD	<i>Gadus morhua</i>	Cod	C	3M	130 mm	31	3751
COD	<i>Gadus morhua</i>	Cod	C	3M	130 mm	1	243
COD	<i>Gadus morhua</i>	Cod	C	3N	130 mm	14	2411
COD	<i>Gadus morhua</i>	Cod	C	3N	280 mm	10	832
COD	<i>Gadus morhua</i>	Cod	D	3M	130 mm	7	259
COD	<i>Gadus morhua</i>	Cod	D	3N	130 mm	1	100
SKA	<i>Raja spp</i>	Skates	C	3L	130 mm	2	100
SKA	<i>Raja spp</i>	Skates	C	3M	130 mm	2	27
HKW	<i>Urophycis tenuis</i>	White hake	C	3N	130 mm	1	57
HKW	<i>Urophycis tenuis</i>	White hake	C	3O	130 mm	2	235
HKW	<i>Urophycis tenuis</i>	White hake	C	3N	280 mm	1	78
BYS	<i>Beryx splendens</i>	Splendid alfonso	C	6G	PT 130 mm	17	1602
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	C	3M	130 mm	4	106
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	C	3L	130 mm	4	417
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	C	3N	130 mm	8	1108
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	C	3O	130 mm	1	112
EPI	<i>Epigonus telescopus</i>	Black cardinal fish	C	6G	PT 130 mm	3	85
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	C	3L	130 mm	98	13699
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	C	3M	130 mm	31	3866
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	C	3N	130 mm	22	3109
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	C	3O	130 mm	2	203
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	D	3N	130 mm	3	252
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	C	3L	130 mm	26	2974
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	C	3M	130 mm	14	1479
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	C	3N	130 mm	10	1430
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	D	3M	130 mm	5	421
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	D	3L	130 mm	7	747
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	D	3N	130 mm	4	748
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	C	3L	130 mm	4	331

RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	C	3M	130 mm	13	1168
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	D	3M	130 mm	4	973
GDE	<i>Gaidropsarus ensis</i>	Threadfin rockling	C	3L	130 mm	1	62
GDE	<i>Gaidropsarus ensis</i>	Threadfin rockling	C	3M	130 mm	1	37
GDE	<i>Gaidropsarus ensis</i>	Threadfin rockling	C	3N	130 mm	1	85
RED	<i>Sebastes spp</i>	Redfish	C	3M	130 mm	8	660
RED	<i>Sebastes spp</i>	Redfish	C	3L	130 mm	4	436
RED	<i>Sebastes spp</i>	Redfish	C	3N	130 mm	16	2631
RED	<i>Sebastes spp</i>	Redfish	C	3O	130 mm	20	3663
RED	<i>Sebastes spp</i>	Redfish	D	3M	130 mm	7	525
RED	<i>Sebastes spp</i>	Redfish	D	3L	130 mm	3	318
HAL	<i>Hippoglossus hippoglossus</i>	Redfish	C	3N	130 mm	1	115
HPR	<i>Hoplostethus mediterraneus</i>	Yellowtail flounder	C	6G	PT 130 mm	4	185
YEL	<i>Limanda ferruginea</i>	Yellowtail flounder	C	3N	130 mm	1	113
YEL	<i>Limanda ferruginea</i>	Yellowtail flounder	C	3N	280 mm	13	1914
YEL	<i>Limanda ferruginea</i>	Yellowtail flounder	D	3N	280 mm	4	447
SKA	<i>Raja spp</i>	Skates	C	3M	130 mm	2	19
ALC	<i>Alepocephalus bairdii</i>	Alepocephalus bair.	C	3L	130 mm	1	107
ALC	<i>Alepocephalus bairdii</i>	Alepocephalus bair.	C	3N	130 mm	1	112
PLA	<i>Hippoglossoides platessoides</i>	American plaice	C	3M	130 mm	1	13
PLA	<i>Hippoglossoides platessoides</i>	American plaice	C	3L	130 mm	4	494
PLA	<i>Hippoglossoides platessoides</i>	American plaice	C	3N	130 mm	6	744
PLA	<i>Hippoglossoides platessoides</i>	American plaice	C	3O	130 mm	3	532
PLA	<i>Hippoglossoides platessoides</i>	American plaice	C	3N	280 mm	22	2690
PLA	<i>Hippoglossoides platessoides</i>	American plaice	D	3N	130 mm	2	385
PLA	<i>Hippoglossoides platessoides</i>	American plaice	D	3O	130 mm	1	241
PLA	<i>Hippoglossoides platessoides</i>	American plaice	D	3N	280 mm	8	968
SKA	<i>Raja spp</i>	Skates	C	3M	130 mm	6	90
SKA	<i>Raja spp</i>	Skates	C	3N	280 mm	28	3439
SKA	<i>Raja spp</i>	Skates	D	3N	280 mm	7	978
CFB	<i>Centroscyllium fabricii</i>	Black dogfish	C	3M	130 mm	1	41
CFB	<i>Centroscyllium fabricii</i>	Black dogfish	C	3O	130 mm	3	222

PT 130 mm = Semipelagic trawl

Table 3. Fishing effort (hours) of the Spanish fleet in 2011 in Divisions 3LMNO by year.

3LMNO	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Effort (Hours)	106821	76028	60128	44044	25163	21408	21250	22703	25276	25410

Table 4. Fishing effort (hours) of the Spanish fleet in 2012, by quarter, depth strata and Division, as well as percentage of effort by quarter and Division.

