

**SCIENTIFIC COUNCIL MEETING – JUNE 2021****Spanish Research Report for 2020**

by

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Spanish catch and effort information used in this Report is based on the preliminary logbook data contributed by the Spanish Administration. The logbooks information for 2020 was available haul by haul. Table 1 presents the preliminary Spanish catches by species and Division in 2020 in NAFO Regulatory Area. Total effort of the Spanish fleet in 2020 was 1,200 fishing days.

In 2020, IEO scientific observers were on board 31 fishing days that it means 3 % 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. In 2020, 37 samples were taken with 4816 individuals of different species examined (Table 2).

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

A total of 10 Spanish trawlers operated in Div. 3LMNO NAFO Regulatory Area (NRA) during 2020, amounting to 1,200 days (19,051 hours) of fishing effort. Table 3 presents the Spanish effort (fishing hours) since 2003 in NRA Subarea 3. Total catches (Table 1) for all species combined in Div. 3LMNO were 16,339 tons.

Table 4 shows the effort (hours) by quarter and Division. This year it has not been possible to analyze the distribution by depth strata due to the lack of depth information in many records of the Logbooks. Table 5 presents the effort by Division, quarter and mesh size.

These effort tables show that the Spanish fleet carry out different directed fisheries in NAFO Subarea 3 characterized by different mesh size, target species, depth and fishing area: 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 280 mm mesh size at less than 200 meters depth. The target species is the skates. 4) In Division 3M at depth between 150-550 meters targeting cod with 130 mm mesh size gear. 5) In Division 3NO, mainly in Div- 3O targeting squid with 60 mm cod-end mesh size gear.

Effort and fisheries by Division. Based on the information on the distribution of the effort by depth of previous years and on the information presented in tables 4 and 5 with 2020 data, it was possible to conclude the following: In Div. 3L, most of the effort was performed at more than 600 meters depth using cod-end mesh size of 130 mm, indicating that the fleet targeted Greenland halibut. Regarding Div. 3M, part of effort was carried out using 130 mm cod-end mesh size at less than 600 m depth targeting redfish and cod and the other part at depths more than 600 m targeting Greenland halibut. In Div. 3N, the effort carried out using 280 mm was the 63% and with 135 mm cod-end mesh size was 37%, which indicates that the fleet targeted mainly skate in depth less than 200 m., redfish in 200-600 meters depth and Greenland halibut in depth more than 600 m.



Fishing effort in Div. 30 was around the 22% of the 3LMNO total effort targeting skates using mainly 280 mm mesh size in depth less than 200 meters and redfish in depth between 200-600 meters using 135 mm mesh size. Since 2018 there is a directed fishery targeted squid in Div. 30, mainly during the third quarter in 400-100 meters depth with a 60 mm mesh size trawl gear.

Due to the COVID-19 pandemic situation, only one IEO scientific observer was onboard Spanish vessels during 2020, comprising a total of 31 observed fishing days, around 3% coverage of the total Spanish effort. Besides recording catches, discards and effort, this observer 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 2020, 37 length samples were taken, with 4,816 individuals of different species examined to obtain the length distributions (Table 2). Length 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 and stocks in Table 6. These relationships were estimated based on the data collected by the IEO scientific observers and the European Union surveys information carried out in the NAFO Regulatory Area (NRA).

Due to the special COVID-19 pandemic situation that has occurred in 2020, the information available on Spanish commercial fishing activity in the NRA is quite poor. Sampling of the catches was very scarce and stock by stock, was the following:

#### **Cod (*Gadus morhua*)**

**Div. 3L:** In Div. 3L, the few catches of this species (3 tons) were taken mainly as by-catch in the redfish fishery. In 2020, there were no sample length distributions of this stock.

**Div. 3NO:** The most important part of the catches of this species was taken as by-catch in the skate fishery with 280 mm mesh size (119 tons) and in less degree in fisheries with 130 mm mesh size (19 tons). In 2020, there were no sample length distributions of this stock.

**Div. 3M:** Catches in Div. 3M were 477 tons and most of them were taken in the direct fishery. In 2020 only trawlers operated in this fishery. A small part of the catches were taken as by catch of the redfish fishery. The legal mesh size of the Cod fishery is 130 mm and the minimum landing size (MLZ) 41 cm. In 2020, there were no sample length distributions of this stock.

#### **Redfish (*Sebastes mentella* and *Sebastes fasciatus*)**

**3M:** In Div. 3M the redfish catches in 2020 have been 1890 tons and most of them were catch in a direct fishery and a small part of them was taken as by-catch in the cod fishery. In 2020, there were no sample length distributions of this stock.

