



**SCIENTIFIC COUNCIL MEETING – JUNE 2020**

Results for the Spanish Survey in the NAFO Regulatory Area of Division 3L for the period 2003-2019

by

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**Abstract**

Since 2003, a stratified random summer bottom trawl survey was conducted by Spain in the NAFO Regulatory Area of Division 3L (Flemish Pass). The surveys were carried out by the R/V “Vizconde de Eza” using bottom trawl net type Campelen 1800. Entire series of mean catches, biomass and length distribution for Greenland halibut, American plaice and witch flounder are presented for the period 2003-2019. Greenland halibut biomass and abundance estimates presented an increasing trend since 2011, reaching in 2017 the highest value of the entire time-series. In 2019, the biomass shows a slight increase. For American plaice biomass and abundance estimates show an increasing trend since 2010, reaching in 2015 the highest value in the series; since 2016, all indices decreased. Regarding witch flounder, the biomass and abundance show no a clear trend in the whole period, reaching the maximum of the series in 2010 and 2015. The 2019 biomass estimate continue the declining trend observed in 2016.

**KEYWORDS:** Survey, Flemish Pass, Greenland halibut, American plaice, witch flounder.

**Material and Methods**

The Spanish surveys in Div. 3L of NAFO Regulatory Area (Flemish Pass) were initiated in 2003. The Research vessel “Vizconde de Eza” has carried out these surveys following the same procedures and using the same bottom trawl gear *Campelen 1800*. In 2003, the survey was carried out in spring (June) and it did not cover all strata adequately (17 of the 24 strata). In 2004, the survey was carried out 50 valid hauls in August, for a period of nine days, and not adequately covered all strata. In 2005, it was not possible to perform the survey due to problems with the winch of the ship; and in 2006, for the first time, an adequate prospecting survey was conducted in Division 3L with over 100 valid hauls. Table 1 presents the number of valid tows, the depth strata covered and the dates of the survey series. Figure 1 shows haul positions of Spanish surveys in NAFO Div. 3L in the period 2003-2019.

The survey area was stratified following the standard stratification schemes (Bishop, 1994). All surveys had a stratified random design following NAFO specifications (Doubleday, 1981). Hauls were allocated to strata proportionally to stratum size, with a minimum of two planned hauls per stratum and the trawl positions were chosen at random. A synoptic sheet of the survey with the vessel and gear characteristics is shown in Table 2. Biomass and abundance indices were calculated by the swept area method (Cochran, 1997), assuming catchability factor of 1.

The catch from each haul was sorted out and weighted by species and a randomly selected sample of each species was taken in order to measure it and to obtain the length distribution. For Greenland halibut, American plaice and witch flounder, each individual of the sample was measured to the total length to the nearest lower cm. and data are given



in 2 cm intervals. We present on a yearly basis: the mean catch per haul, the stratified mean catch per haul, the biomass with its variance per year and the length distribution in number per haul stratified mean catches by length, sex and year for each species in the period 2003-2019.

Biological studies (age, growth, feeding...), oceanographic data and special studies (occurrence of marine mammals and sea birds) were collected from NAFO Regulatory area Div. 3L during the survey aboard *Vizconde de Eza*. The following formula was used to obtain the biomass from length distribution:  $Weight=a (Length+0.5)^b / Weight=a (Length+0.25)^b$ . To calculate the parameters for the indeterminate individuals, we used the total data (males+females+indeterminate individuals).

### Stratified mean catches and SD

The mean catch ( $\bar{y}_i$ ) and the variance ( $Var_i$ ) are calculated by stratum by the following formulas:

$$\bar{y}_i = \sum_{j=1}^{T_i} \frac{y_j}{T_i}, \quad i = 1, \dots, h$$

$$Var_i = \sum_{j=1}^{T_i} \frac{(y_j - \bar{y}_i)^2}{T_i - 1}, \quad i = 1, \dots, h$$

where:  $y_j$  is the catch in haul  $j$   
 $T_i$  is the number of hauls in the stratum  $i$   
 $h$  is the total number of strata

and the stratified mean catch ( $\bar{y}_i^{str}$ ) and the stratified variance ( $Var_i^{str}$ ) by stratum are obtained as follow:

$$\bar{y}_i^{str} = \bar{y}_i n_i, \quad i = 1, \dots, h$$

$$Var_i^{str} = Var_i \frac{n_i^2}{T_i}, \quad i = 1, \dots, h \quad \text{where: } n_i \text{ is the area of the stratum } i, i = 1, \dots, h$$

Then the total stratified mean catch ( $\bar{Y}$ ) and the variance ( $Var$ ) by year are calculated according to the formulas:

$$\bar{Y} = \sum_{i=1}^h \frac{\bar{y}_i^{str}}{N}$$

$$Var = \sum_{i=1}^h \frac{Var_i^{str}}{N^2} \quad \text{where: } N = \sum_{i=1}^h n_i \text{ is the total area by year}$$

The stratified standard deviation (SD) by year is calculated as the square root of the stratified variance by year.

## **Results**

In 2019, the bottom trawl survey in Div. 3L (Flemish pass) of NAFO Regulatory Area was carried out on board R/V *Vizconde de Eza* using the usual survey gear (*Campelen 1800*) from August 3<sup>rd</sup> to 23<sup>rd</sup> and following the same

procedure as in previous years. A total of 97 hauls (1 of them null) were performed in a depth range of 120-1359 m. (Table 1).

### **Biological studies**

Biological data (length, sex, sexual maturity, weight and stomach repletion degree) on 9 target species and other 46 species were collected from Div. 3L in 2019 (14532 individuals sampled).

Maturity and fecundity – 218 samples for histological maturity and fecundity of roughhead grenadier and American plaice were taken.

Age and Growth – otoliths (1073 samples) of Greenland halibut, American plaice, roughhead grenadier and cod were collected for growth studies.

### **Hydrographic Studies**

Temperature and salinity were measured in each haul by means of CTD ((SBE Se 25 SEALOGGER CTD). Hydrographic profile samplings were performed at 96 fishing stations in a depth range of 120-1403 m. The minimum and maximum observed temperatures were  $-0.33$  and  $3.46^{\circ}\text{C}$  respectively and the observed salinity range was 33.33 - 34.91 PSU. Results are presented in MEDS (Marine Environmental Data Service of Canada) every year.

### **Special studies**

#### Benthic invertebrate

The study of benthic invertebrates was performed as a routine work during the survey (catch in weight and number, photographs and collection for study in the laboratory). This study will help us to have more knowledge about these species and their relation to the marine environment in the surveyed area.

#### Marine mammals and sea birds

Observations and incidental catches of marine mammals occasionally occurred were recorded during fishing time in the surveyed area of Flemish Pass. Occurrence, date, position, number, T<sup>a</sup>, fishing time and other data were collected related to marine mammals throughout the survey. In 11 hauls observations of marine mammals species were recorded (Román *et al.*, 2015). *Physeter macrocephalus*, *Hyperoodon Ampullatus* and *Globicephala melas* were the most common marine mammals.

Regarding seabirds, information about species, and incidental catches was also collected in the surveyed area. This will help us get a better understanding of these species, their relation to the marine environment and the interaction of seabirds with fishing. *Fulmarus glacialis*, *Puffinus gravis*, *Puffinus griseus*, *Morus bassanus* and *Catharacta skua* were the most common seabird species.

#### Genetic studies

DNA tissue samples were taken for morphological and molecular identification of the species of the order Rajiformes and Chimaeriformes in the study area.

Results for Greenland halibut, American plaice and witch flounder are presented in this report.

The results for the rest of target species will be presented in other SCR in this SC meeting. The detailed results for Northern shrimp, the most abundant species in the catches of all surveys, were presented in Casas *et al.*, 2019.

### **Greenland halibut (*Reinhardtius hippoglossoides* Walbaum, 1792)**

The Greenland halibut stock in Subarea 2 and Div. 3KLMNO is considered to be part of a biological stock complex, which includes Subareas 0 and 1. Abundance and biomass indices were available from research vessel surveys by Canada in Div. 2J+3KLMNO (1978-2017), EU in Div. 3M (1988-2017), EU-Spain in Div. 3NO (1995-2017) and EU-Spain in Div. 3L (2003-2017).

These surveys provide coverage of the majority of the spatial distribution of the stock and the area from which most of the catches are taken. Over 1995-2007, indices from the majority of the surveys generally provided a consistent signal in stock biomass. Results since 2007 show greater divergence which complicates interpretation of overall status. Since 2014 there is a clear divergence with the surveys in the NAFO Regulatory Area (including 3M) generally increasing and Canadian surveys declining. However, in 2018 there was a substantial decline in surveys conducted in the NRA while Canadian surveys increased. Survey results in recent years show greater divergence which complicates interpretation of overall status. All the survey indices have low abundance at age 4 since the 2009 year class (NAFO, 2019).

#### Mean catches and biomass

Table 3 shows the swept area, the tow number, the mean catches and their variance per haul and year (2006-2019) for Greenland halibut. Table 4 and Figure 2 present the stratified mean catches per stratum with the total variance per year. Table 5 and Figure 3 present the abundance, the biomass per swept area per stratum and their total variance per year. Table 6 presents the length-weight relationships (2006-2019).

The biomass of the Greenland halibut has had an increase in the surveyed area along the whole period, reaching the maximum values in the series in 2017 and 2019. The biomass index for the survey increased from 2006 to 2008. After declining to lower levels in 2011 and 2012 it increased to a time series high in 2017 before declining substantially in 2018. In 2019, there was a great increase in the biomass index, it is the second highest value in the historical series.

The biomass presents the same trend as mean catches since the year 2004. In 2003, the mean catch does not follow the same pattern; this was probably due to the less area covered in 2003 survey (Figures 2 and 3).

The abundance index shows the same trend as biomass since 2003 (Figure 3), in 2016 this index does not follow the same pattern due to the presence of smaller individuals (<15 cm). Figure 4 shows a map with the distribution of Greenland halibut catches per haul in 2019 Spanish 3L survey.

#### Length distribution

Table 7 and 8 present the stratified mean catches per haul length distribution for the Greenland halibut, by sex and year (2006-2019), with the number of samples in which there were length measures, the total number of individuals measured in these samples, the sampled catch and the range of lengths met, as well as the total catch of this species and the total valid hauls made in the survey. In 2013, 2014, 2017 and 2018 there is a quite good presence of small individuals (<30cm). In 2018 and 2019 we have the best presence of small individuals (11-15cm.).

In the 2019 the mode was 12 and 24 cm and the length range 7-104 cm. Females attain larger lengths than males in all years. In Figures 5 and 6 the evolution along the years can be followed.

#### **American plaice (*Hippoglossoides platessoides* Fabricius, 1780)**

There was no fishing targeting American plaice in 1994 and it has been under moratorium since 1995. Catches increased after the moratorium until 2003 and began to decline afterwards. Biomass and abundance remain low compared to historic levels. There has been no good recruitment to the exploitable biomass since the mid-1980s. The stock remains low compared to historic levels and, although SSB is increasing, it is still estimated to be below Blim. (NAFO, 2019).

#### Mean catches and biomass

American plaice haul mean catches by stratum are presented in Table 9, including swept area, number of hauls and SD. Stratified mean catches per tow by stratum and year and their variance are presented in Table 10.

The entire time series (2003-2019) of biomass and their SD estimates of American plaice are shown in Table 11. Length-weight relationships are presented in Table 6 (2006-2019).

The American plaice indices showed a general increasing trend in the prospected area since 2004 (Fig. 7 and 8). But in 2010 this increasing trend was broken and the value was below the 2006 value, following by an increase in 2011-2015. The American plaice indices show a decreasing since 2015. The highest values in the estimated biomass have been observed in the shallowest strata, in a range of depth from 93 to 274 meters. Figure 4 shows a map with the distribution of American plaice catches per haul in 2019 Spanish 3L survey.

### Length distribution

Tables 12 and 13 present the stratified mean catches per haul length distribution by sex and year (2006-2019). They present also the number of samples in which length measurements were performed, the total number of individuals measured in these samples, the sampled catch and the range of lengths found. The total catch of this species and the total valid hauls made in the survey are shown too. In Figures 6 and 9 the evolution along the years can be followed.

From 2014-2017, it can be seen a great increase of small individuals (individuals <20 cm); in 2019, the mode was 22 cm with the dominant length between 14 and 32 cm. There is higher proportion of females than males.

### **Witch flounder (*Glyptocephalus cynoglossus* Linnaeus, 1758)**

Witch flounder are distributed within and managed as two separate stocks in Divisions 3NO and 2J3KL, though a TAC is only assigned for 3L. A moratorium (no directed fishery) has remained in place since it was declared in 2004 and no directed fishing for 2018 to 2019 to allow for stock rebuilding.

The fishery for witch flounder in NAFO Divisions 2J, 3K and 3L began in the early 1960s and increased steadily from about 1 000 t in 1963 to a peak of over 24 000 t in 1973. A moratorium on directed fishing on this stock was implemented in 1995 following drastic declines in catch from the mid-70s, and catches since then have been low levels of by-catch in other fisheries. From 1999 to 2004 catches were estimated to be very low, between 300 and 800 tonnes and from 2005-2017, catches averaged less than 160 tonnes (NAFO, 2019).

### Mean catches and biomass

Table 14 shows the swept area, the tow number, the mean catches and their variance per haul and year (2006-2019) for witch flounder. Table 15 and Figure 10 present the stratified mean catches per stratum with the total variance per year. Table 16 and Figure 11 present the abundance and biomass per swept area per stratum and their total variance per year. Parameters *a* and *b* estimated values of length-weight distribution are presented in Table 6 (2006-2019). Figure 4 shows a map with the distribution of the witch flounder catches per haul in 2019 Spanish 3L survey.

Witch flounder indices show no clear trend throughout the period 2003-2019, the index peaked in 2010 and 2015. Estimated biomass ranged from 691 t in 2010 to 297 t and 298 t in 2003 and 2007 respectively; although most estimate results come from few strata. The witch flounder indices show a decreasing since 2015. The stratified mean catches per stratum followed similar trends as the biomass and abundance indices (Fig. 10 and 11).

### Length distribution

Table 17 and 18 present the stratified mean catches per haul length distribution for this species, by sex and year (2006-2019), with the number of samples in which there were length measures, the total number of individuals measured in these samples, the sampled catch and the range of lengths met, as well as the total catch of this species and the total valid hauls made in the survey. In Figures 6 and 12 we can follow the evolution along the years.

In the 2019 the mode was 8 and 29 cm and the length range 7-53 cm. The highest recruitment was in 2003, but since then the number of younger individuals have declined.

### **Acknowledge**

The data used in this paper have been funded by the EU through the European Maritime and Fisheries Fund (EMFF) within the National Program of collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy.

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**Table 1.** Spanish bottom trawl surveys in NAFO Division 3L for the period 2003-2019.

Year	Vessel	Valid tows	Depth strata covered (m)	Surveyed strata (no.)	Dates
2003	R/V "Vizconde de Eza"	39	118-1100	17	June 2 - June 6, June 29
2004	R/V "Vizconde de Eza"	50	141-1452	23	August 7 - August 15
2006	R/V "Vizconde de Eza"	100	116-1449	24	July 31 - August 18
2007	R/V "Vizconde de Eza"	94	119-1449	24	July 23 - August 11
2008	R/V "Vizconde de Eza"	100	105-1455	24	July 24 - August 11
2009	R/V "Vizconde de Eza"	98	111-1458	24	July 25 - August 12
2010	R/V "Vizconde de Eza"	97	119-1462	24	July 25 - August 14
2011	R/V "Vizconde de Eza"	89	115-1419	24	August 10 - August 24
2012	R/V "Vizconde de Eza"	98	112-1478	24	July 30 - August 18
2013	R/V "Vizconde de Eza"	100	117-1420	24	July 30 - August 19
2014	R/V "Vizconde de Eza"	102	104-1411	24	July 30 - August 19
2015	R/V "Vizconde de Eza"	97	112-1458	24	July 28 - August 17
2016	R/V "Vizconde de Eza"	98	126-1447	24	July 28 - August 17
2017	R/V "Vizconde de Eza"	99	106-1433	24	July 21 - August 8
2018	R/V "Vizconde de Eza"	100	116-1442	24	July 31 - August 19
2019	R/V "Vizconde de Eza"	96	120-1359	24	August 3 - August 23

**Table 2.** Technical data of the Spanish survey in NAFO Division 3L for the period 2003-2019.

Procedure	Specification
<b>Vessel</b>	R/V "Vizconde de Eza"
GT	1400 t.
Power	1800 HP
Surveyed area	Div. 3L (depth < 1500 m, outside ZEE Canada)
Mean trawl speed	3 knots
Trawling time	30 minutes effective time
<b>Fishing gear type</b>	<i>Campelen 1800</i>
Headline	29.5 m
Groundrope	19.5 m
Type of groundrope	34 rockhopper
Floats	( 2 x 39 ) + 10
Bridle	40 m (20 mm)
Vertical opening	4-5
Horizontal opening	26
Trawl doors	Polyvalent, 1400 Kg
Warp	20 mm
Warp to depth ratio	22.287 * Depth (m) <sup>0.6667</sup>
Mesh size in the cod-end	44 mm
<b>Type of survey:</b>	Stratified random bottom trawl survey
Criterion to change position of a selected tow	Unsuitable bottom for trawling according to commercial fish information or ecosounder register. Information on gear damage from previous surveys.
Criterion to reject data from tow	- Severe tears in the gear - Less of 20 minutes tow
	- tears in cod-end - Bad behaviour of the gear
Daily period for fishing	6.00 to 22.00 hours
Target species	Greenland halibut, American plaice, Atlantic cod, roughhead grenadier, witch flounder, thorny skate, red fish, black dogfish, northern shrimp.

**Table 3.** Swept area, number of hauls and **Greenland halibut** mean catch (Kg) and SD (\*\*) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "Vizconde de Eza".

Stratum	2006				2007				2008				2009				2010			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	215.721	8.173		0.0225	216.750	6.293		0.0229	218.011	17.521		0.0225	2	4.975	0.318	0.0225	2	1.250	1.768
387	0.0225	252.500	4.950		0.0225	231.050	6.576		0.0435	446.511	13.072		0.0439	433.070	21.146	0.0458		423.848	6.951	
388	0.0566	547.424	8.026		0.0563	550.036	21.899		0.0559	531.870	17.546		0.0555	513.421	9.628	0.0570		519.602	14.676	
389	0.0795	732.941	14.261		0.0900	837.473	14.697		0.0780	742.616	22.552		0.0803	719.759	12.838	0.0795		710.144	8.949	
390	0.1249	1112.967	16.007		0.1350	12	6.454	10.772	0.1395	12	5.138	7.236	0.1373	12	1.561	3.604	0.1249	11	0.168	0.535
391	0.0450	417.633	5.302		0.0450	415.750	5.063		0.0454	422.882	4.673		0.0458	4	4.841	3.069	0.0454	4	6.375	7.709
392	0.0229	2	6.900	3.111	0.0225	242.350	34.153		0.0221	211.370	3.210		0.0229	213.289	8.925	0.0225		210.390	2.673	
729	0.0338	324.120	9.552		0.0338	324.695	4.326		0.0338	317.887	7.697		0.0341	324.099	8.265	0.0338		320.733	6.933	
730	0.0326	3	8.403	6.415	0.0225	2	4.840	3.620	0.0323	340.777	14.460		0.0338	330.067	18.658	0.0334		320.463	2.567	
731	0.0341	316.643	6.408		0.0338	331.299	16.813		0.0330	342.527	10.506		0.0341	322.403	5.724	0.0338		339.567	9.874	
732	0.0334	3	6.570	3.380	0.0338	3	9.847	3.027	0.0446	442.878	42.441		0.0450	448.133	5.976	0.0450		456.683	13.345	
733	0.0454	418.556	8.530		0.0338	324.610	12.655		0.0431	431.780	5.015		0.0450	436.692	27.661	0.0450		437.143	30.058	
734	0.0225	2	4.478	1.340	0.0225	2	4.639	1.940	0.0221	2	7.603	1.948	0.0218	258.850	16.051	0.0225		232.400	18.102	
741	0.0218	2	5.648	0.583	0.0225	2	4.590	6.491	0.0210	2	7.005	5.961	0.0221	235.435	26.962	0.0225		229.235	15.450	
742	0.0229	210.593	1.453		0.0225	2	4.728	1.503	0.0210	214.420	16.150		0.0214	238.950	16.334	0.0225		257.540	42.936	
743	0.0225	2	4.750	6.718	0.0225	210.925	2.185		0.0203	2	6.460	2.531	0.0203	224.204	23.895	0.0225		249.975	30.399	
744	0.0229	210.520	9.588		0.0218	228.770	21.835		0.0221	223.345	16.553		0.0210	231.190	28.864	0.0229		249.185	42.052	
745	0.0686	6	7.227	3.098	0.0675	6	8.536	4.108	0.0555	520.900	19.813		0.0559	529.738	14.643	0.0563		532.666	9.796	
746	0.0675	6	5.672	4.188	0.0664	6	6.965	6.921	0.0638	656.842	58.887		0.0668	623.069	23.422	0.0679		641.340	32.988	
747	0.1230	11	4.328	5.447	0.1238	11	5.519	6.837	0.1069	1014.341	11.441		0.1118	1011.324	7.418	0.1125		1012.295	15.087	
748	0.0326	3	3.428	4.404	0.0338	3	6.460	6.984	0.0218	213.600	5.940		0.0229	267.150	60.458	0.0225		218.650	18.031	
749	0.0229	2	4.250	6.010	0.0113	1	4.010	-	0.0214	220.670	21.171		0.0225	220.250	4.313	0.0229		210.790	0.919	
750	0.1005	910.041	12.221		0.0679	6	9.362	16.847	0.0844	814.689	17.321		0.0791	714.907	9.349	0.0900		845.238	32.993	
751	0.0454	4	4.570	5.958	0.0225	220.400	15.981		0.0413	420.053	13.204		0.0338	320.017	15.186	0.0225		239.500	31.113	

$$(**) SD = \frac{\sum (x_i - \bar{x})}{n-1}$$



**Table 3 (cont.).** Swept area, number of hauls and **Greenland halibut** mean catch (Kg) and SD (\*\*) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "Vizconde de Eza".

