

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

by

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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 2013 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 2013 information from 1,079 days was available while total effort of the Spanish fleet in NAFO Regulatory Area was 1,143 days (around 94% coverage).

In addition to NAFO observers, IEO scientific observers were on board 322 fishing days that it means 28 % 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: 584 samples were taken in 2013, with 64,051 individuals of different species examined (Table 2).

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

A total of 13 Spanish trawlers operated in Div. 3LMNO NAFO Regulatory Area during 2013, amounting to 1,126 days (18,602 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 14,000 tons in 2013.

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 2013 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 2013 has the same patten described by Gonzalez-Costas (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. 4) In Divisions 3NO with 280 mm mesh size at less than 200 meters depth. The target species is the skates. 5) In Division 3L 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 600 meters depth using cod-end mesh size of 135 mm, indicating that the fleet targeted Greenland halibut. A small part of the effort

(12%) was carried out at depth between 200-600 meters targeting redfish and shrimp. Regarding Div. 3M, most of the effort was carried out using 135 mm cod-end mesh size at less than 600 m depth targeting redfish and cod and in less degree at depths more than 700 m targeting Greenland halibut. In Div. 3N most of the effort was carried out using 280 mm and in less degree with 135 mm cod-end mesh size, which indicates that the fleet targeted mainly skate in depth less than 200 m. and in less proportion Greenland halibut in depth more than 700 m. Fishing effort in Div. 3O was limited (7%) and targeting redfish in depth between 200-600 meters using 135 mm mesh size (41%) and skates using mainly 280 mm mesh size (59%) 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 322 observed fishing days, around 28% 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 2013, 584 length samples were taken, with 64,051 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. These relationships were estimated based on the data collected in the European Union surveys information carried out in 2013 in the NAFO Regulatory Area (NRA).

The Spanish activity en the NRA Subarea 3 in 2013, 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. In Div. 3O were taken the 20% of the Spanish catches of this stock and were by catch of the skate and redfish fisheries. Table 7 shows the catch length distribution for Div. 3NO cod. Most of the length distribution samples came from Div. 3N. The bulk of the catches are comprised in the 44-65 cm range even though it can be observed an important number of individuals with length more than 65 cm.

Div. 3M: Catches in Div. 3M were 2,302 tons and most of them (96%) were taken in the reopen direct fishery. A small part (4%) was taken as by catch of the redfish fishery. The legal mesh size of the Cod fishery is 130 mm. In 2013 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 30-62 cm. The 2013 catch length distribution is quite different from the 2012. The 2013 catch length distribution is much smaller than the 2012. The mode in 2012 was around 63 cm. and in 2013 is around 39 cm.

Redfish

Div. 3LN: Spanish catches in 2013 were 325 tons. Most of the catches were taken in the reopened fishery for this stock. There are not available catches length distributions for this species in Divisions LN.

3M: In Div. 3M the redfish catches in 2013 have been 413 tons and most of them (82%) were catch in a direct fishery. The rest of the catches of this species was taken as by-catch in the cod fishery. Table 9 shows the Spanish catches length distribution for redfish Division 3M and it can be observed that the bulk of the catches are in the 23-29 cm range. This length distribution of catches in Div 3M are bigger than the observed in Div 3O.

Div. 3O: A directed fishery for this species took place in Div. 3O. Catches have reached 1,140 tons in this Division, most of them with 130 mm mesh size. Catches length distribution for Div. 3O are presented in Table 10 and it can be observed that are smaller (20-24 cm) than the observed 3M.

American plaice

Div. 3LNO: Spanish catches in 2013 in Div. 3LNO were 363 tons. Most of the catches were taken as by-catch of the skate (290 tons) and in less degree in Greenland halibut fishery (73 tons). Length distributions in the skate fishery have a bigger length range than in the Greenland halibut fishery. Table 11 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 23-45 cm.

Div. 3M: Catches in Div. 3M only amounted 64 tons and most of them (83%) were taken as by-catch of the cod fishery. Table 12 presents the total length distribution for Div. 3M. The bulk of catches was in the range of 35-54 cm

and was bigger than the observed in Div. 3LNO stock. It can be observed a clear different length between sexes, males are smaller than females.

Witch flounder

Div. 2J and 3KL: Spanish catches for this stock in 2013 were 35 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. The bulk of catches were in the range of 24-35 cm.

Div. 3M: This species in this Division was taken as by-catch in the Cod and redfish fishery. Catches this year were 29 tons and there is not management stock for this species in this Division. In 2013 there are not available catches length distributions for this species in Divisions M.

Div. 3NO: Spanish catches for this stock in 2013 were 108 tons. Most of the catches were taken as by-catch in the Redfish and Greenland halibut fisheries (54%) and in less degree in the skate fishery (46%). 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. The bulk of catches were in the range of 35-49 cm.

Yellowtail flounder

Div. 3LNO: In 2013 the yellowtail flounder Spanish catches were 372 tons. Most of the catches were taken in Div. 3NO in the skate fishery (350 tons) as by-catch. Catches in Div. 3L were only 4 tons taken with 130 mm mesh size gear. Length distributions for yellowtail flounder in Div. 3LNO are presented in Table 15. Most of the catches are in the 28-40 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 2013 Spanish catches were 4,160 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 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 34-54 cm length range and the mode of the length distribution was in 41 cm. This length distribution is smaller than the 2012 where the mode was around 50 cm. 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 5 to 8, 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 2013 data presented by Gonzalez-Costas and Gonzalez-Troncoso (2009). Results show that in 2013 the CPUE has increased reaching maximum levels similar to the 2007-2008 level.

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 2013 were 3,434 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 using 280 mm mesh size. Skate catches in Div. 3L (14 tons) were much smaller than those in Div. 3NO and they were by-catch of the Greenland halibut fishery (130 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 3NO. Most of the catches were in the 36-85 cm length range, similar to years before. It can be observed a clear different length between sexes, males are bigger than females.

Div. 3M: Skate catches in Div. 3M (28 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 2013 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 2013 were 179 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 10-30 AFL length range, with a mode in 17 cm and a clear length difference between sexes, males are smaller than females.