Division	units	1st Q	2nd Q	3rd Q	4th Q	Total	% Div.
3L	<200	7				0.1%	
	200-600	412	72	136	241	7.8%	
	>600	3739	2448	2380	1577	92.1%	
	Total	4158	2520	2515	1819	11012	43%
3M	<200	8		107	35	2.6%	
	200-600	251	158	1204	82	29.9%	
	>600	500	1696	1261	370	67.5%	
	Total	760	1854	2571	488	5672	22%
3N	<200	692	738	971	1108	44.3%	
	200-600	31	11	30	113	2.3%	
	>600	1150	1227	1313	531	53.3%	
	Total	1873	1978	2311	1752	7915	31%
3O	<200	50	58		83	23.6%	
	200-600	205	57	145	72	58.9%	
	>600	46	8	66	22	17.4%	
	Total	301	123	211	177	811	3%
	Total Hours	7092	6475	7608	4236	25410	100%
	%	28%	25%	30%	17%	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	1%	3%			1%
	100-200 mm	99%	97%	100%	100%	99%
	>200 mm					
3M	<90 mm					
	100-200 mm	100%	100%	100%	100%	100%
	>200 mm					
3N	<90 mm					
	100-200 mm	62%	62%	63%	39%	57%
	>200 mm	38%	38%	37%	61%	43%
3O	<90 mm					
	100-200 mm	98%	93%	100%	100%	98%
	>200 mm	2%	7%	0%	0%	2%

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

Species	a	b
Greenland halibut	0.00349	3.21410
Redfish 3O - 3LN	0.0047478	3.3079066
Redfish 3M	0.01584	2.9604
Roughhead grenadier	0.140042	2.8375
Witch flounder	0.0016228	3.3886564
American plaice	0.004273	3.19922
Cod 3NO	0.0057088	3.0934479
Cod 3M	0.007025	3.0506
Yellowtail Flounder	0.004786	3.147102
Skate	0.0086	3.0303
White Hake	0.003272	3.219074

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

Cod Length (cm)	Division 3NO			Total
	Males	Females	Ind.	
22	40	0	0	40
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	52	0	29	81
27	0	12	15	27
28	40	0	0	40
29	0	0	0	0
30	0	0	35	35
31	12	40	33	85
32	0	52	56	108
33	80	69	40	189
34	0	0	51	51
35	24	64	77	165
36	0	0	110	110
37	179	128	197	504
38	0	77	160	237
39	255	116	267	638
40	128	139	225	492
41	201	177	312	690
42	473	233	257	963
43	582	628	278	1489
44	642	193	245	1080
45	614	627	260	1500
46	1083	359	300	1742
47	1207	521	331	2059
48	1132	640	454	2226
49	1381	1529	658	3568
50	985	1834	638	3456
51	1487	1434	599	3520
52	556	1295	761	2612
53	2012	1207	736	3955
54	1971	1951	632	4554
55	2272	2056	766	5093
56	1870	2414	718	5002
57	2791	3016	931	6738
58	1635	1694	760	4088
59	1846	1758	715	4319
60	921	2042	448	3410
61	1606	1261	484	3351
62	1055	1339	488	2883
63	551	1649	444	2644
64	672	859	333	1864
65	437	354	312	1104
66	845	2119	222	3186
67	363	1684	157	2205
68	282	1016	138	1436

69	353	345	144	842
70	550	872	86	1509
71	806	776	83	1665
72	294	121	22	437
73	193	365	55	613
74	437	779	61	1277
75	11	482	35	528
76	219	229	15	463
77	140	326	44	510
78	794	328	0	1122
79	415	795	0	1210
80	752	564	7	1322
81	937	93	0	1029
82	600	540	21	1162
83	405	463	7	875
84	619	427	13	1059
85	439	769	0	1209
86	430	415	0	846
87	730	383	0	1113
88	112	207	15	334
89	245	318	0	563
90	583	565	0	1148
91	592	252	0	845
92	599	687	0	1286
93	375	403	0	778
94	154	283	0	436
95	87	12	0	99
96	703	408	0	1112
97	255	227	0	482
98	483	191	0	674
99	113	19	0	132
100	25	320	0	345
101	142	87	0	229
102	99	179	0	278
103	0	0	0	0
104	21	276	0	297
105	87	187	0	275
113	0	87	0	87
Total	46083	50369	15277	111729

Ind. Sampled	3243
Samples	24
Catch (tons)	292.8
SOP	1.06

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

Cod Length (cm)	3M		Ind.	Total
	Males	Females		
20	0	0	0	0
21	0	0	0	0
22	0	0	94	94
23	0	0	378	378
24	0	0	189	189
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	94	94
29	0	0	0	0
30	125	0	94	219
31	0	0	0	0
32	232	0	94	326
33	173	0	378	551
34	245	41	1038	1324
35	101	101	378	580
36	101	463	944	1508
37	0	173	850	1023
38	172	144	1322	1638
39	72	101	1227	1400
40	72	0	1605	1677
41	191	72	850	1112
42	382	0	1322	1703
43	350	191	566	1107
44	62	441	661	1164
45	0	272	283	555
46	333	0	378	711
47	423	385	472	1280
48	746	125	283	1153
49	799	203	283	1285
50	3070	951	378	4399
51	2102	827	189	3119
52	1529	1215	566	3310
53	2738	1566	283	4587
54	2932	675	189	3795
55	3377	815	189	4381
56	4582	944	1510	7036
57	4653	1602	378	6633
58	4595	2879	850	8323
59	3675	2045	755	6475
60	5698	3555	566	9818
61	7174	3116	378	10667
62	7715	4758	189	12662
63	8292	4999	283	13573

