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Results for the Spanish Survey in the NAFO Regulatory Area of Division 3L for the period 2003-2016

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 2003-2016. Greenland halibut biomass and abundance estimates presented an increasing trend since 2011, reaching in 2014 one of the highest values of the entire time-series. In the last two years, the biomass show a slight decrease but they remain in the highest values of the series. For American plaice biomass and abundance estimates show an increasing trend since 2010, reaching in 2015 the highest value in the series; in 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.

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 2003-2016.

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 2003-2016.

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 ($\overline{y}_i$) and the variance (Var_i) are calculated by stratum by the following formulas:

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

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

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

$$\overline{y}_i^{str} = \overline{y}_i n_i, \quad i = 1,...,h$$

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

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

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

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

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

Results

In 2016, 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 July 28th to August 17th and following the same procedure as in previous years. A total of 105 hauls (7 of them null) were performed in a depth range of 126-1447 m. (Table 1).

Biological studies

Biological data (length, sex, sexual maturity, weight and stomach repletion degree) on 9 target species and other 38 species were collected from Div. 3L in 2016 (15467 individuals sampled).

Maturity and fecundity – 313 samples for histological maturity and fecundity of Greenland halibut, cod, American plaice and roughhead grenadier were taken.

Age and Growth – otoliths (1148 samples) of Greenland halibut, American plaice, roughhead grenadier and cod were collected for growth studies.

Feeding studies were performed on 24 demersal species and 3291 stomach contents were analysed from depths of 126 to 1447 m.

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 87 fishing stations in a depth range of 108-1430 m. The minimum and maximum observed temperatures were –1.30 and 3.83 ºC respectively and the observed salinity range was 33.16 - 34.92 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, Tª, fishing time and other data were collected related to marine mammals throughout the survey. In 10 hauls, observations of 3 marine mammals species (*Physeter macrocephalus, Hyperoodon Ampullatus and Globicephala melas*) were recorded (Román *et al,* 2015).

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 grisseus, Morus bassanus and Catharacta skua* were the most common seabird species.

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*., 2016.

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 (1978-2015), EU in Div. 3M (1988-2015), EU-Spain in Div. 3NO (1995-2015) and EU-Spain in Div. 3L (2003-2015).

Catches increased sharply in 1990 due to a developing fishery in the NAFO Regulatory Area in Div. 3LMNO and continued at high levels during 1991-94. The fishable biomass declined to low levels in 1995-98 due to very high catches and high fishing mortality. It increased during 1998-2001 due to greatly reduced catches, much lower fishing mortality and improved recruitment. Biomass increased over 2004-2010 with decreased in fishing mortality. In 2003, a fifteen year rebuilding plan was implemented by Fisheries Commission for this stock (NAFO, 2016)

Survey data from 2010-2015 are variable which complicates the interpretation of overall status. The surveys show differing trends over this period. Abundance and biomass indices from the Canadian spring surveys in Div. 3LNO declined from relatively high values in the late 1990s and has been relatively low in most years thereafter. In 2013 and 2014, both abundance and biomass were below the time-series average. The biomass index for the survey of the NAFO Regulatory Area (NRA) in Div. 3L increased from 2006 to 2008. After declining to lower levels in 2011 and 2012 it has increased since and 2014 and 2015 are among the highest in the series (NAFO, 2016).

Mean catches and biomass
Table 3 shows the swept area, the tow number, the mean catches and their variance per haul and year (2006-2016) 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 (2006-2016).

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 2008 and 2014. In 2016, there was a slight decrease in the biomass index. 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 2016 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 (2006-2016), 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 and 2014 there is a quite good presence of small individuals (<30cm).

In Figures 5 and 6 the evolution along the years can be followed.

American plaice (*Hippoglossoides platesoides* 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, 2016).

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 (2003-2016) of biomass and their SD estimates of American plaice are shown in Table 11. Length-weight relationships are presented in Table 6 (2006-2016).

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 in 2016. 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 2016 Spanish 3L survey.

Length distribution
Tables 12 and 13 present the stratified mean catches per haul length distribution by sex and year (2006-2016). 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.

In last years it can be seen a great increase of small individuals (individuals <20 cm). There is higher proportion of females than males.

Witch flounder (*Glyptocephalus cynoglossus* Linnaeus, 1758)

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. Since then, catches have averaged below 500 t. Based on survey indices for the current year there is nothing to indicate a change in the status of the stock (NAFO, 2016).

Mean catches and biomass
Table 14 shows the swept area, the tow number, the mean catches and their variance per haul and year (2006-2016) 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 (2006-2016). Figure 4 shows a map with the distribution of the witch flounder catches per haul in 2016 Spanish 3L survey.

Witch flounder indices show no clear trend throughout the period 2003-2016, 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 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 (2006-2016), 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.
The highest recruitment was in 2003, but since then the number of younger individuals have declined.

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TABLE 1.- Spanish bottom trawl surveys in NAFO Division 3L for the period 2003-2016.

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

TABLE 2.- Technical data of the Spanish survey in NAFO Division 3L for the period 2003-2016.

Procedure	Specification
Vessel	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
Fishing gear type	*Campelen 1800*
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	$22.287 * Depth (m)^{0.6667}$
Mesh size in the cod-end	44 mm
Type of survey:	Stratified random bottom trawl survey
Criterion to change position of a selected tow	Unsuitable bottom for trawling according to commercial fish information or ecosonder register. Information on gear damage from previous surveys.
Criterion to reject data from tow	- Severe tears in the gear - tears in cod-end - Less of 20 minutes tow - 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 2006-2016, 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	15.721	8.173	0.0225	2	16.750	6.293	0.0229	2	18.011	17.521	0.0225	2	4.975	0.318	0.0225	2	1.250	1.768
387	0.0225	2	52.500	4.950	0.0225	2	31.050	6.576	0.0435	4	46.511	13.072	0.0439	4	33.070	21.146	0.0458	4	23.848	6.951
388	0.0566	5	47.424	8.026	0.0563	5	50.036	21.899	0.0559	5	31.870	17.546	0.0555	5	13.421	9.628	0.0570	5	19.602	14.676
389	0.0795	7	32.941	14.261	0.0900	8	37.473	14.697	0.0780	7	42.616	22.552	0.0803	7	19.759	12.838	0.0795	7	10.144	8.949
390	0.1249	11	12.967	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	4	17.633	5.302	0.0450	4	15.750	5.063	0.0454	4	22.882	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	2	42.350	34.153	0.0221	2	11.370	3.210	0.0229	2	13.289	8.925	0.0225	2	10.390	2.673
729	0.0338	3	24.120	9.552	0.0338	3	24.695	4.326	0.0338	3	17.887	7.697	0.0341	3	24.099	8.265	0.0338	3	20.733	6.933
730	0.0326	3	8.403	6.415	0.0225	2	4.840	3.620	0.0323	3	40.777	14.460	0.0338	3	30.067	18.658	0.0334	3	20.463	2.567
731	0.0341	3	16.643	6.408	0.0338	3	31.299	16.813	0.0330	3	42.527	10.506	0.0341	3	22.403	5.724	0.0338	3	39.567	9.874
732	0.0334	3	6.570	3.380	0.0338	3	9.847	3.027	0.0446	4	42.878	42.441	0.0450	4	48.133	5.976	0.0450	4	56.683	13.345
733	0.0454	4	18.556	8.530	0.0338	3	24.610	12.655	0.0431	4	31.780	5.015	0.0450	4	36.692	27.661	0.0450	4	37.143	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	2	58.850	16.051	0.0225	2	32.400	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	2	35.435	26.962	0.0225	2	29.235	15.450
742	0.0229	2	10.593	1.453	0.0225	2	4.728	1.503	0.0210	2	14.420	16.150	0.0214	2	38.950	16.334	0.0225	2	57.540	42.936
743	0.0225	2	4.750	6.718	0.0225	2	10.925	2.185	0.0203	2	6.460	2.531	0.0203	2	24.204	23.895	0.0225	2	49.975	30.399
744	0.0229	2	10.520	9.588	0.0218	2	28.770	21.835	0.0221	2	23.345	16.553	0.0210	2	31.190	28.864	0.0229	2	49.185	42.052
745	0.0686	6	7.227	3.098	0.0675	6	8.536	4.108	0.0555	5	20.900	19.813	0.0559	5	29.738	14.643	0.0563	5	32.666	9.796
746	0.0675	6	5.672	4.188	0.0664	6	6.965	6.921	0.0638	6	56.842	58.887	0.0668	6	23.069	23.422	0.0679	6	41.340	32.988
747	0.1230	11	4.328	5.447	0.1238	11	5.519	6.837	0.1069	10	14.341	11.441	0.1118	10	11.324	7.418	0.1125	10	12.295	15.087
748	0.0326	3	3.428	4.404	0.0338	3	6.460	6.984	0.0218	2	13.600	5.940	0.0229	2	67.150	60.458	0.0225	2	18.650	18.031
749	0.0229	2	4.250	6.010	0.0113	1	4.010	-	0.0214	2	20.670	21.171	0.0225	2	20.250	4.313	0.0229	2	10.790	0.919
750	0.1005	9	10.041	12.221	0.0679	6	9.362	16.847	0.0844	8	14.689	17.321	0.0791	7	14.907	9.349	0.0900	8	45.238	32.993
751	0.0454	4	4.570	5.958	0.0225	2	20.400	15.981	0.0413	4	20.053	13.204	0.0338	3	20.017	15.186	0.0225	2	39.500	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 2006-2016, on board R/V "*Vizconde de Eza"*.