Age distributions based on the Spanish commercial and EU Flemish Cap survey 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 2013 were based on ages 5 to 15 with a mode in 10 years old. This age distribution is higher 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 2013 in Div 3LNO (17 tons) were a small by-catch of different fisheries. Catches in Div. 3L (1 ton) are mostly a by-catch of the Greenland halibut fishery. In Division 3NO (16 tons), a small part of the catches were taken with the 280 mesh size in Division 3N. Catches in Div. 3O (12 tons) are by-catch of the redfish fishery. There are not available catches length distributions for this species in Division 3LMNO.

(B) Research studies

The Spanish bottom trawl survey in NAFO Regulatory Area Div. 3NO was conducted from 1st to 21st of June 2013 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 120 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 2013, 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 19th. 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 107 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 13/063. 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 (*Notacanthus chemnitzii*, *Hydrolagus affinis* and *Harriotta raleighana*) were performed and stomach contents were analysed in depths of 632 to 1408 m. One hundred hydrographic profile samplings were made in a depth range of 105-1394 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 26th to July 23th 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 183 and two 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 13/60. Samples for histological assessment of sexual maturity of cod, redfish, Greenland halibut and roughhead grenadier were taken. Oceanography studies continued to take place.

Analysis of Stock Reproductive Potential to promote sustainability of Greenland Halibut fishery (STREPHALIBUT):

The results of the new techniques to incorporate different measures of Reproductive Potential (RP) into assessment, medium term projections and management strategy evaluation of Subarea 2+3KLMNO Greenland halibut stock were presented in the 2013 September Scientific Council meeting. This research was partially funded by the Canadian – Spanish cooperation funds under the scientific project “Analysis of Stock Reproductive Potential to promote sustainability of Greenland Halibut fishery” carried out by the following institutions: Fisheries and Oceans Canada, Institute of Marine Research (CSIC), Spanish Institute of Oceanography (IEO) and AZTI Foundation. It was tested the actual Greenland halibut approved Harvest Control Rule (HCR) using alternative stock recruitment functions (Segmented Regression, Ricker and Ricker) with different RP indices which vary in the level of biological complexity. The RP indices used in increasing order of biological information were: Biomass 10+, SSBcohort, FSBcohort, FSByear and TEP.

NEREIDA Project:

New data on deep-water corals and sponges were presented based on Spanish/EU and Canadian bottom trawl groundfish surveys for the period 2011-2013 in order to make these data available to the NAFO WGESA and improve the mapping of sensitive species in the NAFO Regulatory area (Divs. 3LMNO). “Significant” catches (according to the NAFO definition from groundfish surveys) of deep-water corals and sponges were provided and mapped together with the areas closed in 2010. Most of the significant catches of sponges (78.6%) are inside of the closed areas, meanwhile for corals the results are different according to the group considered. For large gorgonians the 87.5% are outside, for sea pens the 66.7% and for all small gorgonians the significant catches recorded are outside of the closed areas.

IEO and DFO worked in collaboration and carried out a new quantitative spatial analysis applied for corals and sponges for all the available data and different thresholds were selected for significant concentrations of coral and sponges as follows: 75 kg per tow for sponges, 0.6 kg per tow for large gorgonians, 0.15 kg per tow for small gorgonians; and 1.4 kg per tow for sea pens.

All NEREIDA box core samples were analyzed in order to determine the total biomass by major taxonomic group and an analysis of associated photographic records where they are being analyzed to produce a biomass layer. Sample taxon abundance and biomass data matrices are being constructed for the NRA. Multivariate analysis identified 18 statistically distinct groups of samples, each group represented by a varying number of samples. The distinct assemblage characterised by the most taxa also contained the most VME indicative taxa (sponges, sea pens and crinoids).

In addition and as part of the NEREIDA program, benthic imagery collected from the Flemish Cap area in 2009 and 2010 has been analyzed for the abundance of epibenthic megafauna.

SUBAREA 6

A. Status of the fisheries

One Spanish trawler operated in NAFO Regulatory Area, Div. 6G using a midwater trawl gear, during 2013, amounting to 17 days (87 hours) of fishing effort. The most important species in catches was the *Beryx splendens*. Other species present in catches were *Ruvettus pretiosus* (Table 1).

There were not available Spanish catches length distribution in Division 6G.

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Table 1. Spanish Catches (tons) in NAFO Area in 2013 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>	2842	835	482	1	0	4160
SKA	Raja rays nei	<i>Raja spp</i>	14	28	2784	636		3463
COD	Atlantic cod	<i>Gadus morhua</i>	23	2302	300	73		2697
RED	Atlantic redfishes nei	<i>Sebastes spp</i>	182	413	143	1140		1877
PLA	American plaice	<i>Hippoglossoides platessoides</i>	34	64	284	45		427
YEL	Yellowtail flounder	<i>Limanda ferruginea</i>	4	7	347	21		378
RNG	Roundnose grenadier	<i>Coryphaenoides rupestris</i>	29	157	19			205
RHG	Roughhead grenadier	<i>Macrourus berglax</i>	104	63	12			179
WIT	Witch flounder	<i>Glyptocephalus cynoglossus</i>	35	29	61	47		172
HAD	Haddock	<i>Melanogrammus aeglefinus</i>	0	11	71	65		148
ALF	Alfonsinos nei	<i>Beryx spp</i>					114	114
HAL	Atlantic halibut	<i>Hippoglossus hippoglossus</i>	3	11	28	18		60
CAT	Wolffishes(=Catfishes) nei	<i>Anarhichas spp</i>	15	30	13	1		59
DGX	Dogfish sharks nei	<i>Squalidae</i>	20	19	6	0		45
ANG	American angler	<i>Lophius americanus</i>			17	17		34
PRA	Northern prawn	<i>Pandalus borealis</i>	24					24
HKS	Silver hake	<i>Merluccius bilinearis</i>			7	17		24
HKR	Red hake	<i>Urophycis chuss</i>	14	4	4			22
HKW	White hake	<i>Urophycis tenuis</i>	1	0	4	12		17
ANT	Blue antimora	<i>Antimora rostrata</i>	0	2				2
GDE	Threadfin rockling	<i>Gaidropsarus ensis</i>	1	1				2
POK	Saithe(=Pollock)	<i>Pollachius virens</i>			2	0		2
OIL	Oilfish	<i>Ruvettus pretiosus</i>					2	2
ALC	Baird's slickhead	<i>Alepocephalus bairdii</i>			1			1
BYS	Splendid alfonsino	<i>Beryx splendens</i>	1	0				1
	Others		0	0	0	1	0	1
Total tons			3347	3977	4584	2093	116	14116

Table 2. Samples and individuals sampled by the IEO Scientific Observers by species, mesh size and NAFO Division in 2013.