**Div. 3LN:** Spanish catches were 460 tons. Most of the catches were taken in a direct fishery for this stock. In 2020, there were no sample length distributions of this stock.

**Div. 30:** A directed fishery for this species took place in Div. 30. Catches have reached 1960 tons in this Division, most of them with 130 mm mesh size. Catches length distribution for Div. 30 are presented in Table 7. It can be observed a clear different length between sexes; females reach larger sizes than males. The bulk of catches were in the range of 20-28 cm.

#### **American plaice (*Hippoglossoides platessoides*)**

**Div. 3LNO:** Spanish catches in 2020 in Div. 3LNO were 173 tons. Most of the catches were taken with 280 mm mesh size (127 tons) as by-catch of the skate fishery and in less degree with 130 mm mesh size (46 tons) and 60 mm mesh size (1 tons). Table 8 presents the total length distribution for Div. 3LNO. Note that these catches length distributions are based on only three samplings and that they may not be representative of the real catches length distributions. The bulk of catches were in the range of 33-50 cm. It can be observed a clear different length between sexes, females reach larger sizes than males.

**Div. 3M:** Catches in Div. 3M only amounted 11 tons and most of them were taken as by-catch of the cod and redfish fisheries. In 2020, there were no sample length distributions of this stock.

### **Witch flounder (*Glyptocephalus cynoglossus*)**

**Div. 2J and 3KL:** Spanish catches for this stock in 2020 were 16 tons and were taken in the small part of NAFO Regulatory Area (NRA) of Div. 3L as by-catch of the Greenland halibut and redfish fishery. In 2020, there were no available sample length distributions of this species in this Division.

**Div. 3M:** There is not management stock for this species in this Division. Catches this year were 25 tons. This species in this Division was taken as by-catch in the Cod and redfish fishery. In 2020, there were no available sample length distributions of this species in this Division.

**Div. 3NO:** Spanish catches for this stock in 2020 were 21 tons. Most of the catches were taken with 130 mm cod end gear in a direct fishery and as by-catch of the Redfish and Greenland halibut fisheries (16 tons) and in less degree in the skate fishery (4 tons) with 280 mm cod end gear. In 2020, there were no sample length distributions of this stock.

### **Yellowtail flounder (*Limanda ferruginea*)**

**Div. 3LNO:** In 2020 the yellowtail flounder Spanish catches were 276 tons. Most of the catches were taken in Div. 3NO in the skate fishery (270 tons) as by-catch. Length distributions for yellowtail flounder in Div. 3LNO are presented in Table 9. It should be noted that there were only available one length samples of the catches made with 280 mm mesh size in Div. 3N. Most of the catches are in the 30-42 cm length range. Females reach larger sizes than males.

### **Greenland halibut (*Reinhardtius hippoglossoides*)**

**Subareas 2 and Div. 3KLMNO:** Greenland halibut continues to be one of the main target species for the Spanish fleet in NAFO area. In 2020 Spanish catches were 4,615 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 10 shows the length distributions of Spanish catches in Divisions 3KLMNO. The catches length distributions samples available in 2020 are very few (5) and all belong to Division 3N so they may not be representative of the size distribution of the total catch. Most of the catches were in the 34-55 cm length range and the mode of the length distribution was in 37-45 cm. Normally in this document is presented the total age composition based in the commercial Spanish Age Length Key, but in 2020, due to the special circumstances of COVID, the level of sampling was very low and only 54 otoliths have been collected and read, so it has been decided not to present the age composition as a result of this low reading level.

Normally, the Spanish Research Report also present the Spanish fleet standardised CPUE. This year this information is not presented because only very partial information is available on the fishery in Div. 3N and this may not be representative of the annual Spanish Greenland halibut fishery.

### **Thorny skate (*Amblyraja radiata*)**

Commercial catches of skates comprise a mix of skate species (*Amblyraja radiata*, *Bathyrāja spinicauda*, *Raja hyperborean*, *Raja senta*, etc). Thus the catch of skate in Table 1 refers to *Raja* spp. However, thorny skate dominates, comprising about 90% of the skate taken in the Spanish catches base on 2014-2016 data from the EU Spanish 3NO Survey.

**Div. 3LNO:** Spanish 3LNO skate catches in 2020 were 3,742 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 and redfish fisheries (130 mm cod-end). Table 11 shows the total catches length distributions by sex of Div. 3LNO. The available samples in 2020 are very few, there are only available two length distributions samples of the catches made with the 280 mm. mesh size cod-end and may not be representative of the general Spanish skate fishery. Most of the catches were in the 40-80 cm length range. It can be observed a clear different length between sexes, males reach larger sizes than females.