64	7720	2873	566	11159
65	5752	5332	472	11556
66	5220	3953	189	9362
67	6528	5132	189	11849
68	3935	3632	189	7756
69	3091	3912	0	7003
70	1933	3371	94	5398
71	3131	3682	0	6813
72	2871	4511	0	7382
73	2547	2609	94	5250
74	3171	3352	94	6617
75	2047	3672	0	5720
7	2594	5067	94	7756
77	2219	3280	0	5499
78	2330	4779	0	7109
79	2063	3670	0	5733
80	1486	4070	94	5651
81	1816	3609	0	5425
82	3223	4178	0	7401
83	3044	4178	0	7223
84	1953	4303	0	6256
85	1953	4656	0	6610
86	1749	3981	0	5731
87	2552	5239	94	7886
88	2281	2892	0	5173
89	2554	4966	0	7520
90	2002	5610	0	7613
91	1595	4701	0	6297
92	2411	4719	94	7224
93	561	3719	0	4280
94	1330	4695	0	6025
95	1162	3753	0	4915
96	684	5292	0	5976
97	543	4076	0	4618
98	572	3617	0	4188
99	400	2578	0	2978
100	281	3235	0	3516
101	486	1936	0	2422
102	198	2546	0	2744
103	169	865	189	1223
104	38	1247	0	1285
105	192	1436	0	1628
106	142	666	0	808
107	0	1039	0	1039
108	0	374	0	374
109	14	595	0	610
110	0	248	0	248
111	14	1115	0	1129

112	0	624	0	624
113	0	184	0	184
114	0	69	0	69
115	0	165	0	165
116	0	831	0	831
117	0	272	0	272
118	0	53	0	53
119	0	14	0	14
120	0	286	0	286
121	0	172	0	172
122	0	48	0	48
123	0	14	0	14
124	0	242	0	242
125	0	0	0	0
126	0	0	0	0
127	0	292	0	292
128	0	0	0	0
129	0	0	0	0
130	0	0	0	0
131	0	41	0	41
132	0	0	0	0
133	0	0	0	0
Total	159270	198930	22938	381138

Ind. Sampled	4094
Samples	32
Catch (tons)	1682
SOP	1.11

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

Redfish Length (cm)	3LN			Total
	Males	Females	Ind.	
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	1230	0	369	1599
19	2262	941	2839	6042
20	8882	2933	10767	22581
21	18852	16364	17585	52801
22	27137	31082	19639	77859
23	19797	29367	19116	68280
24	13235	27698	11928	52861
25	9996	19192	8696	37884
26	6685	14770	4337	25791
27	2670	9843	3068	15581
28	3228	10861	3077	17165
29	2237	7841	3441	13519
30	1360	4806	1857	8023
31	628	4177	1242	6047
32	383	1416	893	2693
33	212	879	271	1362
34	120	542	418	1080
35	85	118	63	266
36	69	48	37	154
37	94	130	25	250
38	9	28	0	37
39	0	9	0	9
40	0	0	17	17
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	114	0	114
45	0	0	0	0
Total	119172	183159	109683	412014
Ind. Sampled				3067
Samples				20
Catch (tons)				75
SOP				0.95

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

Redfish Length (cm)	3M		Ind.	Total
	Males	Females		
13	472	0	631	1102
14	472	0	0	472
15	1886	2364	0	4250
16	472	472	0	943
17	2994	1261	0	4256
18	472	0	0	472
19	631	3735	0	4365
20	0	1843	0	1843
21	4947	1633	0	6580
22	472	1733	0	2205
23	24569	7260	0	31829
24	39500	14043	0	53543
25	27067	10148	0	37216
26	10936	36870	0	47807
27	14758	28036	0	42794
28	18015	18875	0	36890
29	14133	17266	0	31399
30	70431	16087	0	86518
31	15282	9783	0	25065
32	23166	17644	0	40810
33	48775	23582	0	72357
34	39214	44242	0	83456
35	52901	22637	0	75537
36	11012	73769	0	84781
37	29438	61986	0	91424
38	9936	31879	0	41815
39	4935	32536	0	37471
40	7435	10359	0	17793
41	0	28878	0	28878
42	823	4482	0	5306
43	1633	17440	0	19073
44	0	14933	0	14933
45	0	472	0	472
46	0	0	0	0
47	0	0	0	0
48	0	1633	0	1633
49	0	0	0	0
50	0	13671	0	13671
51	0	631	0	631
52	0	0	0	0
Total	476775	572181	631	1049587
Ind. Sampled				660
Samples				8
Catch (tons)				511.8
SOP				0.89

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

Redfish Length (cm)	3O			Total
	Males	Females	Ind.	
14	0	0	0	0
15	5177	0	0	5177
16	10477	0	0	10477
17	33424	8354	0	41778
18	88284	51800	437	140522
19	483657	156463	33482	673602
20	1351578	679099	201872	2232549
21	1153831	1114351	299514	2567696
22	556230	1201114	262129	2019473
23	367278	628182	160297	1155756
24	257309	293299	108444	659053
25	105663	204313	47647	357623
26	31021	169660	31512	232194
27	5166	71821	8525	85512
28	7749	40443	7534	55726
29	3875	2471	4230	10575
30	0	2471	2740	5211
31	0	0	0	0
32	0	3875	0	3875
33	0	2471	0	2471
34	0	0	1448	1448
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
Total	4460721	4630185	1169812	10260717
Ind. Sampled				3667
Samples				20
Catch (tons)				1414.6
SOP				1.01

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

American Plaice Length (cm)	Division 3LNO			Total
	Males	Females	Ind.	
17	0	0	0	0
18	0	0	0	0
19	0	135	0	135
20	348	197	0	545
21	499	591	0	1090
22	1478	1530	0	3008
23	3893	3185	2254	9332
24	5861	9339	159	15359
25	5476	6030	159	11665
26	13326	11480	318	25124
27	14052	14503	0	28555
28	18639	12592	188	31419
29	16983	12346	0	29329
30	11349	9513	188	21050
31	15533	9993	0	25527
32	14720	12300	0	27020
33	11992	17346	0	29338
34	13351	15086	0	28437
35	9792	13952	0	23744
36	11877	25960	0	37837
37	6774	37995	0	44769
38	7648	34745	0	42394
39	6900	32524	0	39424
40	2416	23274	0	25690
41	797	26903	0	27700
42	949	26104	0	27053
43	1194	29904	0	31098
44	1393	20457	0	21850
45	633	23035	0	23668
46	570	23999	0	24569
47	0	18634	0	18634
48	597	17802	0	18399
49	132	17758	0	17890
50	0	7697	0	7697
51	0	6810	0	6810
52	188	6038	0	6226
53	0	4931	0	4931
54	0	5377	0	5377
55	0	3858	0	3858
56	0	3903	0	3903
57	0	2498	0	2498
58	0	1790	0	1790
59	0	2175	0	2175
60	0	775	0	775
61	0	1466	0	1466
62	0	1351	0	1351