Code	Species	English_name	Catch/Disc.	Division	Mesh size	Samples	Ind.
ANT	<i>Antimora rostrata</i>	Blue antimora	C	3L	130 mm	5	98
ANT	<i>Antimora rostrata</i>	Blue antimora	C	3M	130 mm	1	54
CAB	<i>Anarhichas denticulatus</i>	Northern wolffish	C	3L	130 mm	2	5
CFB	<i>Centroscyllium fabricii</i>	Black dogfish	C	3L	130 mm	2	4
COD	<i>Gadus morhua</i>	Cod	C	3M	130 mm	39	5123
COD	<i>Gadus morhua</i>	Cod	C	3N	130 mm	1	155
COD	<i>Gadus morhua</i>	Cod	C	3O	130 mm	1	19
COD	<i>Gadus morhua</i>	Cod	C	3N	280 mm	15	865
COD	<i>Gadus morhua</i>	Cod	D	3M	130 mm	33	3073
COD	<i>Gadus morhua</i>	Cod	D	3N	280 mm	2	141
GDE	<i>Gaidropsarus ensis</i>	Threadfin rockling	C	3L	130 mm	10	469
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	C	3L	130 mm	94	11706
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	C	3M	130 mm	35	6605
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	C	3N	130 mm	16	1943
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	D	3L	130 mm	9	109
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	D	3M	130 mm	6	80
NZB	<i>Nezumis bairdii</i>	Spike grenadier	C	3L	130 mm	1	32
NZB	<i>Nezumis bairdii</i>	Spike grenadier	C	3N	130 mm	2	189
NZB	<i>Nezumis bairdii</i>	Spike grenadier	D	3N	130 mm	1	130
PLA	<i>Hippoglossoides platessoides</i>	American plaice	C	3L	130 mm	3	48
PLA	<i>Hippoglossoides platessoides</i>	American plaice	C	3N	130 mm	1	131
PLA	<i>Hippoglossoides platessoides</i>	American plaice	C	3M	130 mm	7	831
PLA	<i>Hippoglossoides platessoides</i>	American plaice	C	3N	280 mm	13	1274
PLA	<i>Hippoglossoides platessoides</i>	American plaice	C	3O	280 mm	3	439
PLA	<i>Hippoglossoides platessoides</i>	American plaice	D	3L	130 mm	1	38
PLA	<i>Hippoglossoides platessoides</i>	American plaice	D	3N	130 mm	2	216
PLA	<i>Hippoglossoides platessoides</i>	American plaice	D	3N	280 mm	10	904
PLA	<i>Hippoglossoides platessoides</i>	American plaice	D	3O	280 mm	3	308
PRA	<i>Pandalus borealis</i>	Northern prawn	C	3L	40 mm	10	2891
PRA	<i>Pandalus borealis</i>	Northern prawn	D	3L	40 mm	1	95
RED	<i>Sebastes spp</i>	Redfish	C	3M	130 mm	9	1601
RED	<i>Sebastes spp</i>	Redfish	C	3O	130 mm	11	1921

RED	<i>Sebastes spp</i>	Redfish	C	3M	130 mm	27	3196
RED	<i>Sebastes spp</i>	Redfish	D	3M	130 mm	7	679
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	C	3L	130 mm	15	1121
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	C	3M	130 mm	5	420
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	C	3N	130 mm	4	557
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	D	3L	130 mm	2	128
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	D	3M	130 mm	1	54
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	C	3L	130 mm	11	725
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	C	3M	130 mm	2	182
RNG	<i>Coryphaenoides rupestris</i>	Roundnose grenadier	D	3M	130 mm	1	106
SKA	<i>Raja spp</i>	Skates	C	3L	130 mm	4	18
SKA	<i>Raja spp</i>	Skates	C	3N	280 mm	52	5682
SKA	<i>Raja spp</i>	Skates	C	3O	280 mm	18	2415
SKA	<i>Raja spp</i>	Skates	D	3N	280 mm	22	1737
SKA	<i>Raja spp</i>	Skates	D	3O	280 mm	6	157
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	C	3L	130 mm	11	543
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	C	3M	130 mm	1	71
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	C	3N	130 mm	3	235
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	C	3O	280 mm	1	42
WIT	<i>Glyptocephalus cynoglossus</i>	Witch flounder	D	3O	130 mm	1	96
YEL	<i>Limanda ferruginea</i>	Yellowtail flounder	C	3L	130 mm	2	7
YEL	<i>Limanda ferruginea</i>	Yellowtail flounder	C	3N	130 mm	1	161
YEL	<i>Limanda ferruginea</i>	Yellowtail flounder	C	3N	280 mm	18	2460
YEL	<i>Limanda ferruginea</i>	Yellowtail flounder	D	3N	280 mm	17	1706
		Others	C	3L	130 mm	3	56

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

3LMNO	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Effort (Hours)	106821	76028	60128	44044	25163	21408	21250	22703	25276	25410	18602

Table 4. Fishing effort (hours) of the Spanish fleet in 2013, 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	5		5		0.2%	
	200-600	342	113	307	35	11.7%	
	>600	2448	1868	1038	665	88.2%	
	Total	2796	1981	1351	700	6827	37%
3M	<200		54	56	29	3.0%	
	200-600	88	893	1491	52	54.6%	
	>600	613	990	170	187	42.4%	
	Total	701	1937	1717	268	4622	25%
3N	<200	978	1001	920	1188	70.8%	
	200-600	9	21	40	9	1.4%	
	>600	714	234	453	206	27.8%	
	Total	1701	1256	1413	1403	5773	31%
3O	<200	411	385	54	101	68.9%	
	200-600	156	89	87	73	29.3%	
	>600	24				1.8%	
	Total	591	474	141	174	1380	7%
	Total Hours	5789	5648	4621	2544	18602	100%
	%	31%	30%	25%	14%	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		5%	7%		3%
	100-200 mm	100%	95%	93%	100%	97%
	>200 mm					
3M	<90 mm					
	100-200 mm	100%	100%	100%	100%	100%
	>200 mm					
3N	<90 mm					
	100-200 mm	42%	20%	35%	15%	29%
	>200 mm	58%	80%	65%	85%	71%
3O	<90 mm					
	100-200 mm	28%	24%	80%	98%	41%
	>200 mm	72%	76%	20%	2%	59%