**Div. 3M:** Skate catches in Div. 3M (13 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 (*Macrourus berglax*)**

**Subarea 2 and 3:** Roughhead grenadier is the main species taken as by-catch in the Greenland halibut fishery. Most of the 2020 catches were taken in Div. 3LMN. Spanish catches in 2020 were 88 tons. Normally, individuals are measured from tip of snout to base of first anal-fin ray (AFL) to the half centimetre below in the length distributions samples but in 2020, there is a not available catches length distribution for this stock.

### **White hake (*Urophycis tenuis*)**

**Div. 3NO:** Catches of this species in 2020 in Div 3NO (156 tons) were a small by-catch of different fisheries. In Division 3NO a small part of the catches (4 tons) were taken with the 280 mesh size. Catches in Div. 3NO take with 130 mm mesh size (138 tons) are by-catch of the redfish fishery. A small part of the catches (14 ton) were by catch of the squid fishery in Div. 3NO with 60 mm. mesh size. Table 12 shows the total catches length distributions by sex of Div. 3NO. There were only available tree length distribution samples with 130 mm cod end mesh size. Due to this problem, these samples could not be very representative of the catches distributions. Most of the catches were in the 29-55 cm length range.

### **Capelin (*Mallotus villosus*)**

**Div. 3NO:** Catches of this species are occasional. In 2020 there is no record of capelin catches by the Spanish fleet.

### **Squid (*Illex illecebrosus*)**

**Div. 3NO:** Catches of this species they have been occasional in the past as by-catch of different fisheries, but in the last three years there was a directed fishery to this species. In 2020 squid catches in Div 3NO by the Spanish fleet were 420 (ton). Of which 140 were carried out in a directed fishery in Div 3NO with 60 mesh size and 280 tonnes were captured in Div. 3NO as a by-catch mainly from the redfish fishery. Table 13 shows the total catches length distribution of Div. 3NO. The mantle length of the individuals was measured to the half centimetre below. There were available four length distribution samples. Most of the catches were in the 19.0-23.5 mantle length range.

## **(B) Research studies**

Since 1995, Spain carries out annually a Spring-Summer survey in the NAFO Regulatory Area of Div. 3NO. From 1995 to 2000, the survey was conducted on board the C/V Playa de Menguña with a net trawl type Pedreira. In 2001 this vessel was replaced by the R/V Vizconde de Eza, using a trawl net type Campelen 1800. In 2003, it was decided to extend the Spanish 3NO survey toward Div. 3L (Flemish Pass). In 2020, for the first time, the 3NO and 3L surveys could not be carried out due to the exceptional pandemic situation caused by COVID 19.

Due to the pandemic situation during 2020, R/V Vizconde de Eza only carried out one survey in Flemish Cap area (Div. 3M).

The EU bottom trawl survey in Flemish Cap (Div. 3M) was carried out using the usual survey gear (Lofoten) from June 30th to July 29th 2020. 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 184 and three of them were null. Survey results including abundance indices of the main commercial species and age distributions for cod, redfish, American plaice, roughhead grenadier and Greenland halibut will be presented as a Scientific Council Research document in 2021. Flemish Cap survey results for Northern shrimp (*Pandalus borealis*) were presented in SCR 20/064. Samples for histological assessment of sexual maturity of cod, redfish and American plaice were taken. Oceanography studies continued to take place.

VME data from the 2020 UE (Spain and Portugal) bottom trawl groundfish survey in NAFO Regulatory Area (Div. 3M):

New data on deep-water corals and sponges were presented from the 2020 EU-Spain and Portugal bottom trawl groundfish survey. The data was made available to the NAFO WGESA to improve mapping of Vulnerable Marine Ecosystem (VME) species in the NAFO Regulatory Area (Divs. 3LMNO). Distribution maps of presence and catches above threshold for RV data of sponges (100 kg/tow), large gorgonians (0.6 kg/tow), small gorgonians (0.15 kg/tow) and sea pens (1.3 kg/tow) were presented.

**Sponges:** Sponges were recorded in 47 of the 184 tows (25.5% of the total tows analyzed), with depths ranging between 141 - 1166 m. No Significant catches of sponge ( $\geq 100$  kg/tow) were found.

**Large Gorgonians:** Large gorgonians were recorded in 2 of the 184 tows (1% of total tows analyzed), with depths ranging between 806 - 940 m. None of the tows had significant catches of large gorgonians ( $\geq 0.6$  kg/tow).

**Small Gorgonians:** Small gorgonians were recorded in 15 tows (8.15 % of total tows analyzed), with depths ranging between 567 - 1250 m. No significant catches ( $> 0.2$  kg/tow) were recorded.