Stratum	2011 Swept area	Tow No.	Mean catch	SD	2012 Swept area	Tow No.	Mean catch	SD	2013 Swept area	Tow No.	Mean catch	SD	2014 Swept area	Tow No.	Mean catch	SD	2015 Swept area	Tow No.	Mean catch	SD
385	0.0229	2	13.100	18.526	0.0225	2	0.077	0.033	0.0229	2	12.038	12.942	0.0225	2	28.010	4.087	0.0236	2	1.315	1.817
387	0.0450	4	12.053	6.860	0.0450	4	12.385	6.631	0.0450	4	24.693	2.830	0.0461	4	29.520	10.827	0.0458	4	22.070	9.568
388	0.0563	5	8.313	4.980	0.0570	5	11.348	9.920	0.0570	5	9.154	6.708	0.0585	5	14.622	5.692	0.0574	5	13.772	14.528
389	0.0675	6	11.408	7.061	0.0799	7	31.210	19.695	0.0791	7	13.366	9.837	0.0814	7	20.275	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	4	13.929	11.759	0.0450	4	3.163	1.607	0.0465	4	18.290	14.860	0.0465	4	11.388	4.974
392	0.0229	2	14.425	3.910	0.0225	2	15.750	9.405	0.0225	2	19.055	1.054	0.0225	2	15.100	1.980	0.0229	2	13.136	1.080
729	0.0338	3	9.022	8.348	0.0338	3	12.673	0.142	0.0341	3	8.883	1.937	0.0338	3	13.350	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	3	12.314	3.679	0.0345	3	29.443	12.920	0.0345	3	29.528	14.310
731	0.0334	3	4.090	4.112	0.0341	3	12.457	6.138	0.0334	3	17.314	4.736	0.0345	3	24.067	8.201	0.0345	3	6.689	2.090
732	0.0454	4	21.440	9.450	0.0454	4	18.880	0.566	0.0450	4	19.328	4.346	0.0454	4	24.390	5.572	0.0465	4	26.188	19.068
733	0.0454	4	10.543	4.091	0.0454	4	10.857	4.842	0.0450	4	27.162	5.242	0.0458	4	23.969	5.297	0.0454	4	13.349	6.614
734	0.0225	2	11.243	0.457	0.0233	2	15.680	7.212	0.0221	2	21.064	24.503	0.0225	2	23.770	13.393	0.0225	2	12.387	5.279
741	0.0218	2	19.255	22.267	0.0218	2	25.510	1.287	0.0221	2	52.555	24.728	0.0225	2	18.700	16.829	0.0236	2	116.643	42.204
742	0.0225	2	11.545	4.320	0.0206	2	22.640	13.520	0.0218	2	7.470	2.065	0.0221	2	36.260	23.957	0.0233	2	49.498	32.948
743	0.0221	2	23.185	0.813	0.0206	2	8.713	11.791	0.0218	2	13.625	13.654	0.0221	2	21.265	8.818	0.0233	2	26.880	4.554
744	0.0221	2	25.710	28.100	0.0221	2	15.390	1.994	0.0221	2	38.970	12.968	0.0225	2	32.770	3.960	0.0225	2	46.070	0.735
745	0.0446	4	26.923	10.448	0.0570	5	32.570	9.295	0.0559	5	18.320	7.611	0.0578	5	20.729	11.408	0.0578	5	31.340	5.653
746	0.0566	5	14.369	8.047	0.0675	6	11.888	7.577	0.0675	6	16.688	7.884	0.0683	6	41.292	30.093	0.0686	6	36.425	5.713
747	0.0893	8	8.655	3.839	0.1121	10	10.522	7.681	0.1125	10	15.870	11.712	0.1125	10	18.530	10.421	0.1028	9	18.494	10.818
748	0.0221	2	13.755	0.502	0.0225	2	5.680	3.776	0.0225	2	36.700	31.820	0.0229	2	24.250	14.637	0.0233	2	22.550	6.435
749	0.0221	2	15.695	9.199	0.0221	2	7.755	3.118	0.0225	2	4.053	3.815	0.0225	2	25.050	17.890	0.0225	2	40.815	33.114
750	0.0668	6	28.880	31.040	0.0885	8	17.024	14.241	0.0896	8	27.221	14.388	0.0904	8	58.413	76.657	0.0934	8	36.278	21.030
751	0.0334	3	80.024	73.402	0.0218	2	42.725	48.755	0.0446	4	60.988	52.459	0.0334	3	41.967	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 2006-2016, on board R/V "*Vizconde de Eza*".

Stratum	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
		2016																		
385	0.0233	2	0.326	0.402																
387	0.0454	4	24.744	10.347																
388	0.0570	5	20.479	21.629																
389	0.0814	7	13.803	5.760																
390	0.1391	12	0.647	1.048																
391	0.0469	4	9.586	6.731																
392	0.0233	2	13.075	4.702																
729	0.0341	3	5.133	2.926																
730	0.0233	2	17.350	4.738																
731	0.0345	3	8.324	3.063																
732	0.0454	4	37.100	9.792																
733	0.0458	4	11.526	5.815																
734	0.0229	2	15.419	11.199																
741	0.0233	2	56.250	5.162																
742	0.0229	2	38.513	22.609																
743	0.0229	2	29.875	34.935																
744	0.0229	2	84.505	82.442																
745	0.0574	5	31.402	6.866																
746	0.0690	6	30.953	18.928																
747	0.1140	10	30.581	27.694																
748	0.0233	2	35.050	20.435																
749	0.0233	2	18.750	12.516																
750	0.0930	8	28.781	11.395																
751	0.0345	3	36.900	14.535																

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

TABLE 4.- Stratified mean catches (Kg) and SD of **Greenland halibut** by stratum and year (2003-2016). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2016.

Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
						Survey							
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
$(\bar{y})$	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
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

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 2006-2016.

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

Table 6.- Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2006-2016 for **Greenland halibut, American plaice** and **witch flounder**.

		Greenland halibut,			American plaice				Witch flounder			
Year	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2
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), 2006-2016 for **Greenland halibut, American plaice** and **witch flounder**.