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

Species	Source	a	b
Greenland halibut	FC Survey	0.004401	3.1572
Redfish 3O - 3LN	3NO Survey	0.0106489	3.049833
Redfish 3M	FC Survey	0.0179	2.9523
Roughhead grenadier	FC Survey	0.111208	2.9016
Witch flounder	3NO Survey	0.0021999	3.2888217
American plaice	3NO Survey	0.0078674	3.0397532
Cod 3NO	3NO Survey	0.0058632	3.0913157
Cod 3M	FC Survey	0.007634	3.0339
Yellowtail Flounder	3NO Survey	0.0055041	3.1011746
Skate	3NO Survey	0.0097871	2.9836874
White Hake	3NO Survey	0.0023746	3.2834618

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

Cod Length (cm)	Division 3NO			Total
	Males	Females	Ind.	
33	318	0	0	318
34	159	478	0	637
35	159	318	0	478
36	478	318	0	796
37	159	159	0	318
38	318	159	0	478
39	318	159	0	478
40	159	500	0	659
41	329	159	0	489
42	478	329	159	966
43	637	521	0	1158
44	561	203	0	764
45	977	1340	0	2317
46	648	1462	0	2110
47	829	3234	0	4063
48	2458	1390	0	3848
49	840	1248	0	2088
50	2751	1899	0	4650
51	1393	2630	0	4022
52	1914	2782	0	4696
53	2134	2735	0	4869
54	3275	2532	0	5807
55	2194	2729	0	4923
56	2999	5081	0	8080
57	3121	3886	0	7008
58	2665	1942	0	4608
59	1679	4531	0	6210
60	941	1387	0	2328
61	1563	2059	0	3622
62	1451	1624	0	3075
63	1248	1568	0	2816
64	1804	490	0	2294
65	710	879	0	1590
66	1869	651	0	2520
67	1775	893	0	2669
68	1427	724	0	2151
69	713	789	0	1503
70	420	1022	0	1442
71	1621	809	0	2430
72	809	809	0	1618
73	1530	404	0	1934
74	618	1522	0	2140
75	1945	713	0	2658
76	885	198	0	1083
77	1251	46	0	1297
78	1533	1022	0	2555
79	0	404	0	404
80	866	885	0	1751

81	97	557	0	653
82	66	513	0	579
83	361	467	0	828
84	417	97	0	513
85	506	15	0	521
86	179	191	0	370
87	227	846	0	1074
88	158	373	0	531
89	466	461	0	927
90	675	329	0	1004
91	439	540	0	979
92	228	254	30	512
93	507	488	10	1004
94	395	781	10	1187
95	302	316	10	629
96	84	1194	20	1298
97	330	625	0	955
98	301	589	20	910
99	163	494	20	677
100	429	791	10	1230
101	148	709	10	867
102	212	368	0	580
103	30	121	10	161
104	114	146	0	260
105	46	269	10	324
106	110	88	10	208
107	40	92	0	132
108	66	22	0	88
109	92	112	0	204
110	0	30	20	50
111	0	0	0	0
112	0	129	0	129
113	40	133	10	183
114	0	0	0	0
115	0	40	0	40
116	46	0	0	46
117	0	81	0	81
118	66	15	0	82
119	0	0	0	0
120	66	67	0	134
121	0	0	0	0
122	0	0	0	0
123	0	0	0	0
124	0	0	0	0
125	0	46	0	46
Total	66338	74017	357	140713
Ind. Sampled				1039
Samples				17
Catch (tons)				373
SOP				0.98

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

Cod Length (cm)	3M			Total
	Males	Females	Ind.	
16	538	538	0	1076
17	1779	1076	0	2855
18	0	3228	0	3228
19	3243	852	0	4095
20	1944	852	215	3011
21	2241	3503	475	6219
22	2539	2409	475	5424
23	2188	1600	1119	4907
24	1213	1242	475	2931
25	1034	808	2280	4122
26	1346	1056	1416	3817
27	2939	2693	0	5632
28	3383	2314	0	5697
29	9318	4304	1590	15212
30	9785	7903	215	17903
31	18594	14462	1416	34472
32	18386	21203	0	39589
33	30726	17311	0	48036
34	23679	19350	0	43029
35	29796	29450	0	59246
36	31545	31750	2259	65554
37	37370	25781	73	63224
38	49075	42752	520	92348
39	42884	60629	2843	106356
40	60466	65269	0	125735
41	55525	65169	0	120694
42	63349	54217	1872	119438
43	54015	53593	0	107609
44	46195	57419	0	103613
45	31105	40535	0	71639
46	33045	47392	0	80437
47	16552	23045	0	39597
48	25143	22352	0	47495
49	23640	20229	0	43869
50	18219	19862	0	38081
51	17392	17602	0	34993
52	16782	16338	0	33120
53	22612	13542	0	36154
54	18453	17262	0	35715
55	15764	12935	0	28699
56	17766	10068	0	27834
57	17659	16118	0	33777
58	11648	16634	0	28282
59	13044	11666	0	24710
60	12372	13332	0	25705

61	12118	9726	0	21845
62	12457	13125	0	25582
63	6202	7689	0	13891
64	4699	9509	0	14208
65	2109	4907	0	7016
66	4813	3408	0	8220
67	2435	5243	0	7678
68	3401	4554	0	7955
69	2172	3790	0	5962
70	1843	4385	0	6229
71	2481	3803	0	6285
72	2315	2126	0	4441
73	561	4789	0	5350
74	1407	3811	0	5219
75	98	1271	0	1369
76	1867	978	0	2846
77	635	2248	0	2884
78	1039	1088	0	2127
79	1002	987	0	1988
80	155	5707	0	5862
81	284	965	0	1249
82	1197	992	0	2190
83	754	757	0	1511
84	428	2445	0	2873
85	0	1145	0	1145
86	146	1478	0	1623
87	884	151	0	1035
88	790	1287	0	2077
89	483	52	0	535
90	177	661	0	838
91	430	26	0	456
92	0	837	0	837
93	272	0	0	272
94	942	0	0	942
95	12	891	0	903
96	0	303	0	303
97	12	151	0	163
98	12	754	0	766
99	0	0	0	0
100	0	754	0	754
101	0	139	0	139
102	0	740	0	740
103	12	754	0	766
104	0	0	0	0
105	0	754	0	754
106	0	139	0	139
107	0	740	0	740
Total	986935	1021707	17242	2025885

