Northwest Atlantic Fisheries Organization

Serial No. N5768 **NAFO SCR Doc. 10/15**

SCIENTIFIC COUNCIL MEETING – JUNE 2010

Results for the Spanish Survey in the NAFO Regulatory Area of Division 3L for the period 2003-2009

by

Esther Román, Concepción González-Iglesias and Diana González-Troncoso

Instituto Español de Oceanografía
P.O. Box 1552. Vigo, Spain
e-mail: esther.roman@vi.ieo.es

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*. Entire series of mean catches, biomass and length distribution for Greenland halibut, American plaice and witch flounder are presented for the period 2003-2009. Greenland halibut biomass and abundance estimates present a slight decrease this year; however, it remains one of the highest values of the series. A good recruitment, mainly in 2006, can be seeing; although the number of individuals of length over 70 cm. is very low. American plaice biomass has increased since 2004, reaching this year the highest value in the series. A presence of small individuals is observed in the last years. For witch flounder, the biomass slight decreased in 2009, but there is no a clear trend in the period 2003-2009.

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

Material and Methods

The surveys on NAFO Regulatory Area of Div. 3L (Flemish Pass) were initiated by Spain in 2003. The Research vessel *"Vizconde de Eza"* carried out the surveys following the same procedures and using the same bottom trawl gear *Campelen*. In 2003, the survey was carried out in spring (June) and it did not cover all strata adequately (69% of the total area prospected in 2006-2009). In 2004, the survey was carried out in August, for a period of nine days, and it covered only the 96%. 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 and number of covered strata and the dates of the survey series. Figure 1 shows haul positions of the Spanish surveys in NAFO Div. 3L in the period 2003-2009.

The survey area was stratified following the standard stratification schemes (Bishop, 1994). All surveys had a stratified random design following NAFO specifications (Doubleday, 1981). Sets were allocated to strata proportionally to their 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 sample of each species was taken in order to measure it and 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 the mean catch per haul, the stratified mean catch per haul and the biomass with their variance per year and the length distribution in number per haul stratified mean catches per length, sex and year for each

species in the period 2003-2009. To obtain the biomass from length distribution, the following formula was used: Weight=a (Length+0.5)^b .

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:

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

$$Var_i^{str} = Var_i \frac{n_i^2}{T_i}, \quad i = 1,...,h$$

where:

n_i 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:

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

$$Var = \sum_{i=1}^{h} \frac{Var_i^{str}}{N^2}$$

where:

$N = \sum_{i=1}^{h} n_i$ 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 this report, only the results for Greenland halibut, American plaice and witch flounder are presented. 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*., 2009.

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 (1978-2009), EU in Div. 3M (1988-2009) and EU-Spain in Div. 3NO (1995-2009). Greenland halibut is managed under a fifteen year rebuilding programme that started in 2004.

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 exploitable biomass was reduced to low levels in 1995-97 due to very high catches and high fishing mortality. It increased during 1998-2000 due to greatly reduced catches, much lower fishing mortality and improved recruitment. The exploitable biomass has declined in recent years and the current estimates (2004-2008) are amongst the lowest in the series. Recent recruitment has been below average, and fishing mortality remains high (NAFO, 2009).

Mean catches and biomass

Table 3 shows the swept area, the tow number, the mean catches and their variance per haul and year 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.

The biomass of the Greenland halibut has had an increase in the prospected area along the whole period, mainly in 2008. 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.

Length distribution

Table 7 and 8 present the stratified mean catches per haul length distribution for the Greenland halibut, by sex and year, 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 hauls made in the survey. In Figures 4 and 5 the evolution along the years can be followed.

The biomass of the Greenland halibut presents a slight decrease this year; however, it remains one of the highest values of the series. In this period a good recruitment can be seeing, though the number of individuals of length over 70 cm. is very low. Although biomass and stratified mean catch increased in 2007, the number of individuals per stratified mean catches decreased in this year, due to the good recruitment in 2006. The highest recruitment was in 2006, that appears in Fig. 4, with length classes mode 14 cm. We must wait for next years data to see the evolution of this recruitment.

American plaice (*Hippoglossoides platesoides* Fabricius, 1780)

There was no fishing targeting American plaice in 1994 and there has been under moratorium since 1995. Catches increased after the moratorium until 2003 after which they began to decline. Biomass and SSB remain low compared to historic levels. SSB declined to the lowest estimated level in 1994 and 1995. It has increased since then but it still remains very low. There has been no good recruitment to the exploitable biomass since the mid-1980s (NAFO, 2009).

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 (2003-2009) of biomass and their SD estimates of American plaice are shown in Table 11. Length-weight relationships are presented in Table 6.

The American plaice indices show a general increasing trend in the prospected area along the years (Fig. 6 and 7). The highest values in the estimated biomass have been observed in the shallowest strata, in a range of depth from 93 to 274 meters.

Length distribution

Tables 12 and 13 present the stratified mean catches per haul length distribution by sex and year. They present also 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. The total catch of this species and the total hauls made in the survey are shown too. In Figures 5 and 8 the evolution along the years can be followed.

For this species, there is quite good presence of small individuals (around 10-16 cm) since 2006. There is a higher proportion of females than males.

Witch flounder (*Glyptocephalus cynoglossus* Linnaeus, 1758)

Witch flounder stock has remained at a low level since 1995. A moratorium on directed fishing was implemented in 1995. Increases in biomass indices for the whole stock area were not observed in abundance indices, suggesting the slight increasing trends in biomass are the result of growth and not recruitment (NAFO, 2009).

Mean catches and biomass

Table 14 shows the swept area, the tow number, the mean catches and their variance per haul and year for witch flounder. Table 15 and Figure 9 present the stratified mean catches per stratum with the total variance per year. Table 16 and Figure 10 present the abundance and biomass per swept area per stratum and their total variance per year. Estimated parameters *a* and *b* values of length-weight distribution are presented in Table 6.

For witch flounder the biomass slight decreased in 2009, but there is no a clear trend in this period (2003-2009). We can see a decreasing in the indices between 2004 and 2007, and an increasing for 2003-2004 and 2007-2008. Estimated biomass ranged from 483 t in 2008 to a 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. 9 and 10).

Length distribution

Table 17 and 18 present the stratified mean catches per haul length distribution for this species, by sex and year, 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 hauls made in the survey. In Figures 5 and 11 we can follow the evolution along the years.

The highest recruitment was in 2003, but since then the number of younger individuals have declined.

References

BISHOP, C.A. 1994. Revision and additions to stratification schemes used during research vessel surveys in NAFO Subareas 2 and 3. *NAFO SCR Doc*., No 43, Serial No N2413, 23 p.

CASAS, J. M, C. González, E. Marull and J. Teruel. 2009. Northern Shrimp (*Pandalus borealis*, Krøyer) from Spanish Bottom Trawl Survey 2009 in NAFO Divisions 3LNO. *NAFO SCR Doc*., No 55, Serial No N5716, 14 p.

COCHRAM, W. G. 1997. Sampling techniques. J. Wiley and Sons, N. Y., 23 p.

DOUBLEDAY, W. G. 1981. Manual on groundfish surveys in the Northwest Atlantic. *NAFO Sci.Coun.Studies,* **2**, 55.

NAFO, 2009. Report of Scientific Council Meeting, 4-18 June 2009.

TABLE 1.- Spanish bottom trawl surveys in NAFO Division 3L for the period 2003-2009.

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
2005	-	-	-	-	-
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

TABLE 2.- Technical data of the Spanish survey in NAFO Division 3L for the period 2003-2009.

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	$22.287 * \text{Depth (m)}^{0.6667}$
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 2003-2009, on board R/V "*Vizconde de Eza*". (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