		Greenland halibut,				American plaice				Witch flounder		
Year	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2
2013	All	$W = 0.0034 L^{3.2311}$	1816	0.9943	All	$W = 0.0045 L^{3.1777}$	1544	0.9903	All	$W = 0.0018 L^{3.3681}$	301	0.9901
	Males	$W = 0.0035 L^{3.2198}$	774	0.9936	Males	$W = 0.0034 L^{3.2558}$	487	0.9898	Males	$W = 0.0015 L^{3.4287}$	106	0.987
	Females	$W = 0.0035 L^{3.2247}$	1027	0.9948	Females	$W = 0.0038 L^{3.2259}$	929	0.9948	Females	$W = 0.0024 L^{3.2851}$	192	0.9888
2014	All	$W = 0.0037 L^{3.2014}$	1668	0.9946	All	$W = 0.0042 L^{3.1947}$	996	0.9934	All	$W = 0.0016 L^{3.4054}$	205	0.9853
	Males	$W = 0.0045 L^{3.1468}$	683	0.9937	Males	$W = 0.0043 L^{3.1921}$	343	0.9905	Males	$W = 0.0014 L^{3.4497}$	58	0.9723
	Females	$W = 0.0036 L^{3.2185}$	977	0.9952	Females	$W = 0.0037 L^{3.2324}$	631	0.9941	Females	$W = 0.0017 L^{3.3924}$	144	0.9817
2015	All	$W = 0.0041 L^{3.1770}$	1670	0.9945	All	$W = 0.0038 L^{3.2259}$	1218	0.9952	All	$W = 0.0020 L^{3.3390}$	330	0.9930
	Males	$W = 0.0043 L^{3.1618}$	668	0.9927	Males	$W = 0.0035 L^{3.2562}$	431	0.9908	Males	$W = 0.0022 L^{3.3309}$	110	0.9849
	Females	$W = 0.0042 L^{3.1756}$	998	0.9953	Females	$W = 0.0039 L^{3.2169}$	777	0.9958	Females	$W = 0.0020 L^{3.3459}$	201	0.9900
2016	All	$W = 0.00336 L^{3.2284}$	1623	0.9949	All	$W = 0.0041 L^{3.1971}$	1095	0.9921	All	$W = 0.0021 L^{3.3301}$	277	0.9896
	Males	$W = 0.0034 L^{3.2181}$	657	0.9937	Males	$W = 0.0050 L^{3.1256}$	377	0.9791	Males	$W = 0.0018 L^{3.3695}$	74	0.9884
	Females	$W = 0.0035 L^{3.2218}$	961	0.9952	Females	$W = 0.0038 L^{3.2195}$	709	0.9945	Females	$W = 0.0014 L^{3.4330}$	189	0.9894

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 M	F	I	T	2007 M	F	I	T	2008 M	F	I	T	2009 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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
86	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
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
Nº samples:				94				85				98				96
Nº 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 M	F	I	T	2011 M	F	I	T	2012 M	F	I	T	2013 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
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
Total	12.8	20.7	0.6	34.0	9.2	14.5	0.1	23.8	12.0	18.6	0.0	30.6	15.4	22.6	0.2	38.1
Nº samples:				88				82				94				100
Nº 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: 2014-2016 (R/V *Vizconde de Eza*). Indet. means indeterminate.

Length (cm.)	2014 M	F	I	T	2015 M	F	I	T	2016 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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
Nº samples:				98				94				96				
Nº Ind.:	1535	2594	133	4262	1023	2046	0	3069	1108	2074	19	3201				
Sampled catch:				2404				2426				2187				
Range:				8-87				10-87				4-91				
Total catch:				2404				2428				2187				
Total valid hauls:				99				97				98				

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 2006-2016, 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	48.530	33.757	0.0225	2	31.925	7.955	0.0229	2	64.750	60.033	0.0225	2	561.17	81.79	0.0225	2	2.76	1.12
387	0.0225	2	6.653	5.533	0.0225	2	7.992	2.039	0.0435	4	5.906	4.512	0.0439	4	6.89	2.18	0.0458	4	1.39	2.18
388	0.0566	5	7.618	2.653	0.0563	5	8.390	2.267	0.0559	5	2.925	1.905	0.0555	5	3.68	4.23	0.0570	5	22.11	36.16
389	0.0795	7	20.584	12.793	0.0900	8	25.475	13.677	0.0780	7	12.982	11.014	0.0803	7	24.64	25.37	0.0795	7	35.95	30.88
390	0.1249	11	76.086	51.616	0.1350	12	69.235	50.977	0.1395	12	117.141	134.128	0.1373	12	114.49	164.48	0.1249	11	9.69	8.75
391	0.0450	4	10.585	9.713	0.0450	4	37.163	30.535	0.0454	4	20.580	28.816	0.0458	4	9.60	7.90	0.0454	4	0.53	0.74
392	0.0229	2	0.000	0.000	0.0225	2	1.055	0.658	0.0221	2	0.000	0.000	0.0229	2	1.06	0.91	0.0225	2	0.00	0.00
729	0.0338	3	0.000	0.000	0.0338	3	0.000	0.000	0.0338	3	0.000	0.000	0.0341	3	0.02	0.03	0.0338	3	0.00	0.00
730	0.0326	3	0.000	0.000	0.0225	2	0.000	0.000	0.0323	3	0.000	0.000	0.0338	3	0.19	0.34	0.0334	3	0.00	0.00
731	0.0341	3	0.000	0.000	0.0338	3	0.253	0.439	0.0330	3	0.327	0.566	0.0341	3	0.10	0.18	0.0338	3	0.00	0.00
732	0.0334	3	0.000	0.000	0.0338	3	0.000	0.000	0.0446	4	0.000	0.000	0.0450	4	0.00	0.00	0.0450	4	0.04	0.06
733	0.0454	4	0.000	0.000	0.0338	3	0.320	0.554	0.0431	4	0.426	0.762	0.0450	4	0.02	0.04	0.0450	4	0.56	0.78
734	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.066	0.093	0.0218	2	0.00	0.00	0.0225	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	0.0225	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	0.0225	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	0.00	0.00	0.0225	2	0.00	0.00
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	0.0229	2	0.00	0.00
745	0.0686	6	0.000	0.000	0.0675	6	0.000	0.000	0.0555	5	0.000	0.000	0.0559	5	0.00	0.00	0.0563	5	0.00	0.00
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	0.07	0.16	0.0679	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	0.1125	10	0.00	0.00
748	0.0326	3	0.000	0.000	0.0338	3	0.000	0.000	0.0218	2	0.000	0.000	0.0229	2	0.00	0.00	0.0225	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	0.0229	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	0.0900	8	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	0.0225	2	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 2006-2016, on board R/V "*Vizconde de Eza*".