63	0	562	0	562
64	0	948	0	948
65	0	906	0	906
66	0	104	0	104
67	0	511	0	511
68	0	0	0	0
69	0	0	0	0
70	0	1080	0	1080
71	0	0	0	0
72	0	0	0	0
73	0	0	0	0
Total	199360	561994	3266	764620
Ind. Sampled				4460
Samples				35
Catch (tons)				420
SOP				0.97

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

Witch flounder Length (cm)	3L			Total
	Males	Females	Ind.	
15	0	0	0	0
16	955	0	0	955
17	2865	955	0	3819
18	1910	955	0	2865
19	0	0	0	0
20	0	0	0	0
21	1910	955	0	2865
22	0	3025	0	3025
23	6553	6210	0	12763
24	4465	8222	0	12687
25	9355	6935	0	16291
26	6932	13753	0	20685
27	2632	17847	0	20478
28	12015	16634	0	28649
29	16814	23682	0	40496
30	13540	27694	0	41234
31	3534	28400	0	31933
32	0	5371	0	5371
33	1459	6491	0	7949
34	1566	1963	0	3529
35	611	4647	0	5258
36	0	2734	0	2734
37	0	0	0	0

38	0	2128	0	2128
39	0	2177	0	2177
40	0	1892	0	1892
41	669	3667	0	4336
42	1222	2579	0	3801
43	0	611	0	611
44	0	2070	0	2070
45	0	1624	0	1624
46	0	0	0	0
47	0	669	0	669
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	1008	0	1008
55	0	0	0	0
56	0	0	0	0
57	0	504	0	504
58	0	0	0	0
59	0	0	0	0
60	0	504	0	504
Total	89007	195904	0	284910

Ind. Sampled	417
Samples	4
Catch (tons)	40.3
SOP	0.78

Table 14. Witch flounder Spanish catches length distribution for Div. 3NO.

Witch flounder Length (cm)	3NO			Total
	Males	Females	Ind.	
24	0	377	0	377
25	0	0	0	0
26	677	0	0	677
27	0	0	0	0
28	194	378	0	572
29	1056	0	0	1056
30	2864	0	0	2864
31	3465	1441	0	4906
32	4394	2621	0	7014
33	4732	3806	0	8538
34	7292	5249	677	13218
35	11708	14741	0	26449
36	15064	17928	0	32992
37	10019	17111	677	27807
38	11415	16426	677	28519
39	8974	20354	0	29328
40	14309	26652	0	40960
41	12139	25761	0	37899
42	5946	19992	0	25938
43	3890	20872	0	24761
44	2169	22635	0	24804
45	61	18960	0	19021
46	677	10211	0	10889
47	0	8415	0	8415
48	0	5814	0	5814
49	0	3158	0	3158
50	0	1918	0	1918
51	0	1027	0	1027
52	0	1534	0	1534
53	0	708	0	708
54	0	194	0	194
55	677	0	0	677
56	0	0	0	0
57	0	677	0	677
58	0	388	0	388
59	0	0	0	0
60	0	1355	0	1355
63	0	677	0	677
Total	121720	271379	2032	395132
Ind. Sampled				1220
Samples				9
Catch (tons)				178
SOP				1.06

Table 15. Yellowtail flounder Spanish catches length distribution for Div. 3LNO.

Yellowtail flounder		3LNO			
Length (cm)	Males	Females	Ind.	Total	
17	91	91	0	181	
18	0	181	0	181	
19	474	293	0	767	
20	482	0	0	482	
21	362	0	0	362	
22	1268	91	0	1359	
23	925	181	0	1106	
24	2506	857	0	3364	
25	1421	676	0	2097	
26	2013	738	1402	4153	
27	2653	2057	0	4710	
28	5630	3839	2803	12273	
29	10436	2904	0	13340	
30	11244	7443	0	18687	
31	16983	20910	0	37893	
32	13613	17152	0	30765	
33	10360	17405	0	27765	
34	18236	39836	0	58072	
35	24987	47512	0	72499	
36	17281	63285	0	80566	
37	14545	80527	0	95072	
38	10764	91472	0	102235	
39	3688	79803	0	83492	
40	2923	60505	0	63428	
41	213	55991	0	56204	
42	1365	32659	0	34024	
43	5161	21238	0	26399	
44	1402	12752	0	14154	
45	0	8085	0	8085	
46	1402	8715	0	10117	
47	565	5389	0	5954	
48	0	536	0	536	
49	565	1916	0	2481	
50	0	451	0	451	
51	0	260	0	260	
52	0	197	0	197	
53	0	0	0	0	
54	0	66	0	66	
55	0	66	0	66	
Total	183557	686079	4205	873840	
Ind. Sampled				2027	
Samples				14	
Catch (tons)				389.2	
SOP				1.00	

Table 16. Greenland halibut Spanish catches length distribution for Div. 3L and 3M.