Stratum	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD
	2003 (*)				**2004**				**2006**			
385	0.0225	2	0.000	0.000	0.0229	2	6.025	7.814	0.0229	2	15.721	8.173
387	0.0229	2	15.890	6.661	0.0214	2	65.550	13.930	0.0225	2	52.500	4.950
388	0.0334	3	20.870	13.452	0.0105	1	42.700	-	0.0566	5	47.424	8.026
389	0.0454	4	0.459	0.507	0.0225	2	5.770	1.796	0.0795	7	32.941	14.261
390	0.0563	5	0.020	0.029	0.0345	3	0.000	0.000	0.1249	11	12.967	16.007
391	0.0338	3	0.313	0.369	0.0218	2	5.710	4.398	0.0450	4	17.633	5.302
392	0.0116	1	12.500	-	0.0214	2	15.600	10.607	0.0229	2	6.900	3.111
729	0.0210	2	34.860	7.552	0.0221	2	30.500	3.394	0.0338	3	24.120	9.552
730	0.0221	2	24.400	5.798	0.0221	2	7.650	2.616	0.0326	3	8.403	6.415
731	0.0229	2	36.350	2.758	0.0233	2	27.260	3.338	0.0341	3	16.643	6.408
732	0.0113	1	43.100	-	0.0210	2	11.050	0.778	0.0334	3	6.570	3.380
733	n.s.	n.s.	n.s.	n.s.	0.0330	3	18.233	2.495	0.0454	4	18.556	8.530
734	n.s.	n.s.	n.s.	n.s.	0.0304	3	20.567	11.620	0.0225	2	4.478	1.340
741	0.0113	1	27.200	-	0.0323	3	11.517	6.225	0.0218	2	5.648	0.583
742	0.0116	1	31.800	-	0.0120	1	31.100	-	0.0229	2	10.593	1.453
743	n.s.	n.s.	n.s.	n.s.	0.0188	2	8.765	10.090	0.0225	2	4.750	6.718
744	n.s.	n.s.	n.s.	n.s.	0.0101	1	7.500	-	0.0229	2	10.520	9.588
745	0.0341	3	11.000	8.296	0.0319	3	12.933	1.026	0.0686	6	7.227	3.098
746	0.0446	4	29.503	16.252	0.0338	3	9.533	5.315	0.0675	6	5.672	4.188
747	n.s.	n.s.	n.s.	n.s.	0.0308	3	0.507	0.443	0.1230	11	4.328	5.447
748	0.0109	1	13.700	-	0.0199	2	6.375	5.056	0.0326	3	3.428	4.404
749	0.0221	2	8.540	4.016	0.0221	2	6.550	9.263	0.0229	2	4.250	6.010
750	n.s.	n.s.	n.s.	n.s.	0.0180	2	0.000	0.000	0.1005	9	10.041	12.221
751	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s	n.s	0.0454	4	4.570	5.958
	2007				**2008**				**2009**			
385	0.0225	2	16.750	6.293	0.0229	2	18.011	17.521	0.0225	2	4.975	0.318
387	0.0225	2	31.050	6.576	0.0435	4	46.511	13.072	0.0439	4	33.070	21.146
388	0.0563	5	50.036	21.899	0.0559	5	31.870	17.546	0.0555	5	13.421	9.628
389	0.0900	8	37.473	14.697	0.0780	7	42.616	22.552	0.0803	7	19.759	12.838
390	0.1350	12	6.454	10.772	0.1395	12	5.138	7.236	0.1373	12	1.561	3.604
391	0.0450	4	15.750	5.063	0.0454	4	22.882	4.673	0.0458	4	4.841	3.069
392	0.0225	2	42.350	34.153	0.0221	2	11.370	3.210	0.0229	2	13.289	8.925
729	0.0338	3	24.695	4.326	0.0338	3	17.887	7.697	0.0341	3	24.099	8.265
730	0.0225	2	4.840	3.620	0.0323	3	40.777	14.460	0.0338	3	30.067	18.658
731	0.0338	3	31.299	16.813	0.0330	3	42.527	10.506	0.0341	3	22.403	5.724
732	0.0338	3	9.847	3.027	0.0446	4	42.878	42.441	0.0450	4	48.133	5.976
733	0.0338	3	24.610	12.655	0.0431	4	31.780	5.015	0.0450	4	36.692	27.661
734	0.0225	2	4.639	1.940	0.0221	2	7.603	1.948	0.0218	2	58.850	16.051
741	0.0225	2	4.590	6.491	0.0210	2	7.005	5.961	0.0221	2	35.435	26.962
742	0.0225	2	4.728	1.503	0.0210	2	14.420	16.150	0.0214	2	38.950	16.334
743	0.0225	2	10.925	2.185	0.0203	2	6.460	2.531	0.0203	2	24.204	23.895
744	0.0218	2	28.770	21.835	0.0221	2	23.345	16.553	0.0210	2	31.190	28.864
745	0.0675	6	8.536	4.108	0.0555	5	20.900	19.813	0.0559	5	29.738	14.643
746	0.0664	6	6.965	6.921	0.0638	6	56.842	58.887	0.0668	6	23.069	23.422
747	0.1238	11	5.519	6.837	0.1069	10	14.341	11.441	0.1118	10	11.324	7.418
748	0.0338	3	6.460	6.984	0.0218	2	13.600	5.940	0.0229	2	67.150	60.458
749	0.0113	1	4.010	-	0.0214	2	20.670	21.171	0.0225	2	20.250	4.313
750	0.0679	6	9.362	16.847	0.0844	8	14.689	17.321	0.0791	7	14.907	9.349
751	0.0225	2	20.400	15.981	0.0413	4	20.053	13.204	0.0338	3	20.017	15.186

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

TABLE 4.- Stratified mean catches (Kg) and SD of **Greenland halibut** by stratum and year (2003-2009). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2009.

	Survey						
Stratum	2003	2004	2005	2006	2007	2008	2009
385	0.00	710.95	-	1855.08	1976.50	2125.24	587.05
387	4067.84	16780.80	-	13440.00	7948.80	11906.69	8465.92
388	7450.59	15243.90	-	16930.37	17862.78	11377.52	4791.15
389	233.76	2936.93	-	16767.19	19073.88	21691.69	10057.48
390	16.30	0.00	-	10567.88	5259.74	4187.33	1272.22
391	88.36	1610.22	-	4972.37	4441.50	6452.72	1365.02
392	1812.50	2262.00	-	1000.50	6140.75	1648.65	1926.91
729	6483.96	5673.00	-	4486.32	4593.27	3326.92	4482.35
730	4148.00	1300.50	-	1428.57	822.80	6932.03	5111.33
731	7851.60	5888.16	-	3594.96	6760.51	9185.76	4839.12
732	9956.10	2552.55	-	1517.67	2274.58	9904.70	11118.61
733	n.s.	4266.60	-	4342.16	5758.74	7436.52	8585.81
734	n.s.	3146.70	-	685.06	709.69	1163.18	9004.05
741	2720.00	1151.67	-	564.75	459.00	700.50	3543.50
742	2035.20	1990.40	-	677.92	302.56	922.88	2492.80
743	n.s.	447.02	-	242.25	557.18	329.46	1234.38
744	n.s.	495.00	-	694.32	1898.82	1540.77	2058.54
745	3828.00	4500.80	-	2514.88	2970.59	7273.20	10348.82
746	11564.98	3737.07	-	2223.29	2730.28	22281.93	9042.92
747	n.s.	366.83	-	3133.67	3995.56	10382.88	8198.79
748	2178.30	1013.63	-	545.11	1027.14	2162.40	10676.85
749	1076.04	825.30	-	535.50	505.26	2604.42	2551.50
750	n.s.	0.00	-	5582.86	5205.09	8166.95	8288.21
751	n.s.	n.s.	-	1046.53	4671.60	4592.14	4583.82
TOTAL	65511.53	76900.01	-	99349.19	107946.61	158296.49	134627.15
	14.64	12.29		15.32	16.64	24.40	20.75
SD	1.09	0.59		0.95	1.33	2.12	1.68

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 2006-2009.

	Survey						
Stratum	2003	2004	2005	2006	2007	2008	2009
385	0	62	-	162	176	186	52
387	356	1570	-	1195	707	1095	772
388	670	1452	-	1495	1588	1018	432
389	21	261	-	1476	1695	1947	877
390	1	0	-	931	468	360	111
391	8	148	-	442	395	569	119
392	156	212	-	87	546	149	168
729	618	513	-	399	408	296	394
730	375	118	-	131	73	645	454
731	686	507	-	316	601	835	425
732	885	243	-	136	202	888	988
733	n.s.	388	-	383	512	690	763
734	n.s.	311	-	61	63	105	828
741	242	107	-	52	41	67	320
742	175	166	-	59	27	88	233
743	n.s.	48	-	22	50	33	122
744	n.s.	49	-	61	175	139	196
745	337	424	-	220	264	655	926
746	1037	332	-	198	247	2097	813
747	n.s.	36	-	280	355	971	734
748	200	102	-	50	91	199	933
749	97	75	-	47	45	244	227
750	n.s.	0	-	500	460	774	733
751	n.s.	n.s.	-	92	415	445	407
TOTAL	5863	7121		8795	9603	14494	12030
SD	445	325		551	769	1223	979

Table 6.- Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2003-2009 for **Greenland halibut, American plaice** and **witch flounder**. The equation is Weight=a(Length+0.5)^b. To calculate the parameters for the indeterminate individuals, we used the total data (males+females+indeterminate individuals).

	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
2003	All	$W = 0.0020\ L^{3.3855}$	429	0.9897	All	$W = 0.0018\ L^{3.4328}$	725	0.9873	All	$W = 0.0019\ L^{3.3452}$	96	0.9883
	Males	$W = 0.0020\ L^{3.3776}$	231	0.9858	Males	$W = 0.0025\ L^{3.3191}$	205	0.9813	Males	$W = 0.0018\ L^{3.3564}$	39	0.9901
	Females	$W = 0.0020\ L^{3.3914}$	198	0.9922	Females	$W = 0.0016\ L^{3.4755}$	516	0.9887	Females	$W = 0.0018\ L^{3.3457}$	55	0.9861
2004	All	$W = 0.0025\ L^{3.3067}$	724	0.9817	All	$W = 0.0026\ L^{3.4033}$	515	0.9808	All	$W = 0.0013\ L^{3.4496}$	139	0.9888
	Males	$W = 0.0021\ L^{3.3591}$	335	0.9886	Males	$W = 0.0045\ L^{3.1673}$	142	0.9473	Males	$W = 0.0009\ L^{3.5684}$	51	0.9796
	Females	$W = 0.0030\ L^{3.2628}$	389	0.9769	Females	$W = 0.0022\ L^{3.4001}$	373	0.9856	Females	$W = 0.0013\ L^{3.4636}$	72	0.9907
2006	All	$W = 0.0021\ L^{3.3631}$	1220	0.9835	All	$W = 0.0025\ L^{3.3723}$	759	0.9784	All	$W = 0.0026\ L^{3.2619}$	193	0.9694
	Males	$W = 0.0019\ L^{3.3863}$	583	0.9831	Males	$W = 0.0026\ L^{3.3615}$	267	0.9629	Males	$W = 0.0046\ L^{3.0994}$	65	0.963
	Females	$W = 0.0023\ L^{3.3342}$	637	0.9835	Females	$W = 0.0031\ L^{3.3146}$	486	0.9776	Females	$W = 0.0021\ L^{3.3201}$	123	0.9631
2007	All	$W = 0.0033\ L^{3.2385}$	1544	0.989	All	$W = 0.0024\ L^{3.3710}$	1276	0.9873	All	$W = 0.0023\ L^{3.3024}$	249	0.9776
	Males	$W = 0.0032\ L^{3.2464}$	694	0.9876	Males	$W = 0.0026\ L^{3.3456}$	444	0.9734	Males	$W = 0.0033\ L^{3.1948}$	106	0.9618
	Females	$W = 0.0037\ L^{3.2183}$	842	0.9898	Females	$W = 0.0028\ L^{3.3289}$	809	0.991	Females	$W = 0.0025\ L^{3.2803}$	135	0.988
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

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: 2003-2006 (R/V Vizconde de Eza). Indet. means indeterminate. (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