Stratum	2011 Swept area	Tow No.	Mean catch	SD	2012 Swept area	Tow No.	Mean catch	SD	2013 Swept area	Tow No.	Mean catch	SD	2014 Swept area	Tow No.	Mean catch	SD	2015 Swept area	Tow No.	Mean catch	SD
385	0.0229	2	202.65	197.07	0.0225	2	193.48	181.97	0.0229	2	205.05	211.50	0.0225	2	299.25	128.77	0.0236	2	545.50	220.48
387	0.0450	4	3.59	2.78	0.0450	4	2.42	2.02	0.0450	4	9.09	8.03	0.0461	4	18.61	12.88	0.0458	4	22.44	14.72
388	0.0563	5	2.98	3.12	0.0570	5	1.94	1.59	0.0570	5	4.52	4.79	0.0585	5	16.25	21.81	0.0574	5	5.16	2.87
389	0.0675	6	9.28	6.82	0.0799	7	29.40	19.17	0.0791	7	30.81	33.30	0.0814	7	55.60	68.96	0.0814	7	128.62	166.16
390	0.1009	9	54.05	27.07	0.1354	12	97.01	63.78	0.1358	12	98.07	152.10	0.1369	12	85.16	95.39	0.1260	11	66.48	72.71
391	0.0458	4	21.83	22.49	0.0458	4	31.40	44.84	0.0450	4	29.30	19.53	0.0465	4	159.38	178.33	0.0465	4	90.01	98.23
392	0.0229	2	0.55	0.77	0.0225	2	0.01	0.02	0.0225	2	0.76	0.36	0.0225	2	0.01	0.02	0.0229	2	0.42	0.59
729	0.0338	3	0.11	0.18	0.0338	3	0.00	0.00	0.0341	3	0.24	0.41	0.0338	3	0.00	0.00	0.0345	3	0.00	0.00
730	0.0334	3	0.00	0.00	0.0338	3	0.00	0.00	0.0334	3	0.00	0.00	0.0345	3	0.00	0.00	0.0345	3	0.00	0.00
731	0.0334	3	0.00	0.00	0.0341	3	0.04	0.07	0.0334	3	0.10	0.17	0.0345	3	0.09	0.16	0.0345	3	0.64	1.10
732	0.0454	4	0.00	0.00	0.0454	4	0.00	0.00	0.0450	4	0.00	0.00	0.0454	4	0.00	0.00	0.0465	4	0.00	0.00
733	0.0454	4	0.02	0.05	0.0454	4	0.07	0.11	0.0450	4	0.23	0.34	0.0458	4	0.12	0.24	0.0454	4	0.99	1.22
734	0.0225	2	0.00	0.00	0.0233	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
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	0.01	0.01
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	0.00	0.00	0.0578	5	0.00	0.00	0.0578	5	0.00	0.00
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	0.00	0.00	0.1028	9	0.00	0.00
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	0.00	0.00	0.0885	8	0.00	0.00	0.0896	8	0.00	0.00	0.0904	8	0.00	0.00	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

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

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 2006-2016, on board R/V "*Vizconde de Eza"*.

Stratum	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
	2016																			
385	0.0233	2	311.53	38.28																
387	0.0454	4	8.06	10.31																
388	0.0570	5	6.73	1.57																
389	0.0814	7	66.58	53.13																
390	0.1391	12	60.65	56.90																
391	0.0469	4	100.31	126.76																
392	0.0233	2	1.01	0.00																
729	0.0341	3	0.00	0.00																
730	0.0233	2	0.00	0.00																
731	0.0345	3	3.63	5.49																
732	0.0454	4	0.00	0.00																
733	0.0458	4	0.00	0.00																
734	0.0229	2	0.00	0.00																
741	0.0233	2	0.00	0.00																
742	0.0229	2	0.00	0.00																
743	0.0229	2	0.00	0.00																
744	0.0229	2	0.00	0.00																
745	0.0574	5	0.00	0.00																
746	0.0690	6	0.00	0.00																
747	0.1140	10	0.00	0.00																
748	0.0233	2	0.00	0.00																
749	0.0233	2	0.00	0.00																
750	0.0930	8	0.00	0.00																
751	0.0345	3	0.00	0.00																

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

TABLE 10.- Stratified mean catches (Kg) and SD of **American plaice** by stratum and year (2003-2016). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2016.

						Survey							
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
$(\overline{y})$	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
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

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 2006-2016.

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

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 Males	2006 Females	2006 Indet.	2006 Total	2007 Males	2007 Females	2007 Indet.	2007 Total	2008 Males	2008 Females	2008 Indet.	2008 Total	2009 Males	2009 Females	2009 Indet.	2009 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
Total	8.20	29.04	1.62	38.86	12.72	35.86	1.88	50.46	15.61	36.88	1.75	54.24	23.70	75.22	0.34	99.26
Nº samples:				31				37				37				41
Nº 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 Males	Females	Indet.	Total	2011 Males	Females	Indet.	Total	2012 Males	Females	Indet.	Total	2013 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
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
Nº samples:				35				33				38				39
Nº 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: 2014-2016 (R/V *Vizconde de Eza*). Indet. means indeterminate.

Length (cm.)	2012				2013				2016							
	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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
Total	18.87	61.06	12.49	92.41	107.72	207.58	6.84	322.13	80.27	159.25	3.45	242.97				
Nº samples:				37				37				38				
Nº Ind.:	1324	3141	551	5016	1497	3034	55	4586	1574	3305	69	4948				
Sampled catch:				2804				3199				2297				
Range:				4-59				7-59				6-61				
Total catch:				2804				3205				2297				
Total valid hauls:				99				97				98				

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 2006-2016, 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

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

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 2006-2016, 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

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

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 2006-2016, on board R/V "*Vizconde de Eza*".

Stratum	2016 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																
387	0.0454	4	2.57	1.14																
388	0.0570	5	2.82	3.53																
389	0.0814	7	0.08	0.18																
390	0.1391	12	0.00	0.00																
391	0.0469	4	0.00	0.00																
392	0.0233	2	1.56	2.16																
729	0.0341	3	9.28	2.97																
730	0.0233	2	0.26	0.36																
731	0.0345	3	3.98	3.88																
732	0.0454	4	5.68	2.50																
733	0.0458	4	4.07	2.72																
734	0.0229	2	0.00	0.00																
741	0.0233	2	0.00	0.00																
742	0.0229	2	0.00	0.00																
743	0.0229	2	0.00	0.00																
744	0.0229	2	0.00	0.00																
745	0.0574	5	0.01	0.01																
746	0.0690	6	0.00	0.00																
747	0.1140	10	0.00	0.00																
748	0.0233	2	0.00	0.00																
749	0.0233	2	0.00	0.00																
750	0.0930	8	0.00	0.00																
751	0.0345	3	0.00	0.00																

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

TABLE 15.- Stratified mean catches (Kg) and SD of **Witch flounder Witch flounder** by stratum and year (2003-2016). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2016.

						Survey							
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
$(\overline{y})$	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
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

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 2006-2016.

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

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 Males	Females	Indet.	Total	2007 Males	Females	Indet.	Total	2008 Males	Females	Indet.	Total	2009 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
Total	1.36	2.31	0.09	3.76	1.21	1.62	0.14	2.97	1.59	2.19	0.38	4.16	1.11	1.93	0.15	3.18
Nº samples:				32				22				36				28
Nº 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
Total valid hauls:				100				94				100				98

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 Males	Females	Indet.	Total	2011 Males	Females	Indet.	Total	2012 Males	Females	Indet.	Total	2013 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
Total	1.69	2.65	0.28	4.62	1.04	2.03	0.10	3.17	0.56	1.75	0.14	2.44	1.19	2.04	0.02	3.25
Nº samples:				35				29				31				38
Nº 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: 2014-2016 (R/V *Vizconde de Eza*). Indet. means indeterminate.