Length (cm)	Division 3L				Division 3M			
	Males	Females	Indter.	Total	Males	Females	Indter.	Total
20	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0
22	0	4273	0	4273	0	0	0	0
23	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0
25	4273	4273	0	8547	0	0	0	0
26	12820	8547	0	21367	0	0	0	0
27	8547	4273	0	12820	0	0	0	0
28	12820	21367	0	34187	0	0	140	140
29	17094	25640	147	42881	0	0	0	0
30	22341	64263	0	86604	0	0	0	0
31	55917	77803	238	133958	0	0	0	0
32	9827	17308	293	27429	0	0	0	0
33	5075	420	1468	6963	0	0	0	0
34	1712	5208	1998	8919	0	504	0	504
35	3059	7929	2986	13973	0	0	921	921
36	5307	2466	5004	12776	1332	1248	1033	3613
37	5434	13673	6513	25619	876	511	1230	2617
38	7269	9562	14052	30883	504	1248	2828	4581
39	13575	13884	17244	44703	1624	2341	2894	6858
40	24746	30309	23582	78638	3181	3403	3790	10374
41	30894	24546	36993	92433	3695	5440	6930	16065
42	28688	34773	41731	105192	7935	5675	6318	19928
43	40912	36073	44005	120990	5912	11812	7072	24796
44	31293	37722	50193	119208	15138	8793	8340	32270
45	41726	40808	49252	131786	15675	17478	7557	40710
46	41430	59393	55652	156475	15515	18722	7000	41238
47	38249	47865	52509	138624	18908	15601	6913	41422
48	44059	84889	27375	156323	40144	38191	3318	81653
49	40393	81043	24503	145940	33885	23887	0	57772
50	34767	75787	19325	129879	41765	48513	0	90278
51	25738	89247	4980	119965	37295	46570	0	83865
52	24727	73546	3118	101391	26914	37228	0	64142
53	17916	67166	2461	87543	30688	38431	0	69119
54	16931	72641	1224	90796	26557	49169	0	75726
55	13211	57821	0	71033	17012	32714	0	49726
56	7239	54281	0	61519	23883	39005	0	62888
57	3485	48310	568	52363	14804	37399	0	52202
58	4778	40292	0	45070	13952	32038	0	45990
59	3705	30669	0	34375	9694	38509	0	48203
60	1803	30697	0	32500	5877	18722	0	24599
61	573	26900	0	27473	1596	15553	0	17149
62	676	22923	0	23599	610	20370	0	20979
63	286	16588	0	16874	2673	12882	0	15555
64	479	11001	0	11480	2731	14118	0	16849
65	267	7964	0	8231	936	13984	0	14920

66	0	8676	0	8676	0	12066	0	12066
67	0	6863	0	6863	0	7421	0	7421
68	0	4956	0	4956	0	8732	0	8732
69	76	3754	0	3830	0	10506	0	10506
70	76	3177	0	3253	0	5671	0	5671
71	0	2991	0	2991	0	4118	0	4118
72	0	3239	0	3239	0	6764	0	6764
73	0	1340	0	1340	0	2142	0	2142
74	0	2985	0	2985	0	2772	0	2772
75	0	1426	0	1426	0	5765	0	5765
76	0	188	0	188	0	791	0	791
77	0	1211	0	1211	0	9705	0	9705
78	0	1100	0	1100	0	5033	0	5033
79	0	368	0	368	0	1688	0	1688
80	0	327	0	327	0	761	0	761
81	0	286	0	286	0	1383	0	1383
82	0	144	0	144	0	2681	0	2681
83	0	155	0	155	0	464	0	464
84	0	222	0	222	0	478	0	478
85	0	254	0	254	0	0	0	0
86	0	239	0	239	0	1352	0	1352
87	0	382	0	382	0	0	0	0
88	0	0	0	0	0	0	0	0
89	0	238	0	238	0	2634	0	2634
90	0	80	0	80	0	0	0	0
91	0	0	0	0	0	0	0	0
92	0	118	0	118	0	0	0	0
93	0	171	0	171	0	0	0	0
94	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0
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
Total	704194	1529035	487415	2720645	421311	742983	66284	1230579

Samples				98				31
Ind. Sampled				13699				3866
Catch (tons)				2469.3				1273.2

Table 16 (cont.). Greenland halibut Spanish catches length distribution for Div. 3N and 3O.

Length (cm)	Division 3N				Division 3O			
	Males	Females	Indter.	Total	Males	Females	Indter.	Total
20	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0
24	0	239	0	239	0	0	0	0
25	1517	879	0	2396	0	0	0	0
26	1472	4157	0	5629	0	0	0	0
27	1463	1927	0	3391	0	0	0	0
28	1030	1403	0	2434	0	0	0	0
29	1475	368	168	2011	0	0	0	0
30	2995	3395	0	6390	0	0	0	0
31	3548	1651	0	5199	0	0	0	0
32	4474	4541	0	9014	0	0	0	0
33	4995	8854	0	13850	0	0	0	0
34	1643	6956	0	8598	0	0	0	0
35	3875	10999	0	14874	0	0	0	0
36	7455	16871	0	24326	0	267	0	267
37	10188	19382	0	29570	267	801	0	1067
38	11389	26400	0	37788	534	534	0	1067
39	11355	30227	0	41582	1067	267	0	1334
40	14357	38451	168	52975	534	0	0	534
41	16447	30818	336	47600	534	1334	0	1868
42	19680	31330	168	51177	1334	534	0	1868
43	18687	34223	336	53246	1067	801	0	1868
44	18738	29490	336	48563	1601	1601	0	3202
45	18346	28873	1007	48227	1067	2135	0	3202
46	13012	31699	504	45215	801	1334	0	2135
47	15499	32373	504	48376	534	1601	0	2135
48	11825	28531	336	40692	267	801	0	1067
49	9128	26041	168	35337	0	1334	0	1334
50	6763	25663	839	33265	267	801	0	1067
51	5648	23290	168	29105	0	534	0	534
52	1985	19939	0	21924	0	267	0	267
53	7171	15618	0	22790	0	801	0	801
54	4155	16185	0	20340	0	267	0	267
55	2187	13315	0	15501	0	1334	0	1334
56	2054	14912	0	16966	0	0	0	0
57	1998	8931	0	10929	0	267	0	267
58	728	11242	0	11971	0	534	0	534
59	619	8731	0	9350	0	0	0	0
60	115	8187	0	8302	0	0	0	0
61	0	7387	0	7387	0	0	0	0
62	0	6623	0	6623	0	267	0	267
63	0	5008	0	5008	0	0	0	0
64	0	4871	0	4871	0	0	0	0
65	0	4708	0	4708	0	0	0	0
66	0	1722	0	1722	0	0	0	0