	2003 (*)				2004				2006			
Lenght (cm.)	M	F	I	T	M	F	I	T	M	F	I	T
6	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
10	0.49	0.64	0.00	1.14	0.00	0.04	0.00	0.04	0.26	0.08	0.01	0.35
12	1.04	1.65	0.00	2.69	0.49	0.68	0.10	1.27	2.12	1.48	0.00	3.60
14	0.89	1.25	0.00	2.14	1.08	1.42	0.00	2.49	2.64	3.18	0.00	5.82
16	0.03	0.03	0.00	0.06	0.99	1.20	0.02	2.22	1.01	1.38	0.00	2.40
18	0.06	0.06	0.00	0.12	0.06	0.42	0.00	0.49	0.05	0.15	0.00	0.19
20	0.36	0.62	0.00	0.99	0.01	0.02	0.00	0.03	0.01	0.01	0.00	0.02
22	2.07	2.63	0.00	4.71	0.28	0.10	0.00	0.38	0.01	0.09	0.00	0.10
24	3.81	3.68	0.00	7.49	0.95	0.33	0.00	1.29	0.16	0.08	0.00	0.24
26	3.03	2.55	0.00	5.58	1.70	0.81	0.00	2.51	0.40	0.35	0.00	0.75
28	1.44	1.85	0.00	3.29	1.35	1.14	0.00	2.49	0.65	0.74	0.00	1.39
30	2.21	2.13	0.00	4.35	1.94	1.30	0.00	3.24	0.82	0.70	0.00	1.52
32	2.60	2.52	0.00	5.12	2.32	1.85	0.00	4.16	0.85	0.79	0.00	1.64
34	2.47	1.88	0.00	4.36	2.22	2.11	0.00	4.33	1.54	1.36	0.00	2.90
36	1.55	1.43	0.00	2.98	1.70	2.29	0.00	3.99	1.57	1.62	0.00	3.19
38	1.12	1.34	0.00	2.46	1.34	1.75	0.00	3.09	1.26	1.92	0.00	3.18
40	0.47	1.00	0.00	1.47	0.96	1.47	0.00	2.43	1.28	1.72	0.00	2.99
42	0.40	0.81	0.00	1.21	0.35	0.80	0.00	1.15	1.31	1.56	0.00	2.87
44	0.30	0.62	0.00	0.92	0.26	0.67	0.00	0.93	0.85	1.69	0.00	2.53
46	0.08	0.25	0.00	0.33	0.12	0.28	0.00	0.40	0.48	1.02	0.00	1.50
48	0.16	0.21	0.00	0.37	0.09	0.19	0.00	0.28	0.30	0.81	0.00	1.12
50	0.13	0.22	0.00	0.36	0.08	0.08	0.00	0.16	0.13	0.42	0.00	0.54
52	0.14	0.17	0.00	0.30	0.00	0.07	0.00	0.07	0.05	0.28	0.00	0.33
54	0.05	0.20	0.00	0.25	0.05	0.07	0.00	0.12	0.07	0.17	0.00	0.24
56	0.01	0.10	0.00	0.12	0.02	0.03	0.00	0.05	0.01	0.07	0.00	0.08
58	0.03	0.02	0.00	0.05	0.01	0.04	0.00	0.05	0.03	0.06	0.00	0.09
60	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.05	0.00	0.08	0.00	0.08
62	0.00	0.08	0.00	0.08	0.00	0.01	0.00	0.01	0.01	0.02	0.00	0.03
64	0.02	0.04	0.00	0.07	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
66	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
68	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.02	0.00	0.02
70	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
72	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
74	0.00	0.02	0.00	0.02	0.00	0.04	0.00	0.04	0.00	0.01	0.00	0.01
76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	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	0.01	0.00	0.01
84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
86	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	0.02	0.00	0.02	0.00	0.00	0.00	0.00	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
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
Total	25.0	28.1	0.0	53.1	18.4	19.3	0.1	37.8	17.9	21.9	0.0	39.8
Nº samples:				35				43				94
Nº Ind.:	920	1035	0	1955	935	985	4	1924	1549	1907	1	3457
Sampled catch:				585				695				1397
Range:				10-88				7-75				9-87
Total catch:				585				695				1397
Total hauls:				40				58				101

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: 2007-2009 (R/V *Vizconde de Eza*). Indet. means indeterminate. (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

	2007				2008				2009			
Lenght (cm.)	M	F	I	T	M	F	I	T	M	F	I	T
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
8	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	0.16	0.16	0.06	0.38	0.37	0.35	0.12	0.85	0.28	0.40	0.11	0.79
12	0.94	0.99	0.06	1.99	0.93	1.14	0.14	2.21	1.66	2.27	0.20	4.13
14	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	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	0.06	0.01	0.00	0.07	0.00	0.03	0.00	0.03	0.02	0.02	0.00	0.04
20	0.02	0.04	0.00	0.06	0.04	0.13	0.00	0.17	0.05	0.09	0.00	0.14
22	0.19	0.04	0.00	0.23	0.46	0.55	0.00	1.01	0.21	0.26	0.00	0.48
24	0.43	0.45	0.00	0.88	0.89	1.16	0.00	2.05	0.44	0.66	0.00	1.10
26	0.60	0.69	0.00	1.29	0.72	1.57	0.00	2.29	0.31	0.40	0.00	0.71
28	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	0.21	0.08	0.00	0.29	0.23	0.21	0.00	0.44	0.56	0.29	0.00	0.85
32	0.55	0.28	0.00	0.83	0.50	0.46	0.00	0.96	0.62	0.96	0.00	1.58
34	0.88	0.78	0.00	1.67	0.94	0.88	0.00	1.82	0.88	1.28	0.00	2.16
36	1.22	1.30	0.00	2.52	1.12	1.20	0.00	2.32	0.90	1.09	0.00	1.99
38	1.43	1.58	0.00	3.01	0.97	1.24	0.00	2.21	0.90	1.18	0.00	2.08
40	1.32	2.13	0.00	3.45	1.18	1.26	0.00	2.43	0.92	1.67	0.00	2.59
42	1.12	2.05	0.00	3.16	1.69	2.02	0.00	3.71	0.85	1.63	0.00	2.47
44	1.02	1.92	0.00	2.94	1.23	2.24	0.00	3.47	0.87	1.65	0.00	2.52
46	0.69	1.41	0.00	2.10	1.16	2.06	0.00	3.22	0.82	1.47	0.00	2.29
48	0.34	1.03	0.00	1.37	0.87	2.08	0.00	2.95	0.58	1.80	0.00	2.39
50	0.15	0.72	0.00	0.87	0.42	1.62	0.00	2.04	0.37	1.13	0.00	1.49
52	0.16	0.58	0.00	0.74	0.29	1.30	0.00	1.59	0.23	1.13	0.00	1.35
54	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	0.03	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	0.28	0.00	0.30	0.02	0.31	0.00	0.32
60	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	0.00	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	0.08	0.00	0.08	0.00	0.09	0.00	0.09
66	0.00	0.02	0.00	0.02	0.00	0.05	0.00	0.05	0.00	0.03	0.00	0.03
68	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	0.04	0.00	0.04	0.00	0.01	0.00	0.01
72	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.04	0.00	0.04
74	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	0.02	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	0.02	0.00	0.02	0.00	0.01	0.00	0.01
80	0.00	0.01	0.00	0.01	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00
82	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
86	0.00	0.00	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	0.01	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
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
Total	13.3	19.4	0.1	32.9	14.9	24.7	0.3	39.9	12.8	23.3	0.3	36.4
Nº samples:				85				98				96
Nº Ind.:	1205	1759	13	2977	1447	2416	37	3900	1256	2298	31	3585
Sampled catch:				1533				2431				2098
Range:				9-80				9-92				9-85
Total catch:				1533				2431				2098
Total hauls:				99				103				103

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 2003-2009, on board R/V "*Vizconde de Eza*". (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

Stratum	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD
	2003 (*)				**2004**				**2006**			
385	0.0225	2	3.985	2.920	0.0229	2	19.100	15.132	0.0229	2	48.530	33.757
387	0.0229	2	3.850	4.031	0.0214	2	17.810	2.814	0.0225	2	6.653	5.533
388	0.0334	3	7.317	2.249	0.0105	1	13.450	-	0.0566	5	7.618	2.653
389	0.0454	4	6.455	2.150	0.0225	2	8.950	4.073	0.0795	7	20.584	12.793
390	0.0563	5	1.854	1.584	0.0345	3	27.777	14.246	0.1249	11	76.086	51.616
391	0.0338	3	6.207	1.670	0.0218	2	14.890	3.125	0.0450	4	10.585	9.713
392	0.0116	1	8.400	-	0.0214	2	0.300	0.424	0.0229	2	0.000	0.000
729	0.0210	2	55.190	19.643	0.0221	2	0.150	0.212	0.0338	3	0.000	0.000
730	0.0221	2	59.000	21.779	0.0221	2	0.000	0.000	0.0326	3	0.000	0.000
731	0.0229	2	25.610	11.017	0.0233	2	1.450	2.051	0.0341	3	0.000	0.000
732	0.0113	1	40.700	-	0.0210	2	0.000	0.000	0.0334	3	0.000	0.000
733	n.s.	n.s.	n.s.	n.s.	0.0330	3	1.267	1.186	0.0454	4	0.000	0.000
734	n.s.	n.s.	n.s.	n.s.	0.0304	3	0.000	0.000	0.0225	2	0.000	0.000
741	0.0113	1	0.000	-	0.0323	3	0.000	0.000	0.0218	2	0.000	0.000
742	0.0116	1	0.000	-	0.0120	1	0.000	-	0.0229	2	0.000	0.000
743	n.s.	n.s.	n.s.	n.s.	0.0188	2	0.000	0.000	0.0225	2	0.000	0.000
744	n.s.	n.s.	n.s.	n.s.	0.0101	1	0.000	-	0.0229	2	0.000	0.000
745	0.0341	3	0.610	0.849	0.0319	3	0.000	0.000	0.0686	6	0.000	0.000
746	0.0446	4	0.000	0.000	0.0338	3	0.000	0.000	0.0675	6	0.000	0.000
747	n.s.	n.s.	n.s.	n.s.	0.0308	3	0.000	0.000	0.1230	11	0.000	0.000
748	0.0109	1	1.010	-	0.0199	2	0.000	0.000	0.0326	3	0.000	0.000
749	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0229	2	0.000	0.000
750	n.s.	n.s.	n.s.	n.s.	0.0180	2	0.000	0.000	0.1005	9	0.000	0.000
751	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s	n.s	0.0454	4	0.000	0.000
	2007				**2008**				**2009**			
385	0.0225	2	31.925	7.955	0.0229	2	64.750	60.033	0.0225	2	561.169	81.785
387	0.0225	2	7.992	2.039	0.0435	4	5.906	4.512	0.0439	4	6.887	2.182
388	0.0563	5	8.390	2.267	0.0559	5	2.925	1.905	0.0555	5	3.681	4.233
389	0.0900	8	25.475	13.677	0.0780	7	12.982	11.014	0.0803	7	24.644	25.370
390	0.1350	12	69.235	50.977	0.1395	12	117.141	134.128	0.1373	12	114.493	164.475
391	0.0450	4	37.163	30.535	0.0454	4	20.580	28.816	0.0458	4	9.601	7.900
392	0.0225	2	1.055	0.658	0.0221	2	0.000	0.000	0.0229	2	1.060	0.905
729	0.0338	3	0.000	0.000	0.0338	3	0.000	0.000	0.0341	3	0.020	0.035
730	0.0225	2	0.000	0.000	0.0323	3	0.000	0.000	0.0338	3	0.194	0.335
731	0.0338	3	0.253	0.439	0.0330	3	0.327	0.566	0.0341	3	0.104	0.179
732	0.0338	3	0.000	0.000	0.0446	4	0.000	0.000	0.0450	4	0.000	0.000
733	0.0338	3	0.320	0.554	0.0431	4	0.426	0.762	0.0450	4	0.018	0.036
734	0.0225	2	0.000	0.000	0.0221	2	0.066	0.093	0.0218	2	0.000	0.000
741	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0221	2	0.000	0.000
742	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0214	2	0.000	0.000
743	0.0225	2	0.000	0.000	0.0203	2	0.000	0.000	0.0203	2	0.000	0.000
744	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0210	2	0.000	0.000
745	0.0675	6	0.000	0.000	0.0555	5	0.000	0.000	0.0559	5	0.000	0.000
746	0.0664	6	0.000	0.000	0.0638	6	0.000	0.000	0.0668	6	0.065	0.159
747	0.1238	11	0.000	0.000	0.1069	10	0.000	0.000	0.1118	10	0.000	0.000
748	0.0338	3	0.000	0.000	0.0218	2	0.000	0.000	0.0229	2	0.000	0.000
749	0.0113	1	0.000	-	0.0214	2	0.000	0.000	0.0225	2	0.000	0.000
750	0.0679	6	0.000	0.000	0.0844	8	0.000	0.000	0.0791	7	0.000	0.000
751	0.0225	2	0.000	0.000	0.0413	4	0.000	0.000	0.0338	3	0.000	0.000