| Length (cm.)	2014 Males	Females	Indet.	Total	2015 Males	Females	Indet.	Total	2016 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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
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				
Nº samples:				36				37				32				
Nº Ind.:	73	161	3	237	123	223	19	365	79	212	14	305				
Sampled catch:				83				123				108				
Range:				9-52				6-54				5.51				
Total catch:				83				123				108				
Total valid hauls:				99				97				98				
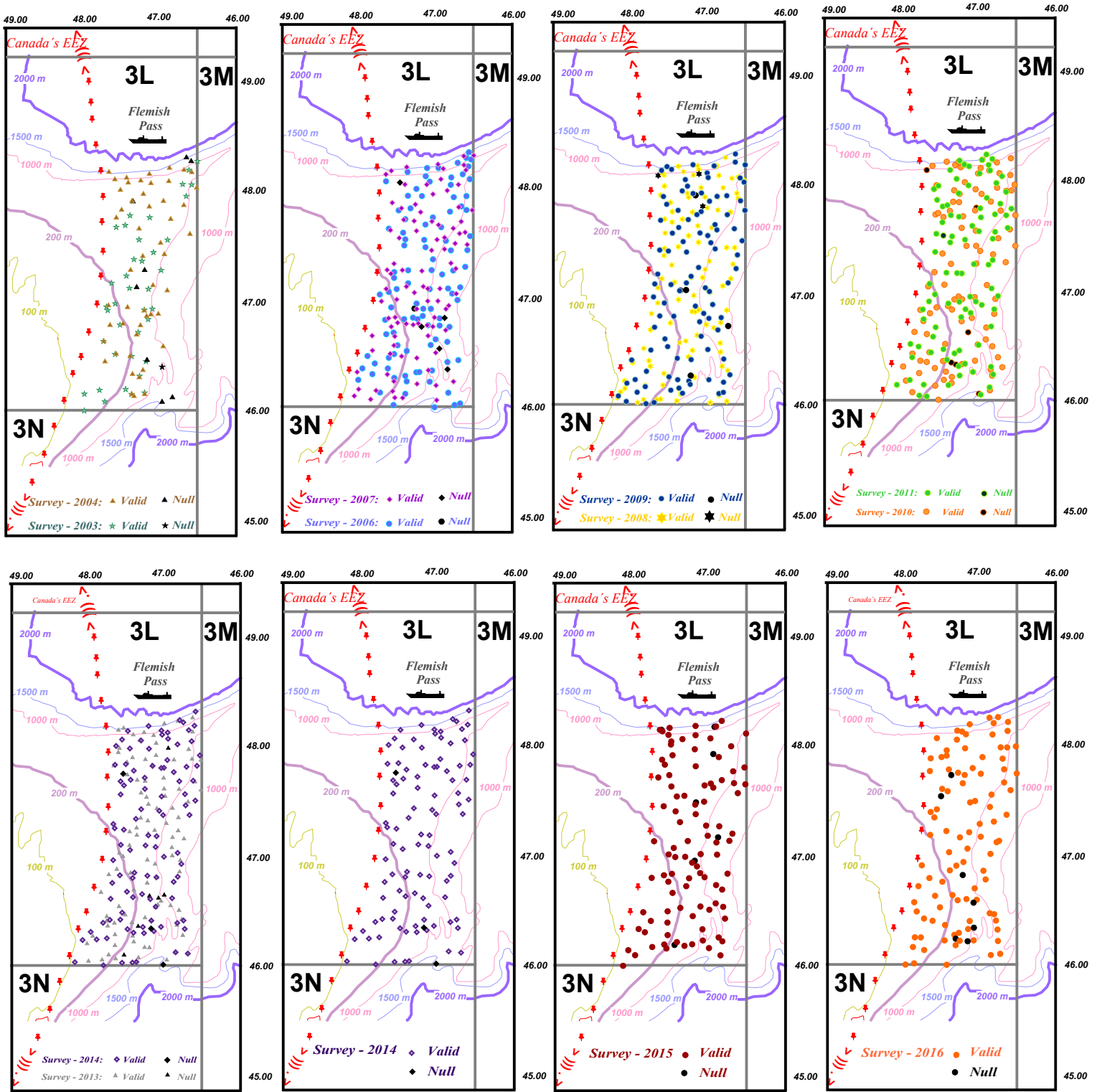
Fig. 1. Haul positions of the Spanish surveys in NAFO Division 3L in the period 2003 - 2016 (R/V *"Vizconde de Eza"*).
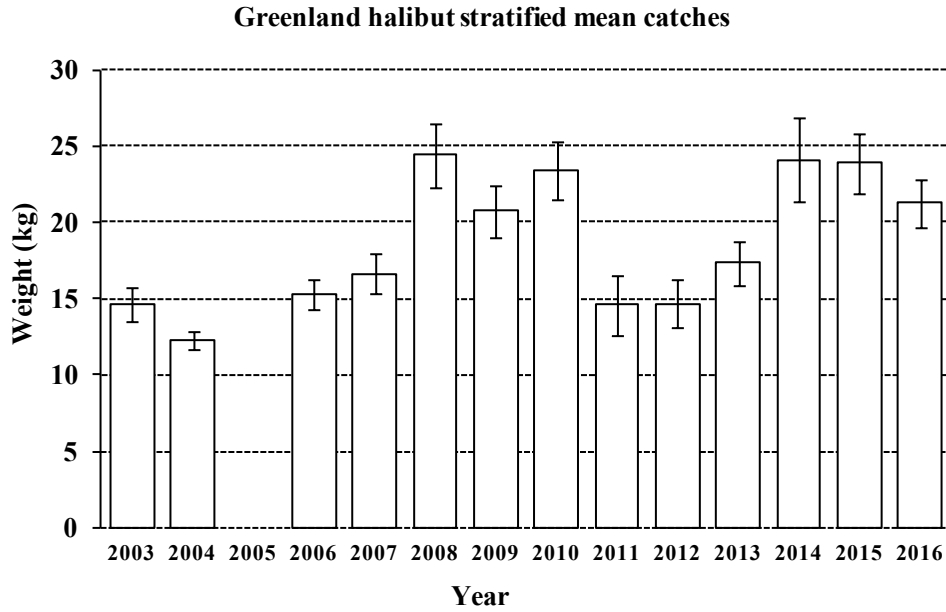
Greenland halibut stratified mean catches