Stratum	2011				2012				2013				2014				2015			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	213.100	18.526	0.0225	2	0.077	0.033	0.0229	212.038	12.942	0.0225	228.010	4.087	0.0236	2	1.315	1.817			
387	0.0450	412.053	6.860	0.0450	412.385	6.631	0.0450	424.693	2.830	0.0461	429.520	10.827	0.0458	4	22.070	9.568				
388	0.0563	5	8.313	4.980	0.0570	511.348	9.920	0.0570	5	9.154	6.708	0.0585	514.622	5.692	0.0574	5	13.772	14.528		
389	0.0675	611.408	7.061	0.0799	731.210	19.695	0.0791	713.366	9.837	0.0814	720.275	7.421	0.0814	7	20.861	11.980				
390	0.1009	9	0.272	0.682	0.1354	12	0.546	0.949	0.1358	12	0.557	1.129	0.1369	12	1.963	3.686	0.1260	11	0.769	1.503
391	0.0458	4	2.492	2.592	0.0458	413.929	11.759	0.0450	4	3.163	1.607	0.0465	418.290	14.860	0.0465	4	11.388	4.974		
392	0.0229	214.425	3.910	0.0225	215.750	9.405	0.0225	219.055	1.054	0.0225	215.100	1.980	0.0229	2	13.136	1.080				
729	0.0338	3	9.022	8.348	0.0338	312.673	0.142	0.0341	3	8.883	1.937	0.0338	313.350	8.349	0.0345	3	5.933	3.272		
730	0.0334	3	7.777	1.600	0.0338	3	5.110	3.891	0.0334	312.314	3.679	0.0345	329.443	12.920	0.0345	3	29.528	14.310		
731	0.0334	3	4.090	4.112	0.0341	312.457	6.138	0.0334	317.314	4.736	0.0345	324.067	8.201	0.0345	3	6.689	2.090			
732	0.0454	421.440	9.450	0.0454	418.880	0.566	0.0450	419.328	4.346	0.0454	424.390	5.572	0.0465	4	26.188	19.068				
733	0.0454	410.543	4.091	0.0454	410.857	4.842	0.0450	427.162	5.242	0.0458	423.969	5.297	0.0454	4	13.349	6.614				
734	0.0225	211.243	0.457	0.0233	215.680	7.212	0.0221	221.064	24.503	0.0225	223.770	13.393	0.0225	2	12.387	5.279				
741	0.0218	219.255	22.267	0.0218	225.510	1.287	0.0221	252.555	24.728	0.0225	218.700	16.829	0.0236	2116.643	42.204					
742	0.0225	211.545	4.320	0.0206	222.640	13.520	0.0218	2	7.470	2.065	0.0221	236.260	23.957	0.0233	2	49.498	32.948			
743	0.0221	223.185	0.813	0.0206	2	8.713	11.791	0.0218	213.625	13.654	0.0221	221.265	8.818	0.0233	2	26.880	4.554			
744	0.0221	225.710	28.100	0.0221	215.390	1.994	0.0221	238.970	12.968	0.0225	232.770	3.960	0.0225	2	46.070	0.735				
745	0.0446	426.923	10.448	0.0570	532.570	9.295	0.0559	518.320	7.611	0.0578	520.729	11.408	0.0578	5	31.340	5.653				
746	0.0566	514.369	8.047	0.0675	611.888	7.577	0.0675	616.688	7.884	0.0683	641.292	30.093	0.0686	6	36.425	5.713				
747	0.0893	8	8.655	3.839	0.1121	1010.522	7.681	0.1125	1015.870	11.712	0.1125	1018.530	10.421	0.1028	9	18.494	10.818			
748	0.0221	213.755	0.502	0.0225	2	5.680	3.776	0.0225	236.700	31.820	0.0229	224.250	14.637	0.0233	2	22.550	6.435			
749	0.0221	215.695	9.199	0.0221	2	7.755	3.118	0.0225	2	4.053	3.815	0.0225	225.050	17.890	0.0225	2	40.815	33.114		
750	0.0668	628.880	31.040	0.0885	817.024	14.241	0.0896	827.221	14.388	0.0904	858.413	76.657	0.0934	8	36.278	21.030				
751	0.0334	380.024	73.402	0.0218	242.725	48.755	0.0446	460.988	52.459	0.0334	341.967	44.197	0.0341	3	98.633	73.695				

$$(**) SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

**TABLE 3 (cont.).** Swept area, number of hauls and **Greenland halibut** mean catch (Kg) and SD (\*\*) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "Vizconde de Eza".

Stratum	2016				2017				2018				2019				
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	
<b>385</b>	0.0233	2	0.326	0.402	0.0225	2	2.994	3.474	0.0221	211.600	4.596	0.0225	215.445	3.331			
<b>387</b>	0.0454	424.744	10.347		0.0446	4	30.778	6.103	0.0465	417.894	14.002	0.0450	418.363	5.800			
<b>388</b>	0.0570	520.479	21.629		0.0566	5	24.755	20.232	0.0566	516.672	7.357	0.0559	529.247	33.782			
<b>389</b>	0.0814	713.803	5.760		0.0799	7	36.392	17.680	0.0803	722.186	5.226	0.0784	713.952	7.032			
<b>390</b>	0.1391	12	0.647	1.048	0.1369	12	0.430	0.584	0.1358	12	5.758	7.635	0.1125	10	7.417	7.085	
<b>391</b>	0.0469	4	9.586	6.731	0.0458	4	12.446	11.267	0.0458	429.575	8.078	0.0450	425.552	16.731			
<b>392</b>	0.0233	213.075	4.702		0.0229	2	62.074	52.360	0.0229	214.000	5.445	0.0229	262.140	40.885			
<b>729</b>	0.0341	3	5.133	2.926	0.0345	3	39.678	27.201	0.0341	319.350	5.921	0.0338	310.667	5.948			
<b>730</b>	0.0233	217.350	4.738		0.0341	3	29.547	13.488	0.0330	333.700	12.988	0.0338	358.533	13.455			
<b>731</b>	0.0345	3	8.324	3.063	0.0338	3	51.183	15.365	0.0353	327.428	9.712	0.0341	323.926	15.876			
<b>732</b>	0.0454	437.100	9.792		0.0446	4	57.010	17.882	0.0461	427.092	11.860	0.0454	452.478	19.796			
<b>733</b>	0.0458	411.526	5.815		0.0450	4	26.257	10.222	0.0454	430.242	20.540	0.0450	422.738	5.931			
<b>734</b>	0.0229	215.419	11.199		0.0225	2	39.400	7.212	0.0225	227.940	4.327	0.0229	226.450	1.131			
<b>741</b>	0.0233	256.250	5.162		0.0225	2	75.867	22.773	0.0229	233.410	1.895	0.0225	244.485	33.255			
<b>742</b>	0.0229	238.513	22.609		0.0225	2	46.225	6.399	0.0221	236.369	20.491	0.0221	239.693	40.528			
<b>743</b>	0.0229	229.875	34.935		0.0229	2	96.145	32.393	0.0225	223.365	2.440	0.0225	259.725	20.966			
<b>744</b>	0.0229	284.505	82.442		0.0221	2	105.601	65.052	0.0229	226.188	24.193	0.0225	242.385	39.407			
<b>745</b>	0.0574	531.402	6.866		0.0559	5	43.750	25.418	0.0596	521.985	11.365	0.0578	545.894	20.251			
<b>746</b>	0.0690	630.953	18.928		0.0683	6	49.232	11.599	0.0698	632.570	13.006	0.0679	632.247	22.674			
<b>747</b>	0.1140	1030.581	27.694		0.1125	10	42.505	35.682	0.1140	1012.780	4.729	0.1125	1024.155	19.948			
<b>748</b>	0.0233	235.050	20.435		0.0225	2	70.221	68.307	0.0225	220.712	13.277	0.0225	276.625	72.231			
<b>749</b>	0.0233	218.750	12.516		0.0229	2	16.025	7.248	0.0225	2	8.035	5.112	0.0221	219.175	1.591		
<b>750</b>	0.0930	828.781	11.395		0.0934	8	36.150	22.967	0.0904	823.887	6.916	0.0788	743.061	15.592			
<b>751</b>	0.0345	336.900	14.535		0.0349	3	33.517	17.830	0.0454	461.608	93.564	0.0338	344.700	23.718			

$$(**) SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

**Table 4.** Stratified mean catches (Kg) and SD of **Greenland halibut** by stratum and year (2003-2019). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey													
	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0.00	710.95	1855.08	1976.50	2125.24	587.05	147.50	1545.80	9.09	1420.43	3305.18	155.17	38.41	353.23
387	4067.84	16780.80	13440.00	7948.80	11906.69	8465.92	6105.15	3085.44	3170.62	6321.41	7557.18	5649.92	6334.40	7879.10
388	7450.59	15243.90	16930.37	17862.78	11377.52	4791.15	6998.06	2967.74	4051.16	3267.91	5220.20	4916.46	7311.00	8837.68
389	233.76	2936.93	16767.19	19073.88	21691.69	10057.48	5163.08	5806.67	15885.89	6803.08	10319.98	10618.03	7025.65	18523.75
390	16.30	0.00	10567.88	5259.74	4187.33	1272.22	137.14	221.50	445.19	453.62	1599.57	626.81	527.51	350.65
391	88.36	1610.22	4972.37	4441.50	6452.72	1365.02	1797.75	702.67	3927.91	891.83	5157.78	3211.28	2703.25	3509.63
392	1812.50	2262.00	1000.50	6140.75	1648.65	1926.91	1506.55	2091.63	2283.75	2762.98	2189.50	1904.72	1895.88	9000.73
729	6483.96	5673.00	4486.32	4593.27	3326.92	4482.35	3856.40	1678.09	2357.24	1652.30	2483.10	1103.60	954.80	7380.05
730	4148.00	1300.50	1428.57	822.80	6932.03	5111.33	3478.77	1322.09	868.70	2093.32	5005.37	5019.82	2949.50	5022.93
731	7851.60	5888.16	3594.96	6760.51	9185.76	4839.12	8546.40	883.51	2690.64	3739.90	5198.40	1444.75	1797.98	11055.60
732	9956.10	2552.55	1517.67	2274.58	9904.70	11118.61	13093.66	4952.58	4361.28	4464.65	5634.09	6049.31	8570.10	13169.31
733	n.s.	4266.60	4342.16	5758.74	7436.52	8585.81	8691.35	2467.00	2540.48	6355.85	5608.69	3123.72	2696.97	6144.08
734	n.s.	3146.70	685.06	709.69	1163.18	9004.05	4957.20	1720.18	2399.04	3222.72	3636.81	1895.21	2359.11	6028.20
741	2720.00	1151.67	564.75	459.00	700.50	3543.50	2923.50	1925.50	2551.00	5255.50	1870.00	11664.25	5625.00	7586.70
742	2035.20	1990.40	677.92	302.56	922.88	2492.80	3682.56	738.88	1448.96	478.08	2320.64	3167.84	2464.83	2958.40
743	n.s.	447.02	242.25	557.18	329.46	1234.38	2548.73	1182.44	444.34	694.88	1084.52	1370.88	1523.60	4903.40
744	n.s.	495.00	694.32	1898.82	1540.77	2058.54	3246.21	1696.86	1015.74	2572.02	2162.82	3040.62	5577.33	6969.67
745	3828.00	4500.80	2514.88	2970.59	7273.20	10348.82	11367.77	9369.03	11334.36	6375.36	7213.83	10906.32	10927.83	15225.14
746	11564.98	3737.07	2223.29	2730.28	22281.93	9042.92	16205.28	5632.73	4660.23	6541.83	16186.33	14278.60	12133.45	19298.75
747	n.s.	366.83	3133.67	3995.56	10382.88	8198.79	8901.58	6266.04	7617.93	11489.59	13415.86	13389.82	22140.64	30773.91
748	2178.30	1013.63	545.11	1027.14	2162.40	10676.85	2965.35	2187.05	903.12	5835.30	3855.75	3585.45	5572.95	11165.06
749	1076.04	825.30	535.50	505.26	2604.42	2551.50	1359.54	1977.57	977.13	510.62	3156.30	5142.69	2362.50	2019.15
750	n.s.	0.00	5582.86	5205.09	8166.95	8288.21	25152.05	16057.28	9465.55	15135.08	32477.35	20170.29	16002.38	20099.54
751	n.s.	n.s.	1046.53	4671.60	4592.14	4583.82	9045.50	18325.42	9784.03	13966.14	9610.37	22587.03	8450.10	7675.32
TOTAL	65511.53	76900.01	99349.19	107946.61	158296.49	134627.15	151877.06	94803.69	95193.38	112304.36	156269.61	155022.59	137945.16	225929.47
( $\bar{y}$ )	14.64	12.29	15.32	16.64	24.40	20.75	23.41	14.61	14.67	17.31	24.09	23.90	21.26	24.83
SD	1.09	0.59	0.95	1.33	2.12	1.68	1.92	1.97	1.55	1.42	2.75	1.96	1.57	2.48

**TABLE 4 (cont).** Stratified mean catches (Kg) and SD of **Greenland halibut** by stratum and year (2003-2019). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey	
	2018	2019
385	1368.80	1822.45
387	4580.80	4700.80
388	5951.83	10441.25
389	11292.67	7101.79
390	4692.70	6044.94
391	8340.15	7205.66
392	2030.00	9010.30
729	3599.10	1984.00
730	5729.00	9950.67
731	5924.38	5168.02
732	6258.14	12122.36
733	7076.63	5320.58
734	4274.82	4046.85
741	3341.00	4448.50
742	2327.62	2540.32
743	1191.62	3045.98
744	1728.41	2797.41
745	7650.78	15971.11
746	12767.44	12640.69
747	9252.86	17488.22
748	3293.21	12183.38
749	1012.41	2416.05
750	13281.10	23941.76
751	14108.12	10236.30
TOTAL	141073.58	192629.37
$(\bar{y})$	21.75	29.69
SD	1.9	2.25

**Table 5.** Survey estimates (by the swept area method) of **Greenland halibut** biomass (t.) and SD by stratum and year on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey													
	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0	62	162	176	186	52	13	135	1	124	294	13	3	31
387	356	1570	1195	707	1095	772	534	274	282	562	655	494	558	706
388	670	1452	1495	1588	1018	432	614	264	355	287	446	428	641	780
389	21	261	1476	1695	1947	877	455	516	1392	602	888	913	604	1623
390	1	0	931	468	360	111	12	20	39	40	140	55	45	31
391	8	148	442	395	569	119	158	61	343	79	444	276	231	307
392	156	212	87	546	149	168	134	183	203	246	195	167	163	787
729	618	513	399	408	296	394	343	149	210	145	221	96	84	642
730	375	118	131	73	645	454	313	119	77	188	435	437	254	442
731	686	507	316	601	835	425	760	79	237	336	452	126	156	983
732	885	243	136	202	888	988	1164	437	384	397	497	520	755	1180
733	n.s.	388	383	512	690	763	773	217	224	565	490	275	236	546
734	n.s.	311	61	63	105	828	441	153	206	291	323	168	206	536
741	242	107	52	41	67	320	260	177	235	475	166	987	484	674
742	175	166	59	27	88	233	327	66	141	44	210	273	216	263
743	n.s.	48	22	50	33	122	227	107	43	64	98	118	133	429
744	n.s.	49	61	175	139	196	284	153	92	232	192	270	488	630
745	337	424	220	264	655	926	1010	840	994	571	625	944	952	1362
746	1037	332	198	247	2097	813	1433	497	414	581	1423	1248	1055	1697
747	n.s.	36	280	355	971	734	791	562	679	1021	1193	1173	1942	2735
748	200	102	50	91	199	933	264	198	80	519	337	308	479	992
749	97	75	47	45	244	227	119	179	88	45	281	457	203	177
750	n.s.	0	500	460	774	733	2236	1443	856	1351	2875	1728	1377	1722
751	n.s.	n.s.	92	415	445	407	804	1647	900	1252	864	1986	735	660
TOTAL	5863	7121	8795	9603	14494	12030	13466	8477	8476	10018	13743	13462	12002	19936
SD	445	325	551	769	1223	979	1107	1147	909	822	1539	1114	878	1430

**Table 5 (cont).** Survey estimates (by the swept area method) of **Greenland halibut** biomass (t.) and SD by stratum and year on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey	
	2018	2019
385	124	162
387	394	418
388	526	934
389	985	634
390	415	537
391	729	641
392	177	788
729	316	176
730	521	885
731	504	454
732	543	1069
733	624	473
734	380	354
741	292	395
742	210	230
743	106	271
744	151	249
745	642	1383
746	1098	1117
747	812	1555
748	293	1083
749	90	218
750	1176	2128
751	1244	910
TOTAL	12351	17063
SD	1122	1297

**Table 6.** Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2006-2019 for **Greenland halibut, American plaice and witch flounder.**

Greenland halibut,					American plaice				Witch flounder			
Year	Sex	L-W Equations	N	r <sup>2</sup>	Sex	L-W Equations	N	r <sup>2</sup>	Sex	L-W Equations	N	r <sup>2</sup>
2006	All	$W = 0.0021 L^{3.3631}$	1220	0.9835	All	$W = 0.0018 L^{3.4328}$	725	0.9873	All	$W = 0.0019 L^{3.3452}$	96	0.9883
	Males	$W = 0.0019 L^{3.3863}$	583	0.9831	Males	$W = 0.0025 L^{3.3191}$	205	0.9813	Males	$W = 0.0018 L^{3.3564}$	39	0.9901
	Females	$W = 0.0023 L^{3.3342}$	637	0.9835	Females	$W = 0.0016 L^{3.4755}$	516	0.9887	Females	$W = 0.0018 L^{3.3457}$	55	0.9861
2007	All	$W = 0.0033 L^{3.2385}$	1544	0.9890	All	$W = 0.0026 L^{3.4033}$	515	0.9808	All	$W = 0.0013 L^{3.4496}$	139	0.9888
	Males	$W = 0.0032 L^{3.2464}$	694	0.9876	Males	$W = 0.0045 L^{3.1673}$	142	0.9473	Males	$W = 0.0009 L^{3.5684}$	51	0.9796
	Females	$W = 0.0037 L^{3.2183}$	842	0.9898	Females	$W = 0.0022 L^{3.4001}$	373	0.9856	Females	$W = 0.0013 L^{3.4636}$	72	0.9907
2008	All	$W = 0.0037 L^{3.2060}$	1704	0.99	All	$W = 0.0044 L^{3.2282}$	1196	0.9894	All	$W = 0.0031 L^{3.2244}$	381	0.9844
	Males	$W = 0.0036 L^{3.2070}$	700	0.989	Males	$W = 0.0057 L^{3.1501}$	386	0.9853	Males	$W = 0.0028 L^{3.2523}$	147	0.986
	Females	$W = 0.0038 L^{3.2008}$	998	0.99	Females	$W = 0.0042 L^{3.2366}$	773	0.9931	Females	$W = 0.0031 L^{3.2241}$	210	0.9882
2009	All	$W = 0.0032 L^{3.2445}$	1407	0.9945	All	$W = 0.0038 L^{3.2226}$	812	0.9890	All	$W = 0.0020 L^{3.3367}$	221	0.9906
	Males	$W = 0.0030 L^{3.2546}$	568	0.9936	Males	$W = 0.0043 L^{3.1859}$	263	0.9847	Males	$W = 0.0016 L^{3.3951}$	74	0.9845
	Females	$W = 0.0034 L^{3.2303}$	826	0.9954	Females	$W = 0.0037 L^{3.2324}$	542	0.9881	Females	$W = 0.0018 L^{3.3712}$	134	0.9891
2010	All	$W = 0.0045 L^{3.1518}$	1434	0.9898	All	$W = 0.0030 L^{3.3098}$	975	0.9910	All	$W = 0.0016 L^{3.4075}$	193	0.9936
	Males	$W = 0.0045 L^{3.1470}$	609	0.9903	Males	$W = 0.0035 L^{3.2635}$	288	0.9810	Males	$W = 0.0012 L^{3.4881}$	55	0.9787
	Females	$W = 0.0048 L^{3.1409}$	824	0.9897	Females	$W = 0.0030 L^{3.3045}$	667	0.9927	Females	$W = 0.0015 L^{3.4199}$	119	0.9923
2011	All	$W = 0.0043 L^{3.1624}$	1469	0.9948	All	$W = 0.0029 L^{3.3106}$	1285	0.9914	All	$W = 0.0017 L^{3.3810}$	193	0.9926
	Males	$W = 0.0045 L^{3.1411}$	599	0.9946	Males	$W = 0.0036 L^{3.2430}$	431	0.9848	Males	$W = 0.0016 L^{3.4021}$	88	0.9858
	Females	$W = 0.0043 L^{3.1658}$	868	0.9949	Females	$W = 0.0027 L^{3.3356}$	854	0.9924	Females	$W = 0.0015 L^{3.4172}$	105	0.9896
2012	All	$W = 0.0053 L^{3.1125}$	1624	0.9895	All	$W = 0.0033 L^{3.2658}$	1033	0.9891	All	$W = 0.0024 L^{3.2947}$	193	0.9872
	Males	$W = 0.0058 L^{3.0782}$	658	0.9870	Males	$W = 0.0051 L^{3.1338}$	335	0.9790	Males	$W = 0.0025 L^{3.2771}$	54	0.9846
	Females	$W = 0.0051 L^{3.1255}$	966	0.9909	Females	$W = 0.0030 L^{3.2978}$	682	0.9918	Females	$W = 0.0016 L^{3.4063}$	139	0.9848

**Table 6 (cont).** Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2006-2019 for **Greenland halibut**, **American plaice** and **witch flounder**.