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

TABLE 10.- Stratified mean catches (Kg) and SD of **American plaice** by stratum and year (2003-2009). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2009.

	Survey						
Stratum	2003	2004	2005	2006	2007	2008	2009
385	470.23	2253.80	-	5726.54	3767.15	7640.50	66217.94
387	985.60	4559.36	-	1703.04	2045.95	1511.87	1763.14
388	2612.05	4801.65	-	2719.48	2995.09	1044.23	1314.12
389	3285.60	4555.55	-	10477.26	12966.65	6608.06	12543.72
390	1511.01	22637.98	-	62010.39	56426.39	95469.71	93311.86
391	1750.28	4198.98	-	2984.97	10479.83	5803.56	2707.34
392	1218.00	43.50	-	0.00	152.90	0.00	153.70
729	10265.34	27.90	-	0.00	0.00	0.00	3.72
730	10030.00	0.00	-	0.00	0.00	0.00	32.92
731	5531.76	313.20	-	0.00	54.72	70.56	22.54
732	9401.70	0.00	-	0.00	0.00	0.00	0.00
733	n.s	296.40	-	0.00	74.88	99.68	4.15
734	n.s	0.00	-	0.00	0.00	10.10	0.00
741	0.00	0.00	-	0.00	0.00	0.00	0.00
742	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
744	n.s	0.00	-	0.00	0.00	0.00	0.00
745	212.28	0.00	-	0.00	0.00	0.00	0.00
746	0.00	0.00	-	0.00	0.00	0.00	25.48
747	n.s	0.00	-	0.00	0.00	0.00	0.00
748	160.59	0.00	-	0.00	0.00	0.00	0.00
749	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
751	n.s	n.s	-	0.00	0.00	0.00	0.00
TOTAL	47434.44	43688.32		85621.68	88963.55	118258.27	178100.64
	10.60	6.98		13.20	13.71	18.23	27.46
SD	0.95	1.12		2.06	2.00	4.98	6.11

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 2006-2009.

	Survey						
Stratum	2003	2004	2005	2006	2007	2008	2009
385	42	197	-	501	335	668	5886
387	86	427	-	151	182	139	161
388	235	457	-	240	266	93	118
389	290	405	-	923	1153	593	1094
390	134	1969	-	5462	5016	8212	8158
391	156	386	-	265	932	512	237
392	105	4	-	0	14	0	13
729	978	3	-	0	0	0	0
730	907	0	-	0	0	0	3
731	484	27	-	0	5	6	2
732	836	0	-	0	0	0	0
733	n.s	27	-	0	7	9	0
734	n.s	0	-	0	0	1	0
741	0	0	-	0	0	0	0
742	0	0	-	0	0	0	0
743	n.s	0	-	0	0	0	0
744	n.s	0	-	0	0	0	0
745	19	0	-	0	0	0	0
746	0	0	-	0	0	0	2
747	n.s	0	-	0	0	0	0
748	15	0	-	0	0	0	0
749	0	0	-	0	0	0	0
750	n.s	0	-	0	0	0	0
751	n.s	n.s	-	0	0	0	0
TOTAL	4284	3901		7542	7908	10234	15676
SD	362	626		1150	1156	2805	3411

TABLE 12.- American plaice length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2003-2006 (R/V *Vizconde de Eza*). Indet. means indeterminate. (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

	2003 (*)				2004				2006			
Lenght (cm.)	M	F	I	T	M	F	I	T	M	F	I	T
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.10
6	0.00	0.03	0.07	0.10	0.05	0.00	0.00	0.05	0.02	0.02	0.29	0.33
8	0.24	0.19	0.04	0.47	0.04	0.00	0.06	0.10	0.23	0.10	1.28	1.62
10	0.15	0.32	0.04	0.50	0.09	0.09	0.19	0.37	0.07	0.05	0.02	0.14
12	0.55	0.70	0.00	1.26	0.03	0.42	0.06	0.52	1.10	1.39	0.00	2.49
14	0.43	1.06	0.00	1.50	0.65	0.56	0.31	1.52	1.87	2.18	0.00	4.05
16	1.28	3.08	0.00	4.36	0.62	0.81	0.00	1.43	0.56	0.80	0.00	1.36
18	1.16	3.38	0.00	4.53	0.59	1.37	0.00	1.96	0.34	0.63	0.00	0.97
20	0.97	3.38	0.00	4.35	0.43	2.85	0.00	3.29	0.42	0.60	0.00	1.03
22	0.49	3.34	0.00	3.83	0.71	4.01	0.00	4.73	0.66	1.06	0.00	1.72
24	0.41	2.34	0.00	2.75	0.88	4.92	0.00	5.79	0.56	1.28	0.00	1.85
26	0.21	1.55	0.00	1.76	0.32	3.80	0.00	4.12	0.47	1.47	0.02	1.96
28	0.18	1.08	0.00	1.26	0.34	2.16	0.00	2.50	0.48	2.43	0.00	2.91
30	0.33	0.86	0.00	1.20	0.06	0.94	0.00	1.00	0.35	2.95	0.00	3.30
32	0.39	0.51	0.00	0.90	0.04	0.55	0.00	0.59	0.34	2.59	0.00	2.93
34	0.43	0.90	0.00	1.33	0.04	0.45	0.00	0.49	0.20	2.57	0.00	2.77
36	0.29	1.35	0.00	1.64	0.00	0.51	0.00	0.51	0.20	1.90	0.00	2.10
38	0.19	2.03	0.00	2.22	0.00	0.47	0.00	0.47	0.09	1.15	0.00	1.24
40	0.06	2.07	0.00	2.13	0.12	0.68	0.00	0.80	0.02	0.74	0.00	0.75
42	0.07	1.78	0.00	1.85	0.00	0.70	0.00	0.70	0.01	0.74	0.00	0.76
44	0.07	1.51	0.00	1.58	0.00	0.43	0.00	0.43	0.02	1.00	0.00	1.02
46	0.02	0.83	0.00	0.85	0.00	0.62	0.00	0.62	0.02	1.01	0.00	1.03
48	0.00	0.32	0.00	0.32	0.00	0.20	0.00	0.20	0.03	1.11	0.00	1.15
50	0.00	0.36	0.00	0.36	0.00	0.17	0.00	0.17	0.02	0.50	0.00	0.52
52	0.00	0.07	0.00	0.07	0.00	0.02	0.00	0.02	0.00	0.50	0.00	0.50
54	0.00	0.04	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.15	0.00	0.15
56	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.07	0.00	0.07
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	7.95	33.07	0.14	41.16	5.02	26.77	0.62	32.41	8.20	29.04	1.62	38.86
Nº samples:				30				17				31
Nº Ind.:	333	1297	5	1635	178	846	10	1034	704	2441	136	3281
Sampled catch:				423				226				1172
Range:				6-54				7-57				3-60
Total catch:				423				226				1172
Total hauls:				40				58				101

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: 2007-2009 (R/V *Vizconde de Eza*). Indet. means indeterminate. (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