Fig. 2. Greenland halibut stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2016 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2016.
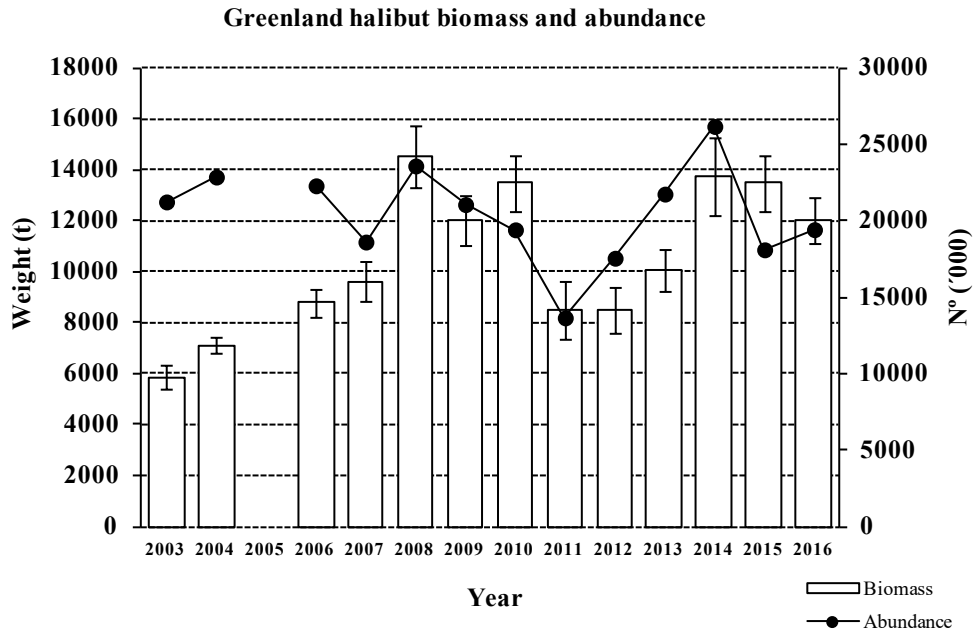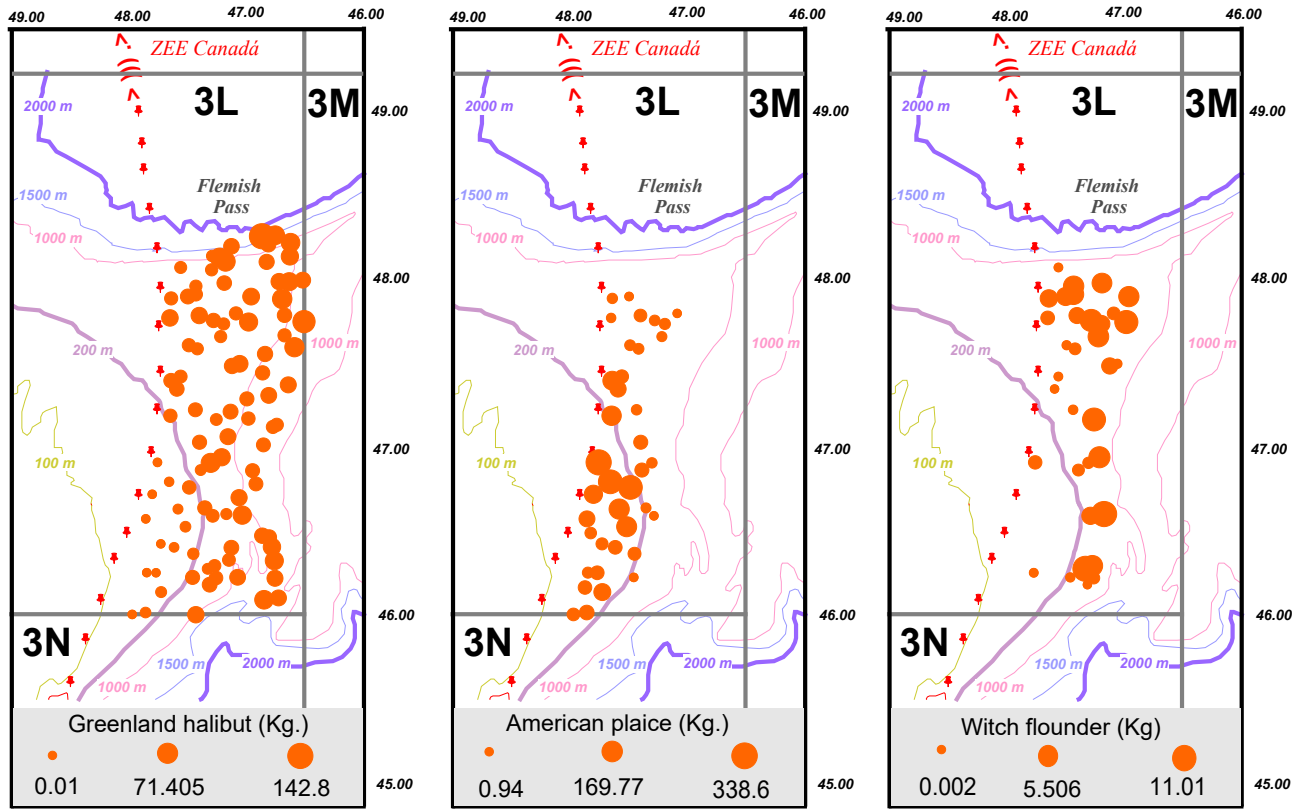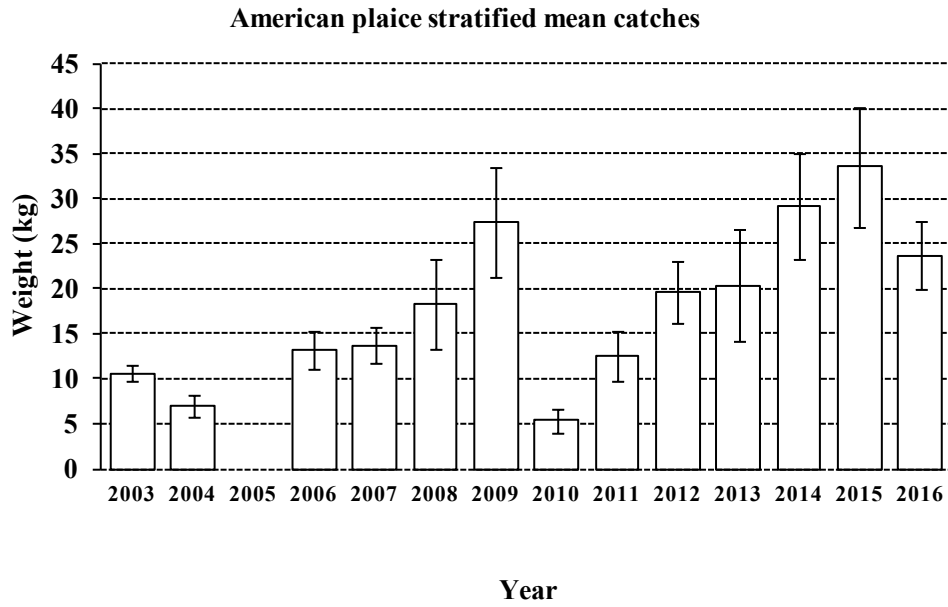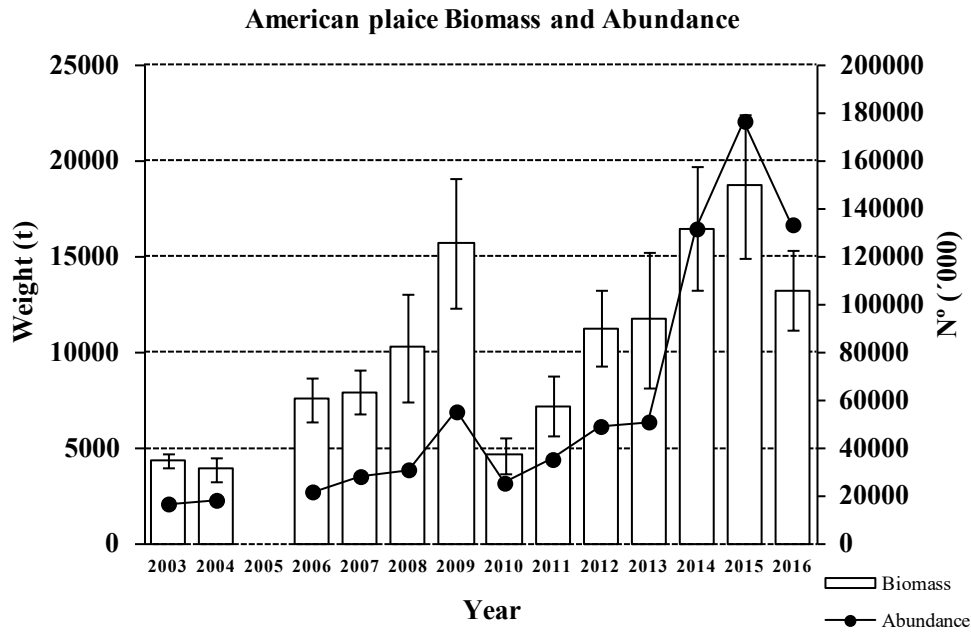
Greenland halibut biomass and abundance