Greenland halibut,					American plaice				Witch flounder			
Year	Sex	L-W Equations	N	r <sup>2</sup>	Sex	L-W Equations	N	r <sup>2</sup>	Sex	L-W Equations	N	r <sup>2</sup>
2013	All	W = 0.0034 L <sup>3.2311</sup>	1816	0.9943	All	W = 0.0045 L <sup>3.1777</sup>	1544	0.9903	All	W = 0.0018 L <sup>3.3681</sup>	301	0.9901
	Males	W = 0.0035 L <sup>3.2198</sup>	774	0.9936	Males	W = 0.0034 L <sup>3.2558</sup>	487	0.9898	Males	W = 0.0015 L <sup>3.4287</sup>	106	0.987
	Females	W = 0.0035 L <sup>3.2247</sup>	1027	0.9948	Females	W = 0.0038 L <sup>3.2259</sup>	929	0.9948	Females	W = 0.0024 L <sup>3.2851</sup>	192	0.9888
2014	All	W = 0.0037 L <sup>3.2014</sup>	1668	0.9946	All	W = 0.0042 L <sup>3.1947</sup>	996	0.9934	All	W = 0.0016 L <sup>3.4054</sup>	205	0.9853
	Males	W = 0.0045 L <sup>3.1468</sup>	683	0.9937	Males	W = 0.0043 L <sup>3.1921</sup>	343	0.9905	Males	W = 0.0014 L <sup>3.4497</sup>	58	0.9723
	Females	W = 0.0036 L <sup>3.2185</sup>	977	0.9952	Females	W = 0.0037 L <sup>3.2324</sup>	631	0.9941	Females	W = 0.0017 L <sup>3.3924</sup>	144	0.9817
2015	All	W = 0.0041 L <sup>3.1770</sup>	1670	0.9945	All	W = 0.0038 L <sup>3.2259</sup>	1218	0.9952	All	W = 0.0020 L <sup>3.3390</sup>	330	0.9930
	Males	W = 0.0043 L <sup>3.1618</sup>	668	0.9927	Males	W = 0.0035 L <sup>3.2562</sup>	431	0.9908	Males	W = 0.0022 L <sup>3.3309</sup>	110	0.9849
	Females	W = 0.0042 L <sup>3.1756</sup>	998	0.9953	Females	W = 0.0039 L <sup>3.2169</sup>	777	0.9958	Females	W = 0.0020 L <sup>3.3459</sup>	201	0.9900
2016	All	W = 0.00336 L <sup>3.2284</sup>	1623	0.9949	All	W = 0.0041 L <sup>3.1971</sup>	1095	0.9921	All	W = 0.0021 L <sup>3.3301</sup>	277	0.9896
	Males	W = 0.0034 L <sup>3.2181</sup>	657	0.9937	Males	W = 0.0050 L <sup>3.1256</sup>	377	0.9791	Males	W = 0.0018 L <sup>3.3695</sup>	74	0.9884
	Females	W = 0.0035 L <sup>3.2218</sup>	961	0.9952	Females	W = 0.0038 L <sup>3.2195</sup>	709	0.9945	Females	W = 0.0014 L <sup>3.4330</sup>	189	0.9894
2017	All	W = 0.0032 L <sup>3.2341</sup>	2068	0.9962	All	W = 0.0034 L <sup>3.2548</sup>	1205	0.9942	All	W = 0.0019 L <sup>3.3572</sup>	204	0.9946
	Males	W = 0.0034 L <sup>3.2136</sup>	872	0.9954	Males	W = 0.0032 L <sup>3.2655</sup>	400	0.9866	Males	W = 0.0017 L <sup>3.3935</sup>	52	0.9960
	Females	W = 0.0032 L <sup>3.2360</sup>	1180	0.9966	Females	W = 0.0032 L <sup>3.2704</sup>	778	0.9950	Females	W = 0.0020 L <sup>3.3437</sup>	148	0.9941
2018	All	W = 0.0033 L <sup>3.2316</sup>	1777	0.9959	All	W = 0.0034 L <sup>3.2547</sup>	806	0.9899	All	W = 0.0021 L <sup>3.3470</sup>	152	0.9738
	Males	W = 0.0032 L <sup>3.2436</sup>	724	0.9950	Males	W = 0.0037 L <sup>3.2216</sup>	284	0.9839	Males	W = 0.0019 L <sup>3.3575</sup>	41	0.9738
	Females	W = 0.0035 L <sup>3.2205</sup>	1052	0.9961	Females	W = 0.0033 L <sup>3.2615</sup>	520	0.9902	Females	W = 0.0024 L <sup>3.3108</sup>	110	0.9898
2019	All	W = 0.0034 L <sup>3.2235</sup>	1714	0.9932	All	W = 0.0034 L <sup>3.2627</sup>	739	0.9895	All	W = 0.0014 L <sup>3.4472</sup>	191	0.9917
	Males	W = 0.0032 L <sup>3.2370</sup>	707	0.9905	Males	W = 0.0046 L <sup>3.1537</sup>	221	0.9770	Males	W = 0.0018 L <sup>3.3733</sup>	57	0.9653
	Females	W = 0.0037 L <sup>3.2033</sup>	1004	0.9944	Females	W = 0.0031 L <sup>3.2875</sup>	517	0.9900	Females	W = 0.0017 L <sup>3.4024</sup>	105	0.9927



**Table 7. Greenland halibut** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2013 (R/V *Vizconde de Eza*). Indet. means indeterminate.

Length (cm.)	2006				2007				2008				2009			
	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.02	0.00	0.02	0.01	0.00	0.01	0.02	0.01	0.02	0.02	0.05	0.00	0.00	0.01	0.01
10	0.26	0.08	0.01	0.35	0.16	0.16	0.06	0.38	0.37	0.35	0.12	0.85	0.28	0.40	0.11	0.79
12	2.12	1.48	0.00	3.60	0.94	0.99	0.06	1.99	0.93	1.14	0.14	2.21	1.66	2.28	0.20	4.14
14	2.64	3.18	0.00	5.82	1.09	1.47	0.00	2.56	0.24	0.44	0.05	0.73	0.77	1.22	0.01	2.00
16	1.01	1.38	0.00	2.40	0.26	0.45	0.00	0.72	0.00	0.00	0.00	0.00	0.06	0.10	0.00	0.16
18	0.05	0.15	0.00	0.19	0.06	0.01	0.00	0.07	0.00	0.03	0.00	0.03	0.02	0.02	0.00	0.04
20	0.01	0.01	0.00	0.02	0.02	0.04	0.00	0.06	0.04	0.13	0.00	0.17	0.05	0.09	0.00	0.14
22	0.01	0.09	0.00	0.10	0.19	0.04	0.00	0.23	0.46	0.55	0.00	1.01	0.21	0.26	0.00	0.48
24	0.16	0.08	0.00	0.24	0.42	0.45	0.00	0.88	0.89	1.16	0.00	2.05	0.44	0.66	0.00	1.10
26	0.40	0.35	0.00	0.75	0.60	0.69	0.00	1.29	0.72	1.57	0.00	2.29	0.31	0.41	0.00	0.71
28	0.65	0.74	0.00	1.39	0.35	0.52	0.00	0.88	0.27	0.67	0.00	0.94	0.23	0.20	0.00	0.42
30	0.82	0.70	0.00	1.52	0.21	0.08	0.00	0.29	0.23	0.21	0.00	0.44	0.56	0.29	0.00	0.85
32	0.85	0.79	0.00	1.64	0.55	0.28	0.00	0.83	0.50	0.46	0.00	0.96	0.62	0.96	0.00	1.59
34	1.54	1.36	0.00	2.90	0.88	0.78	0.00	1.66	0.94	0.88	0.00	1.82	0.88	1.28	0.00	2.17
36	1.57	1.62	0.00	3.19	1.22	1.32	0.00	2.54	1.12	1.20	0.00	2.32	0.90	1.09	0.00	1.99
38	1.26	1.92	0.00	3.18	1.43	1.58	0.00	3.01	0.97	1.24	0.00	2.21	0.91	1.18	0.00	2.09
40	1.28	1.72	0.00	2.99	1.31	2.13	0.00	3.45	1.18	1.26	0.00	2.43	0.92	1.67	0.00	2.59
42	1.31	1.56	0.00	2.87	1.11	2.05	0.00	3.16	1.69	2.02	0.00	3.71	0.85	1.63	0.00	2.48
44	0.85	1.69	0.00	2.53	1.02	1.92	0.00	2.94	1.23	2.24	0.00	3.47	0.88	1.65	0.00	2.53
46	0.48	1.02	0.00	1.50	0.69	1.41	0.00	2.09	1.16	2.06	0.00	3.22	0.82	1.47	0.00	2.29
48	0.30	0.81	0.00	1.12	0.34	1.02	0.00	1.37	0.87	2.08	0.00	2.95	0.59	1.81	0.00	2.39
50	0.13	0.42	0.00	0.54	0.15	0.72	0.00	0.86	0.42	1.62	0.00	2.04	0.37	1.13	0.00	1.50
52	0.05	0.28	0.00	0.33	0.16	0.57	0.00	0.74	0.29	1.30	0.00	1.59	0.23	1.13	0.00	1.36
54	0.07	0.17	0.00	0.24	0.06	0.32	0.00	0.38	0.18	0.80	0.00	0.98	0.13	0.82	0.00	0.95
56	0.01	0.07	0.00	0.08	0.03	0.13	0.00	0.16	0.15	0.43	0.00	0.58	0.07	0.57	0.00	0.64
58	0.03	0.06	0.00	0.09	0.03	0.06	0.00	0.09	0.03	0.28	0.00	0.30	0.02	0.31	0.00	0.32
60	0.00	0.08	0.00	0.08	0.01	0.09	0.00	0.10	0.01	0.13	0.00	0.14	0.02	0.28	0.00	0.30
62	0.01	0.02	0.00	0.03	0.00	0.07	0.00	0.07	0.02	0.06	0.00	0.08	0.00	0.15	0.00	0.15
64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.00	0.09	0.00	0.09
66	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.05	0.00	0.05	0.00	0.03	0.00	0.03
68	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02	0.01	0.01	0.00	0.02
70	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.04	0.00	0.04	0.00	0.01	0.00	0.01
72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.04	0.00	0.04
74	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00
76	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02
78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01
80	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00
82	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02
84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
86	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	17.9	21.9	0.0	39.8	13.3	19.4	0.1	32.9	14.9	24.7	0.3	39.9	12.8	23.3	0.3	36.5
N° samples:				94				85				98				96
N° Ind.:	1549	1907	1	3457	1205	1761	13	2979	1447	2416	37	3900	1256	2298	31	3585

Sampled catch:	1397	1533	2403	1319
Range:	9-87	9-80	9-92	9-85
Total catch:	1397	1533	2431	2098
Total valid hauls:	100	94	97	89

**Table 7 (cont) Greenland halibut** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2013 (R/V *Vizconde de Eza*). Indet. means indeterminate.

Length (cm.)	2010				2011				2012				2013			
	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
10	0.01	0.04	0.07	0.12	0.00	0.00	0.04	0.04	0.03	0.06	0.00	0.09	0.50	0.28	0.04	0.83
12	0.12	0.16	0.26	0.53	0.10	0.09	0.00	0.18	0.41	0.52	0.01	0.93	3.45	3.74	0.11	7.30
14	0.15	0.17	0.23	0.55	0.52	0.51	0.00	1.03	0.80	0.78	0.00	1.57	2.24	2.54	0.01	4.79
16	0.06	0.03	0.01	0.11	1.20	1.50	0.00	2.70	0.21	0.36	0.00	0.57	0.11	0.10	0.00	0.21
18	0.05	0.04	0.00	0.09	0.32	0.38	0.00	0.70	0.00	0.01	0.00	0.01	0.20	0.19	0.00	0.38
20	0.04	0.17	0.00	0.21	0.09	0.07	0.00	0.16	0.00	0.01	0.00	0.01	0.31	0.36	0.00	0.67
22	0.34	0.43	0.00	0.76	0.27	0.28	0.00	0.54	0.26	0.14	0.00	0.40	0.20	0.38	0.00	0.59
24	0.91	0.98	0.00	1.90	0.38	0.61	0.00	0.99	1.00	1.07	0.00	2.07	0.14	0.26	0.00	0.40
26	0.76	1.00	0.00	1.76	0.37	0.48	0.00	0.85	1.33	2.41	0.00	3.73	0.11	0.06	0.00	0.18
28	0.44	0.42	0.00	0.86	0.24	0.28	0.00	0.51	1.48	2.26	0.00	3.74	0.18	0.09	0.00	0.28
30	0.23	0.18	0.00	0.41	0.24	0.21	0.00	0.45	0.69	1.22	0.00	1.91	0.35	0.30	0.00	0.65
32	0.53	0.57	0.00	1.11	0.25	0.44	0.00	0.69	0.34	0.52	0.00	0.86	0.71	0.60	0.00	1.30
34	0.67	0.73	0.00	1.41	0.42	0.41	0.00	0.84	0.42	0.60	0.00	1.01	1.02	1.09	0.00	2.11
36	1.01	0.99	0.00	1.99	0.46	0.55	0.00	1.01	0.52	0.57	0.00	1.09	0.87	1.54	0.00	2.41
38	1.28	1.24	0.00	2.52	0.64	0.51	0.00	1.14	0.56	0.75	0.00	1.31	1.06	1.02	0.00	2.08
40	1.31	1.82	0.00	3.14	0.60	0.85	0.00	1.45	0.82	0.80	0.00	1.62	0.71	1.05	0.00	1.75
42	1.14	1.72	0.00	2.86	0.65	0.82	0.00	1.48	0.80	1.14	0.00	1.94	0.81	1.44	0.00	2.25
44	0.86	1.49	0.00	2.35	0.54	0.95	0.00	1.49	0.54	1.07	0.00	1.61	0.63	1.52	0.00	2.14
46	0.80	1.48	0.00	2.28	0.56	0.88	0.00	1.43	0.40	0.90	0.00	1.30	0.63	1.43	0.00	2.07
48	0.81	1.40	0.00	2.21	0.43	0.83	0.00	1.26	0.41	0.92	0.00	1.33	0.46	1.13	0.00	1.58
50	0.50	1.19	0.00	1.68	0.28	0.73	0.00	1.02	0.36	0.52	0.00	0.88	0.25	0.98	0.00	1.23
52	0.38	1.08	0.00	1.45	0.30	0.71	0.00	1.01	0.28	0.48	0.00	0.76	0.17	0.71	0.00	0.87
54	0.24	0.99	0.00	1.23	0.15	0.61	0.00	0.76	0.18	0.35	0.00	0.52	0.14	0.39	0.00	0.53
56	0.11	0.84	0.00	0.95	0.13	0.48	0.00	0.61	0.11	0.25	0.00	0.36	0.07	0.42	0.00	0.49
58	0.00	0.56	0.00	0.56	0.03	0.44	0.00	0.47	0.02	0.26	0.00	0.28	0.05	0.25	0.00	0.30
60	0.04	0.34	0.00	0.38	0.01	0.28	0.00	0.29	0.02	0.17	0.00	0.19	0.03	0.16	0.00	0.18
62	0.00	0.20	0.00	0.20	0.00	0.19	0.00	0.19	0.01	0.12	0.00	0.13	0.00	0.09	0.00	0.09
64	0.00	0.11	0.00	0.11	0.00	0.18	0.00	0.18	0.01	0.11	0.00	0.13	0.00	0.11	0.00	0.11
66	0.00	0.07	0.00	0.07	0.00	0.08	0.00	0.08	0.00	0.06	0.00	0.06	0.00	0.12	0.00	0.12
68	0.00	0.06	0.00	0.06	0.00	0.02	0.00	0.02	0.00	0.13	0.00	0.13	0.00	0.07	0.00	0.07
70	0.00	0.04	0.00	0.04	0.00	0.06	0.00	0.06	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03
72	0.00	0.03	0.00	0.03	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
74	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01
76	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04
78	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
80	0.00	0.03	0.00	0.03	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
84	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>12.8</b>	<b>20.7</b>	<b>0.6</b>	<b>34.0</b>	<b>9.2</b>	<b>14.5</b>	<b>0.1</b>	<b>23.8</b>	<b>12.0</b>	<b>18.6</b>	<b>0.0</b>	<b>30.6</b>	<b>15.4</b>	<b>22.6</b>	<b>0.2</b>	<b>38.1</b>	
N° samples:	88				82				94				100				
N° Ind.:	1275	2055	42	3372	813	1275	4	2092	966	1503	1	2470	1434	2116	16	3566	
Sampled catch:	2403				1319				1392				1782				
Range:	10-94				7-80				11-81				9-88				
Total catch:	2403				1319				1392				1782				
Total valid hauls:	97				89				98				100				

**Table 8** Greenland halibut length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2014-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

Length (cm.)	2014				2015				2016				2017			
	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
8	0.01	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01
10	0.52	0.51	0.76	1.79	0.12	0.17	0.00	0.28	0.36	0.21	0.07	0.64	0.51	0.43	0.19	1.13
12	2.30	2.26	0.48	5.04	0.41	0.40	0.00	0.81	1.03	1.36	0.09	2.48	2.36	2.09	0.28	4.74
14	0.67	0.91	0.03	1.61	0.18	0.22	0.00	0.39	0.20	0.26	0.01	0.47	1.35	1.25	0.03	2.63
16	0.05	0.04	0.00	0.10	0.00	0.02	0.00	0.02	0.06	0.11	0.00	0.17	0.11	0.15	0.00	0.26
18	0.13	0.12	0.00	0.25	0.14	0.15	0.00	0.29	0.15	0.23	0.00	0.38	0.41	0.70	0.00	1.11
20	0.76	1.07	0.00	1.83	0.40	0.50	0.00	0.89	0.53	0.79	0.00	1.32	1.23	1.28	0.00	2.50
22	1.87	2.61	0.00	4.48	1.12	1.20	0.00	2.32	1.09	1.33	0.00	2.42	2.69	2.85	0.00	5.54
24	1.37	1.92	0.00	3.29	1.15	1.13	0.00	2.29	0.88	1.41	0.00	2.29	2.84	2.53	0.00	5.37
26	0.73	0.89	0.00	1.62	0.42	0.36	0.00	0.79	0.73	0.60	0.00	1.33	3.05	2.17	0.00	5.21
28	0.35	0.34	0.00	0.70	0.27	0.36	0.00	0.63	0.54	0.61	0.00	1.15	2.22	1.85	0.00	4.07
30	0.28	0.24	0.00	0.53	0.63	0.55	0.00	1.18	0.91	0.87	0.00	1.79	2.46	2.14	0.00	4.60
32	0.36	0.35	0.00	0.71	0.58	0.56	0.00	1.14	0.97	0.73	0.00	1.70	2.34	2.66	0.00	5.00
34	0.47	0.56	0.00	1.03	0.39	0.54	0.00	0.93	0.48	0.51	0.00	0.99	1.95	2.32	0.00	4.27
36	0.83	0.83	0.00	1.66	0.39	0.41	0.00	0.80	0.52	0.56	0.00	1.08	2.09	2.01	0.00	4.10
38	0.80	1.26	0.00	2.05	0.49	0.65	0.00	1.14	0.51	0.92	0.00	1.44	1.71	2.16	0.00	3.87
40	0.98	1.27	0.00	2.25	0.61	0.81	0.00	1.42	0.51	0.91	0.00	1.41	1.41	1.98	0.00	3.39
42	0.96	1.73	0.00	2.69	0.66	1.18	0.00	1.84	0.42	0.83	0.00	1.25	1.35	2.20	0.00	3.55
44	0.95	1.83	0.00	2.78	0.70	1.01	0.00	1.72	0.30	0.69	0.00	0.99	1.09	1.69	0.00	2.78
46	0.64	1.50	0.00	2.13	0.58	1.46	0.00	2.05	0.38	0.78	0.00	1.16	1.05	1.61	0.00	2.66
48	0.37	1.71	0.00	2.07	0.56	1.41	0.00	1.97	0.37	1.07	0.00	1.44	0.70	1.16	0.00	1.86
50	0.42	1.63	0.00	2.05	0.59	1.57	0.00	2.16	0.31	1.13	0.00	1.44	0.42	1.22	0.00	1.64
52	0.24	1.32	0.00	1.56	0.31	1.60	0.00	1.91	0.27	1.37	0.00	1.63	0.34	1.21	0.00	1.55
54	0.17	0.96	0.00	1.14	0.17	1.18	0.00	1.35	0.17	1.25	0.00	1.42	0.21	1.32	0.00	1.53
56	0.15	0.74	0.00	0.88	0.08	1.10	0.00	1.18	0.07	1.16	0.00	1.22	0.11	1.19	0.00	1.29
58	0.06	0.46	0.00	0.53	0.05	0.75	0.00	0.80	0.05	0.72	0.00	0.77	0.09	1.02	0.00	1.11
60	0.04	0.31	0.00	0.35	0.01	0.39	0.00	0.40	0.01	0.56	0.00	0.58	0.00	0.78	0.00	0.78
62	0.00	0.29	0.00	0.29	0.01	0.48	0.00	0.50	0.02	0.41	0.00	0.43	0.01	0.69	0.00	0.70
64	0.00	0.17	0.00	0.17	0.00	0.26	0.00	0.26	0.00	0.25	0.00	0.25	0.00	0.25	0.00	0.25
66	0.01	0.16	0.00	0.17	0.00	0.19	0.00	0.19	0.00	0.15	0.00	0.15	0.00	0.19	0.00	0.19
68	0.00	0.08	0.00	0.08	0.00	0.08	0.00	0.08	0.00	0.09	0.00	0.09	0.00	0.13	0.00	0.13
70	0.00	0.07	0.00	0.07	0.00	0.14	0.00	0.14	0.00	0.10	0.00	0.10	0.00	0.07	0.00	0.07
72	0.00	0.03	0.00	0.03	0.00	0.06	0.00	0.06	0.00	0.03	0.00	0.03	0.00	0.06	0.00	0.06

74	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.07	0.00	0.07	0.00	0.02	0.00	0.02
76	0.00	0.02	0.00	0.02	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.06	0.00	0.06
78	0.00	0.05	0.00	0.05	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02
80	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.05	0.00	0.05
82	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
84	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
86	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	16.5	28.4	1.3	46.1	11.0	21.1	0.0	32.1	11.8	22.1	0.2	34.2	34.1	43.5	0.5	78.1
N° samples:				98				94				96				
N° Ind.:	1535	2594	133	4262	1023	2046	0	3069	1108	2074	19	3201	3185	4154	50	7389
Sampled catch:				2404				2426				2187				3609
Range:				8-87				10-87				4-91				9-89
Total catch:				2404				2428				2187				3609
Total valid hauls:				99				97				98				99

**Table 8 cont. Greenland halibut** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L 2014-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

Length (cm.)	2018				2019											
	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
6	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01								
8	0.01	0.00	0.00	0.01	0.00	0.00	0.02	0.02								
10	3.18	1.53	0.04	4.74	1.43	1.02	0.03	2.48								
12	13.38	9.67	0.03	23.08	6.01	5.49	0.07	11.57								
14	6.88	6.42	0.02	13.32	1.72	1.82	0.00	3.54								
16	0.44	0.56	0.00	1.00	0.12	0.08	0.00	0.21								
18	0.60	0.91	0.00	1.51	0.62	0.36	0.00	0.98								
20	1.81	1.73	0.00	3.54	1.75	1.75	0.00	3.50								
22	2.58	2.56	0.00	5.13	3.73	2.42	0.00	6.16								
24	2.08	2.17	0.00	4.26	4.24	2.51	0.00	6.76								
26	1.08	1.11	0.00	2.19	3.12	2.12	0.00	5.24								
28	1.07	1.20	0.00	2.27	2.93	2.24	0.00	5.17								
30	1.48	1.52	0.00	3.00	2.27	2.18	0.00	4.45								
32	1.44	1.41	0.00	2.86	2.11	1.93	0.00	4.04								
34	1.29	0.87	0.00	2.15	1.85	1.32	0.00	3.17								
36	0.89	0.93	0.00	1.83	2.07	1.76	0.00	3.83								
38	0.84	1.08	0.00	1.92	2.03	1.85	0.00	3.88								
40	0.54	0.80	0.00	1.34	1.85	2.25	0.00	4.10								
42	0.66	0.61	0.00	1.27	1.33	1.97	0.00	3.30								
44	0.46	0.69	0.00	1.15	0.89	1.61	0.00	2.50								
46	0.40	0.72	0.00	1.12	0.55	1.13	0.00	1.68								
48	0.24	0.72	0.00	0.96	0.35	1.05	0.00	1.40								
50	0.30	0.63	0.00	0.94	0.22	0.97	0.00	1.19								
52	0.25	0.69	0.00	0.94	0.24	0.77	0.00	1.01								
54	0.14	0.80	0.00	0.94	0.09	0.67	0.00	0.76								
56	0.11	0.84	0.00	0.95	0.06	0.77	0.00	0.83								
58	0.04	0.79	0.00	0.83	0.02	0.60	0.00	0.62								
60	0.03	0.76	0.00	0.79	0.04	0.50	0.00	0.54								
62	0.00	0.41	0.00	0.41	0.01	0.44	0.00	0.46								

64	0.01	0.33	0.00	0.34	0.00	0.30	0.00	0.30		
66	0.00	0.20	0.00	0.20	0.01	0.27	0.00	0.27		
68	0.00	0.10	0.00	0.10	0.00	0.13	0.00	0.13		
70	0.00	0.05	0.00	0.05	0.00	0.12	0.00	0.12		
72	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.03		
74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
76	0.00	0.05	0.00	0.05	0.00	0.03	0.00	0.03		
78	0.00	0.01	0.00	0.01	0.00	0.04	0.00	0.04		
80	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01		
82	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00		
84	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01		
86	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01		
88	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02		
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	°	
92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
104	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01		
<b>Total</b>	<b>42.2</b>	<b>43.0</b>	<b>0.1</b>	<b>85.3</b>	<b>41.7</b>	<b>42.6</b>	<b>0.1</b>	<b>84.4</b>		
N° samples:				100				96		
N° Ind.:				6464	3378	3607	12	6997		
Sampled catch:	3121	3335	8	2242				2946		
Range:				9-89				7-104		
Total catch:				2242				2946		
Total valid hauls:				100				96		

**Table 9.** Swept area, number of hauls and **American plaice** mean catch (Kg) and SD (\*\*\*) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "Vizconde de Eza".