	2007				2008				2009			
Lenght (cm.)	M	F	I	T	M	F	I	T	M	F	I	T
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.10
6	0.00	0.03	0.07	0.10	0.05	0.00	0.00	0.05	0.02	0.02	0.29	0.33
8	0.24	0.19	0.04	0.47	0.04	0.00	0.06	0.10	0.23	0.10	1.28	1.62
10	0.15	0.32	0.04	0.50	0.09	0.09	0.19	0.37	0.07	0.05	0.02	0.14
12	0.55	0.70	0.00	1.26	0.03	0.42	0.06	0.52	1.10	1.39	0.00	2.49
14	0.43	1.06	0.00	1.50	0.65	0.56	0.31	1.52	1.87	2.18	0.00	4.05
16	1.28	3.08	0.00	4.36	0.62	0.81	0.00	1.43	0.56	0.80	0.00	1.36
18	1.16	3.38	0.00	4.53	0.59	1.37	0.00	1.96	0.34	0.63	0.00	0.97
20	0.97	3.38	0.00	4.35	0.43	2.85	0.00	3.29	0.42	0.60	0.00	1.03
22	0.49	3.34	0.00	3.83	0.71	4.01	0.00	4.73	0.66	1.06	0.00	1.72
24	0.41	2.34	0.00	2.75	0.88	4.92	0.00	5.79	0.56	1.28	0.00	1.85
26	0.21	1.55	0.00	1.76	0.32	3.80	0.00	4.12	0.47	1.47	0.02	1.96
28	0.18	1.08	0.00	1.26	0.34	2.16	0.00	2.50	0.48	2.43	0.00	2.91
30	0.33	0.86	0.00	1.20	0.06	0.94	0.00	1.00	0.35	2.95	0.00	3.30
32	0.39	0.51	0.00	0.90	0.04	0.55	0.00	0.59	0.34	2.59	0.00	2.93
34	0.43	0.90	0.00	1.33	0.04	0.45	0.00	0.49	0.20	2.57	0.00	2.77
36	0.29	1.35	0.00	1.64	0.00	0.51	0.00	0.51	0.20	1.90	0.00	2.10
38	0.19	2.03	0.00	2.22	0.00	0.47	0.00	0.47	0.09	1.15	0.00	1.24
40	0.06	2.07	0.00	2.13	0.12	0.68	0.00	0.80	0.02	0.74	0.00	0.75
42	0.07	1.78	0.00	1.85	0.00	0.70	0.00	0.70	0.01	0.74	0.00	0.76
44	0.07	1.51	0.00	1.58	0.00	0.43	0.00	0.43	0.02	1.00	0.00	1.02
46	0.02	0.83	0.00	0.85	0.00	0.62	0.00	0.62	0.02	1.01	0.00	1.03
48	0.00	0.32	0.00	0.32	0.00	0.20	0.00	0.20	0.03	1.11	0.00	1.15
50	0.00	0.36	0.00	0.36	0.00	0.17	0.00	0.17	0.02	0.50	0.00	0.52
52	0.00	0.07	0.00	0.07	0.00	0.02	0.00	0.02	0.00	0.50	0.00	0.50
54	0.00	0.04	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.15	0.00	0.15
56	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.07	0.00	0.07
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	7.95	33.07	0.14	41.16	5.02	26.77	0.62	32.41	8.20	29.04	1.62	38.86
Nº samples:				37				37				41
Nº Ind.:	1129	3116	179	4424	924	2383	98	3405	1033	2843	16	3892
Sampled catch:				1309				1749				2757
Range:				4-63				6-61				6-59
Total catch:				1309				1749				2757
Total hauls:				99				103				103

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 2003-2009, on board R/V "*Vizconde de Eza*". (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

Stratum	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD	Swept area	Tow number	Mean catch	SD
	2003 (*)				**2004**				**2006**			
385	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0229	2	0.240	0.339
387	0.0229	2	0.260	0.368	0.0214	2	2.650	2.263	0.0225	2	3.434	2.996
388	0.0334	3	0.159	0.122	0.0105	1	4.327	-	0.0566	5	0.876	0.480
389	0.0454	4	0.013	0.019	0.0225	2	0.093	0.131	0.0795	7	0.284	0.372
390	0.0563	5	0.000	0.000	0.0345	3	0.000	0.000	0.1249	11	0.079	0.185
391	0.0338	3	0.000	0.000	0.0218	2	0.000	0.000	0.0450	4	0.388	0.775
392	0.0116	1	0.008	-	0.0214	2	0.004	0.006	0.0229	2	0.195	0.276
729	0.0210	2	0.785	1.110	0.0221	2	2.310	0.820	0.0338	3	1.450	1.422
730	0.0221	2	5.105	4.052	0.0221	2	1.885	2.666	0.0326	3	0.460	0.797
731	0.0229	2	1.815	0.969	0.0233	2	3.765	3.373	0.0341	3	3.395	2.651
732	0.0113	1	7.150	-	0.0210	2	2.150	1.131	0.0334	3	1.367	1.623
733	n.s.	n.s.	n.s.	n.s.	0.0330	3	2.489	2.543	0.0454	4	6.706	9.359
734	n.s.	n.s.	n.s.	n.s.	0.0304	3	0.000	0.000	0.0225	2	0.190	0.269
741	0.0113	1	0	-	0.0323	3	0.003	0.003	0.0218	2	0.000	0.000
742	0.0116	1	0	-	0.0120	1	0.000	-	0.0229	2	0.000	0.000
743	n.s.	n.s.	n.s.	n.s.	0.0188	2	0.000	0.000	0.0225	2	0.000	0.000
744	n.s.	n.s.	n.s.	n.s.	0.0101	1	0.000	-	0.0229	2	0.000	0.000
745	0.0341	3	0.377	0.635	0.0319	3	0.000	0.000	0.0686	6	0.000	0.000
746	0.0446	4	0.000	0.000	0.0338	3	0.000	0.000	0.0675	6	0.000	0.000
747	n.s.	n.s.	n.s.	n.s.	0.0308	3	0.007	0.012	0.1230	11	0.000	0.000
748	0.0109	1	0.000	-	0.0199	2	0.002	0.003	0.0326	3	0.021	0.036
749	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0229	2	0.000	0.000
750	n.s.	n.s.	n.s.	n.s.	0.0180	2	0.000	0.000	0.1005	9	0.000	0.000
751	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	0.0454	4	0.000	0.000
	2007				**2008**				**2009**			
385	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000
387	0.0225	2	1.300	1.399	0.0435	4	3.040	1.153	0.0439	4	0.177	0.190
388	0.0563	5	1.492	1.300	0.0559	5	1.830	2.034	0.0555	5	1.327	1.272
389	0.0900	8	0.001	0.002	0.0780	7	0.184	0.262	0.0803	7	0.005	0.013
390	0.1350	12	0.000	0.000	0.1395	12	0.105	0.246	0.1373	12	0.000	0.000
391	0.0450	4	0.102	0.204	0.0454	4	1.003	1.551	0.0458	4	0.103	0.198
392	0.0225	2	1.175	1.300	0.0221	2	1.694	2.336	0.0229	2	1.241	1.040
729	0.0338	3	4.823	3.341	0.0338	3	2.770	3.289	0.0341	3	3.187	1.846
730	0.0225	2	0.000	0.000	0.0323	3	0.743	1.287	0.0338	3	0.000	0.000
731	0.0338	3	3.854	4.324	0.0330	3	3.445	1.075	0.0341	3	5.992	2.310
732	0.0338	3	0.317	0.548	0.0446	4	2.056	1.827	0.0450	4	3.131	2.003
733	0.0338	3	2.052	2.218	0.0431	4	5.530	4.719	0.0450	4	7.234	5.816
734	0.0225	2	0.066	0.093	0.0221	2	0.200	0.283	0.0218	2	0.000	0.000
741	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0221	2	0.000	0.000
742	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0214	2	0.000	0.000
743	0.0225	2	0.000	0.000	0.0203	2	0.000	0.000	0.0203	2	0.092	0.130
744	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0210	2	0.000	0.000
745	0.0675	6	0.002	0.004	0.0555	5	0.000	0.000	0.0559	5	0.010	0.022
746	0.0664	6	0.000	0.000	0.0638	6	0.000	0.000	0.0668	6	0.000	0.000
747	0.1238	11	0.000	0.000	0.1069	10	0.000	0.000	0.1118	10	0.000	0.000
748	0.0338	3	0.000	0.000	0.0218	2	0.000	0.000	0.0229	2	0.000	0.000
749	0.0113	1	0.000	-	0.0214	2	0.000	0.000	0.0225	2	0.000	0.000
750	0.0679	6	0.000	0.000	0.0844	8	0.000	0.000	0.0791	7	0.000	0.000
751	0.0225	2	0.000	0.000	0.0413	4	0.000	0.000	0.0338	3	0.000	0.000

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

TABLE 15.- Stratified mean catches (Kg) and SD of **Witch flounder** by stratum and year (2003-2009). Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2009.

	Survey						
Stratum	2003	2004	2005	2006	2007	2008	2009
385	0.00	0.00	-	28.32	0.00	0.00	0.00
387	66.56	678.40	-	878.98	332.67	778.18	45.38
388	56.88	1544.74	-	312.80	532.50	653.38	473.74
389	6.36	47.08	-	144.34	0.38	93.58	2.47
390	0.00	0.00	-	64.46	0.00	85.58	0.00
391	0.00	0.00	-	109.28	28.69	282.71	28.98
392	1.16	0.58	-	28.28	170.30	245.56	179.87
729	146.01	429.66	-	269.70	897.14	515.22	592.78
730	867.85	320.45	-	78.20	0.00	126.37	0.00
731	392.04	813.24	-	733.32	832.46	744.12	1294.34
732	1651.65	496.65	-	315.70	73.15	474.94	723.32
733	n.s	582.50	-	1569.26	480.17	1293.90	1692.76
734	n.s	0.00	-	29.07	10.02	30.60	0.00
741	0.00	0.27	-	0.00	0.00	0.00	0.00
742	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
744	n.s	0.00	-	0.00	0.00	0.00	0.00
745	131.08	0.00	-	0.00	0.58	0.00	3.48
746	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
748	0.00	0.32	-	3.34	0.00	0.00	0.00
749	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
751	n.s	n.s	-	0.00	0.00	0.00	0.00
TOTAL	3319.59	4918.72	-	4565.04	3358.07	5324.12	5041.81
	0.74	0.79		0.70	0.52	0.82	0.78
SD	0.12	0.13		0.20	0.12	0.13	0.13

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 2006-2009.