**Sea Pens:** Sea pens were recorded in 59 tows (32% of total tows analyzed), with depths ranging between 182 - 1423 m. No significant catches ( $> 1.3$  kg/tow) were recorded.

## NEREIDA

Research in support of the re-assessment of NAFO Bottom Fisheries in 2021 under the EU NEREIDA project was presented in WGESA 2020. An update on the description and classification of the different fisheries and distribution of fishing effort in the NRA for a four-year period (2016 to 2019) was conducted. This characterization of the different demersal fisheries was done on the basis of two data sources: Haul by haul logbook information and Vessel Monitoring System (VMS) data. Two analyses were presented on the quality and coverage of VMS and logbooks data. Additionally, an overlay analysis to estimate the area of VME polygons that was overlapped by the 2016 to 2019 cumulative fishing effort and fisheries-specific effort layers was conducted.

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## ATLAS:

Available information from EU-Spain groundfish surveys (Div. 3L, 2006-2019 period) regarding marine mammals and seabirds distribution, behaviour and interaction with fishing were presented during the 2020. The work was developed in collaboration with BIOESLE project.

Regarding seabed litter, the Spanish Institute of Oceanography (IEO) developed a protocol to be used in all the EU groundfish surveys in the NRA. It was developed in collaboration with BIOESLE and CleanAtlantic projects. The objective of the protocol is to expand the seabed litter data collection started in year 2006 in the Flemish Pass (Div. 3L) to the other areas sampled by the EU surveys: Flemish Cap (Div. 3M) and the Grand Banks (Divs. 3NO) using the same methodology and standardized forms. In 2020, data on seabed litter was collected during the EU Spain and Portugal Flemish Cap survey (Div. 3M).

An updated map showing the geographical location of oil and gas activities in NAFO Divs. 3LMN was presented during the 2020 WGESA. The map showed the overlap and potential conflicts between different users of the marine space (e.g. oil and gas vs. fisheries) and between users and marine environment (oil and gas vs. VMEs). Furthermore, an update on oil and gas incidents that occurred within the NAFO Convention area during 2020 year was presented. Both map and incidents list were obtained from public available information

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## **SUBAREA 6**

### **A. Status of the fisheries**

During 2020 there was no fishing activity of the Spanish fleet in this Division.

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### **REFERENCES**

Casas, J.M. 2019. Northern Shrimp (*Pandalus borealis*) on Flemish Cap Surveys 2020. Serial No.N7138 NAFO SCR Doc.20/064.

**Table1.** Spanish Catches (tons) in NAFO Area in 2020 by species and Division, based on the provisional Logbook data.

Code	English_name	Scientific_name	Provisional STATLANT 21A 2020				
			3L	3M	3N	3O	Total
GHL	Greenland halibut	<i>Reinhardtius hippoglossoides</i>	2487	1262	865	1	4615
RED	Atlantic redfishes nei	<i>Sebastes spp</i>	334	1890	125	1960	4309
SKA	Raja rays nei	<i>Raja spp</i>	14	13	2720	1008	3756
HKS	Silver hake	<i>Merluccius bilinearis</i>	0	0	198	1347	1545
COD	Atlantic cod	<i>Gadus morhua</i>	3	477	85	54	618
SQI	Northern shortfin squid	<i>Illex illecebrosus</i>	0	0	68	351	420
YEL	Yellowtail flounder	<i>Limanda ferruginea</i>	0	0	232	44	276
PLA	American plaice	<i>Hippoglossoides platessoides</i>	5	11	115	52	184
HAL	Atlantic halibut	<i>Hippoglossus hippoglossus</i>	10	14	63	79	166
HKW	White hake	<i>Urophycis tenuis</i>	0	0	32	125	156
RNG	Roundnose grenadier	<i>Coryphaenoides rupestris</i>	1	114	0	0	115
RHG	Roughhead grenadier	<i>Macrourus berglax</i>	21	30	36	0	88
WIT	Witch flounder	<i>Glyptocephalus cynoglossus</i>	16	25	12	9	62
HAD	Haddock	<i>Melanogrammus aeglefinus</i>	0	0	3	9	11
CAT	Wolffishes(=Catfishes) nei	<i>Anarhichas spp</i>	2	6	0	0	8
ANG	American angler	<i>Lophius americanus</i>	0	0	1	3	4
GPE	Longfin Hake	<i>Phycis chesteri</i>	3	0	0	0	3
GDE	Threadfin rockling	<i>Gaidropsarus ensis</i>	2	0	0	0	2
DGX	Dogfish sharks nei	<i>Squalidae</i>	0	0	0	0	0
		Total tons	2900	3843	4555	5042	16339