Stratum	2006				2007				2008				2009				2010			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	248.53	0.3375	70.0225	231.925	7.9550	0.0229	2	64.750	60.0330	0.0225	2561.17	81.790	0.0225	2	2.76	1.12			
387	0.0225	2	6.653	5.5330	0.0225	2	7.992	2.0390	0.0435	4	5.906	4.5120	0.0439	4	6.89	2.180	0.0458	4	1.39	2.18
388	0.0566	5	7.618	2.6530	0.0563	5	8.390	2.2670	0.0559	5	2.925	1.9050	0.0555	5	3.68	4.230	0.0570	522.11	36.16	
389	0.0795	720.58	412.79	30.0900	825.47	513.67	70.0780	7	12.982	11.0140	0.0803	7	24.64	25.370	0.0795	735.95	30.88			
390	0.1249	1176.08	651.61	60.1350	1269.23	550.97	70.1395	12	117.14	1134.12	80.1373	12	114.49	164.480	0.1249	11	9.69	8.75		
391	0.0450	410.585	9.7130	0.0450	437.16	330.53	50.0454	4	20.580	28.8160	0.0458	4	9.60	7.900	0.0454	4	0.53	0.74		
392	0.0229	2	0.000	0.0000	0.0225	2	1.055	0.6580	0.0221	2	0.000	0.0000	0.0229	2	1.06	0.910	0.0225	2	0.00	0.00
729	0.0338	3	0.000	0.0000	0.0338	3	0.000	0.0000	0.0338	3	0.000	0.0000	0.0341	3	0.02	0.030	0.0338	3	0.00	0.00
730	0.0326	3	0.000	0.0000	0.0225	2	0.000	0.0000	0.0323	3	0.000	0.0000	0.0338	3	0.19	0.340	0.0334	3	0.00	0.00
731	0.0341	3	0.000	0.0000	0.0338	3	0.253	0.4390	0.0330	3	0.327	0.5660	0.0341	3	0.10	0.180	0.0338	3	0.00	0.00
732	0.0334	3	0.000	0.0000	0.0338	3	0.000	0.0000	0.0446	4	0.000	0.0000	0.0450	4	0.00	0.000	0.0450	4	0.04	0.06
733	0.0454	4	0.000	0.0000	0.0338	3	0.320	0.5540	0.0431	4	0.426	0.7620	0.0450	4	0.02	0.040	0.0450	4	0.56	0.78
734	0.0225	2	0.000	0.0000	0.0225	2	0.000	0.0000	0.0221	2	0.066	0.0930	0.0218	2	0.00	0.000	0.0225	2	0.00	0.00
741	0.0218	2	0.000	0.0000	0.0225	2	0.000	0.0000	0.0210	2	0.000	0.0000	0.0221	2	0.00	0.000	0.0225	2	0.00	0.00
742	0.0229	2	0.000	0.0000	0.0225	2	0.000	0.0000	0.0210	2	0.000	0.0000	0.0214	2	0.00	0.000	0.0225	2	0.00	0.00
743	0.0225	2	0.000	0.0000	0.0225	2	0.000	0.0000	0.0203	2	0.000	0.0000	0.0203	2	0.00	0.000	0.0225	2	0.00	0.00
744	0.0229	2	0.000	0.0000	0.0218	2	0.000	0.0000	0.0221	2	0.000	0.0000	0.0210	2	0.00	0.000	0.0229	2	0.00	0.00
745	0.0686	6	0.000	0.0000	0.0675	6	0.000	0.0000	0.0555	5	0.000	0.0000	0.0559	5	0.00	0.000	0.0563	5	0.00	0.00
746	0.0675	6	0.000	0.0000	0.0664	6	0.000	0.0000	0.0638	6	0.000	0.0000	0.0668	6	0.07	0.160	0.0679	6	0.00	0.00
747	0.1230	11	0.000	0.0000	0.1238	11	0.000	0.0000	0.1069	10	0.000	0.0000	0.1118	10	0.00	0.000	0.1125	10	0.00	0.00
748	0.0326	3	0.000	0.0000	0.0338	3	0.000	0.0000	0.0218	2	0.000	0.0000	0.0229	2	0.00	0.000	0.0225	2	0.00	0.00
749	0.0229	2	0.000	0.0000	0.0113	1	0.000	-0.0214	2	0.000	0.0000	0.0225	2	0.00	0.000	0.0229	2	0.00	0.00	
750	0.1005	9	0.000	0.0000	0.0679	6	0.000	0.0000	0.0844	8	0.000	0.0000	0.0791	7	0.00	0.000	0.0900	8	0.00	0.00
751	0.0454	4	0.000	0.0000	0.0225	2	0.000	0.0000	0.0413	4	0.000	0.0000	0.0338	3	0.00	0.000	0.0225	2	0.00	0.00

**Table 9 (cont.).** Swept area, number of hauls and **American plaice** mean catch (Kg) and SD (\*\*) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "Vizconde de Eza".

Stratum	2011				2012				2013				2014				2015			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	2	202.65	197.070	0.0225	2	193.48	181.970	0.0229	2	205.05	211.500	0.0225	2	299.25	128.770	0.0236	2	545.50	220.48
387	0.0450	4	3.59	2.780	0.0450	4	2.42	2.020	0.0450	4	9.09	8.030	0.0461	4	18.61	12.880	0.0458	4	22.44	14.72
388	0.0563	5	2.98	3.120	0.0570	5	1.94	1.590	0.0570	5	4.52	4.790	0.0585	5	16.25	21.810	0.0574	5	5.16	2.87
389	0.0675	6	9.28	6.820	0.0799	7	29.40	19.170	0.0791	7	30.81	33.300	0.0814	7	55.60	68.960	0.0814	7	128.62	166.16
390	0.1009	9	54.05	27.070	0.1354	12	97.01	63.780	0.1358	12	98.07	152.100	0.1369	12	85.16	95.390	0.1260	11	66.48	72.71
391	0.0458	4	21.83	22.490	0.0458	4	31.40	44.840	0.0450	4	29.30	19.530	0.0465	4	159.38	178.330	0.0465	4	90.01	98.23
392	0.0229	2	0.55	0.770	0.0225	2	0.01	0.020	0.0225	2	0.76	0.360	0.0225	2	0.01	0.020	0.0229	2	0.42	0.59
729	0.0338	3	0.11	0.180	0.0338	3	0.00	0.000	0.0341	3	0.24	0.410	0.0338	3	0.00	0.000	0.0345	3	0.00	0.00
730	0.0334	3	0.00	0.000	0.0338	3	0.00	0.000	0.0334	3	0.00	0.000	0.0345	3	0.00	0.000	0.0345	3	0.00	0.00
731	0.0334	3	0.00	0.000	0.0341	3	0.04	0.070	0.0334	3	0.10	0.170	0.0345	3	0.09	0.160	0.0345	3	0.64	1.10
732	0.0454	4	0.00	0.000	0.0454	4	0.00	0.000	0.0450	4	0.00	0.000	0.0454	4	0.00	0.000	0.0465	4	0.00	0.00
733	0.0454	4	0.02	0.050	0.0454	4	0.07	0.110	0.0450	4	0.23	0.340	0.0458	4	0.12	0.240	0.0454	4	0.99	1.22
734	0.0225	2	0.00	0.000	0.0233	2	0.00	0.000	0.0221	2	0.00	0.000	0.0225	2	0.00	0.000	0.0225	2	0.00	0.00
741	0.0218	2	0.00	0.000	0.0218	2	0.00	0.000	0.0221	2	0.00	0.000	0.0225	2	0.00	0.000	0.0236	2	0.01	0.01
742	0.0225	2	0.00	0.000	0.0206	2	0.00	0.000	0.0218	2	0.00	0.000	0.0221	2	0.00	0.000	0.0233	2	0.00	0.00
743	0.0221	2	0.00	0.000	0.0206	2	0.00	0.000	0.0218	2	0.00	0.000	0.0221	2	0.00	0.000	0.0233	2	0.00	0.00
744	0.0221	2	0.00	0.000	0.0221	2	0.00	0.000	0.0221	2	0.00	0.000	0.0225	2	0.00	0.000	0.0225	2	0.00	0.00
745	0.0446	4	0.00	0.000	0.0570	5	0.00	0.000	0.0559	5	0.00	0.000	0.0578	5	0.00	0.000	0.0578	5	0.00	0.00
746	0.0566	5	0.00	0.000	0.0675	6	0.00	0.000	0.0675	6	0.00	0.000	0.0683	6	0.00	0.000	0.0686	6	0.00	0.00
747	0.0893	8	0.00	0.000	0.1121	10	0.00	0.000	0.1125	10	0.00	0.000	0.1125	10	0.00	0.000	0.1028	9	0.00	0.00
748	0.0221	2	0.00	0.000	0.0225	2	0.00	0.000	0.0225	2	0.00	0.000	0.0229	2	0.00	0.000	0.0233	2	0.00	0.00
749	0.0221	2	0.00	0.000	0.0221	2	0.00	0.000	0.0225	2	0.00	0.000	0.0225	2	0.00	0.000	0.0225	2	0.00	0.00
750	0.0668	6	0.00	0.000	0.0885	8	0.00	0.000	0.0896	8	0.00	0.000	0.0904	8	0.00	0.000	0.0934	8	0.00	0.00
751	0.0334	3	0.00	0.000	0.0218	2	0.00	0.000	0.0446	4	0.00	0.000	0.0334	3	0.00	0.000	0.0341	3	0.00	0.00

$$(**) SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

**Table 9 (cont.).** Swept area, number of hauls and **American plaice** mean catch (Kg) and SD (\*\*) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "Vizconde de Eza".

Stratum	2016				2017				2018				2019				Swept area	Tow No.	Mean catch	SD
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD				
385	0.0233	2311.53	38.28	0.0225	22142.920.02	0.0221	22148.660.02	0.0225	21321.38	0.02										
387	0.0454	4	8.06	10.31	0.0446	4	166.910.04	0.0465	4	160.000.05	0.0450	4	133.00	0.05						
388	0.0570	5	6.73	1.57	0.0566	5	494.000.06	0.0566	5	291.530.06	0.0559	5	425.00	0.06						
389	0.0814	7	66.58	53.13	0.0799	77509.590.08	0.0803	72641.510.08	0.0784	72424.75	0.08									
390	0.1391	12	60.65	56.90	0.1369	126203.320.14	0.1358	125074.080.14	0.1125	103076.25	0.11									
391	0.0469	4100.31126.76	0.0458	43980.200.05	0.0458	44340.730.05	0.0450	41815.33	0.05											
392	0.0233	2	1.01	0.00	0.0229	2	51.000.02	0.0229	2	10.000.02	0.0229	2	158.00	0.02						
729	0.0341	3	0.00	0.00	0.0345	3	0.000.03	0.0341	3	0.000.03	0.0338	3	0.00	0.03						
730	0.0233	2	0.00	0.00	0.0341	3	0.000.03	0.0330	3	0.000.03	0.0338	3	0.00	0.03						
731	0.0345	3	3.63	5.49	0.0338	3	5.000.03	0.0353	3	3.000.04	0.0341	3	17.00	0.03						
732	0.0454	4	0.00	0.00	0.0446	4	4.000.04	0.0461	4	0.000.05	0.0454	4	0.00	0.05						
733	0.0458	4	0.00	0.00	0.0450	4	10.000.05	0.0454	4	0.000.05	0.0450	4	22.00	0.05						
734	0.0229	2	0.00	0.00	0.0225	2	0.000.02	0.0225	2	0.000.02	0.0229	2	0.00	0.02						
741	0.0233	2	0.00	0.00	0.0225	2	0.000.02	0.0229	2	0.000.02	0.0225	2	0.00	0.02						
742	0.0229	2	0.00	0.00	0.0225	2	0.000.02	0.0221	2	0.000.02	0.0221	2	0.00	0.02						
743	0.0229	2	0.00	0.00	0.0229	2	0.000.02	0.0225	2	0.000.02	0.0225	2	0.00	0.02						
744	0.0229	2	0.00	0.00	0.0221	2	0.000.02	0.0229	2	0.000.02	0.0225	2	0.00	0.02						
745	0.0574	5	0.00	0.00	0.0559	5	0.000.06	0.0596	5	0.000.06	0.0578	5	0.00	0.06						
746	0.0690	6	0.00	0.00	0.0683	6	0.000.07	0.0698	6	0.000.07	0.0679	6	0.00	0.07						
747	0.1140	10	0.00	0.00	0.1125	10	0.000.11	0.1140	10	0.000.11	0.1125	10	0.00	0.11						
748	0.0233	2	0.00	0.00	0.0225	2	0.000.02	0.0225	2	0.000.02	0.0225	2	0.00	0.02						
749	0.0233	2	0.00	0.00	0.0229	2	0.000.02	0.0225	2	0.000.02	0.0221	2	0.00	0.02						
750	0.0930	8	0.00	0.00	0.0934	8	0.000.09	0.0904	8	0.000.09	0.0788	7	0.00	0.08						
751	0.0345	3	0.00	0.00	0.0349	3	0.000.03	0.0454	4	0.000.05	0.0338	3	0.00	0.03						

$$(**) SD = \frac{\sum (x_i - \bar{x})}{n-1}$$



**Table 10.** Stratified mean catches (Kg) and SD of **American plaice** by stratum and year (2003-2019). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey													
	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	470.23	2253.80	5726.54	3767.15	7640.50	66217.94	325.80	23912.70	22830.05	24195.90	35310.91	64369.00	36760.84	16470.74
387	985.60	4559.36	1703.04	2045.95	1511.87	1763.14	356.97	918.27	618.37	2327.04	4763.52	5744.77	2064.58	2091.84
388	2612.05	4801.65	2719.48	2995.09	1044.23	1314.12	7892.20	1062.36	691.15	1613.93	5800.54	1843.33	2402.18	6772.08
389	3285.60	4555.55	10477.26	12966.65	6608.06	12543.72	18300.40	4725.39	14965.33	15680.91	28302.15	65468.53	33889.66	45430.50
390	1511.01	22637.98	62010.39	56426.39	95469.71	93311.86	7899.18	44052.56	79061.11	79928.41	69406.08	54181.94	49426.69	34565.51
391	1750.28	4198.98	2984.97	10479.83	5803.56	2707.34	148.33	6156.13	8854.31	8262.60	44943.75	25383.53	28287.42	21124.27
392	1218.00	43.50	0.00	152.90	0.00	153.70	0.00	79.03	1.81	109.91	1.60	60.61	146.67	326.25
729	10265.34	27.90	0.00	0.00	0.00	3.72	0.00	19.84	0.00	44.08	0.00	0.00	0.00	0.00
730	10030.00	0.00	0.00	0.00	0.00	32.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
731	5531.76	313.20	0.00	54.72	70.56	22.54	0.00	0.00	8.64	20.88	20.02	137.52	784.08	111.17
732	9401.70	0.00	0.00	0.00	0.00	0.00	9.07	0.00	0.00	0.00	0.00	0.00	0.00	22.29
733	n.s	296.40	0.00	74.88	99.68	4.15	129.87	5.73	16.50	54.52	28.08	231.78	0.00	146.48
734	n.s	0.00	0.00	0.00	10.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
741	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.00	0.00
742	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
743	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
744	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
745	212.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
746	0.00	0.00	0.00	0.00	0.00	25.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
747	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
748	160.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
749	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
751	n.s	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	47434.44	43688.32	85621.68	88963.55	118258.27	178100.64	35061.82	80932.01	127047.27	132238.18	188576.63	217421.80	153762.11	127061.12
( $\bar{y}$ )	10.60	6.98	13.20	13.71	18.23	27.46	5.40	12.48	19.58	20.39	29.07	33.52	23.70	19.59
SD	0.95	1.12	2.06	2.00	4.98	6.11	1.32	2.83	3.48	6.25	5.85	6.68	5.82	3.06

**Table 10 (cont).** Stratified mean catches (Kg) and SD of **American plaice** by stratum and year (2003-2019). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey	
	2018	2019
385	18485.29	12065.80
387	1998.34	1706.88
388	4101.07	6628.49
389	19259.03	20085.43
390	38088.35	29310.17
391	39751.43	18437.87
392	64.02	2315.22
729	0.00	0.00
730	0.00	0.00
731	53.28	363.46
732	0.00	0.00
733	0.00	238.39
734	0.00	0.00
741	0.00	0.00
742	0.00	0.00
743	0.00	0.00
744	0.00	0.00
745	0.00	0.00
746	0.00	0.00
747	0.00	0.00
748	0.00	0.00
749	0.00	0.00
750	0.00	0.00
751	0.00	0.00
TOTAL	121800.80	91151.69
( $\bar{y}$ )	18.78	14.05
SD	3.31	2.28

**Table 11.** Survey estimates (by the swept area method) of **American plaice** biomass (t.) and SD by stratum and year on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey													
	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	42	197	501	335	668	5886	685	2091	2029	2115	3139	5449	3162	1464
387	86	427	151	182	139	161	54	82	55	207	413	502	182	188
388	235	457	240	266	93	118	44	94	61	142	496	161	211	598
389	290	405	923	1153	593	1094	991	420	1312	1387	2435	5632	2915	3981
390	134	1969	5462	5016	8212	8158	2581	3930	7008	7065	6085	4730	4263	3030
391	156	386	265	932	512	237	241	538	774	734	3866	2184	2414	1847
392	105	4	0	14	0	13	7	7	0	10	0	5	13	29
729	978	3	0	0	0	0	0	2	0	4	0	0	0	0
730	907	0	0	0	0	3	0	0	0	0	0	0	0	0
731	484	27	0	5	6	2	0	0	1	2	2	12	68	10
732	836	0	0	0	0	0	0	0	0	0	0	0	0	2
733	n.s	27	0	7	9	0	1	1	1	5	2	20	0	13
734	n.s	0	0	0	1	0	8	0	0	0	0	0	0	0
741	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743	n.s	0	0	0	0	0	0	0	0	0	0	0	0	0
744	n.s	0	0	0	0	0	0	0	0	0	0	0	0	0
745	19	0	0	0	0	0	0	0	0	0	0	0	0	0
746	0	0	0	0	0	2	0	0	0	0	0	0	0	0
747	n.s	0	0	0	0	0	0	0	0	0	0	0	0	0
748	15	0	0	0	0	0	0	0	0	0	0	0	0	0
749	0	0	0	0	0	0	0	0	0	0	0	0	0	0
750	n.s	0	0	0	0	0	0	0	0	0	0	0	0	0
751	n.s	n.s	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	4284	3901	7542	7908	10234	15676	4611	7165	11241	11671	16438	18695	13228	11162
SD	362	626	1150	1156	2805	3411	925	1580	2006	3513	3229	3750	2100	1744

**Table 11 (cont).** Survey estimates (by the swept area method) of **American plaice** biomass (t.) and SD by stratum and year on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey	
	2018	2019
385	1671	1073
387	172	152
388	362	593
389	1680	1794
390	3367	2605
391	3476	1639
392	6	202
729	0	0
730	0	0
731	5	32
732	0	0
733	0	21
734	0	0
741	0	0
742	0	0
743	0	0
744	0	0
745	0	0
746	0	0
747	0	0
748	0	0
749	0	0
750	0	0
751	0	0
TOTAL	10738	8111
SD	1890	1314

**Table 12.** American plaice length distribution per ha3ul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2013 (R/V *Vizconde de Eza*). Indet. means indeterminate.