Ind. Sampled	5123
Samples	39
Catch (tons)	2302
SOP	0.87

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

Redfish Length (cm)	3M			Total
	Males	Females	Ind.	
10	0	0	249	249
11	0	0	0	0
12	422	39	0	461
13	0	0	0	0
14	0	0	0	0
15	45	957	249	1251
16	103	78	154	336
17	1231	3336	249	4816
18	2291	1514	2032	5837
19	7210	2905	1549	11664
20	3898	2405	1940	8243
21	17899	15216	1900	35015
22	32593	21774	2071	56438
23	72363	32785	2272	107420
24	123852	72343	3335	199529
25	149244	126494	5230	280968
26	151425	145119	3286	299831
27	96469	180994	3610	281072
28	50423	85047	3307	138777
29	23365	64936	2141	90442
30	10277	25370	2306	37952
31	9231	25624	1683	36538
32	4746	13662	564	18973
33	6609	14717	1140	22467
34	8042	6762	893	15697
35	5011	10865	461	16336
36	4035	4957	1035	10028
37	3441	3427	552	7420
38	1757	5972	179	7908
39	2250	3135	217	5602
40	763	2960	641	4365
41	100	2835	357	3292
42	60	2769	311	3140
43	38	1204	36	1278
44	40	637	275	952
45	0	653	36	689
46	0	575	0	575
47	0	290	0	290
48	0	65	0	65
49	0	38	0	38
50	0	29	142	171
Total	789234	882490	44402	1716126
Ind. Sampled				4797
Samples				36
Catch (tons)				413
SOP				1.30

Table 10. Redfish 30 stock Spanish catches length distribution.

Redfish Length (cm)	Males	Females	30 Ind.	Total
15	0	0	9678	9678
16	1274	0	19356	20631
17	9561	637	38712	48910
18	22021	9332	61295	92648
19	159695	115930	80651	356276
20	642092	119897	111897	873886
21	1024346	495542	92541	1612429
22	1027361	850285	138902	2016549
23	372934	642690	91526	1107151
24	234134	390203	37698	662035
25	114002	134581	3226	251809
26	65978	100306	3226	169510
27	78699	29994	0	108693
28	41001	7849	0	48850
29	0	3303	0	3303
30	75396	0	0	75396
31	37698	0	0	37698
Total	3906192	2900550	688709	7495452
Ind. Sampled				1921
Samples				11
Catch (tons)				1140
SOP				0.97

Table 11. American plaice 3LNO stock Spanish catches length distribution.

American Plaice Length (cm)	Division 3LNO			Total
	Males	Females	Ind.	
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	206	194	0	400
22	5019	0	0	5019
23	8225	335	0	8561
24	14762	1556	0	16318
25	10063	10117	0	20180
26	15469	9983	0	25452
27	23117	3007	1379	27503
28	30832	5375	0	36207
29	15845	7673	309	23827
30	18712	2988	1379	23078
31	24707	5779	1069	31555
32	15726	6147	1379	23251
33	14623	3722	0	18344
34	11300	12012	1069	24381
35	9614	12545	2448	24607
36	7450	16068	1069	24587
37	9235	21990	229	31454
38	7183	25607	686	33475
39	3346	23196	1069	27611
40	1845	20713	457	23015
41	2248	21214	686	24147
42	1149	25856	457	27462
43	1070	14386	686	16141
44	623	17376	1371	19370
45	932	17112	457	18501
46	309	7649	457	8416
47	0	8848	1298	10146
48	0	7095	229	7324
49	0	7090	229	7319
50	0	4059	229	4288
51	0	3363	229	3592
52	0	4516	229	4745
53	0	3474	457	3931
54	0	4239	229	4468
55	0	5152	0	5152
56	0	4177	0	4177
57	0	4331	0	4331
58	0	5916	0	5916
59	0	3635	0	3635
60	0	1731	0	1731
61	0	2968	0	2968
62	309	2921	0	3231
63	0	1558	0	1558

64	0	1855	0	1855
65	0	2696	0	2696
66	0	1138	0	1138
67	0	1134	0	1134
68	0	1482	0	1482
69	0	627	0	627
70	0	940	0	940
71	0	627	0	627
72	0	0	0	0
73	0	1147	0	1147
74	0	313	0	313
Total	253918	379635	19782	653335

Ind. Sampled	1892
Samples	20
Catch (tons)	363
SOP	1.06

Table 12. American plaice 3M Spanish catches length distribution.

American Plaice Length (cm)	Division 3M			Total
	Males	Females	Ind.	
30	108	0	0	108
31	108	0	0	108
32	67	101	0	168
33	203	0	72	275
34	564	286	184	1033
35	829	180	256	1265
36	1725	380	0	2105
37	1583	424	313	2320
38	2312	948	269	3529
39	3135	1091	660	4886
40	2860	771	872	4503
41	2621	1248	581	4451
42	1992	1524	447	3963
43	761	1225	347	2333
44	1079	2931	538	4547
45	832	4208	213	5253
46	206	5152	359	5718
47	636	3906	472	5014
48	279	3645	338	4262
49	67	3857	303	4227
50	0	2051	269	2320
51	0	1563	303	1866
52	0	1542	113	1654
53	0	830	56	886
54	0	1308	0	1308
55	0	279	56	336
56	0	1058	0	1058
57	0	1081	56	1137
58	0	664	0	664
59	0	820	0	820
60	0	178	0	178
61	0	106	0	106
62	0	145	0	145
Total	21965	43501	7077	72544
Ind. Sampled				831
Samples				20
Catch (tons)				64
SOP				1.19

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

Witch flounder Length (cm)	3L			Total
	Males	Females	Ind.	
12	0	0	139	139
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	287	287
17	0	0	139	139
18	0	0	426	426
19	0	0	139	139
20	0	0	426	426
21	0	0	1138	1138
22	0	0	1564	1564
23	1130	0	1417	2547
24	530	0	2481	3011
25	1388	102	5141	6631
26	2056	1403	7061	10519
27	3288	2825	8234	14348
28	5559	4015	10322	19896
29	3500	5472	10782	19754
30	4194	6602	11121	21917
31	5955	6124	5983	18063
32	409	1558	6876	8843
33	694	994	2502	4190
34	102	1768	3344	5215
35	205	2149	639	2992
36	0	0	1056	1056
37	0	3060	139	3199
38	843	2529	0	3372
39	911	843	0	1753
40	0	2529	0	2529
41	843	3439	0	4282
42	843	1753	139	2736
43	0	843	0	843
44	843	1686	0	2529
45	0	2529	0	2529
46	0	1686	0	1686
47	0	0	0	0
48	0	0	0	0
49	0	843	0	843
Total	33293	54753	81493	169539
Ind. Sampled				542
Samples				11
Catch (tons)				35
SOP				0.99