**Table 2.** Samples and individuals sampled by the IEO Scientific Observers by species, mesh size and NAFO Division in 2020

Code	Species	English_name	Catch/Disc.	Division	Mesh size	Samples	Ind.
PLA	<i>Hippoglossoides platessoides</i>	American plaice	C	3N	280 mm	3	219
SQI	<i>Illex Illecebrosus</i>	Short-finned squid	C	3O	130 mm	4	416
YEL	<i>Limanda ferruginea</i>	Yellowtail flounder	C	3N	280 mm	1	130
RHG	<i>Macrourus berglax</i>	Roughhead grenadier	C	3N	130 mm	2	356
HKS	<i>Merluccius bilineares</i>	Silver hake	C	3N	130 mm	2	231
HKS	<i>Merluccius bilineares</i>	Silver hake	C	3O	130 mm	6	923
RJR	<i>Raja radiata</i>	Starry ray	C	3N	280 mm	2	206
GHL	<i>Reinhardtius hippoglossoides</i>	Greenland halibut	C	3N	130 mm	5	747
RED	<i>Sebastes spp</i>	Redfish	C	3O	130 mm	7	1018
HKW	<i>Urophycis tenuis</i>	White hake	C	3O	130 mm	3	301
RJR	<i>Raja radiata</i>	Starry ray	<b>D</b>	3N	280 mm	1	100
HKS	<i>Merluccius bilineares</i>	Silver hake	<b>D</b>	3O	130 mm	1	169



**Table 3.** Fishing effort (hours) of the Spanish fleet in Divisions 3LMNO by year based on the Logbook data.

3LMNO	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Effort (Hours)	106821	76028	60128	44044	25163	21408	21250	22703	25276	25410	18602	18271
3LMNO	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Effort (Hours)	18031	15577	15101	16608	18686	19051						

**Table 4.** Fishing effort (hours) of the Spanish fleet in 2020 by quarter and Division, as well as percentage of effort by Division based on the Logbook data.

Division	Depth	1st Q	2nd Q	3rd Q	4th Q	Total	% Div.
3L	<200					0%	
	200-600					0%	
	>600					0%	
	<b>Total</b>	<b>2385</b>	<b>1029</b>	<b>329</b>	<b>604</b>	<b>4347</b>	<b>23%</b>
3M	<200					0%	
	200-600					0%	
	>600					0%	
	<b>Total</b>	<b>1372</b>	<b>506</b>	<b>1878</b>	<b>407</b>	<b>4162</b>	<b>22%</b>
3N	<200					0%	
	200-600					0%	
	>600					0%	
	<b>Total</b>	<b>1309</b>	<b>1744</b>	<b>1988</b>	<b>1233</b>	<b>6274</b>	<b>33%</b>
3O	<200					0%	
	200-600					0%	
	>600					0%	
	<b>Total</b>	<b>1102</b>	<b>749</b>	<b>1398</b>	<b>1019</b>	<b>4268</b>	<b>22%</b>
	<b>Total Hours</b>	<b>6169</b>	<b>4028</b>	<b>5593</b>	<b>3262</b>	<b>19051</b>	100%
	<b>%</b>	32%	21%	29%	17%	100%	

**Table 5.** Spanish 2020 effort (hours) in SA 3 by mesh size, quarter and Division based on the Logbook data.

Div.	Mesh Size	1st Q	2nd Q	3rd Q	4th Q	Total
3L	<90 mm					
	100-200 mm	2385	1029	329	604	4347
	>200 mm					
3M	<90 mm					
	100-200 mm	1372	506	1878	407	4162
	>200 mm					
3N	<90 mm			46		46
	100-200 mm	381	689	727	502	2299
	>200 mm	928	1055	1215	730	3929
3O	<90 mm			212		212
	100-200 mm	244	447	1129	1003	2823
	>200 mm	859	302	57	16	1234

**Table 6.** Parameters of the length-weight relationship ( $W(g) = a*L(cm)^b$ ) by species (2020).

Species	Source	a	b	SOP
Greenland halibut 3LMNO	Commercial	0.00237	3.3119	0.90
Redfish 3O	Commercial	0.00821	3.1325	0.93
American plaice 3LNO	Commercial	0.00110	3.5645	1.02
Yellowtail Flounder 3LNO	Commercial 2019	0.01866	2.7796	0.95
Skate 3LNO	3NO Survey 2019	0.00741	3.0662	0.88
White Hake 3NO	3NO Survey 2019	0.00352	3.1876	1.02