Length (cm.)	2006				2007				2008				2009			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
2	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.10	0.00	0.00	0.10	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.02	0.02	0.29	0.33	0.02	0.00	1.10	1.12	0.00	0.00	0.76	0.76	0.06	0.04	0.15	0.25
8	0.23	0.10	1.28	1.62	0.06	0.02	0.73	0.82	0.01	0.02	0.87	0.90	0.22	0.12	0.07	0.41
10	0.07	0.05	0.02	0.14	0.36	0.33	0.03	0.72	0.55	0.39	0.05	0.99	4.28	3.78	0.09	8.15
12	1.10	1.39	0.00	2.49	2.67	2.75	0.00	5.43	3.49	3.58	0.06	7.13	3.28	3.70	0.01	6.99
14	1.87	2.18	0.00	4.05	2.16	2.08	0.00	4.24	1.95	2.05	0.00	4.00	2.29	4.64	0.01	6.95
16	0.56	0.80	0.00	1.36	1.14	1.79	0.00	2.93	0.86	1.36	0.00	2.22	3.81	7.38	0.00	11.19
18	0.34	0.63	0.00	0.97	1.72	3.00	0.00	4.72	1.45	2.22	0.00	3.67	1.42	2.83	0.00	4.26
20	0.42	0.60	0.00	1.03	1.19	2.15	0.00	3.34	0.92	2.03	0.00	2.94	1.07	3.16	0.00	4.23
22	0.66	1.06	0.00	1.72	0.52	1.28	0.00	1.80	0.94	2.10	0.00	3.04	0.88	3.30	0.00	4.18
24	0.56	1.28	0.00	1.85	0.68	1.36	0.00	2.04	1.12	1.96	0.00	3.08	0.82	3.04	0.00	3.86
26	0.47	1.47	0.02	1.96	0.63	1.50	0.00	2.13	0.94	1.68	0.00	2.62	1.27	3.98	0.00	5.25
28	0.48	2.43	0.00	2.91	0.53	1.52	0.00	2.05	0.75	1.70	0.00	2.46	1.09	3.71	0.00	4.81
30	0.35	2.95	0.00	3.30	0.29	1.65	0.00	1.94	0.56	1.26	0.00	1.81	0.77	3.61	0.00	4.38
32	0.34	2.59	0.00	2.93	0.18	2.14	0.00	2.32	0.62	1.00	0.00	1.63	0.81	3.21	0.00	4.02
34	0.20	2.57	0.00	2.77	0.16	2.87	0.00	3.03	0.46	0.83	0.00	1.30	0.64	3.33	0.00	3.97
36	0.20	1.90	0.00	2.10	0.20	2.45	0.00	2.65	0.44	1.45	0.00	1.89	0.43	2.47	0.00	2.91
38	0.09	1.15	0.00	1.24	0.08	2.29	0.00	2.38	0.35	1.89	0.00	2.23	0.24	3.29	0.00	3.53
40	0.02	0.74	0.00	0.75	0.04	1.83	0.00	1.88	0.12	2.43	0.00	2.55	0.12	4.41	0.00	4.53
42	0.01	0.74	0.00	0.76	0.00	1.23	0.00	1.23	0.07	2.41	0.00	2.48	0.02	4.78	0.00	4.80
44	0.02	1.00	0.00	1.02	0.01	0.90	0.00	0.91	0.00	1.88	0.00	1.88	0.08	4.09	0.00	4.16
46	0.02	1.01	0.00	1.03	0.02	0.74	0.00	0.77	0.00	1.59	0.00	1.59	0.04	2.20	0.00	2.24
48	0.03	1.11	0.00	1.15	0.00	0.57	0.00	0.57	0.00	1.09	0.00	1.09	0.00	1.62	0.00	1.62
50	0.02	0.50	0.00	0.52	0.02	0.60	0.00	0.63	0.00	0.83	0.00	0.83	0.00	1.13	0.00	1.13
52	0.00	0.50	0.00	0.50	0.01	0.35	0.00	0.36	0.00	0.66	0.00	0.66	0.00	0.73	0.00	0.73
54	0.00	0.15	0.00	0.15	0.00	0.23	0.00	0.23	0.00	0.34	0.00	0.34	0.04	0.40	0.00	0.44
56	0.00	0.07	0.00	0.07	0.00	0.09	0.00	0.09	0.00	0.04	0.00	0.04	0.00	0.13	0.00	0.13
58	0.00	0.02	0.00	0.02	0.00	0.10	0.00	0.10	0.00	0.04	0.00	0.04	0.00	0.12	0.00	0.12
60	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00
62	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>8.20</b>	<b>29.04</b>	<b>1.62</b>	<b>38.86</b>	<b>12.72</b>	<b>35.86</b>	<b>1.88</b>	<b>50.46</b>	<b>15.61</b>	<b>36.88</b>	<b>1.75</b>	<b>54.24</b>	<b>23.70</b>	<b>75.22</b>	<b>0.34</b>	<b>99.26</b>
N° samples:				31				37				37				41
N° Ind.:	704	2441	136	3281	1129	3116	179	4424	924	2383	98	3405	1033	2843	16	3892
Sampled catch:				1172				1309				1749				2757
Range:				3-60				4-63				6-61				6-59
Total catch:				1172				1309				1749				2757
Total valid hauls:				100				94				100				98

**Table 12 (cont.). American plaice** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2013 (R/V *Vizconde de Eza*). Indet. means indeterminate.

Length (cm.)	2010				2011				2012				2013			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.45
6	0.20	0.10	0.97	1.28	0.00	0.00	0.00	0.00	0.00	0.03	0.30	0.32	0.02	0.00	8.05	8.06
8	0.22	0.26	0.76	1.24	0.04	0.00	0.00	0.04	0.36	0.16	0.54	1.06	0.01	0.02	3.63	3.66
10	0.49	0.58	0.17	1.25	0.56	0.76	0.00	1.32	0.07	0.07	0.11	0.26	2.10	1.71	0.27	4.08
12	1.60	1.48	0.03	3.10	5.41	5.60	0.00	11.01	0.08	0.09	0.00	0.17	3.07	3.38	0.05	6.50
14	1.05	2.29	0.00	3.34	3.77	5.50	0.00	9.28	2.68	2.16	0.00	4.84	1.95	1.71	0.00	3.66
16	1.27	1.93	0.00	3.20	2.07	2.98	0.00	5.05	6.60	7.80	0.00	14.40	0.73	1.30	0.00	2.03
18	0.78	1.76	0.00	2.54	2.00	3.42	0.00	5.43	3.60	6.55	0.00	10.15	1.24	3.08	0.00	4.32
20	0.78	2.20	0.00	2.98	1.16	3.70	0.00	4.86	3.47	5.47	0.00	8.93	2.38	5.09	0.00	7.47
22	0.33	1.25	0.00	1.58	0.63	2.16	0.00	2.80	1.53	3.88	0.00	5.40	1.98	5.89	0.00	7.87
24	0.19	0.68	0.00	0.87	0.45	3.01	0.00	3.46	1.30	4.96	0.00	6.26	1.36	5.98	0.00	7.34
26	0.23	0.85	0.00	1.08	0.44	1.66	0.00	2.10	1.04	4.99	0.00	6.04	1.15	4.48	0.00	5.62
28	0.21	0.84	0.00	1.05	0.41	1.27	0.00	1.68	0.80	5.05	0.00	5.84	1.30	4.12	0.00	5.42
30	0.20	0.74	0.00	0.94	0.44	1.16	0.00	1.61	0.76	3.35	0.00	4.12	0.67	3.48	0.00	4.15
32	0.11	0.98	0.00	1.08	0.37	1.52	0.00	1.89	0.37	2.53	0.00	2.90	0.47	2.98	0.00	3.45
34	0.07	1.02	0.00	1.08	0.40	2.24	0.00	2.64	0.45	2.31	0.00	2.76	0.20	2.89	0.04	3.12
36	0.09	0.63	0.00	0.72	0.12	2.16	0.00	2.28	0.31	2.58	0.00	2.89	0.14	2.10	0.00	2.25
38	0.02	0.70	0.00	0.71	0.17	2.39	0.00	2.56	0.10	2.55	0.00	2.65	0.04	1.99	0.00	2.04
40	0.02	0.39	0.00	0.41	0.07	1.64	0.00	1.71	0.11	2.16	0.00	2.26	0.02	2.37	0.00	2.39
42	0.02	0.49	0.00	0.51	0.00	1.04	0.00	1.04	0.00	2.11	0.00	2.11	0.02	1.71	0.00	1.73
44	0.01	0.53	0.00	0.53	0.00	1.02	0.00	1.02	0.00	1.61	0.00	1.61	0.01	1.86	0.00	1.87
46	0.00	0.46	0.00	0.46	0.00	0.93	0.00	0.93	0.00	0.94	0.00	0.94	0.00	1.45	0.00	1.45
48	0.00	0.21	0.00	0.21	0.00	0.56	0.00	0.56	0.00	1.20	0.00	1.20	0.00	0.89	0.00	0.89
50	0.02	0.12	0.00	0.14	0.00	0.43	0.00	0.43	0.00	0.70	0.00	0.70	0.00	1.01	0.00	1.01
52	0.00	0.14	0.00	0.14	0.00	0.23	0.00	0.23	0.00	0.71	0.00	0.71	0.00	0.62	0.00	0.62
54	0.00	0.07	0.00	0.07	0.01	0.11	0.00	0.12	0.00	0.16	0.00	0.16	0.00	0.56	0.00	0.56
56	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.14	0.00	0.14
58	0.00	0.01	0.00	0.01	0.00	0.05	0.00	0.05	0.00	0.07	0.00	0.07	0.00	0.15	0.00	0.15
60	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.08	0.00	0.08
62	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04
64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	7.90	20.75	1.94	30.58	18.54	45.54	0.00	64.08	23.63	64.27	0.95	88.84	18.87	61.06	12.49	92.41
N° samples:				35				33				38				39
N° Ind.:	740	2014	231	2985	1044	2582	0	3626	1044	2917	35	3996	908	2969	534	4411
Sampled catch:				739				1066				1902				1982
Range:				5-63				9-63				6-60				5-62
Total catch:				739				1066				1902				1982
Total valid hauls:				97				89				98				100

**Table 13. American plaice length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2014-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.**

Length (cm.)	2014				2015				2016				2017			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.45	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.02	0.00	8.05	8.06	0.00	0.20	0.06	0.26	0.04	0.00	0.15	0.19	0.00	0.00	0.07	0.07
8	0.01	0.02	3.63	3.66	1.22	0.99	1.77	3.98	0.26	0.19	1.09	1.54	0.08	0.22	0.32	0.62
10	2.10	1.71	0.27	4.08	8.81	5.20	4.74	18.76	6.44	5.88	2.03	14.36	1.68	1.39	0.26	3.33
12	3.07	3.38	0.05	6.50	23.59	31.50	0.26	55.35	8.60	11.14	0.14	19.87	6.23	8.38	0.00	14.61
14	1.95	1.71	0.00	3.66	37.48	57.71	0.00	95.19	16.84	30.05	0.05	46.94	10.49	15.01	0.00	25.50
16	0.73	1.30	0.00	2.03	17.98	29.50	0.00	47.48	23.77	38.21	0.00	61.98	14.68	25.67	0.00	40.35
18	1.24	3.08	0.00	4.32	5.31	11.30	0.00	16.61	11.69	20.89	0.00	32.57	12.50	26.15	0.00	38.65
20	2.38	5.09	0.00	7.47	3.06	5.14	0.00	8.19	6.53	13.99	0.00	20.53	8.39	23.26	0.00	31.65
22	1.98	5.89	0.00	7.87	2.16	4.46	0.00	6.62	2.02	3.63	0.00	5.65	5.66	15.34	0.00	21.00
24	1.36	5.98	0.00	7.34	1.73	3.09	0.00	4.82	0.73	1.88	0.00	2.61	2.05	10.18	0.00	12.23
26	1.15	4.48	0.00	5.62	2.53	5.73	0.00	8.26	0.82	2.04	0.00	2.86	1.17	5.12	0.00	6.29
28	1.30	4.12	0.00	5.42	1.30	10.19	0.00	11.49	0.68	3.77	0.00	4.45	1.07	2.84	0.00	3.91
30	0.67	3.48	0.00	4.15	0.74	9.54	0.00	10.28	0.59	5.23	0.00	5.82	0.39	2.75	0.00	3.15
32	0.47	2.98	0.00	3.45	0.66	7.47	0.00	8.13	0.58	3.68	0.00	4.26	0.18	2.87	0.00	3.05
34	0.20	2.89	0.04	3.12	0.56	6.04	0.00	6.60	0.19	4.22	0.00	4.41	0.13	2.83	0.00	2.96
36	0.14	2.10	0.00	2.25	0.31	3.32	0.00	3.63	0.21	3.11	0.00	3.32	0.18	2.40	0.00	2.58
38	0.04	1.99	0.00	2.04	0.09	3.32	0.00	3.41	0.05	2.74	0.00	2.78	0.04	1.88	0.00	1.93
40	0.02	2.37	0.00	2.39	0.18	2.51	0.00	2.69	0.06	2.17	0.00	2.23	0.05	1.69	0.00	1.74
42	0.02	1.71	0.00	1.73	0.00	3.73	0.00	3.73	0.00	1.62	0.00	1.62	0.00	0.63	0.00	0.63
44	0.01	1.86	0.00	1.87	0.00	1.42	0.00	1.42	0.00	1.78	0.00	1.78	0.00	0.82	0.00	0.82
46	0.00	1.45	0.00	1.45	0.00	1.52	0.00	1.52	0.00	0.66	0.00	0.66	0.00	0.26	0.00	0.26
48	0.00	0.89	0.00	0.89	0.00	1.01	0.00	1.01	0.00	0.68	0.00	0.68	0.00	0.25	0.00	0.25
50	0.00	1.01	0.00	1.01	0.00	1.19	0.00	1.19	0.00	0.44	0.00	0.44	0.00	0.30	0.00	0.30
52	0.00	0.62	0.00	0.62	0.00	0.58	0.00	0.58	0.00	0.48	0.00	0.48	0.00	0.06	0.00	0.06
54	0.00	0.56	0.00	0.56	0.00	0.62	0.00	0.62	0.18	0.36	0.00	0.53	0.00	0.15	0.00	0.15
56	0.00	0.14	0.00	0.14	0.00	0.15	0.00	0.15	0.00	0.19	0.00	0.19	0.00	0.10	0.00	0.10
58	0.00	0.15	0.00	0.15	0.00	0.15	0.00	0.15	0.00	0.12	0.00	0.12	0.00	0.04	0.00	0.04
60	0.00	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.00	0.00	0.00	0.00
62	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>18.87</b>	<b>61.06</b>	<b>12.49</b>	<b>92.41</b>	<b>107.72</b>	<b>207.58</b>	<b>6.84</b>	<b>322.13</b>	<b>80.27</b>	<b>159.25</b>	<b>3.45</b>	<b>242.97</b>	<b>64.97</b>	<b>150.63</b>	<b>0.65</b>	<b>216.25</b>
N° samples:				37				37				38				40
N° Ind.:	1324	3141	551	5016	1497	3034	55	4586	1574	3305	69	4948	2053	4736	27	6816
Sampled catch:				2804				3199				2297				1849
Range:				4-59				7-59				6-61				7-58
Total catch:				2804				3205				2297				1849
Total valid hauls:				99				97				98				99

**Table 13 (cont.). American plaice** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2014-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

Length (cm.)	2018				2019											
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
6	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03								
8	0.06	0.00	0.01	0.07	0.03	0.00	0.00	0.03								
10	0.34	0.66	0.00	1.00	0.28	0.05	0.00	0.33								
12	1.35	1.35	0.00	2.70	0.89	0.64	0.00	1.53								
14	3.03	5.14	0.01	8.17	1.59	2.45	0.00	4.04								
16	4.82	9.78	0.00	14.60	2.80	4.37	0.00	7.18								
18	5.91	15.12	0.00	21.03	2.76	6.70	0.00	9.46								
20	5.69	21.06	0.00	26.75	4.03	12.97	0.00	17.00								
22	4.58	20.22	0.00	24.79	3.85	14.08	0.00	17.93								
24	3.90	19.41	0.00	23.31	2.75	11.98	0.00	14.73								
26	1.86	11.59	0.00	13.45	1.06	7.99	0.00	9.04								
28	0.74	6.65	0.00	7.39	0.81	7.32	0.00	8.13								
30	0.40	3.35	0.00	3.75	0.23	4.01	0.00	4.25								
32	0.48	1.90	0.00	2.38	0.11	2.28	0.00	2.39								
34	0.23	1.95	0.00	2.17	0.06	1.33	0.00	1.38								
36	0.16	1.60	0.00	1.76	0.09	1.42	0.00	1.52								
38	0.05	1.33	0.00	1.38	0.00	0.93	0.00	0.93								
40	0.02	1.11	0.00	1.14	0.03	0.79	0.00	0.82								
42	0.00	0.52	0.00	0.52	0.00	0.52	0.00	0.52								
44	0.00	0.50	0.00	0.50	0.00	0.26	0.00	0.26								
46	0.00	0.15	0.00	0.15	0.00	0.41	0.00	0.41								
48	0.00	0.32	0.00	0.32	0.00	0.14	0.00	0.14								
50	0.00	0.18	0.00	0.18	0.00	0.14	0.00	0.14								
52	0.00	0.21	0.00	0.21	0.00	0.07	0.00	0.07								
54	0.00	0.01	0.00	0.01	0.00	0.04	0.00	0.04								
56	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00								
58	0.00	0.07	0.00	0.07	0.00	0.04	0.00	0.04								
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
62	0.00	0.08	0.00	0.08	0.00	0.00	0.00	0.00								
64	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03								
<b>Total</b>	<b>33.615</b>	<b>124.261</b>	<b>0.022</b>	<b>157.898</b>	<b>21.37</b>	<b>80.99</b>	<b>0.03</b>	<b>102.40</b>								
N° samples:				37				37								
N° Ind.:	1324	3141	551	4753	952	3773	1	4726								
Sampled catch:				1793				1262								
Range:				9-62				7-64								
Total catch:				1793				1262								
<b>Total valid hauls:</b>				<b>100</b>				<b>96</b>								



**Table 14.** Swept area, number of hauls and **Witch flounder** mean catch (Kg) and SD (\*\*) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "Vizconde de Eza".

Stratum	2006				2007				2008				2009				2010			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	2	0.240	0.339	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.00	0.00	0.0225	2	0.00	0.00
387	0.0225	2	3.434	2.996	0.0225	2	1.300	1.399	0.0435	4	3.040	1.153	0.0439	4	0.18	0.19	0.0439	4	0.18	0.19
388	0.0566	5	0.876	0.480	0.0563	5	1.492	1.300	0.0559	5	1.830	2.034	0.0555	5	1.33	1.27	0.0555	5	1.33	1.27
389	0.0795	7	0.284	0.372	0.0900	8	0.001	0.002	0.0780	7	0.184	0.262	0.0803	7	0.00	0.01	0.0803	7	0.00	0.01
390	0.1249	11	0.079	0.185	0.1350	12	0.000	0.000	0.1395	12	0.105	0.246	0.1373	12	0.00	0.00	0.1373	12	0.00	0.00
391	0.0450	4	0.388	0.775	0.0450	4	0.102	0.204	0.0454	4	1.003	1.551	0.0458	4	0.10	0.20	0.0458	4	0.10	0.20
392	0.0229	2	0.195	0.276	0.0225	2	1.175	1.300	0.0221	2	1.694	2.336	0.0229	2	1.24	1.04	0.0229	2	1.24	1.04
729	0.0338	3	1.450	1.422	0.0338	3	4.823	3.341	0.0338	3	2.770	3.289	0.0341	3	3.19	1.85	0.0341	3	3.19	1.85
730	0.0326	3	0.460	0.797	0.0225	2	0.000	0.000	0.0323	3	0.743	1.287	0.0338	3	0.00	0.00	0.0338	3	0.00	0.00
731	0.0341	3	3.395	2.651	0.0338	3	3.854	4.324	0.0330	3	3.445	1.075	0.0341	3	5.99	2.31	0.0341	3	5.99	2.31
732	0.0334	3	1.367	1.623	0.0338	3	0.317	0.548	0.0446	4	2.056	1.827	0.0450	4	3.13	2.00	0.0450	4	3.13	2.00
733	0.0454	4	6.706	9.359	0.0338	3	2.052	2.218	0.0431	4	5.530	4.719	0.0450	4	7.23	5.82	0.0450	4	7.23	5.82
734	0.0225	2	0.190	0.269	0.0225	2	0.066	0.093	0.0221	2	0.200	0.283	0.0218	2	0.00	0.00	0.0218	2	0.00	0.00
741	0.0218	2	0.000	0.000	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0221	2	0.00	0.00	0.0221	2	0.00	0.00
742	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0214	2	0.00	0.00	0.0214	2	0.00	0.00
743	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0203	2	0.000	0.000	0.0203	2	0.09	0.13	0.0203	2	0.09	0.13
744	0.0229	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0210	2	0.00	0.00	0.0210	2	0.00	0.00
745	0.0686	6	0.000	0.000	0.0675	6	0.002	0.004	0.0555	5	0.000	0.000	0.0559	5	0.01	0.02	0.0559	5	0.01	0.02
746	0.0675	6	0.000	0.000	0.0664	6	0.000	0.000	0.0638	6	0.000	0.000	0.0668	6	0.00	0.00	0.0668	6	0.00	0.00
747	0.1230	11	0.000	0.000	0.1238	11	0.000	0.000	0.1069	10	0.000	0.000	0.1118	10	0.00	0.00	0.1118	10	0.00	0.00
748	0.0326	3	0.021	0.036	0.0338	3	0.000	0.000	0.0218	2	0.000	0.000	0.0229	2	0.00	0.00	0.0229	2	0.00	0.00
749	0.0229	2	0.000	0.000	0.0113	1	0.000	-	0.0214	2	0.000	0.000	0.0225	2	0.00	0.00	0.0225	2	0.00	0.00
750	0.1005	9	0.000	0.000	0.0679	6	0.000	0.000	0.0844	8	0.000	0.000	0.0791	7	0.00	0.00	0.0791	7	0.00	0.00
751	0.0454	4	0.000	0.000	0.0225	2	0.000	0.000	0.0413	4	0.000	0.000	0.0338	3	0.00	0.00	0.0338	3	0.00	0.00

$$(**) SD = \frac{\sum (x_i - \bar{x})^2}{n-1}$$

**Table 14 (cont.).** Swept area, number of hauls and **Witch flounder** mean catch (Kg) and SD (\*\*) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "Vizconde de Eza".