67	0	2445	0	2445		0	0	0	0
68	0	1043	0	1043		0	0	0	0
69	0	984	0	984		0	0	0	0
70	0	1485	0	1485		0	0	0	0
71	0	0	0	0		0	0	0	0
72	0	378	0	378		0	0	0	0
73	0	434	0	434		0	0	0	0
74	0	337	0	337		0	0	0	0
75	0	249	0	249		0	0	0	0
76	0	0	0	0		0	0	0	0
77	0	0	0	0		0	0	0	0
78	0	417	0	417		0	0	0	0
79	0	0	0	0		0	0	0	0
80	0	0	0	0		0	0	0	0
81	0	0	0	0		0	0	0	0
82	0	0	0	0		0	0	0	0
83	0	0	0	0		0	0	0	0
84	0	0	0	0		0	0	0	0
85	0	0	0	0		0	0	0	0
86	0	0	0	0		0	0	0	0
87	0	0	0	0		0	0	0	0
88	0	0	0	0		0	0	0	0
89	0	0	0	0		0	0	0	0
90	0	0	0	0		0	0	0	0
91	0	0	0	0		0	0	0	0
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	0	0	0
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
Total	258014	654185	5035	917235		9874	18413	0	28287
Samples				22					2
Ind Sampled				3109					203
Catch (tons)				779.5					24.3

Table 16 (cont.). Greenland halibut Spanish catches length distribution for Div. 3LMNO.

Length (cm)	Division 3LMNO			Total
	Males	Females	Indter.	
20	0	0	0	0
21	0	0	0	0
22	0	4273	0	4273
23	0	0	0	0
24	0	239	0	239
25	5791	5152	0	10943
26	14292	12704	0	26996
27	10010	6201	0	16211
28	13851	22771	140	36761
29	18568	26009	315	44892
30	25336	67658	0	92994
31	59465	79455	238	139158
32	14301	21849	293	36443
33	10071	9274	1468	20813
34	3355	12668	1998	18021
35	6934	18927	3907	29769
36	14094	20852	6037	40983
37	16765	34367	7742	58874
38	19696	37743	16881	74320
39	27621	46719	20138	94478
40	42818	72162	27540	142521
41	51570	62138	44259	157966
42	57637	72312	48217	178166
43	66578	82909	51412	200900
44	66770	77606	58869	203244
45	76815	89293	57816	223924
46	70757	111148	63156	245062
47	73191	97440	59926	230557
48	96295	152411	31028	279735
49	83406	132306	24671	240382
50	83561	150763	20165	254489
51	68681	159640	5148	233469
52	53625	130981	3118	187724
53	55775	122016	2461	180253
54	47643	138261	1224	187128
55	32410	105184	0	137594
56	33176	108197	0	141373
57	20287	94906	568	115761
58	19458	84106	0	103564
59	14018	77909	0	91927
60	7794	57606	0	65400
61	2169	49840	0	52009
62	1286	50183	0	51468
63	2959	34477	0	37437
64	3210	29991	0	33200
65	1203	26656	0	27859
66	0	22464	0	22464

67	0	16729	0	16729
68	0	14731	0	14731
69	76	15244	0	15320
70	76	10333	0	10409
71	0	7108	0	7108
72	0	10381	0	10381
73	0	3916	0	3916
74	0	6094	0	6094
75	0	7441	0	7441
76	0	979	0	979
77	0	10915	0	10915
78	0	6550	0	6550
79	0	2056	0	2056
80	0	1089	0	1089
81	0	1669	0	1669
82	0	2825	0	2825
83	0	619	0	619
84	0	700	0	700
85	0	254	0	254
86	0	1591	0	1591
87	0	382	0	382
88	0	0	0	0
89	0	2872	0	2872
90	0	80	0	80
91	0	0	0	0
92	0	118	0	118
93	0	171	0	171
94	0	0	0	0
95	0	0	0	0
96	0	0	0	0
97	0	0	0	0
98	0	0	0	0
99	0	0	0	0
100	0	0	0	0
Total	1393393	2944617	558735	4896745

Samples	153
Ind Sampled	20877
Catch (tons)	4546.3
SOP	0.91

Table 18. Skates Spanish catches length distribution by sex for Div. 3LNO.

Skates Length (cm)	3LNO			Total
	Males	Females	Ind.	
23	2881	0	0	2881
24	2881	0	0	2881
25	2881	0	0	2881
26	0	2881	0	2881
27	2881	5762	0	8643
28	5908	3427	0	9335
29	5762	2881	0	8643
30	9966	3189	0	13155
31	9817	4956	0	14773
32	7834	15077	0	22910
33	4773	7385	0	12158
34	16856	4738	0	21595
35	17021	12832	0	29853
36	12368	25809	0	38177
37	20504	26398	0	46903
38	17985	20017	0	38002
39	10750	26105	0	36855
40	24157	15849	0	40005
41	21409	35060	0	56469
42	28273	20072	0	48345
43	23206	12732	0	35938
44	16315	23873	0	40189
45	20637	15798	0	36435
46	11728	18137	0	29865
47	13776	10531	146	24454
48	13437	17153	0	30590
49	14765	13478	0	28243
50	8804	10599	0	19403
51	12305	18424	0	30729
52	16200	16633	0	32833
53	24088	13929	0	38017
54	14841	10527	0	25369
55	8131	7468	0	15599
56	20017	13074	0	33092
57	19919	18154	0	38073
58	10243	6340	0	16583
59	17840	9265	0	27105
60	21057	10623	0	31680
61	25757	7173	0	32930
62	15912	10470	0	26383
63	12625	13146	0	25771
64	14256	11627	0	25882
65	9988	6321	0	16309
66	17457	13063	0	30520
67	14426	7043	0	21469
68	13649	13898	0	27547
69	13135	8776	0	21910