**Table 7.** Redfish 30 stock Spanish catches length distribution (2020).

<b>Redfish Length (cm)</b>	<b>Males</b>	<b>30 Females</b>	<b>Ind.</b>	<b>Total</b>
<b>10</b>				0
<b>11</b>				0
<b>12</b>				0
<b>13</b>				0
<b>14</b>	34782	0	0	34782
<b>15</b>	0	0	0	0
<b>16</b>	44450	41259	23768	109477
<b>17</b>	2348	29375	0	31723
<b>18</b>	82092	80301	0	162393
<b>19</b>	108580	109294	0	217874
<b>20</b>	453300	194804	0	648104
<b>21</b>	867088	375735	0	1242823
<b>22</b>	1456581	515606	0	1972186
<b>23</b>	1119430	813375	0	1932806
<b>24</b>	634920	841182	0	1476103
<b>25</b>	434717	1142718	0	1577435
<b>26</b>	63392	680178	0	743571
<b>27</b>	7319	611377	0	618696
<b>28</b>	36835	528003	0	564838
<b>29</b>	0	162130	0	162130
<b>30</b>	0	26522	0	26522
<b>31</b>	0	64914	0	64914
<b>32</b>	0	24352	0	24352
<b>33</b>	0	38849	0	38849
<b>34</b>	0	29375	0	29375
<b>35</b>				0
<b>36</b>				0
<b>37</b>				0
<b>38</b>				0
<b>39</b>				0
<b>40</b>				0
<b>Total</b>	5345833	6309349	23768	11678950
<b>Samples</b>				7
<b>Ind. Sampled</b>				1018
<b>Catch (tons)</b>				1960
<b>SOP</b>				0.93

**Table 8.** American plaice 3LNO stock Spanish catches length distribution (2020).

American Plaice Length (cm)	Division 3LNO			Total
	Males	Females	Ind.	
20	0	0	0	0
21	0	0	0	0
22	0	462	0	462
23	1540	0	0	1540
24	462	0	0	462
25	462	0	0	462
26	462	0	0	462
27	462	0	0	462
28	0	0	0	0
29	3079	0	0	3079
30	2463	462	0	2925
31	3892	0	0	3892
32	6971	1540	0	8511
33	5893	2925	0	8819
34	9675	4003	0	13677
35	8751	3892	0	12643
36	9083	4859	0	13942
37	5826	4970	0	10795
38	7211	9829	0	17040
39	0	5783	0	5783
40	3541	11171	0	14712
41	0	12643	0	12643
42	0	13591	0	13591
43	0	14404	0	14404
44	0	10290	0	10290
45	0	10752	0	10752
46	0	11368	0	11368
47	0	7895	0	7895
48	0	2463	0	2463
49	0	6860	0	6860
50	0	5893	0	5893
51	0	2968	0	2968
52	0	1891	0	1891
53	0	0	0	0
54	0	924	0	924
55	0	0	0	0
56	0	1429	0	1429
57	1540	0	0	1540
58	0	0	0	0
59	0	462	0	462
60	0	1540	0	1540
61	0	0	0	0
62	0	462	0	462
63	1540	1891	0	3430
64	0	1429	0	1429
65	0	0	0	0

<b>66</b>	0	0	0	0
<b>67</b>	0	0	0	0
<b>68</b>	0	0	0	0
<b>69</b>	0	0	0	0
<b>70</b>	0	462	0	462
<b>Total</b>	72852	159511	0	232362

<b>Samples</b>	3
<b>Ind. Sampled</b>	219
<b>Catch (tons)</b>	173
<b>SOP</b>	1.02

**Table 9.** Yellowtail flounder Spanish catches length distribution for Div. 3LNO.

Yellowtail flounder Length (cm)	3LNO			Total
	Males	Females	Ind.	
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	5275	0	0	5275
30	5275	10551	0	15826
31	26376	5275	0	31652
32	26376	0	0	26376
33	58028	21101	0	79129
34	52753	15826	0	68579
35	26376	47477	0	73854
36	15826	68579	0	84404
37	15826	89680	0	105505
38	0	52753	0	52753
39	0	47477	0	47477
40	0	26376	0	26376
41	0	26376	0	26376
42	0	15826	0	15826
43	0	5275	0	5275
44	0	5275	0	5275
45	0	5275	0	5275
46	0	5275	0	5275
47	0	5275	0	5275
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
<b>Total</b>	232112	453674	0	685786
<b>Samples</b>				1
<b>Ind. Sampled</b>				260
<b>Catch (tons)</b>				275
<b>SOP</b>				0.95