Fig. 3. Greenland halibut abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2016 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2016.
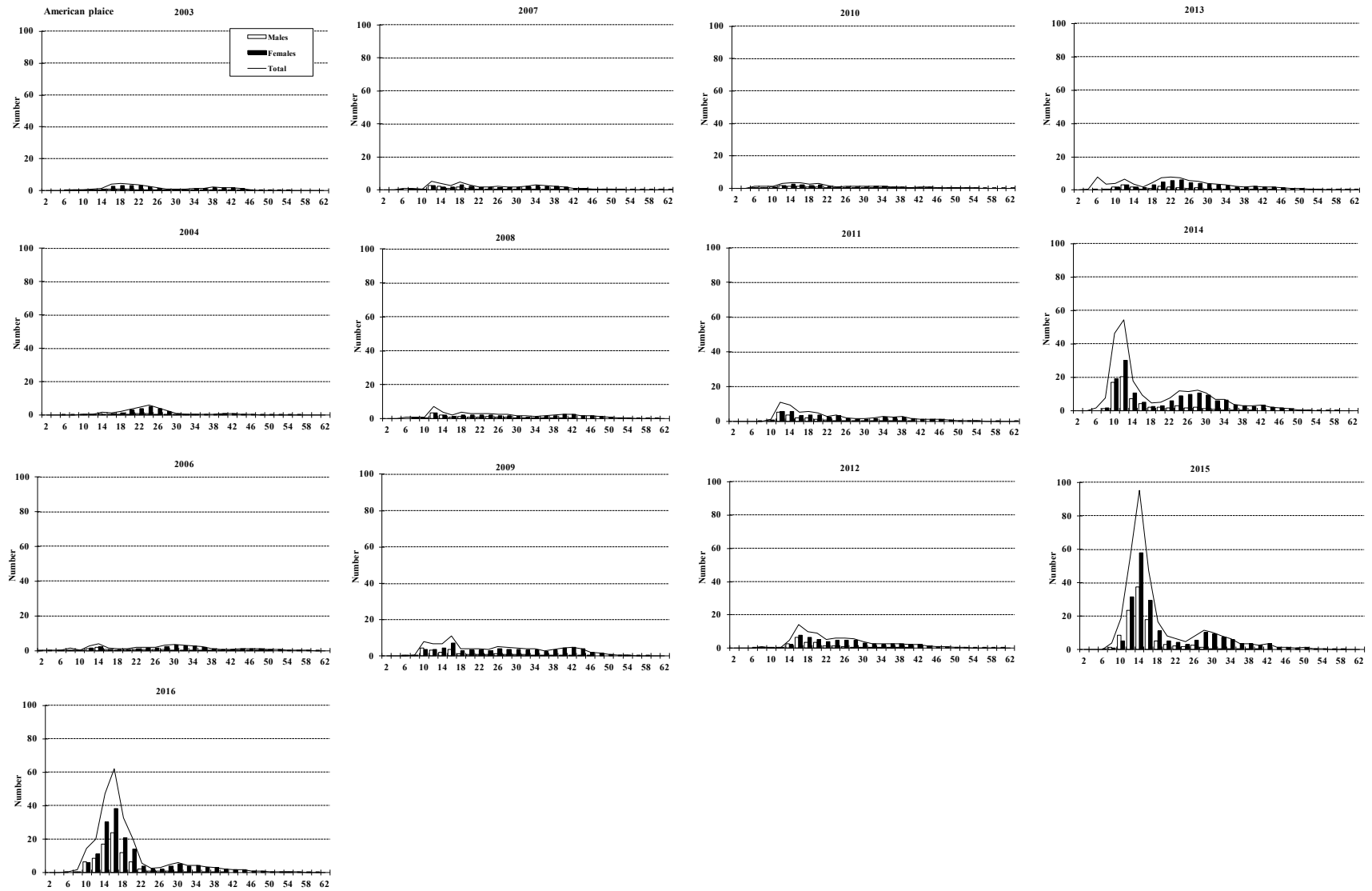
Fig. 4. Distribution of the catches per haul for **Greenland halibut, American plaice** and **witch flounder** in 2016 Spanish 3L survey.
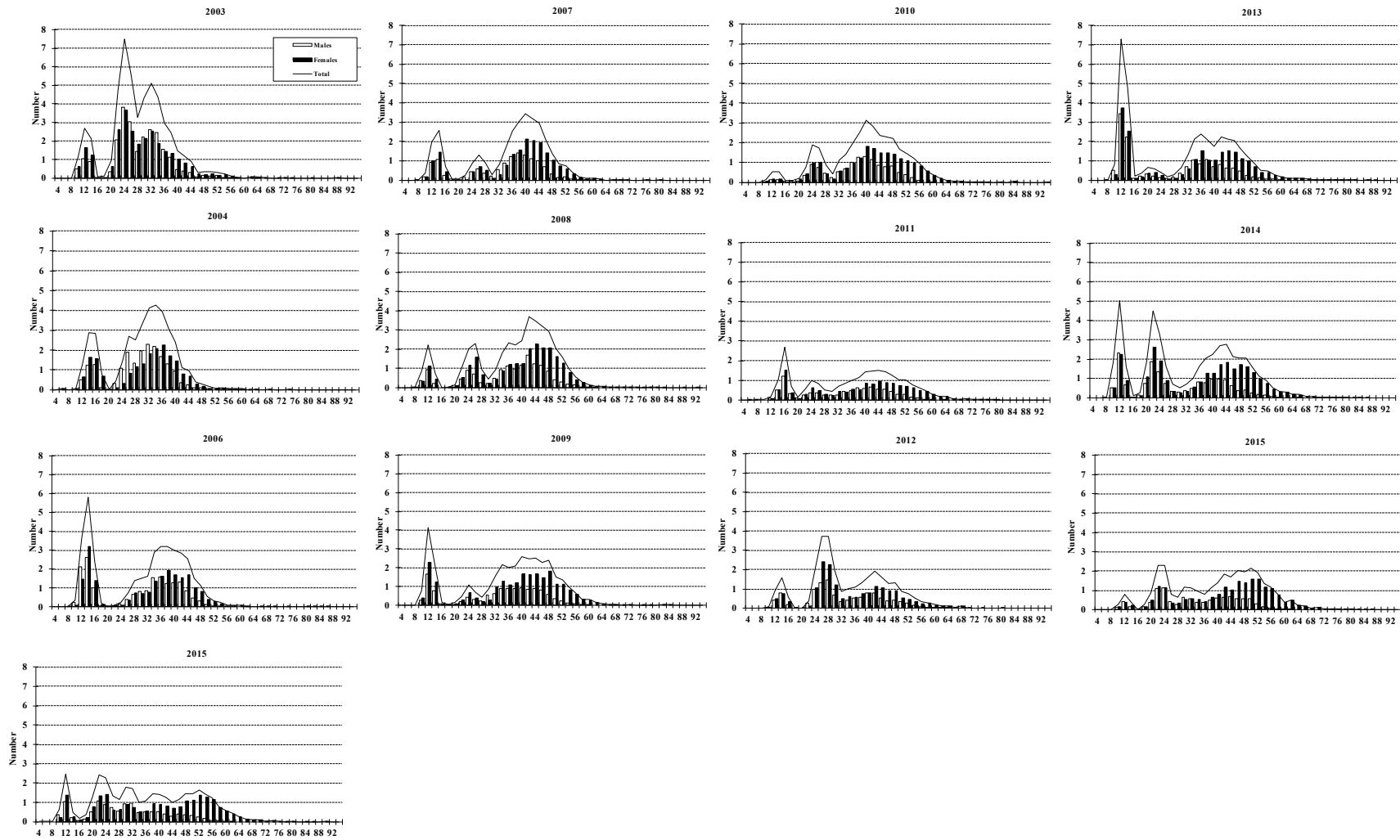
Fig. 5.   Greenland halibut length distribution (cm) in NAFO 3L: 2003-2016. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2016.

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Fig. 6.   Greenland halibut, American plaice and witch flounder length distribution (cm) in NAFO 3L: 2003-2016.

American plaice stratified mean catches

Fig. 7. American plaice stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2016 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2016.