70	21771	12280	0	34051
71	18961	11823	0	30783
72	13503	15942	0	29445
73	17417	13795	0	31211
74	18021	16092	0	34113
75	12482	10337	0	22819
76	17544	10302	0	27846
77	16156	6136	0	22293
78	18861	1608	0	20469
79	20878	3030	0	23908
80	17389	1506	0	18895
81	29590	3412	0	33002
82	13469	1895	0	15365
83	11287	1700	0	12987
84	7354	465	0	7819
85	12933	418	0	13351
86	9512	330	0	9843
87	8256	533	0	8789
88	7279	1174	0	8453
89	3181	1416	0	4597
90	330	0	0	330
91	746	0	0	746
92	582	0	0	582
93	136	0	0	136
94	0	0	0	0
95	0	0	0	0
Total	947062	684887	146	1632096

Ind. Sampled	3439
Samples	28
Catch (tons)	3236.9
SOP	1.08

Table 19. 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	0	0	324	324
6	210	324	324	858
7	2927	1678	0	4605
8	8249	8284	0	16533
9	14653	10989	0	25642
10	21532	18762	2728	43022
11	24269	26481	909	51659
12	41742	32180	234	74156
13	44363	31802	701	76865
14	56694	32474	234	89402
15	60095	29248	467	89811
16	83924	34094	0	118018
17	59979	29024	0	89003
18	57369	36931	0	94299
19	31055	24942	0	55998
20	15251	26675	0	41926
21	5699	25566	0	31266
22	4114	20941	144	25199
23	1859	18946	0	20805
24	391	17533	0	17924
25	67	18776	0	18842
26	2798	18665	0	21463
27	328	12819	0	13147
28	0	15910	0	15910
29	0	14688	0	14688
30	0	10827	0	10827
31	0	4050	0	4050
32	0	4144	0	4144
33	0	2494	0	2494
34	0	1328	0	1328
35	0	342	0	342
36	0	377	0	377
37	0	997	0	997
38	0	171	0	171
39	0	0	0	0
40	0	227	0	227
Total	537569	532689	6065	1076323
Ind. Sampled				5883
Samples				50
Catch (tons)				621
SOP				1.01

Table 21. White hake Spanish catches length distribution for Div. 3NO.

White hake Length (cm)	3NO			Total
	Males	Females	Ind.	
25	0	0	0	0
26	0	0	0	0
27	441	0	0	441
28	882	0	0	882
29	699	0	0	699
30	3236	0	0	3236
31	1323	699	0	2022
32	1581	187	0	1768
33	2724	6335	0	9059
34	5572	2463	0	8035
35	3166	4102	0	7268
36	5750	7963	0	13712
37	5379	9481	0	14860
38	2650	5426	0	8076
39	1511	11827	0	13337
40	3677	5379	0	9055
41	3419	7026	0	10445
42	5956	2978	0	8934
43	2904	6912	0	9817
44	3683	2022	0	5705
45	465	7280	0	7744
46	1856	6924	0	8780
47	447	882	0	1329
48	0	12	0	12
49	12	465	0	477
50	12	24	0	35
51	0	0	0	0
52	0	453	0	453
53	6	12	0	18
54	6	0	0	6
55	6	12	0	18
56	18	12	0	30
57	0	24	0	24
58	6	18	0	24
59	0	12	0	12
60	6	0	0	6
61	12	6	0	18
62	12	6	0	18
63	6	0	0	6
64	0	6	0	6
65	0	0	0	0
66	18	0	0	18
67	6	0	0	6
68	0	6	0	6

69	0	12	0	12
70	12	0	0	12
71	6	6	0	12
72	6	12	0	18
73	0	0	0	0
74	0	0	0	0
75	0	0	0	0
76	6	0	0	6
77	6	6	0	12
78	0	12	0	12
Total	57480	88998	0	146478

Ind. Sampled	370
Samples	4
Catch (tons)	64.8
SOP	0.95

Table 22. *Beryx splendens* 6G Spanish catches length distribution.

<i>Beryx splendens</i> Length (cm)	6G		Ind.	Total
	Males	Females		
29	202	0	0	202
30	0	0	0	0
31	0	0	0	0
32	825	311	0	1136
33	1939	642	0	2581
34	1446	1026	0	2472
35	2239	1773	0	4012
36	10937	3574	0	14511
37	11353	5217	0	16570
38	20339	9001	0	29340
39	22327	11403	0	33730
40	27636	18183	0	45819
41	23517	18788	0	42305
42	21948	20195	0	42143
43	14099	17228	0	31327
44	8826	11685	0	20511
45	3957	7221	0	11178
46	1988	6716	0	8704
47	2014	5628	0	7641
48	515	2179	0	2694
49	479	1973	0	2452
50	90	1277	0	1367
51	73	404	0	477
52	0	0	0	0
53	0	0	0	0
54	0	342	0	342
55	0	168	0	168
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	95	0	95
Total	176747	145028	0	321776
Ind. Sampled				1602
Samples				17
Catch (tons)				297.6
SOP				

Table 23. *Epigonus telescopus* 6G Spanish catches length distribution.