Stratum	2011				2012				2013				2014				2015			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00	0.0229	2	0.60	0.84	0.0225	2	0.31	0.44	0.0236	2	0.00	0.00
387	0.0450	4	4.65	1.24	0.0450	4	1.15	1.02	0.0450	4	3.62	2.74	0.0461	4	2.16	1.38	0.0458	4	9.12	5.86
388	0.0563	5	1.50	1.96	0.0570	5	1.75	2.63	0.0570	5	2.13	1.56	0.0585	5	2.21	1.40	0.0574	5	1.02	0.86
389	0.0675	6	0.14	0.22	0.0799	7	0.02	0.04	0.0791	7	0.22	0.33	0.0814	7	0.36	0.62	0.0814	7	0.13	0.36
390	0.1009	9	0.00	0.00	0.1354	12	0.00	0.00	0.1358	12	0.20	0.52	0.1369	12	0.07	0.25	0.1260	11	0.07	0.22
391	0.0458	4	0.00	0.00	0.0458	4	0.16	0.32	0.0450	4	0.00	0.00	0.0465	4	0.00	0.00	0.0465	4	0.29	0.59
392	0.0229	2	0.30	0.33	0.0225	2	1.26	1.73	0.0225	2	0.70	0.98	0.0225	2	0.80	1.14	0.0229	2	0.73	0.97
729	0.0338	3	12.22	7.49	0.0338	3	10.50	8.97	0.0341	3	6.43	4.77	0.0338	3	4.12	3.81	0.0345	3	8.81	5.09
730	0.0334	3	0.00	0.00	0.0338	3	0.60	1.04	0.0334	3	0.60	0.82	0.0345	3	2.74	3.17	0.0345	3	0.40	0.69
731	0.0334	3	3.00	1.75	0.0341	3	1.81	2.10	0.0334	3	4.19	3.09	0.0345	3	4.09	2.06	0.0345	3	5.65	3.80
732	0.0454	4	2.57	1.95	0.0454	4	3.39	1.68	0.0450	4	3.57	2.82	0.0454	4	4.39	2.02	0.0465	4	4.15	1.63
733	0.0454	4	2.00	2.41	0.0454	4	2.16	2.46	0.0450	4	4.27	2.44	0.0458	4	1.15	1.51	0.0454	4	3.78	4.95
734	0.0225	2	0.22	0.30	0.0233	2	0.00	0.00	0.0221	2	0.02	0.03	0.0225	2	0.57	0.81	0.0225	2	0.29	0.42
741	0.0218	2	0.00	0.00	0.0218	2	0.00	0.00	0.0221	2	0.00	0.00	0.0225	2	0.00	0.00	0.0236	2	0.00	0.00
742	0.0225	2	0.00	0.00	0.0206	2	0.00	0.00	0.0218	2	0.00	0.00	0.0221	2	0.00	0.00	0.0233	2	0.00	0.00
743	0.0221	2	0.00	0.00	0.0206	2	0.00	0.00	0.0218	2	0.00	0.00	0.0221	2	0.00	0.00	0.0233	2	0.00	0.00
744	0.0221	2	0.00	0.00	0.0221	2	0.00	0.00	0.0221	2	0.00	0.00	0.0225	2	0.00	0.00	0.0225	2	0.00	0.00
745	0.0446	4	0.00	0.00	0.0570	5	0.00	0.00	0.0559	5	0.07	0.09	0.0578	5	0.15	0.31	0.0578	5	0.05	0.08
746	0.0566	5	0.00	0.00	0.0675	6	0.00	0.00	0.0675	6	0.00	0.00	0.0683	6	0.00	0.00	0.0686	6	0.00	0.00
747	0.0893	8	0.00	0.00	0.1121	10	0.00	0.00	0.1125	10	0.00	0.00	0.1125	10	0.09	0.27	0.1028	9	0.04	0.11
748	0.0221	2	0.00	0.00	0.0225	2	0.00	0.00	0.0225	2	0.00	0.00	0.0229	2	0.00	0.00	0.0233	2	0.00	0.00
749	0.0221	2	0.00	0.00	0.0221	2	0.00	0.00	0.0225	2	0.00	0.00	0.0225	2	0.00	0.00	0.0225	2	0.00	0.00
750	0.0668	6	0.06	0.14	0.0885	8	0.05	0.11	0.0896	8	0.02	0.05	0.0904	8	0.01	0.04	0.0934	8	0.00	0.00
751	0.0334	3	0.00	0.00	0.0218	2	0.00	0.00	0.0446	4	0.00	0.00	0.0334	3	0.00	0.00	0.0341	3	0.00	0.00

$$(**) SD = \frac{\sum (x_i - \bar{x})^2}{n-1}$$

**Table 14 (cont.).** Swept area, number of hauls and **Witch flounder** mean catch (Kg) and SD (\*\*) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "Vizconde de Eza".

Stratum	2016				2017				2018				2019							
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0233	2	0.50	0.71	0.0225	2	0.00	0.00	0.0221	2	0.48	0.68	0.0225	2	0.00	0.00				
387	0.0454	4	2.57	1.14	0.0446	4	1.16	1.38	0.0465	4	3.18	1.67	0.0450	4	1.97	1.90				
388	0.0570	5	2.82	3.53	0.0566	5	0.87	0.72	0.0566	5	0.53	0.38	0.0559	5	1.04	0.45				
389	0.0814	7	0.08	0.18	0.0799	7	0.00	0.01	0.0803	7	0.16	0.20	0.0784	7	0.60	0.48				
390	0.1391	12	0.00	0.00	0.1369	12	0.02	0.08	0.1358	12	0.18	0.63	0.1125	10	0.00	0.00				
391	0.0469	4	0.00	0.00	0.0458	4	0.00	0.00	0.0458	4	0.77	0.96	0.0450	4	0.00	0.00				
392	0.0233	2	1.56	2.16	0.0229	2	0.33	0.46	0.0229	2	1.93	2.72	0.0229	2	1.04	0.27				
729	0.0341	3	9.28	2.97	0.0345	3	2.76	1.00	0.0341	3	5.11	3.12	0.0338	3	2.31	1.43				
730	0.0233	2	0.26	0.36	0.0341	3	0.28	0.48	0.0330	3	1.40	1.68	0.0338	3	0.69	1.20				
731	0.0345	3	3.98	3.88	0.0338	3	4.62	2.71	0.0353	3	2.36	2.24	0.0341	3	2.96	2.34				
732	0.0454	4	5.68	2.50	0.0446	4	4.06	3.35	0.0461	4	1.21	1.35	0.0454	4	0.59	0.69				
733	0.0458	4	4.07	2.72	0.0450	4	5.74	6.81	0.0454	4	1.95	2.03	0.0450	4	0.85	0.63				
734	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00	0.0225	2	0.27	0.37	0.0229	2	0.08	0.11				
741	0.0233	2	0.00	0.00	0.0225	2	0.00	0.00	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00				
742	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00	0.0221	2	0.00	0.00	0.0221	2	0.00	0.00				
743	0.0229	2	0.00	0.00	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00	0.0225	2	0.00	0.00				
744	0.0229	2	0.00	0.00	0.0221	2	0.00	0.00	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00				
745	0.0574	5	0.01	0.01	0.0559	5	0.21	0.46	0.0596	5	0.02	0.04	0.0578	5	0.04	0.08				
746	0.0690	6	0.00	0.00	0.0683	6	0.00	0.00	0.0698	6	0.00	0.00	0.0679	6	0.00	0.00				
747	0.1140	10	0.00	0.00	0.1125	10	0.00	0.00	0.1140	10	0.00	0.00	0.1125	10	0.00	0.00				
748	0.0233	2	0.00	0.00	0.0225	2	0.34	0.48	0.0225	2	0.00	0.00	0.0225	2	0.49	0.69				
749	0.0233	2	0.00	0.00	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00	0.0221	2	0.00	0.00				
750	0.0930	8	0.00	0.00	0.0934	8	0.00	0.00	0.0904	8	0.00	0.00	0.0788	7	0.00	0.00				
751	0.0345	3	0.00	0.00	0.0349	3	0.00	0.00	0.0454	4	0.00	0.00	0.0338	3	0.00	0.00				

$$(**) SD = \frac{\sum (x_i - \bar{x})^2}{n-1}$$

**Table 15.** Stratified mean catches (Kg) and SD of **Witch flounder** by stratum and year (2003-2019). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey													
	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0.00	0.00	28.32	0.00	0.00	0.00	0.00	0.24	0.00	70.21	36.58	0.00	59.00	0.00
387	66.56	678.40	878.98	332.67	778.18	45.38	393.86	1189.70	294.85	926.08	551.94	2333.57	657.86	297.22
388	56.88	1544.74	312.80	532.50	653.38	473.74	709.43	535.00	625.89	761.55	789.97	363.57	1005.74	311.16
389	6.36	47.08	144.34	0.38	93.58	2.47	41.59	71.51	11.34	111.62	185.57	68.35	39.41	1.96
390	0.00	0.00	64.46	0.00	85.58	0.00	0.00	0.00	0.00	165.04	59.09	54.31	0.75	19.15
391	0.00	0.00	109.28	28.69	282.71	28.98	125.42	0.00	44.70	0.00	0.00	82.49	0.00	0.00
392	1.16	0.58	28.28	170.30	245.56	179.87	13.70	43.65	182.27	101.57	116.44	106.14	226.42	47.56
729	146.01	429.66	269.70	897.14	515.22	592.78	1370.20	2273.11	1952.50	1195.36	766.26	1638.66	1725.40	512.80
730	867.85	320.45	78.20	0.00	126.37	0.00	87.83	0.00	102.23	101.89	465.69	67.83	43.35	47.03
731	392.04	813.24	733.32	832.46	744.12	1294.34	1758.96	646.92	390.74	905.98	883.22	1219.39	859.97	998.42
732	1651.65	496.65	315.70	73.15	474.94	723.32	1281.47	594.65	783.26	825.13	1014.03	958.07	1311.39	938.15
733	n.s	582.50	1569.26	480.17	1293.90	1692.76	1979.35	468.35	506.08	998.01	269.51	883.47	951.39	1344.27
734	n.s	0.00	29.07	10.02	30.60	0.00	9.95	32.90	0.00	3.60	87.21	44.98	0.00	0.00
741	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.05	0.00	0.00
742	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
743	n.s	0.00	0.00	0.00	0.00	4.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
744	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
745	131.08	0.00	0.00	0.58	0.00	3.48	2.51	0.00	0.00	25.20	52.83	18.30	2.30	72.73
746	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
747	n.s	4.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.26	27.03	0.00	0.00
748	0.00	0.32	3.34	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.32	0.00	53.58
749	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	n.s	0.00	0.00	0.00	0.00	0.00	12.09	31.97	30.51	10.43	7.65	0.00	0.00	0.00
751	n.s	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	3319.59	4918.72	4565.04	3358.07	5324.12	5041.81	7786.36	5888.14	4924.70	6201.65	5348.23	7866.53	6882.96	4644.05
( $\bar{y}$ )	0.74	0.79	0.70	0.52	0.82	0.78	1.20	0.91	0.76	0.96	0.82	1.21	1.06	0.72
SD	0.12	0.13	0.20	0.12	0.13	0.13	0.24	0.15	0.18	0.14	0.11	0.19	0.15	0.15

**Table 15 (cont).** Stratified mean catches (Kg) and SD of **American plaice** by stratum and year (2003-2019). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey	
	2018	2019
385	56.64	0.00
387	813.44	504.51
388	188.00	369.50
389	82.39	306.64
390	148.13	0.00
391	216.22	0.00
392	279.13	150.51
729	950.40	429.97
730	237.43	117.87
731	509.11	639.86
732	279.91	136.35
733	455.66	199.31
734	40.55	12.24
741	0.00	0.00
742	0.00	0.00
743	0.00	0.00
744	0.00	0.00
745	6.68	12.81
746	0.00	0.00
747	0.00	0.00
748	0.00	77.12
749	0.00	0.00
750	0.00	0.00
751	0.00	0.00
TOTAL	4263.68	2956.67
( $\bar{y}$ )	0.66	0.46
SD	0.11	0.07

**Table 16.** Survey estimates (by the swept area method) of **Witch flounder** biomass (t.) and SD by stratum and year on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey													
	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0	0	2	0	0	0	0	0	0	6	3	0	5	0
387	6	63	78	30	72	4	34	106	26	82	48	204	58	27
388	5	147	28	47	58	43	62	48	55	67	68	32	88	27
389	1	4	13	0	8	0	4	6	1	10	16	6	3	0
390	0	0	6	0	7	0	0	0	0	15	5	5	0	2
391	0	0	10	3	25	3	11	0	4	0	0	7	0	0
392	0	0	2	15	22	16	1	4	16	9	10	9	19	4
729	14	39	24	80	46	52	122	202	174	105	68	142	152	45
730	78	29	7	0	12	0	8	0	9	9	40	6	4	4
731	34	70	64	74	68	114	156	58	34	81	77	106	75	89
732	147	47	28	7	43	64	114	52	69	73	89	82	116	84
733	n.s.	53	138	43	120	150	176	41	45	89	24	78	83	119
734	n.s.	0	3	1	3	0	1	3	0	0	8	4	0	0
741	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743	n.s.	0	0	0	0	0	0	0	0	0	0	0	0	0
744	n.s.	0	0	0	0	0	0	0	0	0	0	0	0	0
745	12	0	0	0	0	0	0	0	0	2	5	2	0	7
746	0	0	0	0	0	0	0	0	0	0	0	0	0	0
747	n.s.	0	0	0	0	0	0	0	0	0	6	2	0	0
748	0	0	0	0	0	0	0	0	0	0	0	0	0	5
749	0	0	0	0	0	0	0	0	0	0	0	0	0	0
750	n.s.	0	0	0	0	0	1	3	3	1	1	0	0	0
751	n.s.	n.s.	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	297	453	404	298	483	447	691	523	436	550	467	685	603	412
SD	51	75	116	71	80	74	137	86	103	80	65	107	83	88

**Table 16 (cont).** Survey estimates (by the swept area method) of **Witch flounder** biomass (t.) and SD by stratum and year on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

Stratum	Survey	
	2018	2019
385	5	0
387	70	45
388	17	33
389	7	27
390	13	0
391	19	0
392	24	13
729	84	38
730	22	10
731	43	56
732	24	12
733	40	18
734	4	1
741	0	0
742	0	0
743	0	0
744	0	0
745	1	1
746	0	0
747	0	0
748	0	7
749	0	0
750	0	0
751	0	0
TOTAL	372	262
SD	60	40

**Table 17. Witch flounder length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2013 (R/V *Vizconde de Eza*). Indet. means indeterminate.**

Length (cm.)	2006				2007				2008				2009			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.07	0.07
8	0.02	0.00	0.06	0.09	0.00	0.01	0.02	0.03	0.00	0.01	0.22	0.23	0.00	0.00	0.07	0.07
10	0.03	0.02	0.01	0.07	0.02	0.01	0.05	0.09	0.03	0.01	0.08	0.12	0.00	0.00	0.01	0.01
12	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.02
14	0.04	0.01	0.01	0.06	0.01	0.07	0.03	0.11	0.07	0.12	0.04	0.23	0.03	0.05	0.00	0.08
16	0.15	0.18	0.00	0.34	0.03	0.02	0.01	0.07	0.11	0.10	0.02	0.23	0.03	0.04	0.00	0.07
18	0.11	0.15	0.00	0.26	0.02	0.01	0.01	0.04	0.17	0.20	0.00	0.37	0.04	0.05	0.00	0.09
20	0.06	0.07	0.00	0.14	0.04	0.13	0.00	0.17	0.05	0.08	0.00	0.13	0.01	0.07	0.00	0.08
22	0.10	0.32	0.00	0.42	0.12	0.26	0.00	0.38	0.15	0.10	0.00	0.25	0.11	0.10	0.00	0.21
24	0.22	0.31	0.00	0.52	0.22	0.15	0.00	0.37	0.11	0.11	0.00	0.23	0.07	0.15	0.00	0.22
26	0.02	0.11	0.00	0.13	0.14	0.10	0.01	0.25	0.13	0.08	0.00	0.21	0.07	0.10	0.00	0.17
28	0.07	0.09	0.00	0.16	0.32	0.34	0.00	0.66	0.29	0.32	0.00	0.61	0.07	0.16	0.00	0.23
30	0.10	0.22	0.00	0.33	0.12	0.11	0.00	0.23	0.09	0.15	0.00	0.24	0.15	0.15	0.00	0.30
32	0.21	0.24	0.00	0.46	0.03	0.03	0.00	0.07	0.14	0.14	0.00	0.29	0.23	0.16	0.00	0.40
34	0.13	0.12	0.00	0.25	0.03	0.07	0.00	0.10	0.06	0.09	0.00	0.15	0.10	0.16	0.00	0.26
36	0.02	0.05	0.00	0.07	0.03	0.04	0.00	0.08	0.09	0.08	0.00	0.16	0.05	0.15	0.00	0.20
38	0.02	0.13	0.00	0.15	0.02	0.08	0.00	0.10	0.04	0.17	0.00	0.21	0.08	0.12	0.00	0.20
40	0.03	0.09	0.00	0.12	0.02	0.03	0.00	0.05	0.04	0.11	0.00	0.15	0.02	0.13	0.00	0.15
42	0.00	0.07	0.00	0.07	0.02	0.01	0.00	0.03	0.01	0.11	0.00	0.12	0.01	0.14	0.00	0.15
44	0.00	0.07	0.00	0.07	0.00	0.04	0.00	0.04	0.00	0.06	0.00	0.06	0.01	0.04	0.00	0.05
46	0.00	0.01	0.00	0.01	0.00	0.06	0.00	0.06	0.00	0.12	0.00	0.12	0.00	0.10	0.00	0.10
48	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.04	0.00	0.04
50	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>1.36</b>	<b>2.31</b>	<b>0.09</b>	<b>3.76</b>	<b>1.21</b>	<b>1.62</b>	<b>0.14</b>	<b>2.97</b>	<b>1.59</b>	<b>2.19</b>	<b>0.38</b>	<b>4.16</b>	<b>1.11</b>	<b>1.93</b>	<b>0.15</b>	<b>3.18</b>
N° samples:				32				22				36				28
N° Ind.:	113	198	8	319	106	139	13	258	159	223	37	419	110	193	13	316
Sampled catch:				64				46				83				80
Range:				8-60				9-54				7-54				6-50
Total catch:				64				46				83				80
<b>Total valid hauls:</b>				<b>100</b>				<b>94</b>				<b>100</b>				<b>98</b>



**Table 17 (cont.). Witch flounder** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2013 (R/V *Vizconde de Eza*). Indet. means indeterminate.