American plaice Biomass and Abundance

Fig. 8. American plaice abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2016 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2016.
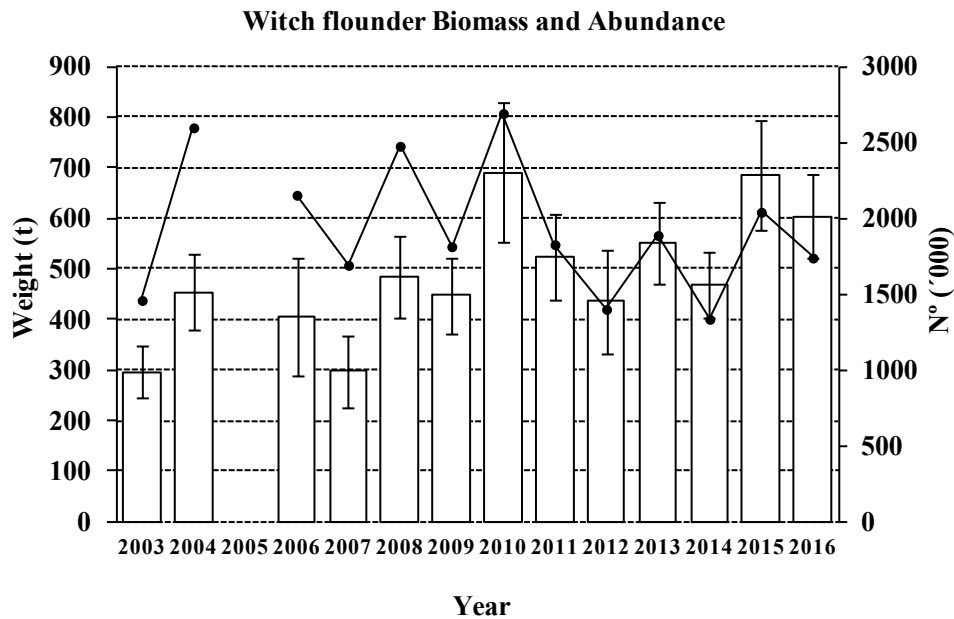
Fig. 9. American plaice length distribution (cm) in NAFO 3L: 2003-2016. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2016.

Witch flounder stratified mean catches

Fig. 10. Witch flounder stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2016 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2016.

Witch flounder Biomass and Abundance
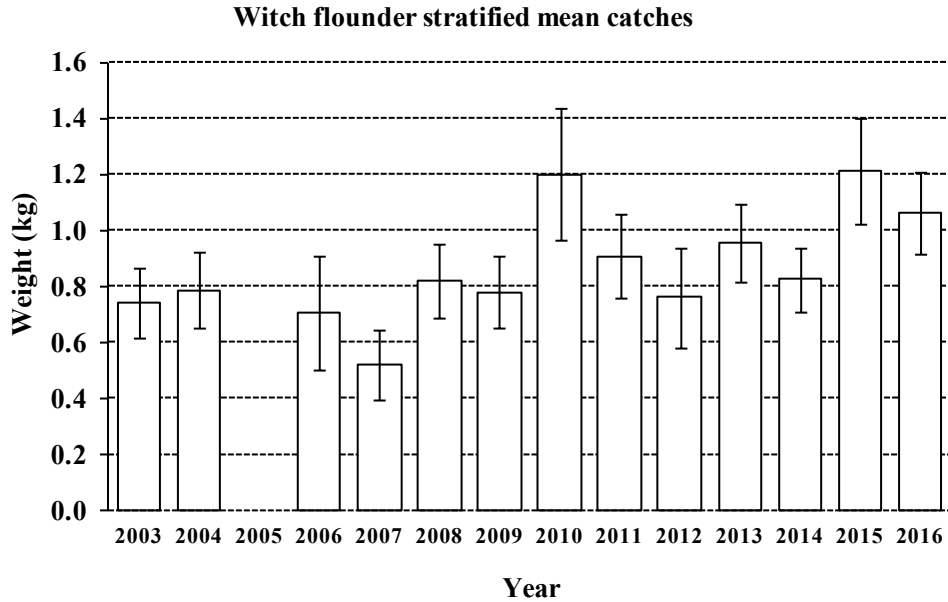
Fig. 11. Witch flounder abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2016 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2016.
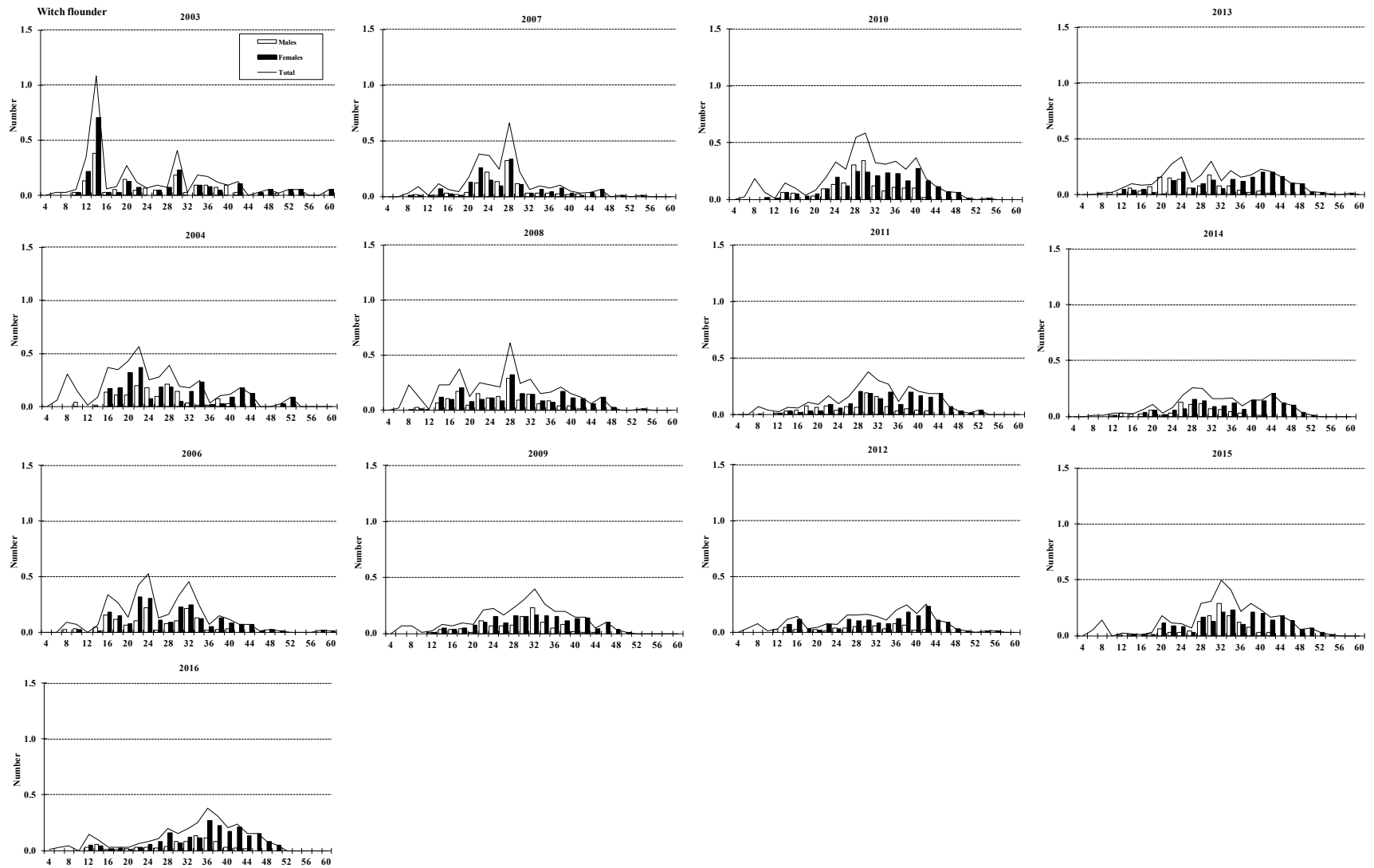
Fig. 12.   Witch flounder length distribution (cm) in NAFO 3L: 2006-2016. Number per stratified mean catches.