<i>Epigonus telescopus</i> Length (cm)	6G			Total
	Males	Females	Ind.	
30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	8	0	0	8
34	0	0	2	2
35	0	0	3	3
36	0	0	0	0
37	13	2	0	15
38	2	0	4	6
39	0	3	2	5
40	6	3	0	9
41	8	5	0	13
42	3	0	0	3
43	13	0	0	13
44	0	3	0	3
45	14	3	0	17
46	8	0	0	8
47	0	3	0	3
48	3	3	0	6
49	19	3	0	22
50	0	0	0	0
51	8	0	0	8
52	3	0	0	3
53	0	0	0	0
54	8	0	0	8
55	11	0	0	11
56	0	0	0	0
57	0	0	0	0
58	8	0	0	8
59	0	0	0	0
60	0	0	0	0
61	0	0	0	0
62	0	0	0	0
63	8	0	0	8
64	0	0	0	0
65	0	0	0	0
66	15	0	0	15
67	8	0	0	8
68	0	0	0	0
69	0	0	0	0
70	23	0	0	23
71	8	3	0	11
72	0	0	0	0
73	2	0	0	2
74	0	0	0	0
75	14	0	0	14

76	2	0	0	2
77	0	16	0	16
78	0	8	0	8
79	0	28	0	28
80	0	21	0	21
81	0	18	0	18
82	0	6	0	6
83	8	0	0	8
84	0	0	0	0
85	0	3	0	3
86	0	0	0	0
87	0	3	0	3
88	0	0	0	0
89	0	0	0	0
90	0	0	0	0
Total	221	135	10	366

Ind. Sampled	85
Samples	3
Catch (tons)	0.92
SOP	

Table 24. *Hoplosethus mediterraneus* 6G Spanish catches length distribution.

<i>Hoplosethus mediterraneus</i>		6G			
Length (cm)	Males	Females	Ind.	Total	
10	0	0	0	0	
11	0	0	0	0	
12	2	0	0	2	
13	5	2	0	6	
14	3	0	0	3	
15	5	5	0	10	
16	8	6	0	14	
17	5	6	0	11	
18	3	8	0	11	
19	15	10	0	24	
20	3	2	0	5	
21	23	3	0	26	
22	21	33	2	55	
23	73	18	0	91	
24	57	41	2	99	
25	68	68	0	137	
26	190	60	0	250	
27	50	31	0	81	
28	27	67	0	94	
29	23	60	0	83	
30	0	21	0	21	
31	0	10	0	10	
32	0	0	0	0	
33	0	0	0	0	
34	0	0	0	0	
35	0	0	0	0	
Total	581	450	3	1034	
Ind. Sampled					185
Samples					4
Catch (tons)					0.3
SOP					

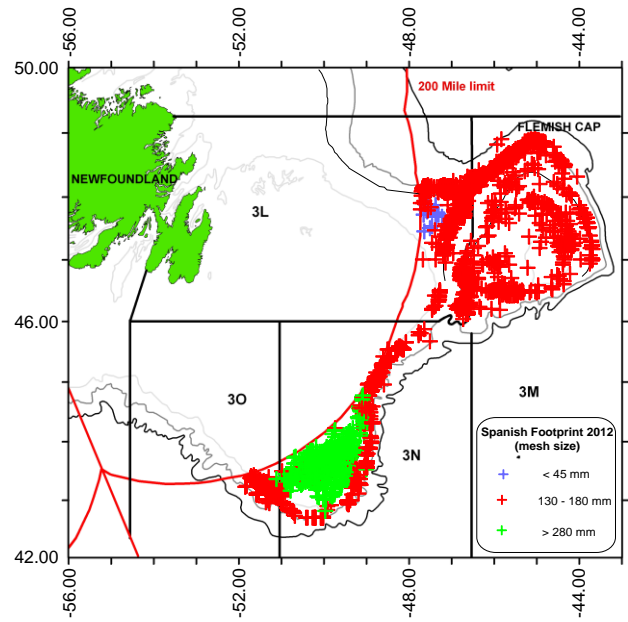


Figure 1. Spanish Fishery 2012 footprint by mesh size based in NAFO Observers data.

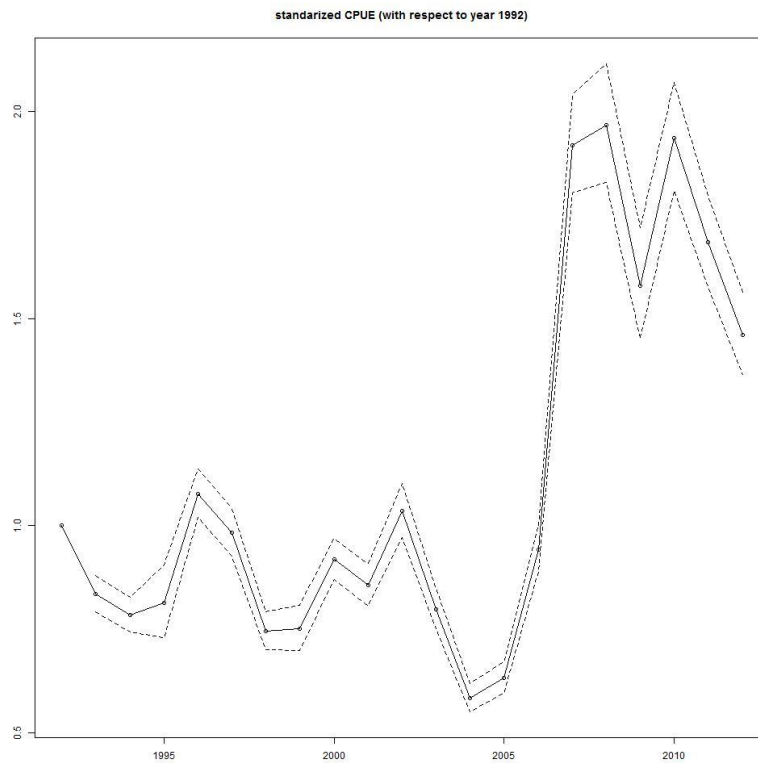


Figure 2. Spanish fleet standardized CPUE with model presented by Gonzalez-Costas and Gonzalez-Troncoso (2009) update with the 2012 data.