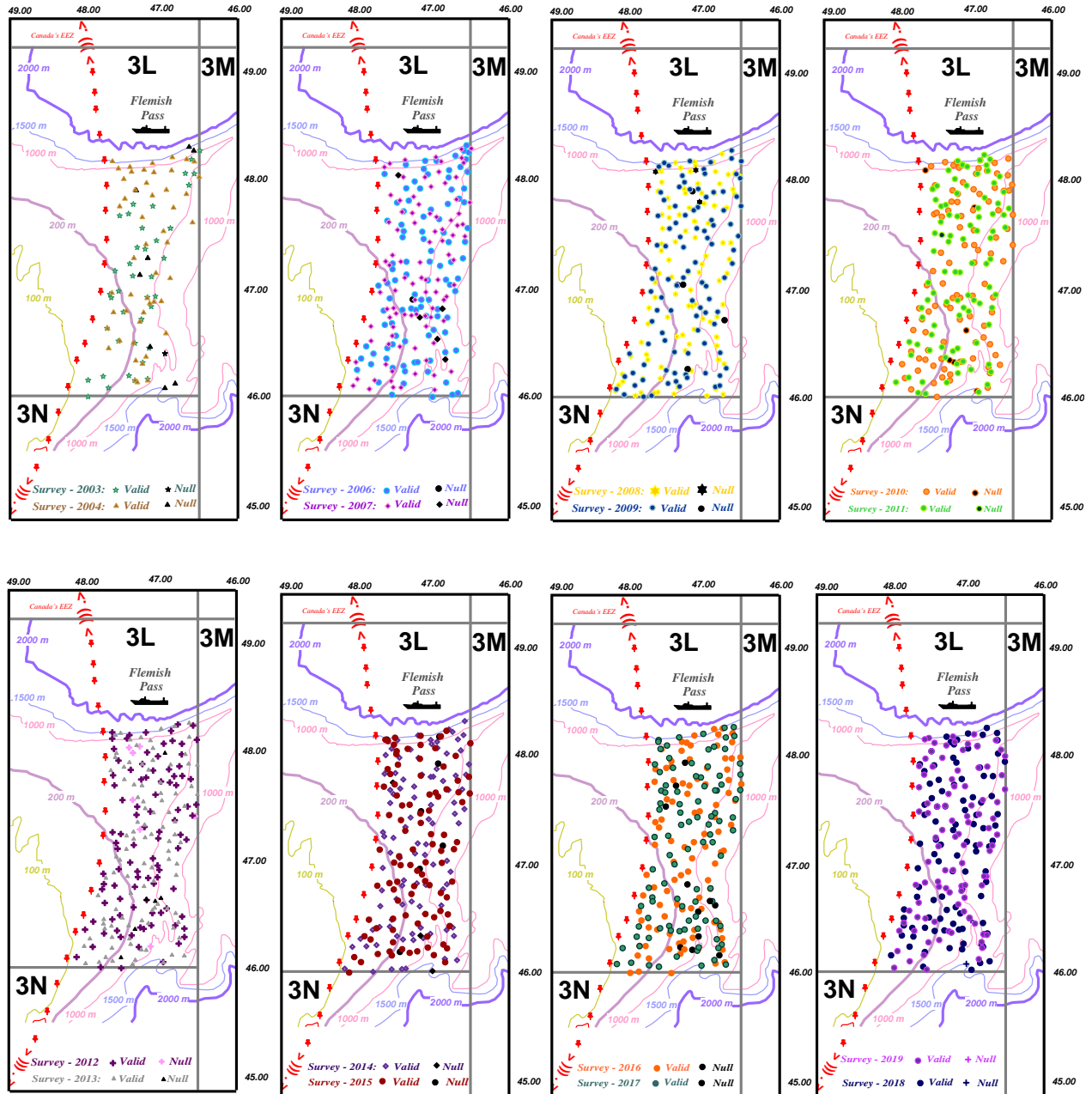
Length (cm.)	2010				2011				2012				2013			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00
8	0.00	0.00	0.18	0.18	0.00	0.01	0.06	0.07	0.00	0.00	0.07	0.07	0.01	0.00	0.00	0.01
10	0.00	0.02	0.04	0.06	0.00	0.00	0.04	0.04	0.00	0.00	0.01	0.01	0.02	0.00	0.00	0.02
12	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.02	0.02	0.00	0.01	0.03	0.01	0.04	0.01	0.06
14	0.06	0.06	0.02	0.15	0.03	0.03	0.00	0.06	0.04	0.07	0.00	0.11	0.06	0.04	0.00	0.10
16	0.05	0.05	0.00	0.10	0.04	0.02	0.00	0.06	0.02	0.11	0.01	0.14	0.03	0.05	0.01	0.09
18	0.00	0.03	0.01	0.04	0.07	0.03	0.00	0.11	0.00	0.03	0.00	0.03	0.07	0.02	0.00	0.09
20	0.03	0.05	0.00	0.08	0.06	0.03	0.00	0.09	0.03	0.02	0.00	0.05	0.16	0.01	0.00	0.17
22	0.10	0.09	0.00	0.19	0.08	0.09	0.00	0.17	0.01	0.07	0.00	0.08	0.15	0.13	0.00	0.27
24	0.13	0.19	0.00	0.33	0.04	0.06	0.00	0.10	0.04	0.03	0.00	0.07	0.13	0.20	0.00	0.34
26	0.15	0.12	0.00	0.27	0.07	0.09	0.00	0.16	0.04	0.12	0.00	0.15	0.06	0.06	0.00	0.11
28	0.30	0.24	0.00	0.55	0.07	0.20	0.00	0.27	0.05	0.10	0.00	0.15	0.07	0.10	0.00	0.17
30	0.34	0.24	0.00	0.58	0.19	0.19	0.00	0.38	0.05	0.11	0.00	0.16	0.17	0.13	0.00	0.30
32	0.12	0.21	0.00	0.32	0.16	0.14	0.00	0.30	0.06	0.08	0.00	0.14	0.08	0.05	0.00	0.13
34	0.08	0.23	0.00	0.31	0.07	0.19	0.00	0.27	0.03	0.08	0.00	0.11	0.08	0.13	0.00	0.21
36	0.11	0.23	0.00	0.33	0.03	0.09	0.00	0.12	0.08	0.12	0.00	0.20	0.04	0.12	0.00	0.15
38	0.10	0.17	0.00	0.27	0.05	0.20	0.00	0.25	0.06	0.18	0.00	0.24	0.02	0.15	0.00	0.18
40	0.10	0.27	0.00	0.37	0.04	0.16	0.00	0.20	0.02	0.15	0.00	0.17	0.03	0.20	0.00	0.23
42	0.02	0.16	0.00	0.18	0.03	0.15	0.00	0.18	0.02	0.23	0.00	0.25	0.01	0.20	0.00	0.21
44	0.00	0.11	0.00	0.11	0.00	0.19	0.00	0.19	0.00	0.11	0.00	0.11	0.00	0.16	0.00	0.16
46	0.00	0.07	0.00	0.07	0.00	0.07	0.00	0.07	0.00	0.09	0.00	0.09	0.00	0.11	0.00	0.11
48	0.00	0.06	0.00	0.06	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.09	0.00	0.09
50	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02
52	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
54	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>1.69</b>	<b>2.65</b>	<b>0.28</b>	<b>4.62</b>	<b>1.04</b>	<b>2.03</b>	<b>0.10</b>	<b>3.17</b>	<b>0.56</b>	<b>1.75</b>	<b>0.14</b>	<b>2.44</b>	<b>1.19</b>	<b>2.04</b>	<b>0.02</b>	<b>3.25</b>
N° samples:				35				29				31				38
N° Ind.:	169	272	25	466	103	206	10	319	56	178	12	246	117	202	2	321
Sampled catch:				123				92				78				97
Range:				6-55				8-53				7-56				9-58
Total catch:				123				92				78				97
Total valid hauls:				97				89				98				100

**Table 18. Witch flounder length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2014-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.**

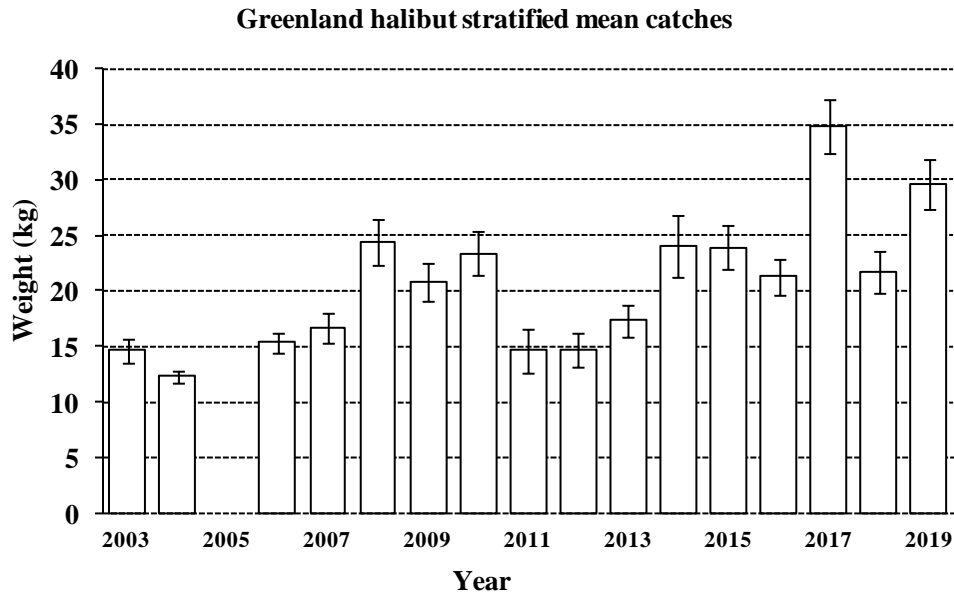
Length (cm.)	2014				2015				2016				2017			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.03	0.03	0.00	0.00	0.02	0.02
8	0.00	0.00	0.01	0.01	0.00	0.00	0.14	0.14	0.00	0.00	0.04	0.04	0.00	0.00	0.02	0.02
10	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
12	0.01	0.01	0.01	0.03	0.01	0.00	0.01	0.02	0.03	0.05	0.06	0.14	0.01	0.01	0.00	0.02
14	0.03	0.00	0.00	0.03	0.01	0.01	0.00	0.02	0.05	0.04	0.00	0.09	0.03	0.07	0.00	0.10
16	0.02	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.01	0.02	0.00	0.03	0.02	0.02	0.00	0.04
18	0.02	0.04	0.00	0.06	0.02	0.01	0.00	0.03	0.01	0.02	0.00	0.03	0.02	0.04	0.00	0.06
20	0.06	0.05	0.00	0.11	0.06	0.12	0.00	0.18	0.02	0.01	0.00	0.03	0.04	0.06	0.00	0.10
22	0.01	0.02	0.00	0.03	0.03	0.09	0.00	0.11	0.03	0.03	0.00	0.06	0.02	0.09	0.00	0.11
24	0.03	0.05	0.00	0.08	0.03	0.08	0.00	0.11	0.03	0.06	0.00	0.08	0.02	0.03	0.00	0.05
26	0.13	0.07	0.00	0.19	0.04	0.03	0.00	0.07	0.02	0.08	0.00	0.11	0.00	0.03	0.00	0.03
28	0.11	0.15	0.00	0.26	0.13	0.16	0.00	0.29	0.04	0.16	0.00	0.20	0.03	0.02	0.00	0.05
30	0.11	0.14	0.00	0.25	0.18	0.13	0.00	0.31	0.08	0.07	0.00	0.15	0.04	0.08	0.00	0.11
32	0.07	0.09	0.00	0.16	0.29	0.21	0.00	0.50	0.08	0.12	0.00	0.20	0.07	0.08	0.00	0.14
34	0.06	0.09	0.00	0.16	0.18	0.23	0.00	0.41	0.13	0.11	0.00	0.25	0.06	0.14	0.00	0.20
36	0.04	0.12	0.00	0.16	0.12	0.10	0.00	0.22	0.11	0.27	0.00	0.38	0.05	0.07	0.00	0.12
38	0.03	0.06	0.00	0.09	0.08	0.21	0.00	0.29	0.08	0.22	0.00	0.31	0.03	0.08	0.00	0.11
40	0.00	0.15	0.00	0.15	0.03	0.20	0.00	0.23	0.03	0.17	0.00	0.20	0.04	0.15	0.00	0.19
42	0.01	0.14	0.00	0.15	0.03	0.14	0.00	0.17	0.02	0.21	0.00	0.23	0.01	0.13	0.00	0.14
44	0.00	0.20	0.00	0.20	0.00	0.18	0.00	0.18	0.02	0.14	0.00	0.15	0.01	0.11	0.00	0.12
46	0.00	0.12	0.00	0.12	0.00	0.13	0.00	0.13	0.00	0.15	0.00	0.15	0.01	0.05	0.00	0.06
48	0.00	0.10	0.00	0.10	0.00	0.06	0.00	0.06	0.00	0.08	0.00	0.08	0.00	0.11	0.00	0.11
50	0.00	0.04	0.00	0.04	0.00	0.07	0.00	0.07	0.00	0.05	0.00	0.05	0.00	0.04	0.00	0.04
52	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
54	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.74	1.66	0.03	2.43	1.23	2.20	0.20	3.64	0.80	2.07	0.15	3.02	0.51	1.44	0.04	1.99
N° samples:				36				37				32				29
N° Ind.:	73	161	3	237	123	223	19	365	79	212	14	305	51	148	4	203
Sampled catch:				83				123				108				74
Range:				9-52				6-54				5-51				7-55
Total catch:				83				123				108				74
Total valid hauls:				99				97				98				99

**Table 18 (cont).** Witch flounder length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2014-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

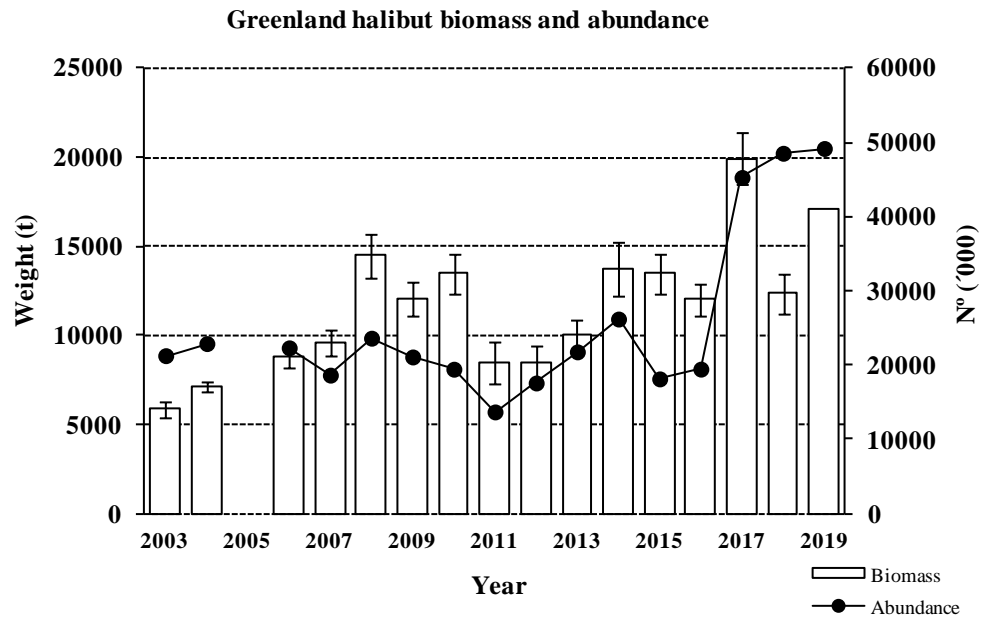
Length (cm.)	2018				2019											
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
6	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.02								
8	0.00	0.00	0.01	0.01	0.00	0.00	0.33	0.33								
10	0.00	0.00	0.02	0.02	0.00	0.00	0.07	0.07								
12	0.01	0.00	0.00	0.01	0.00	0.00	0.06	0.06								
14	0.01	0.03	0.00	0.04	0.01	0.01	0.02	0.04								
16	0.02	0.02	0.00	0.04	0.03	0.13	0.01	0.18								
18	0.04	0.01	0.00	0.05	0.02	0.00	0.00	0.02								
20	0.03	0.06	0.00	0.09	0.02	0.04	0.00	0.06								
22	0.03	0.07	0.00	0.10	0.09	0.06	0.00	0.15								
24	0.03	0.00	0.00	0.03	0.08	0.14	0.00	0.21								
26	0.03	0.03	0.00	0.06	0.09	0.04	0.00	0.13								
28	0.02	0.06	0.00	0.08	0.07	0.17	0.00	0.23								
30	0.03	0.06	0.00	0.09	0.12	0.07	0.00	0.19								
32	0.02	0.02	0.00	0.04	0.06	0.03	0.00	0.09								
34	0.02	0.07	0.00	0.09	0.02	0.08	0.00	0.10								
36	0.02	0.07	0.00	0.09	0.02	0.07	0.00	0.09								
38	0.04	0.09	0.00	0.13	0.01	0.02	0.00	0.03								
40	0.02	0.10	0.00	0.12	0.02	0.06	0.00	0.08								
42	0.04	0.11	0.00	0.15	0.00	0.08	0.00	0.08								
44	0.00	0.09	0.00	0.09	0.00	0.02	0.00	0.02								
46	0.01	0.07	0.00	0.08	0.00	0.04	0.00	0.04								
48	0.00	0.08	0.00	0.08	0.00	0.06	0.00	0.06								
50	0.00	0.07	0.00	0.07	0.00	0.03	0.00	0.03								
52	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01								
54	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00								
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Total	0.43	1.14	0.04	1.61	0.66	1.16	0.51	2.33								
N° samples:				33				31								
N° Ind.:	42	113	4	159	61	111	46	218								
Sampled catch:				66				44								
Range:				7-54				7-53								
Total catch:				66				44								
Total valid hauls:				100				96								



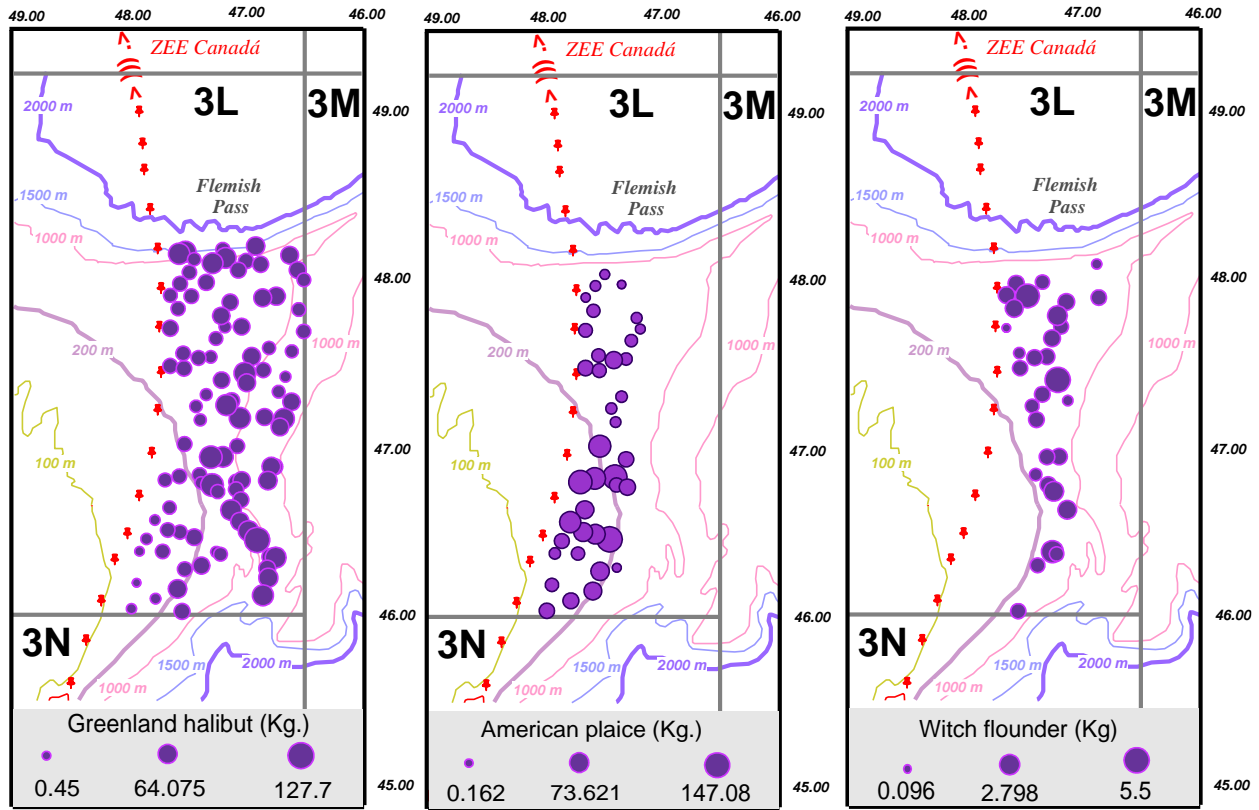
**Figure 1.** Haul positions of the Spanish surveys in NAFO Division 3L in the period 2003 - 2019 (R/V “Vizconde de Eza”).



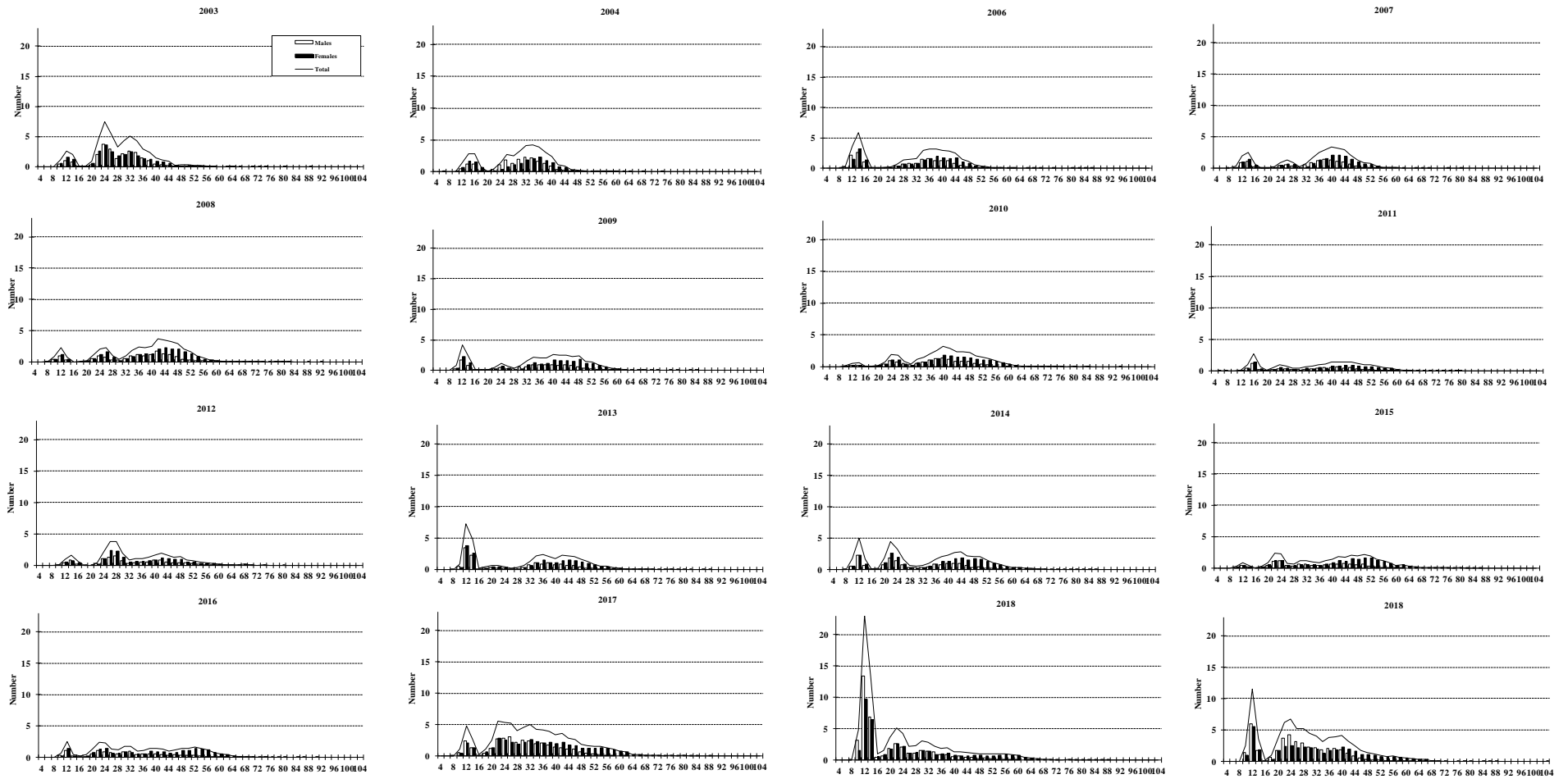
**Figure 2.** Greenland halibut stratified mean catches in Kg and  $\pm$ SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V “Vizconde de Eza”). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.



**Figure 3.** Greenland halibut abundance ('000), biomass in tonnes and  $\pm$ SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V “Vizconde de Eza”). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.