**Table 10.** Greenland halibut 2020 Spanish catches length distribution for Div. 3LMNO.

Length (cm)	Division 3LMNO			
	Males	Females	Indter.	Total
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0
30	0	0	0	0
31	0	26924	0	26924
32	74125	18232	0	92356
33	70596	0	0	70596
34	59754	49093	0	108847
35	101352	130638	0	231990
36	90963	128275	0	219239
37	200521	216006	0	416527
38	95325	251478	0	346803
39	120688	233828	0	354517
40	131873	248412	0	380285
41	166768	286079	0	452848
42	134832	267628	0	402460
43	139890	324428	0	464318
44	198848	351822	0	550671
45	107567	303130	0	410698
46	58921	184009	0	242930
47	98580	233654	0	332234
48	58330	205966	0	264296
49	29741	153950	0	183691
50	20261	110664	0	130925
51	17323	93485	0	110808
52	17808	71959	0	89767
53	32679	127495	0	160174
54	9116	47776	0	56892
55	0	89555	0	89555
56	17808	51970	0	69778
57	6663	41310	0	47973
58	0	53999	0	53999
59	0	37880	0	37880
60	6663	65781	0	72444
61	0	33102	0	33102
62	0	17323	0	17323
63	0	24471	0	24471
64	0	22442	0	22442
65	0	15779	0	15779

<b>66</b>	0	20261	0	20261
<b>67</b>	0	27219	0	27219
<b>68</b>	0	0	0	0
<b>69</b>	0	14870	0	14870
<b>70</b>	9116	9116	0	18232
<b>71</b>	0	0	0	0
<b>72</b>	0	0	0	0
<b>73</b>	0	0	0	0
<b>74</b>	0	6663	0	6663
<b>75</b>	0	0	0	0
<b>76</b>	0	0	0	0
<b>77</b>	0	0	0	0
<b>78</b>	0	0	0	0
<b>79</b>	0	0	0	0
<b>80</b>	0	0	0	0
<b>81</b>	0	0	0	0
<b>82</b>	0	0	0	0
<b>83</b>	0	0	0	0
<b>84</b>	0	8207	0	8207
<b>85</b>	0	0	0	0
<b>86</b>	0	0	0	0
<b>87</b>	0	0	0	0
<b>88</b>	0	0	0	0
<b>89</b>	0	0	0	0
<b>90</b>	0	0	0	0
<b>91</b>	0	11441	0	11441
<b>92</b>	0	0	0	0
<b>93</b>	0	0	0	0
<b>94</b>	0	0	0	0
<b>98</b>	0	0	0	0
<b>Total</b>	2076111	4616322	0	6692432

<b>Samples</b>	5
<b>Ind Sampled</b>	747
<b>Catch (tons)</b>	4615
<b>SOP</b>	0.90



**Table 11.** Skates Spanish 2020 catches length distribution by sex for Div. 3LNO.

Skates Length (cm)	3LNO			Total
	Males	Females	Ind.	
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	11286	0	11286
30	11286	0	0	11286
31	0	5399	0	5399
32	5399	0	0	5399
33	0	0	0	0
34	11286	0	0	11286
35	11286	5399	0	16685
36	5399	5399	0	10798
37	0	11286	0	11286
38	5399	10798	0	16197
39	10798	10798	0	21596
40	5399	5399	0	10798
41	5399	10798	0	16197
42	0	44657	0	44657
43	16685	5399	0	22084
44	11286	27972	0	39258
45	0	5399	0	5399
46	16685	11286	0	27972
47	5399	38769	0	44168
48	22084	16685	0	38769
49	21596	16197	0	37792
50	26995	22084	0	49079
51	16197	22573	0	38769
52	10798	44657	0	55455
53	33371	45145	0	78516
54	16685	39258	0	55943
55	27972	39258	0	67230
56	5399	0	0	5399
57	22084	50056	0	72140
58	33371	22084	0	55455
59	5399	38769	0	44168
60	11286	0	0	11286
61	0	22573	0	22573
62	22573	22084	0	44657
63	0	16685	0	16685
64	0	22084	0	22084
65	22573	21596	0	44168