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

Witch flounder	3NO			
Length (cm)	Males	Females	Ind.	Total
30	0	0	0	0
31	2298	0	0	2298
32	4596	0	0	4596
33	0	0	0	0
34	208	0	0	208
35	8588	0	0	8588
36	3070	1129	0	4200
37	208	2524	0	2732
38	4161	1902	0	6062
39	9282	5894	0	15176
40	11411	14254	0	25665
41	9075	14786	0	23860
42	7906	10054	0	17961
43	6777	13708	0	20485
44	7380	11788	0	19168
45	7419	8964	0	16383
46	0	8003	0	8003
47	1129	7704	0	8833
48	4596	12430	0	17026
49	0	2713	0	2713
50	0	2298	0	2298
51	0	4596	0	4596
52	0	0	0	0
53	0	2298	0	2298
Total	88103	125044	0	213147
Ind. Sampled				277
Samples				4
Catch (tons)				108
SOP				1.05

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

Yellowtail flounder Length (cm)	3LNO			Total
	Males	Females	Ind.	
17	397	444	0	842
18	0	617	0	617
19	0	1234	0	1234
20	1061	0	0	1061
21	444	444	0	888
22	1769	1061	0	2830
23	3042	1842	0	4884
24	3785	3326	0	7111
25	4860	3183	0	8042
26	8273	8634	431	17339
27	14186	15896	0	30081
28	29733	19177	268	49178
29	40054	34451	0	74504
30	56751	41971	1330	100053
31	58571	39008	743	98321
32	49184	62948	958	113091
33	31622	61940	371	93934
34	29087	50576	1486	81149
35	17612	50796	2229	70636
36	12105	42908	1486	56499
37	7403	51255	3343	62001
38	12330	46117	1486	59933
39	1839	44792	743	47374
40	2377	37563	743	40682
41	1858	25092	371	27322
42	897	19457	1114	21469
43	1912	11578	743	14233
44	0	5973	371	6344
45	444	5752	0	6196
46	0	4752	371	5123
47	0	5869	0	5869
48	0	4398	0	4398
49	0	640	0	640
50	0	3706	0	3706
51	0	885	0	885
Total	391598	708282	18589	1118469
Ind. Sampled				2628
Samples				21
Catch (tons)				372
SOP				1.01

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

Length (cm)	Division 3L				Division 3M			
	Males	Females	Ind.	Total	Males	Females	Ind.	Total
28	0	0	0	0	0	0	0	0
29	0	0	0	0	72	0	0	72
30	1745	1077	0	2822	203	0	80	283
31	2235	1809	0	4045	102	0	226	328
32	4752	3930	264	8945	342	0	299	640
33	7961	7691	2803	18455	367	102	664	1133
34	7036	9181	1133	17350	801	271	835	1906
35	16600	9740	494	26834	537	624	1724	2885
36	16822	11703	1192	29717	926	951	3522	5399
37	17728	18956	1456	38139	469	1141	3331	4941
38	30678	29452	845	60975	2376	1411	5155	8941
39	34280	39846	1642	75768	2983	2955	8577	14515
40	38532	54007	4914	97453	3000	2896	11854	17749
41	42678	67507	1456	111640	4775	7283	12107	24165
42	46464	81665	7645	135774	6190	5451	18591	30233
43	62233	84941	10122	157296	7074	9200	17935	34209
44	60365	98172	6253	164790	10522	8995	25119	44637
45	74253	118910	8633	201796	9726	11743	27466	48934
46	65505	113419	6447	185371	7578	11493	34398	53468
47	61386	112384	7390	181159	4237	11162	33029	48428
48	67679	137520	6128	211327	6984	9530	28188	44701
49	54031	120579	4132	178741	7319	9708	26445	43473
50	43654	111390	7334	162378	15319	22454	3842	41615
51	35713	92562	10536	138811	11332	21949	394	33675
52	36065	90661	5130	131856	11472	24687	240	36400
53	22764	81798	5324	109885	8190	18784	79	27054
54	18845	72793	3993	95632	7840	17790	0	25630
55	12229	48116	5130	65475	5849	17614	0	23463
56	11852	45029	998	57879	5142	17338	0	22481
57	7318	43926	1067	52311	3669	15770	0	19439
58	7328	39732	2995	50056	3255	15869	0	19124
59	4884	25181	3133	33198	1837	13728	0	15565
60	3212	22888	1067	27168	1574	12674	0	14247
61	2308	15002	0	17310	743	10354	0	11097
62	1344	12855	0	14199	225	9207	0	9431
63	144	10079	0	10223	178	7696	0	7874
64	1149	10541	998	12688	483	6940	0	7422
65	269	9207	0	9476	0	6761	0	6761
66	0	6552	998	7550	218	4994	0	5212
67	0	3926	0	3926	194	2786	0	2980
68	291	3004	0	3294	115	5149	0	5264
69	249	4038	998	5285	61	2725	0	2786
70	600	4070	0	4670	128	2253	0	2381
71	0	263	0	263	0	1307	0	1307
72	0	2220	0	2220	0	1879	0	1879
73	0	1547	0	1547	0	1110	0	1110

74	0	1386	0	1386		61	1205	0	1267
75	0	1604	0	1604		0	811	0	811
76	0	249	0	249		0	1400	0	1400
77	0	0	0	0		0	665	0	665
78	0	1130	0	1130		0	1041	0	1041
79	0	0	0	0		0	405	0	405
80	0	0	0	0		0	291	0	291
81	0	0	0	0		0	183	0	183
82	0	216	0	216		0	269	0	269
83	0	0	0	0		0	0	0	0
84	0	0	0	0		0	228	0	228
85	0	488	0	488		0	101	0	101
86	0	0	0	0		0	93	0	93
87	0	0	0	0		0	194	0	194
88	0	0	0	0		0	92	0	92
Total	923183	1884939	122651	2930773		154469	363713	264098	782279
Samples				94					35
Ind. Sampled				11706					6605
Catch (tons)				2842					835