**Figure 4.** Distribution of the catches per haul for **Greenland halibut**, **American plaice** and **witch flounder** in 2019 Spanish 3L survey.



**Figure 5.** Greenland halibut length distribution (cm) in NAFO 3L: 2003-2019. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

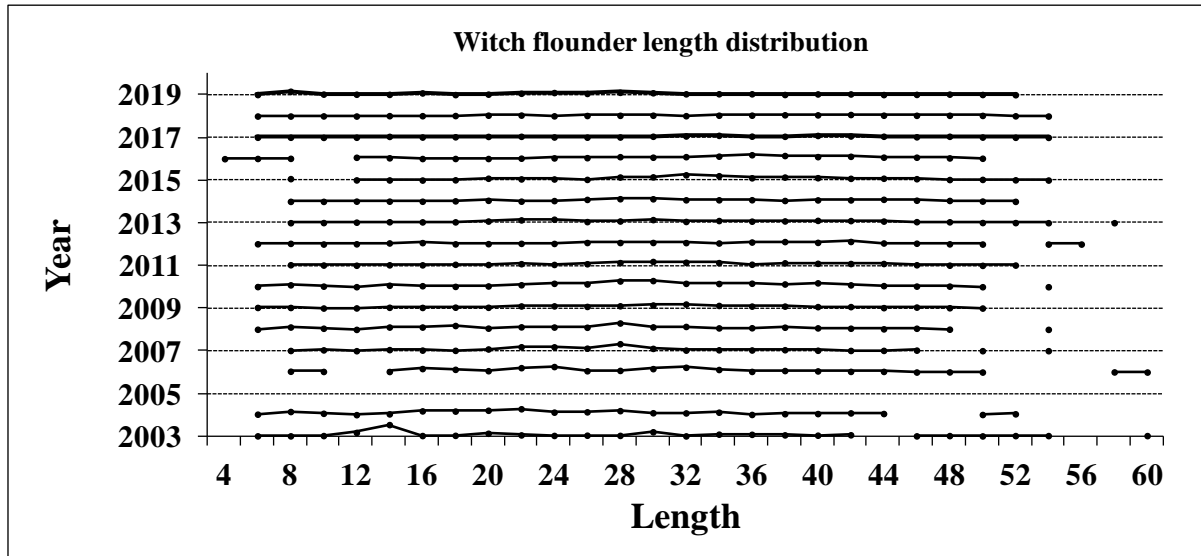
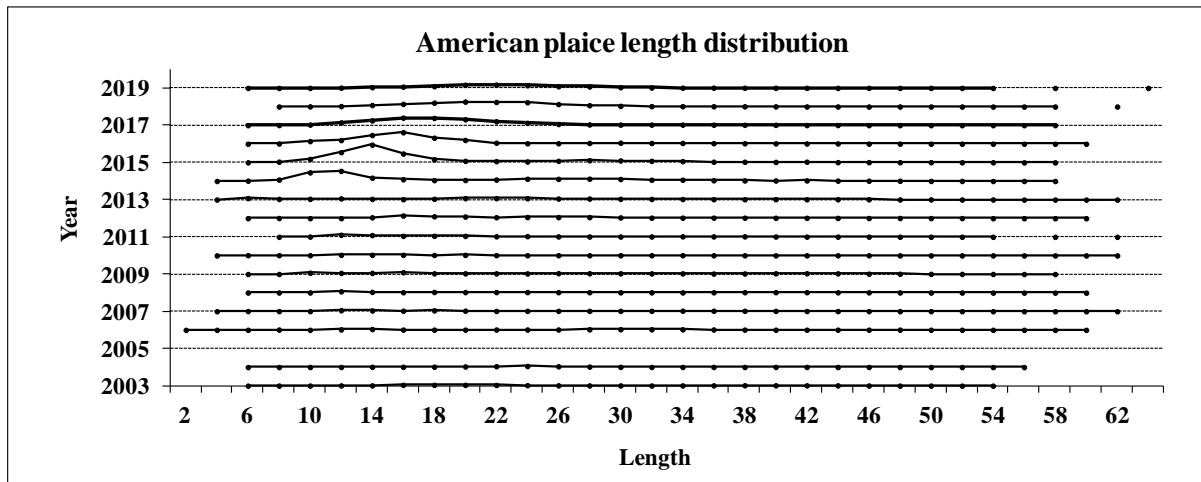
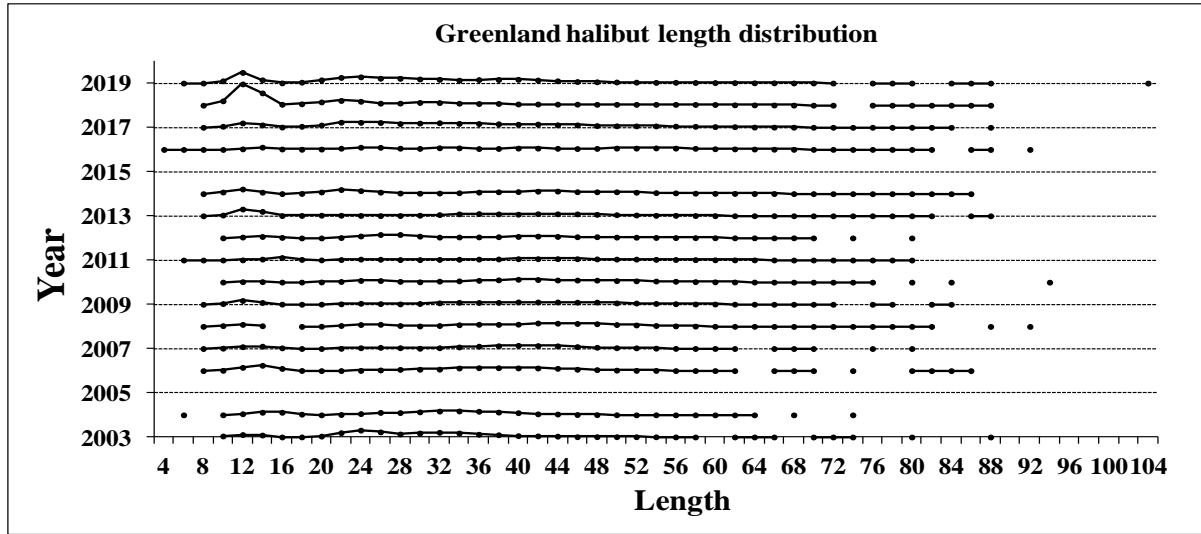
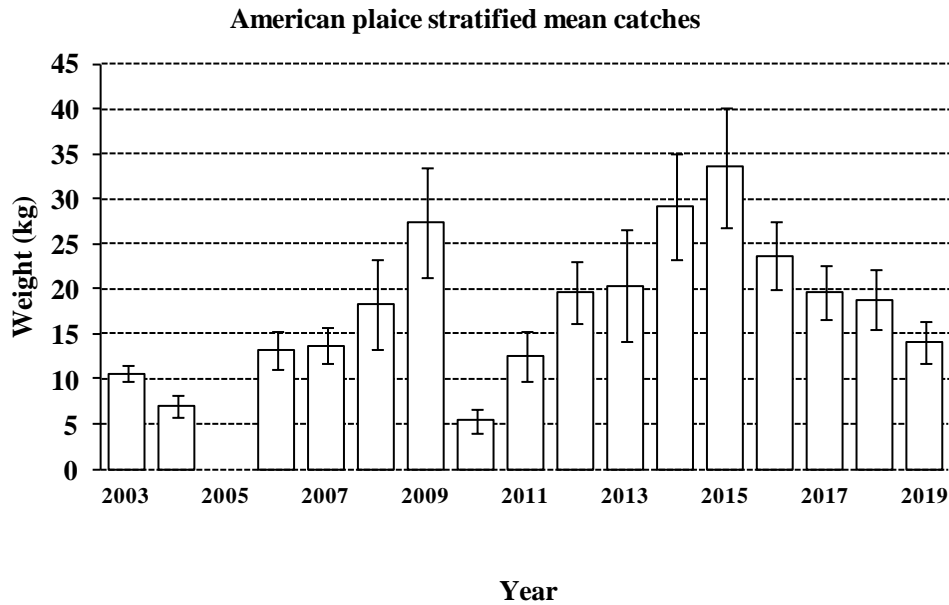
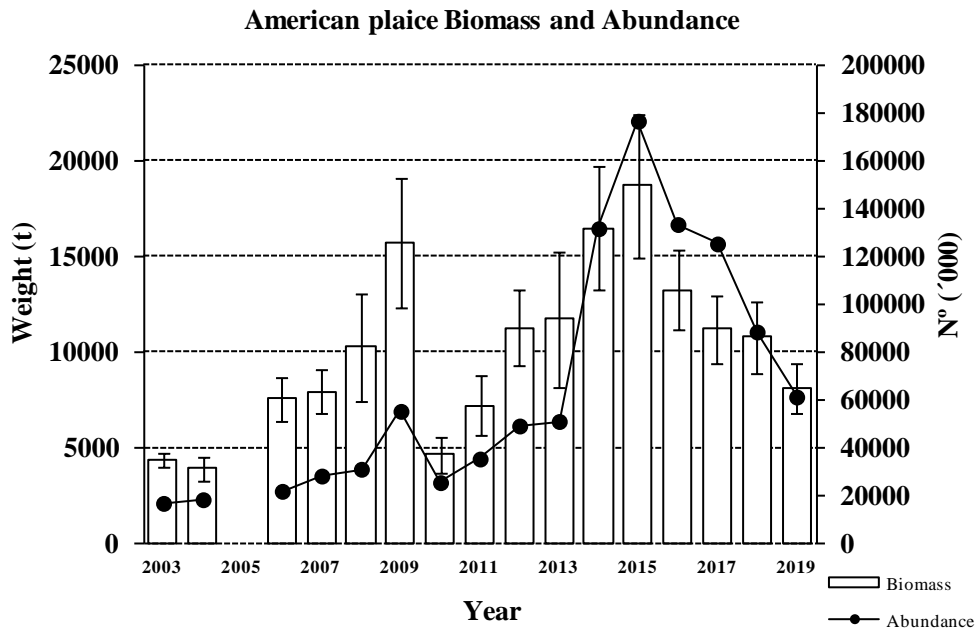


Figure 6. Greenland halibut, American plaice and witch flounder length distribution (cm) in NAFO 3L: 2003-2019.

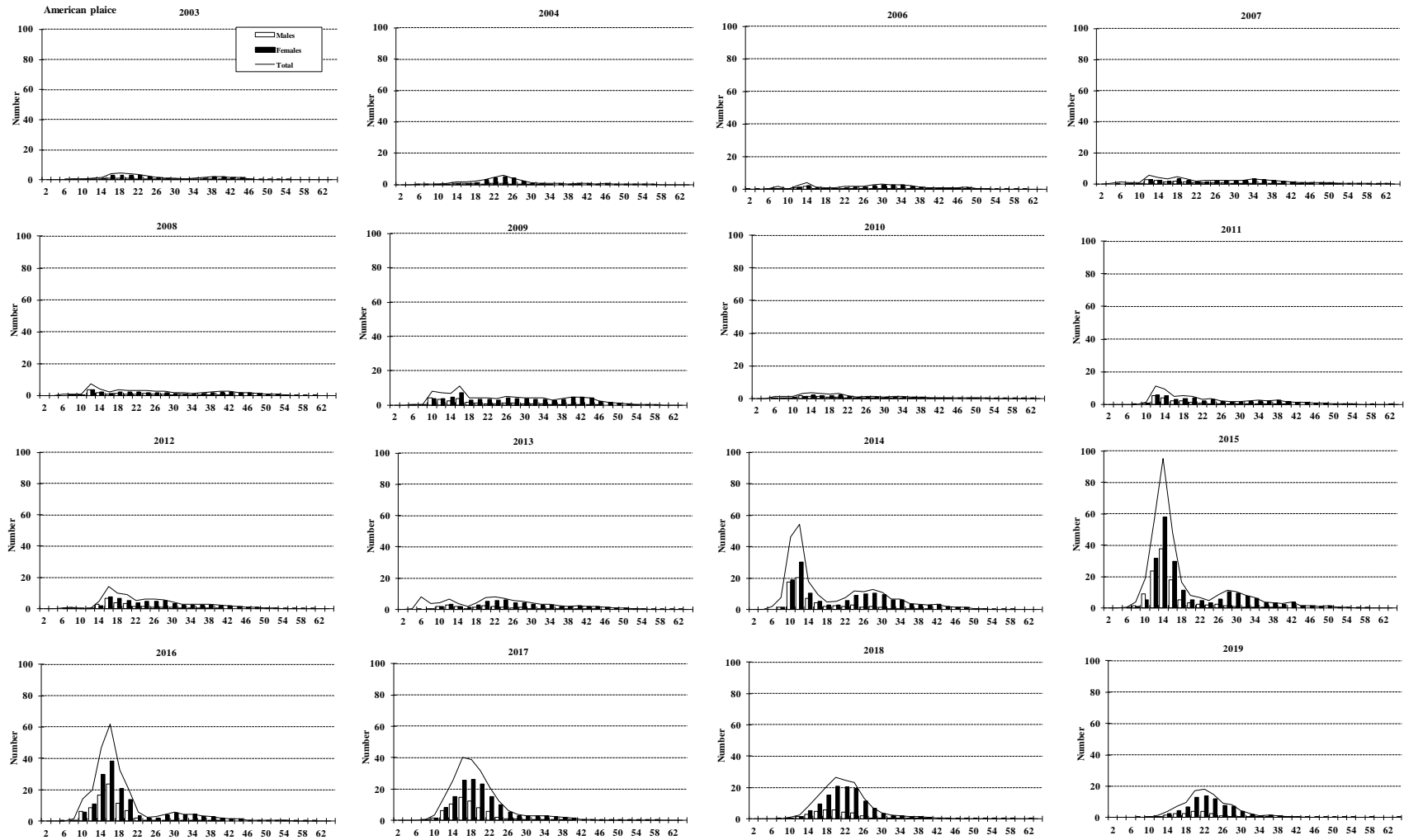




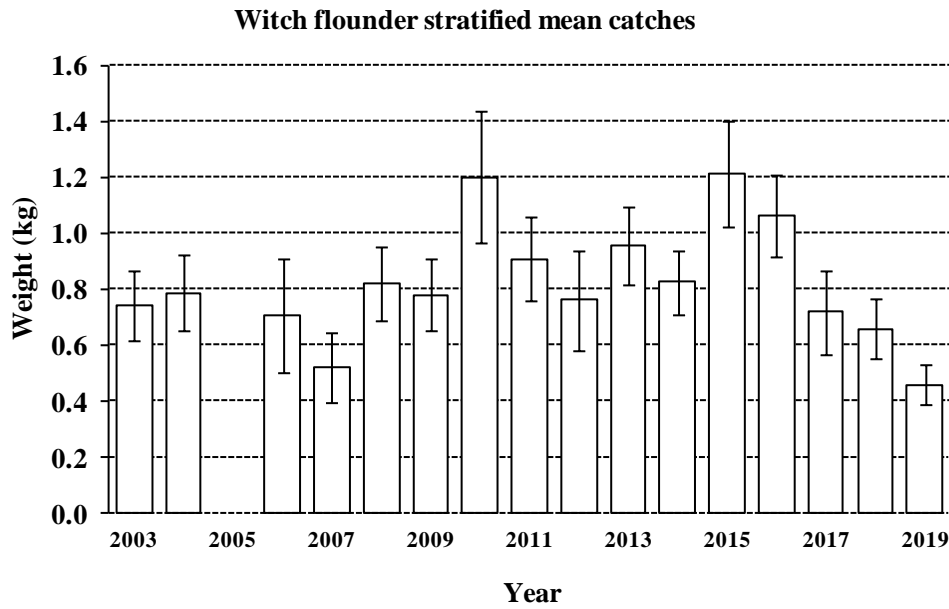
**Figure 7.** American plaice stratified mean catches in Kg and  $\pm$ SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V “*Vizconde de Eza*”). In 2003, the data correspond to 69% of the total area prospected in 2006-2019



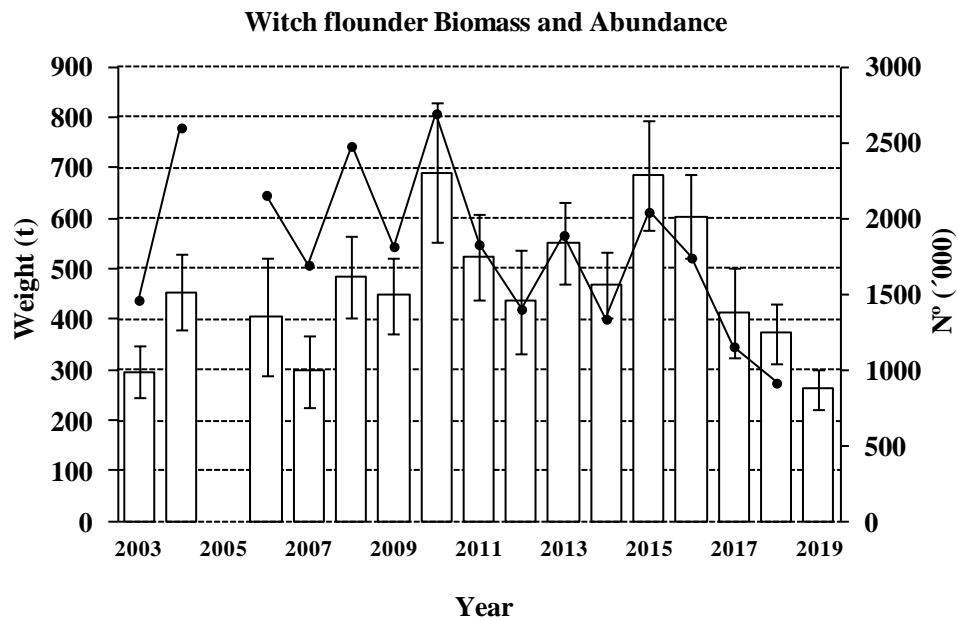
**Figure 8.** American plaice abundance ('000), biomass in tonnes and  $\pm$ SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V “*Vizconde de Eza*”). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.



**Figure 9.** American plaice length distribution (cm) in NAFO 3L: 2003-2019. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.



**Figure 10.** Witch flounder stratified mean catches in Kg and  $\pm$ SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V “*Vizconde de Eza*”). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.



**Figure 11.** Witch flounder abundance ('000), biomass in tonnes and  $\pm$ SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V “*Vizconde de Eza*”). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

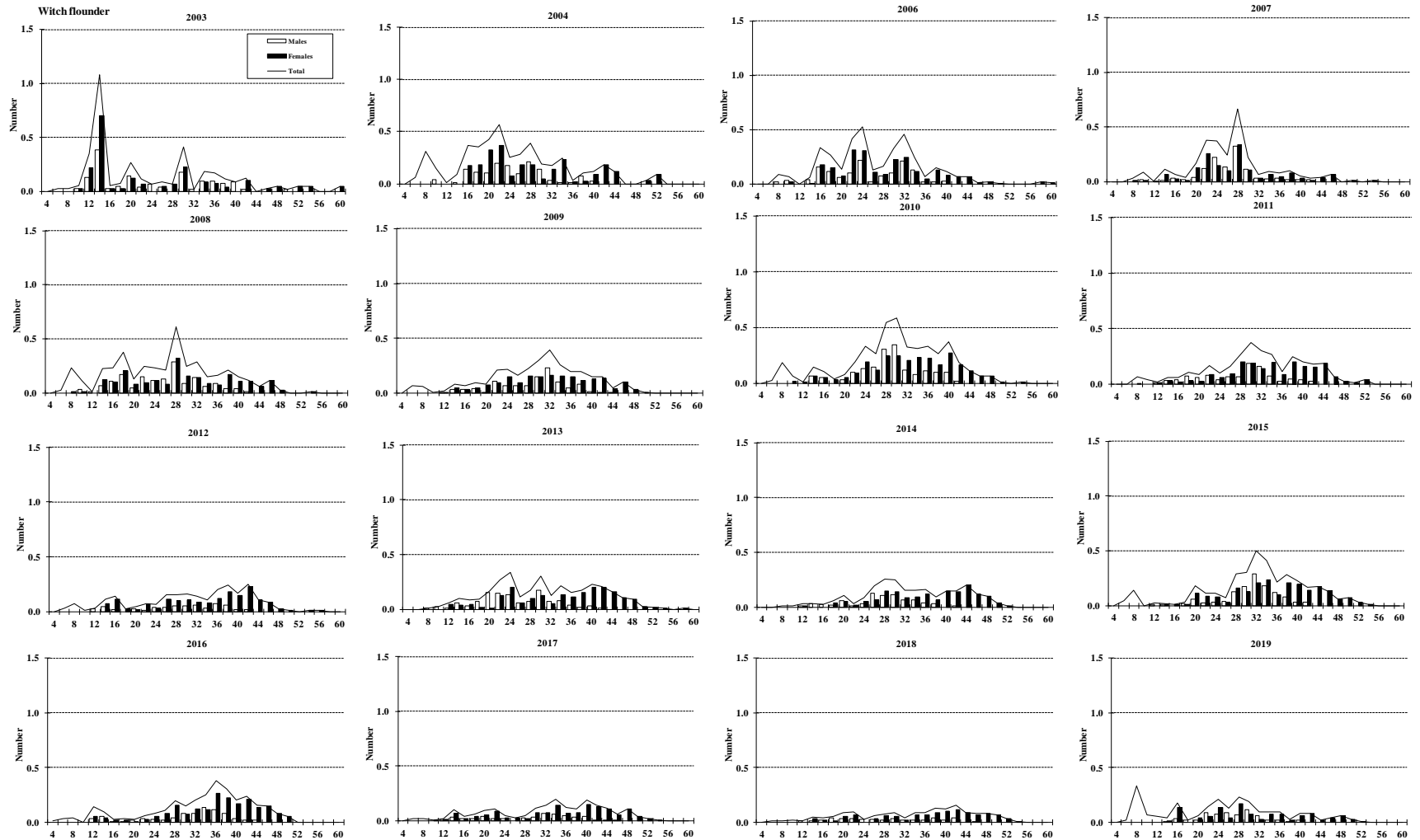


Figure 12. Witch flounder length distribution (cm) in NAFO 3L: 2006-2019. Number per stratified mean catches.