<b>66</b>	11286	22084	0	33371
<b>67</b>	22573	50056	0	72629
<b>68</b>	0	16685	0	16685
<b>69</b>	0	16197	0	16197
<b>70</b>	33859	27972	0	61831
<b>71</b>	0	27972	0	27972
<b>72</b>	22573	11286	0	33859
<b>73</b>	11286	5399	0	16685
<b>74</b>	0	22084	0	22084
<b>75</b>	27972	27972	0	55943
<b>76</b>	0	33371	0	33371
<b>77</b>	11286	5399	0	16685
<b>78</b>	22573	27972	0	50544
<b>79</b>	11286	0	0	11286
<b>80</b>	45145	0	0	45145
<b>81</b>	22573	0	0	22573
<b>82</b>	11286	0	0	11286
<b>83</b>	11286	0	0	11286
<b>84</b>	33859	0	0	33859
<b>85</b>	22573	0	0	22573
<b>86</b>	0	0	0	0
<b>87</b>	11286	0	0	11286
<b>88</b>	0	0	0	0
<b>89</b>	0	5399	0	5399
<b>90</b>	0	0	0	0
<b>91</b>	0	0	0	0
<b>92</b>	0	0	0	0
<b>93</b>	0	0	0	0
<b>94</b>	0	0	0	0
<b>95</b>	0	0	0	0
<b>Total</b>	752792	971680	0	1724472

<b>Samples</b>	2
<b>Ind. Sampled</b>	206
<b>Catch (ton)</b>	3742
<b>SOP</b>	0.88

**Table 12.** White hake 2020 Spanish catches length distribution by sex for Div. 3NO.

White hake Length (cm)	3NO			Total
	Males	Females	Ind.	
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	541	0	0	541
24	0	0	0	0
25	541	0	0	541
26	0	541	0	541
27	1082	417	0	1499
28	541	417	0	958
29	1499	1375	0	2875
30	2210	1917	0	4126
31	2334	417	0	2751
32	1499	958	0	2458
33	1917	1082	0	2999
34	3709	1624	0	5333
35	2334	1917	0	4250
36	2041	1499	0	3540
37	2999	1499	0	4498
38	6753	541	0	7294
39	7158	1082	0	8240
40	5626	3280	0	8906
41	9583	1082	0	10665
42	2875	417	0	3292
43	4791	3292	0	8083
44	5750	4114	0	9864
45	5874	1499	0	7373
46	4250	1668	0	5919
47	5646	2073	0	7720
48	3573	417	0	3990
49	3709	1656	0	5365
50	2041	4147	0	6188
51	2041	4395	0	6436
52	5477	2615	0	8092
53	2198	2073	0	4271
54	958	417	0	1375
55	1792	1656	0	3449
56	0	541	0	541
57	417	0	0	417
58	3854	958	0	4812
59	1082	0	0	1082
60	0	3313	0	3313
61	0	2073	0	2073
62	1656	3854	0	5510
63	0	1656	0	1656
64	1656	0	0	1656
65	0	3313	0	3313

<b>66</b>	0	0	0	0
<b>67</b>	0	0	0	0
<b>68</b>	0	0	0	0
<b>69</b>	1656	0	0	1656
<b>70</b>	0	1656	0	1656
<b>71</b>	0	0	0	0
<b>72</b>	0	0	0	0
<b>73</b>	0	0	0	0
<b>74</b>	0	0	0	0
<b>75</b>	0	0	0	0
<b>76</b>	0	417	0	417
<b>77</b>	0	1656	0	1656
<b>78</b>	0	0	0	0
<b>79</b>	0	0	0	0
<b>80</b>	0	0	0	0
<b>Total</b>	113665	69530	0	183194

<b>Samples</b>	3
<b>Ind. Sampled</b>	301
<b>Catch (ton)</b>	156
<b>SOP</b>	1.02

**Table 13.** Squid 3NO 2020 Spanish catches length distribution.

<b>Squid Length (cm)</b>	<b>Division 3NO</b>			<b>Total</b>
	<b>Males</b>	<b>Females</b>	<b>Ind.</b>	
14.0	0	0	0	0
14.5	0	0	0	0
15.0	0	0	0	0
15.5	0	1646	0	1646
16.0	0	3360	0	3360
16.5	857	1646	0	2503
17.0	0	1646	0	1646
17.5	0	0	0	0
18.0	0	2503	0	2503
18.5	1944	2503	0	4446
19.0	4744	1714	75432	81890
19.5	6713	3589	37716	48018
20.0	12408	8197	37716	58321
20.5	13501	11725	113148	138373
21.0	6452	14190	264012	284653
21.5	11420	16487	150864	178771
22.0	13531	25970	339444	378945
22.5	7011	28050	37716	72777
23.0	230	17642	188580	206451
23.5	1875	16555	37716	56147
24.0	1316	12376	0	13693
24.5	1646	9843	0	11489
25.0	857	4577	0	5434
25.5	0	5465	0	5465
26.0	0	3192	0	3192
<b>Total</b>	<b>84504</b>	<b>192875</b>	<b>1282342</b>	<b>1559721</b>
<b>Samples</b>				<b>4</b>
<b>Ind. Sampled</b>				<b>416</b>
<b>Catch (tons)</b>				<b>419</b>
<b>SOP</b>				