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

Length (cm)	Division 3N					Division 3O			
	Males	Females	Ind.	Total		Males	Females	Ind.	Total
28	128	0	0	128					
29	0	128	0	128					
30	255	383	0	638					
31	255	255	0	510					
32	128	893	0	1020					
33	474	255	0	729					
34	1735	793	0	2527					
35	2401	1168	0	3568					
36	2444	2304	0	4748					
37	2879	3173	0	6052					
38	4809	5845	0	10654					
39	4643	5576	0	10218					
40	10680	12006	0	22686					
41	10292	8702	0	18994					
42	15915	20877	0	36791					
43	14157	18342	0	32499					
44	14816	26833	0	41649					
45	15087	26622	0	41709					
46	16753	25694	0	42447					
47	14202	21413	0	35615					
48	8797	22309	0	31107					
49	7218	21919	0	29137					
50	10241	19937	0	30178					
51	4845	22071	0	26916					
52	4477	17129	0	21606					
53	4221	15010	0	19231					
54	4384	16721	0	21105					
55	3825	11763	0	15588					
56	1765	12793	0	14559					
57	950	9192	0	10142					
58	1179	6970	0	8149					
59	427	4556	0	4983					
60	529	4448	0	4977					
61	427	4226	0	4652					
62	0	3001	0	3001					
63	239	2131	0	2369					
64	153	3795	0	3947					
65	146	2655	0	2801					
66	0	1239	0	1239					
67	0	980	0	980					
68	188	188	0	376					
69	0	710	0	710					
70	153	223	0	376					
71	0	0	0	0					
72	0	360	0	360					
73	0	275	0	275					
74	0	445	0	445					

75	0	474	0	474
76	0	0	0	0
77	0	0	0	0
78	0	0	0	0
79	0	0	0	0
80	0	0	0	0
81	0	0	0	0
82	0	0	0	0
83	0	0	0	0
84	0	0	0	0
85	0	0	0	0
86	0	0	0	0
87	0	0	0	0
88	0	0	0	0
Total	186216	386780	0	572996
Samples				16
Ind Sampled				1943
Catch (tons)				482

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

Length (cm)	Division 3LMNO			Total
	Males	Females	Indter.	
28	128	0	0	128
29	72	128	0	200
30	2204	1459	80	3743
31	2593	2064	226	4883
32	5221	4823	562	10606
33	8802	8048	3467	20318
34	9572	10244	1968	21784
35	19537	11532	2219	33288
36	20191	14959	4714	39864
37	21075	23270	4787	49132
38	37863	36707	6000	80570
39	41906	48377	10219	100502
40	52212	68909	16767	137888
41	57745	83492	13563	154800
42	68569	107993	26236	202798
43	83465	112483	28056	224004
44	85703	134000	31372	251076
45	99066	157275	36099	292440
46	89836	150606	40844	281286
47	79825	144959	40419	265203
48	83460	169358	34316	287134
49	68569	152206	30577	251351
50	69214	153781	11176	234171
51	51890	136582	10930	199402
52	52015	132477	5370	189861
53	35175	115592	5403	156170
54	31069	107304	3993	142366
55	21903	77494	5130	104527
56	18759	75161	998	94918
57	11937	68889	1067	81893
58	11762	62571	2995	77328
59	7149	43464	3133	53746
60	5315	40010	1067	46392
61	3478	29582	0	33059
62	1569	25062	0	26631
63	561	19905	0	20466
64	1785	21275	998	24058
65	414	18624	0	19038
66	218	12785	998	14002
67	194	7692	0	7887
68	594	8340	0	8934
69	310	7472	998	8781
70	881	6546	0	7427
71	0	1570	0	1570
72	0	4459	0	4459
73	0	2932	0	2932
74	61	3037	0	3098

75	0	2889	0	2889
76	0	1648	0	1648
77	0	665	0	665
78	0	2170	0	2170
79	0	405	0	405
80	0	291	0	291
81	0	183	0	183
82	0	485	0	485
83	0	0	0	0
84	0	228	0	228
85	0	590	0	590
86	0	93	0	93
87	0	194	0	194
88	0	92	0	92
Total	1263868	2635432	386749	4286049

Samples	145
Ind Sampled	20254
Catch (tons)	4160
SOP	1.02

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

Skates Length (cm)	3LNO			Total
	Males	Females	Ind.	
15	0	505	0	505
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	343	343	0	686
21	505	0	0	505
22	0	505	0	505
23	0	0	0	0
24	0	0	788	788
25	310	1057	0	1367
26	505	484	0	989
27	1547	944	0	2491
28	254	171	0	424
29	867	141	0	1007
30	2792	3718	0	6511
31	1085	1963	0	3048
32	2096	293	0	2389
33	3381	3847	0	7227
34	5149	3233	0	8383
35	9517	4374	0	13890
36	7482	11129	0	18611
37	11471	6007	788	18266
38	12471	12290	0	24762
39	12688	16424	0	29112
40	16066	20262	202	36529
41	11081	16367	0	27448
42	13225	16915	404	30545
43	18171	21334	202	39706
44	18283	23659	1192	43134
45	24660	19110	788	44557
46	19390	23377	202	42969
47	14724	24942	404	40069
48	16395	31573	202	48170
49	16091	22617	0	38709
50	25200	28123	404	53726
51	21754	20212	1595	43562
52	23952	18111	0	42063
53	21337	14196	202	35735
54	18025	15032	0	33057
55	20649	18749	0	39398
56	15407	19163	404	34974
57	18379	12815	606	31800
58	21282	20077	404	41763
59	13133	10649	404	24186
60	19054	21698	0	40752
61	19750	13947	202	33899