	Survey						
Stratum	2003	2004	2005	2006	2007	2008	2009
385	0	0	-	2	0	0	0
387	6	63	-	78	30	72	4
388	5	147	-	28	47	58	43
389	1	4	-	13	0	8	0
390	0	0	-	6	0	7	0
391	0	0	-	10	3	25	3
392	0	0	-	2	15	22	16
729	14	39	-	24	80	46	52
730	78	29	-	7	0	12	0
731	34	70	-	64	74	68	114
732	147	47	-	28	7	43	64
733	n.s	53	-	138	43	120	150
734	n.s	0	-	3	1	3	0
741	0	0	-	0	0	0	0
742	0	0	-	0	0	0	0
743	n.s	0	-	0	0	0	0
744	n.s	0	-	0	0	0	0
745	12	0	-	0	0	0	0
746	0	0	-	0	0	0	0
747	n.s	0	-	0	0	0	0
748	0	0	-	0	0	0	0
749	0	0	-	0	0	0	0
750	n.s	0	-	0	0	0	0
751	n.s	n.s	-	0	0	0	0
TOTAL	297	453		404	298	483	447
SD	51	75		116	71	80	74

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: 2003-2006 (R/V *Vizconde de Eza*). Indet. means indeterminate. (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

	2003 (*)				2004				2006			
Lenght (cm.)	M	F	I	T	M	F	I	T	M	F	I	T
6	0.00	0.00	0.03	0.03	0.00	0.00	0.06	0.06	0.00	0.00	0.00	0.00
8	0.00	0.00	0.03	0.03	0.00	0.00	0.31	0.31	0.02	0.00	0.06	0.09
10	0.03	0.03	0.00	0.05	0.04	0.00	0.10	0.14	0.03	0.02	0.01	0.07
12	0.13	0.22	0.00	0.35	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
14	0.38	0.70	0.00	1.08	0.01	0.00	0.07	0.09	0.04	0.01	0.01	0.06
16	0.03	0.03	0.00	0.06	0.14	0.17	0.06	0.37	0.15	0.18	0.00	0.34
18	0.05	0.03	0.00	0.08	0.11	0.18	0.06	0.35	0.11	0.15	0.00	0.26
20	0.15	0.12	0.00	0.27	0.11	0.32	0.00	0.43	0.06	0.07	0.00	0.14
22	0.04	0.07	0.00	0.12	0.20	0.37	0.00	0.57	0.10	0.32	0.00	0.42
24	0.07	0.00	0.00	0.07	0.17	0.08	0.00	0.25	0.22	0.31	0.00	0.52
26	0.04	0.05	0.00	0.09	0.09	0.18	0.00	0.28	0.02	0.11	0.00	0.13
28	0.00	0.07	0.00	0.07	0.21	0.18	0.00	0.39	0.07	0.09	0.00	0.16
30	0.18	0.23	0.00	0.41	0.14	0.05	0.00	0.19	0.10	0.22	0.00	0.33
32	0.02	0.00	0.00	0.02	0.04	0.14	0.00	0.18	0.21	0.24	0.00	0.46
34	0.09	0.09	0.00	0.18	0.01	0.23	0.00	0.25	0.13	0.12	0.00	0.25
36	0.09	0.08	0.00	0.17	0.01	0.02	0.00	0.03	0.02	0.05	0.00	0.07
38	0.08	0.04	0.00	0.12	0.07	0.03	0.00	0.10	0.02	0.13	0.00	0.15
40	0.09	0.00	0.00	0.09	0.03	0.09	0.00	0.12	0.03	0.09	0.00	0.12
42	0.02	0.10	0.00	0.13	0.00	0.18	0.00	0.18	0.00	0.07	0.00	0.07
44	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.12	0.00	0.07	0.00	0.07
46	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
48	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02
50	0.02	0.00	0.00	0.02	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01
52	0.00	0.05	0.00	0.05	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00
54	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	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	0.02	0.00	0.02
60	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Total	1.52	2.08	0.05	3.66	1.39	2.47	0.68	4.54	1.36	2.31	0.09	3.76
Nº samples:				15				17				32
Nº Ind.:	57	70	2	129	70	101	20	191	113	198	8	319
Sampled catch:				25				38				64
Range:				7-61				7-53				8-60
Total catch:				25				38				64
Total hauls:				40				58				101

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: 2007-2009 (R/V *Vizconde de Eza*). Indet. means indeterminate. (*) In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

	2007				2008				2009			
Lenght (cm.)	M	F	I	T	M	F	I	T	M	F	I	T
6	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	0.00	0.01	0.02	0.03	0.00	0.01	0.22	0.23	0.00	0.00	0.06	0.06
10	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	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.02
14	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	0.03	0.02	0.01	0.07	0.11	0.10	0.02	0.23	0.03	0.03	0.00	0.07
18	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	0.04	0.13	0.00	0.17	0.05	0.08	0.00	0.13	0.01	0.07	0.00	0.08
22	0.12	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	0.15	0.00	0.37	0.11	0.11	0.00	0.23	0.07	0.15	0.00	0.21
26	0.14	0.10	0.01	0.25	0.13	0.08	0.00	0.21	0.07	0.09	0.00	0.16
28	0.32	0.34	0.00	0.66	0.29	0.32	0.00	0.61	0.07	0.15	0.00	0.22
30	0.12	0.11	0.00	0.23	0.09	0.15	0.00	0.24	0.15	0.14	0.00	0.29
32	0.03	0.03	0.00	0.07	0.14	0.14	0.00	0.29	0.22	0.16	0.00	0.38
34	0.03	0.07	0.00	0.10	0.06	0.09	0.00	0.15	0.10	0.15	0.00	0.25
36	0.03	0.04	0.00	0.08	0.09	0.08	0.00	0.16	0.05	0.14	0.00	0.19
38	0.02	0.08	0.00	0.10	0.04	0.17	0.00	0.21	0.08	0.11	0.00	0.19
40	0.02	0.03	0.00	0.05	0.04	0.11	0.00	0.15	0.02	0.13	0.00	0.14
42	0.02	0.01	0.00	0.03	0.01	0.11	0.00	0.12	0.01	0.13	0.00	0.14
44	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	0.06	0.00	0.06	0.00	0.12	0.00	0.12	0.00	0.10	0.00	0.10
48	0.00	0.00	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	0.00	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
54	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
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	1.21	1.62	0.14	2.97	1.59	2.19	0.38	4.16	1.071	1.858	0.140	3.069
Nº samples:				22				36				28
Nº Ind.:	106	139	13	258	159	223	37	419	110	193	13	316
Sampled catch:				46				83				80
Range:				9-54				7-54				6-50
Total catch:				46				83				80
Total hauls:				99				103				103

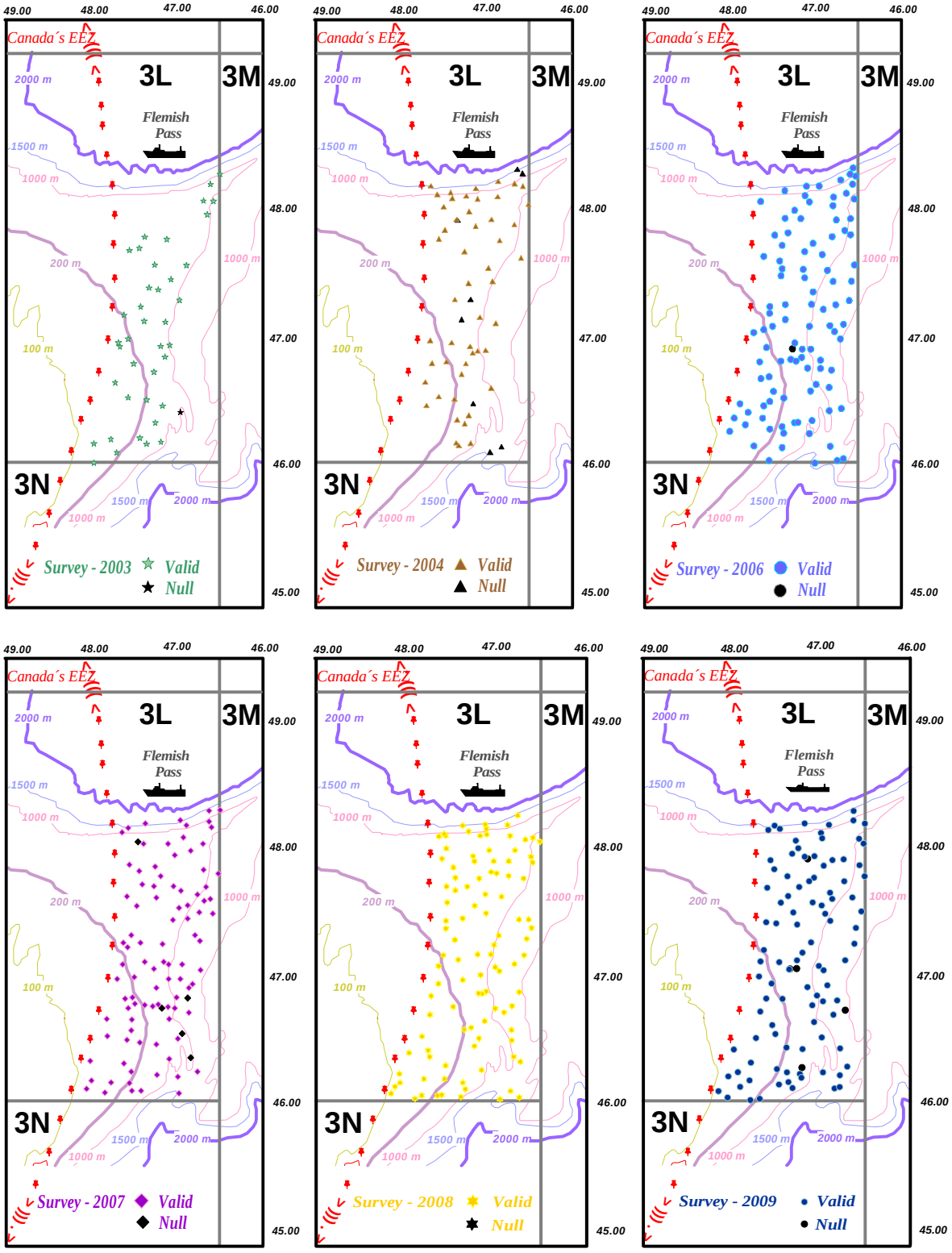


FIGURE 1.- Haul positions of the Spanish surveys in NAFO Division 3L in the period 2003 - 2009 (R/V *"Vizconde de Eza"*).