62	18208	12389	404	31001
63	12790	13476	0	26266
64	20538	14020	404	34962
65	21598	11967	404	33969
66	16533	12311	0	28844
67	8360	11402	202	19963
68	11887	12786	0	24673
69	12898	13865	404	27167
70	22501	14010	404	36916
71	16344	8600	0	24944
72	17470	13545	0	31015
73	18069	8647	404	27120
74	17587	9588	0	27174
75	16696	7340	202	24238
76	15707	7239	404	23350
77	23326	8707	0	32033
78	19640	6158	202	26000
79	20584	4311	404	25299
80	18051	3685	0	21736
81	17996	2276	0	20272
82	18836	3056	202	22094
83	16041	2678	606	19325
84	11690	1504	404	13597
85	11021	576	0	11597
86	10656	236	0	10892
87	5607	157	202	5966
88	4317	529	0	4846
89	2136	186	0	2322
90	1888	0	0	1888
91	375	0	0	375
92	1708	0	0	1708
93	664	0	0	664
94	302	0	0	302
95	124	0	0	124
96	156	0	0	156
97	171	0	0	171
Total	910942	705599	14646	1631187

Samples	70
Ind. Sampled	8097
Catch (ton)	3420
SOP	1.03

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	0	0
6	103	0	229	332
7	0	0	0	0
8	435	0	229	665
9	1143	0	0	1143
10	3996	273	803	5072
11	981	66	803	1849
12	1578	3458	1088	6124
13	4682	2652	3212	10546
14	5954	3314	996	10263
15	3818	3831	737	8386
16	10392	5448	989	16829
17	11650	8513	608	20770
18	10040	8081	229	18350
19	8836	9420	1032	19289
20	5658	10117	50	15825
21	2824	13276	45	16145
22	1829	7800	0	9629
23	395	11194	329	11918
24	150	10619	107	10875
25	22	5816	0	5839
26	50	5333	149	5531
27	323	6790	50	7163
28	194	4730	229	5153
29	0	4013	0	4013
30	0	4473	0	4473
31	0	1182	0	1182
32	0	1368	0	1368
33	0	899	0	899
34	0	888	0	888
35	0	413	0	413
36	0	282	0	282
37	0	0	0	0
38	0	50	0	50
39	0	231	0	231
40	0	225	0	225
Total	75049	134754	11916	221719
Ind. Sampled				2098
Samples				24
Catch (tons)				179
SOP				1.00

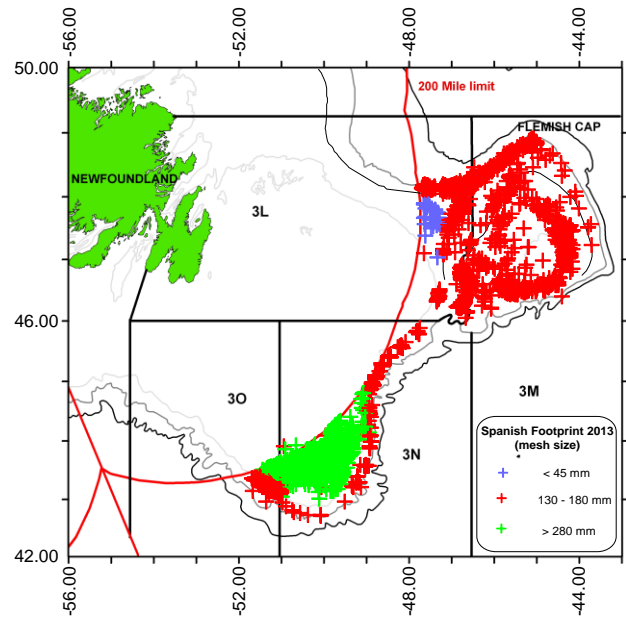


Figure 1. Spanish Fishery 2013 footprint by mesh size based in NAFO Observers data.

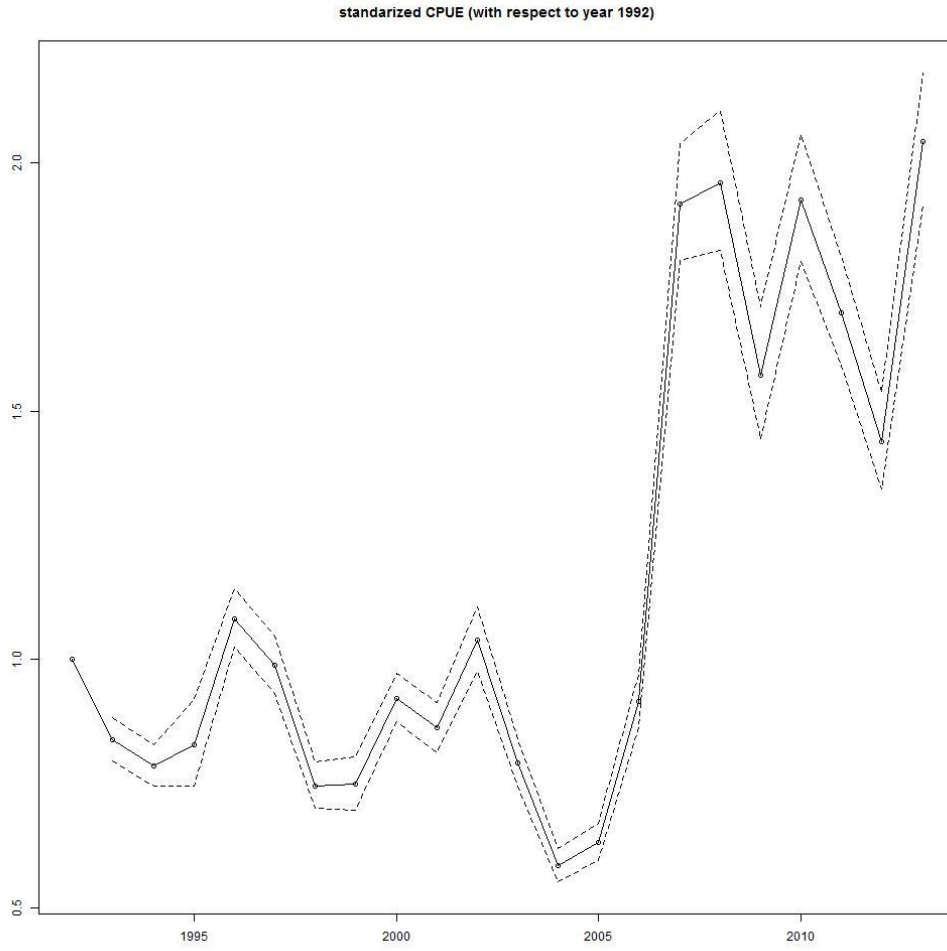


Figure 2. Spanish fleet standardized CPUE with model presented by Gonzalez-Costas and Gonzalez-Troncoso (2009) update with the 2013 data.