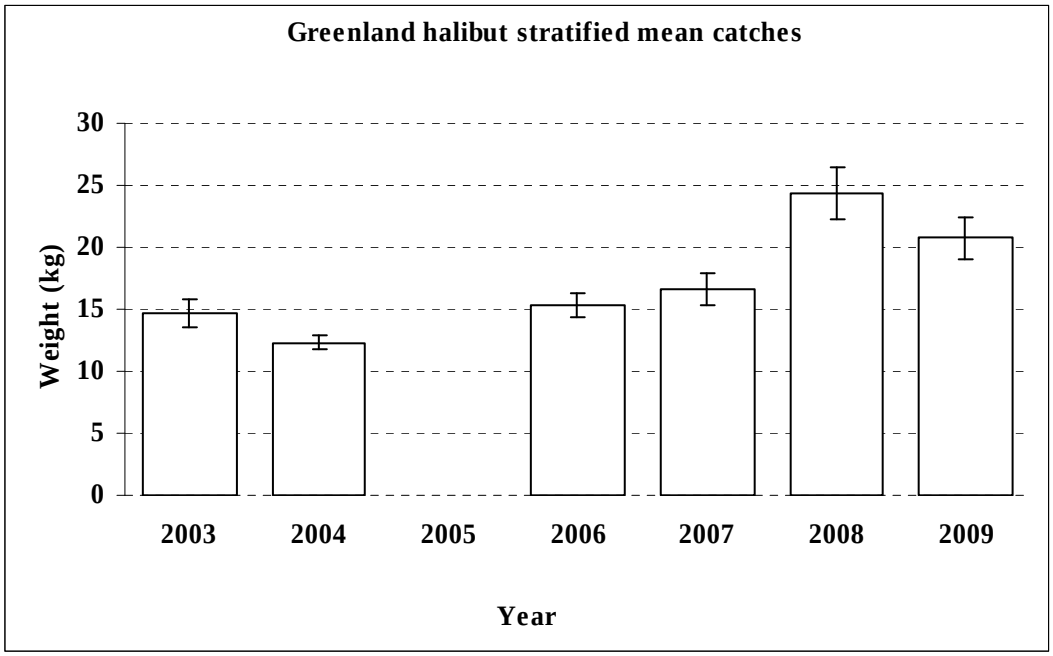


FIGURE 2.- Greenland halibut stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2009 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

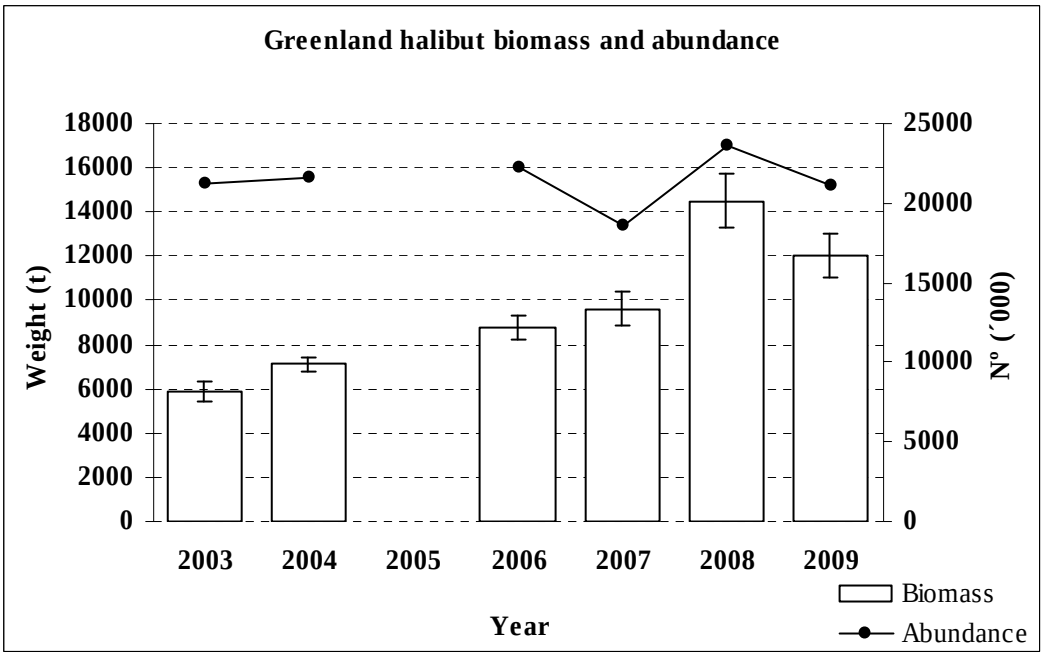


FIGURE 3.- Greenland halibut abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2009 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

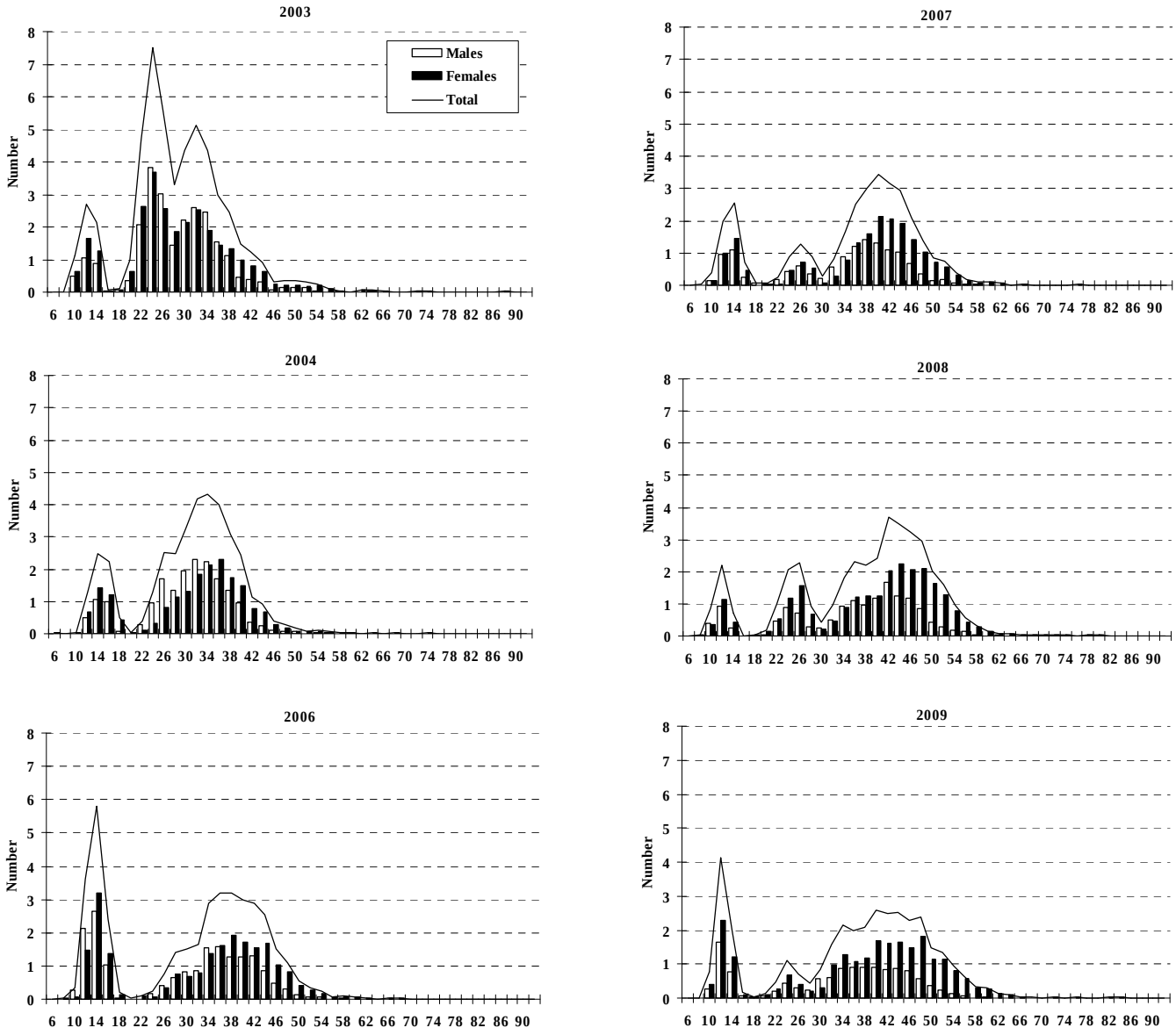
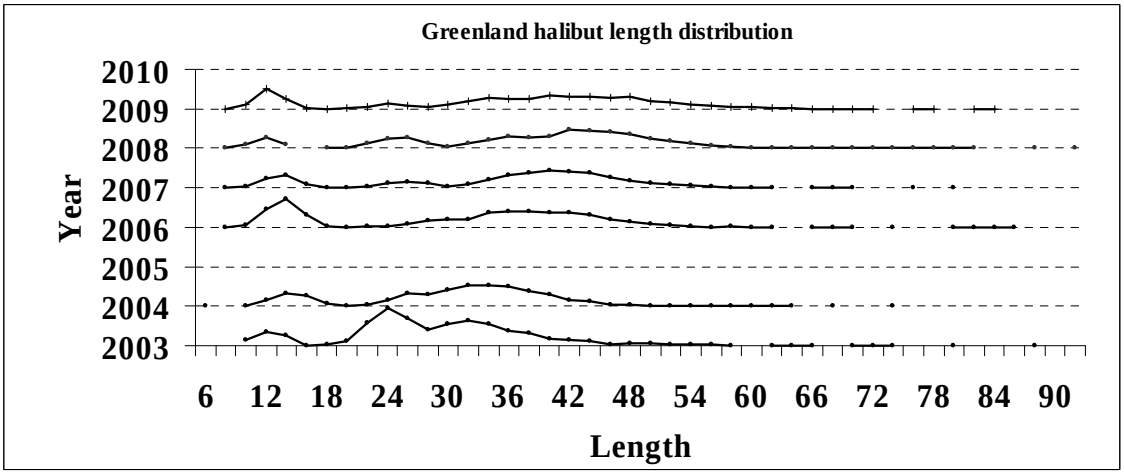
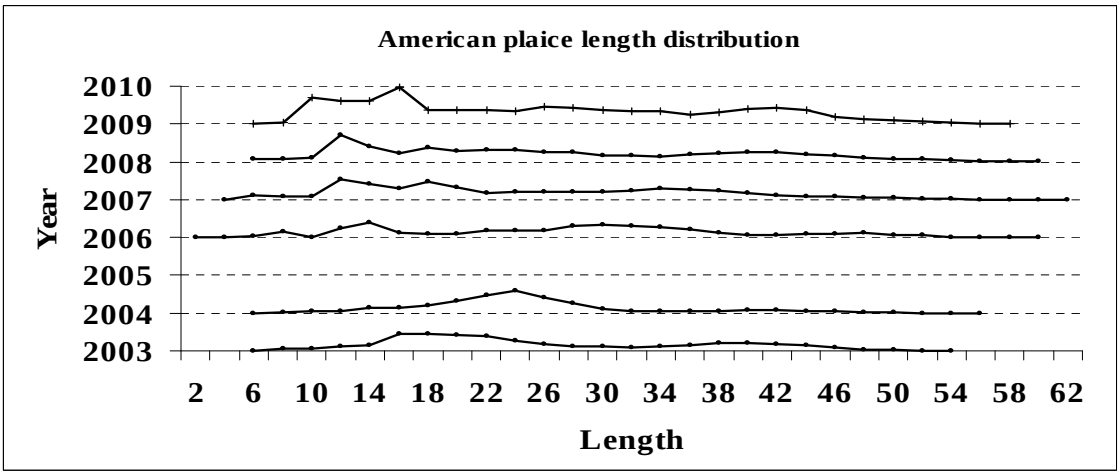


FIGURE 4.- Greenland halibut length distribution (cm) in NAFO 3L: 2003-2009. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2009.





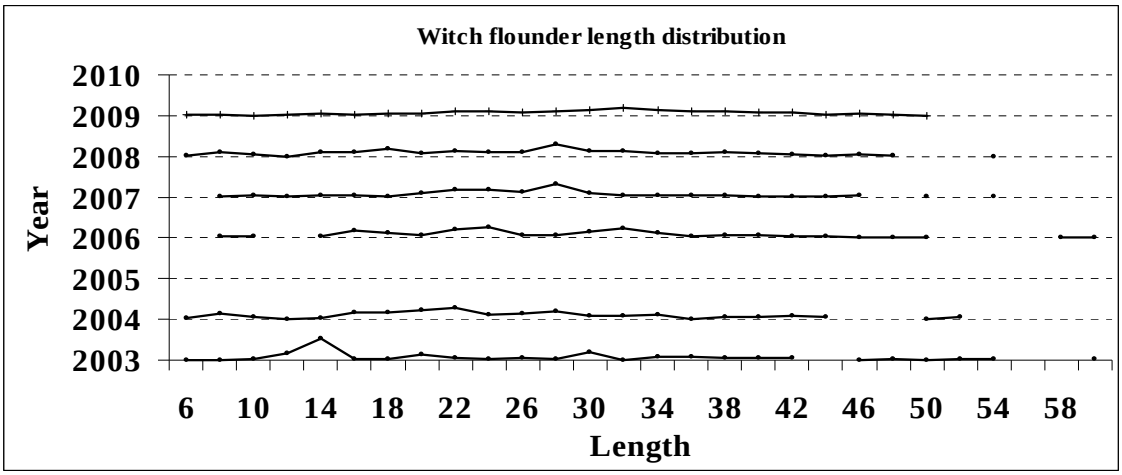


FIGURE 5.- Greenland halibut, American plaice and **witch flounder** length distribution (cm) in NAFO 3L: 2003-2009.

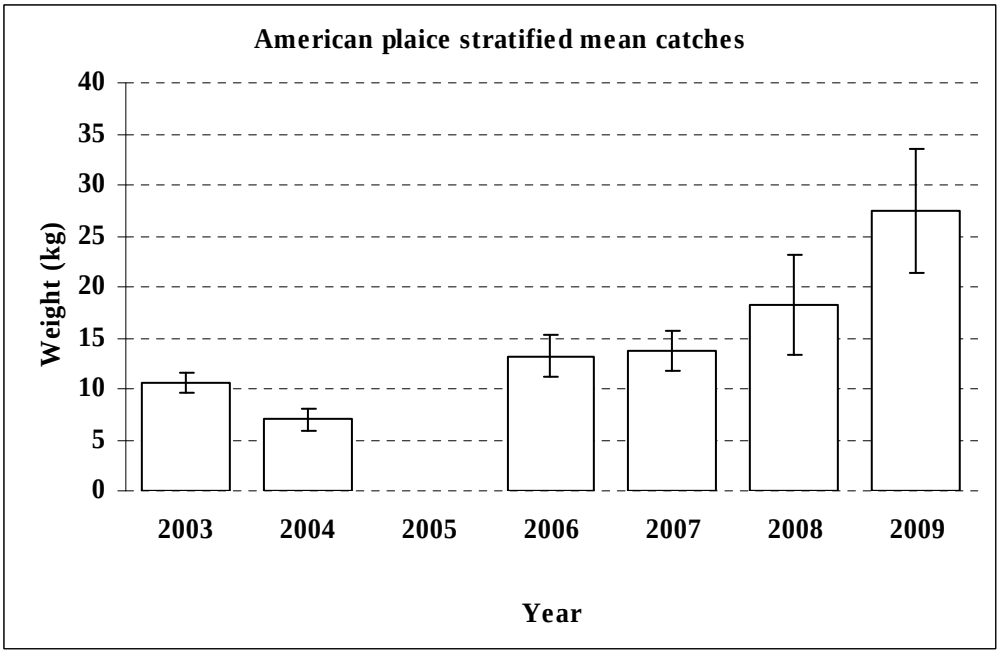


FIGURE 6.- American plaice stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2009 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

.

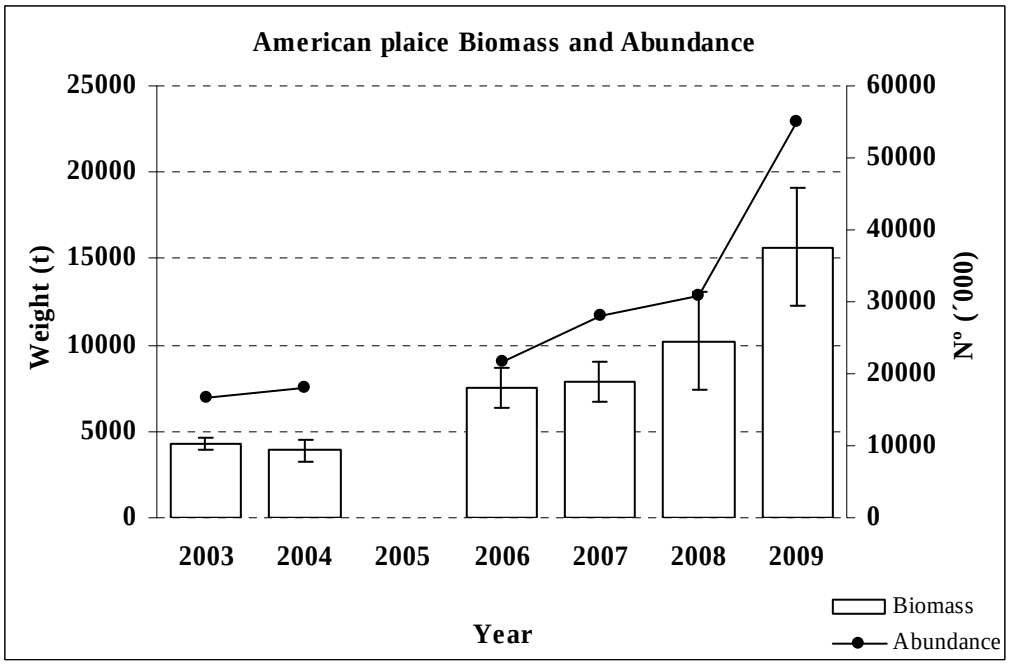


FIGURE 7.- American plaice abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2009 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

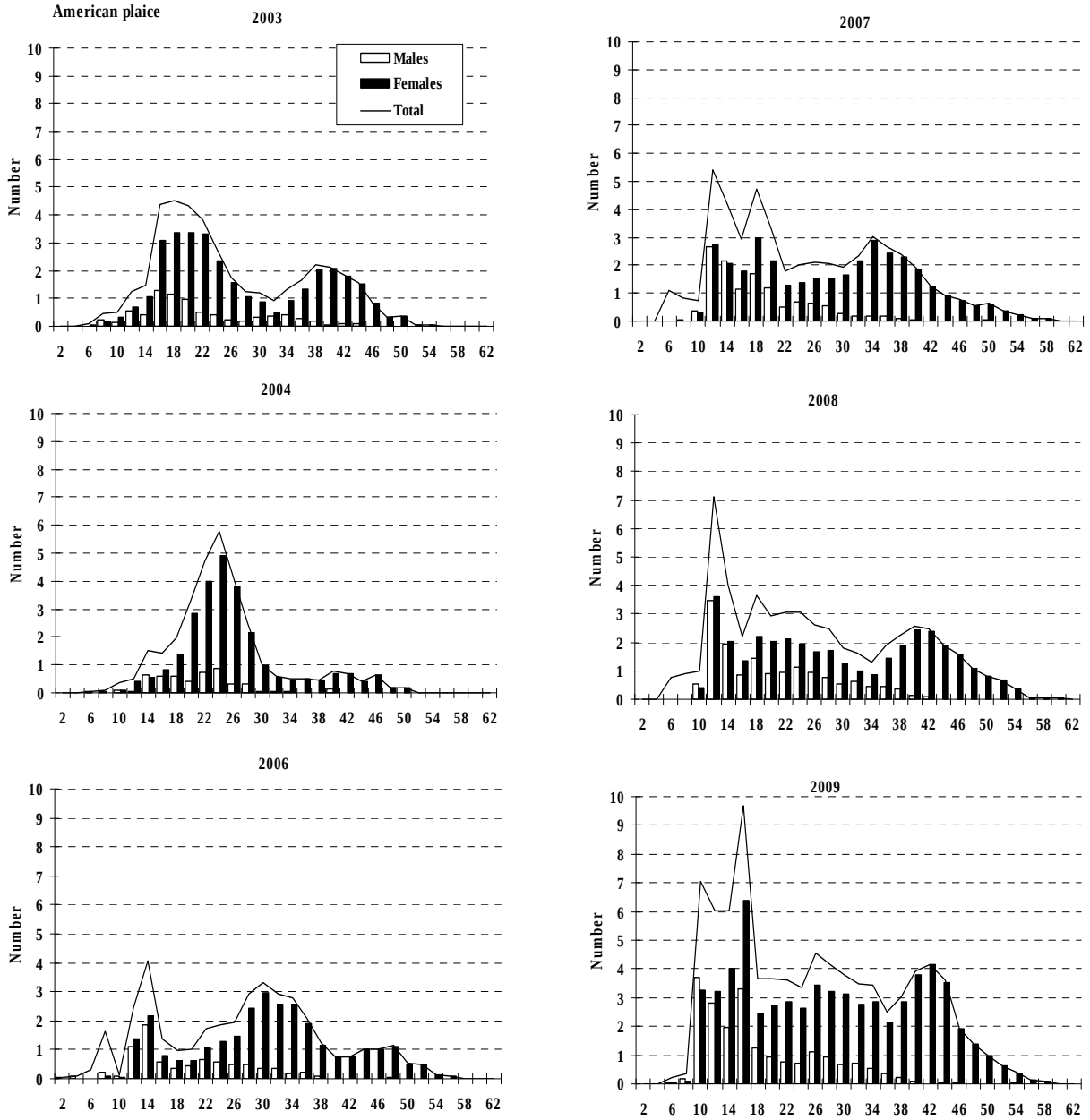


FIGURE 8.- American plaice length distribution (cm) in NAFO 3L: 2003-2009. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

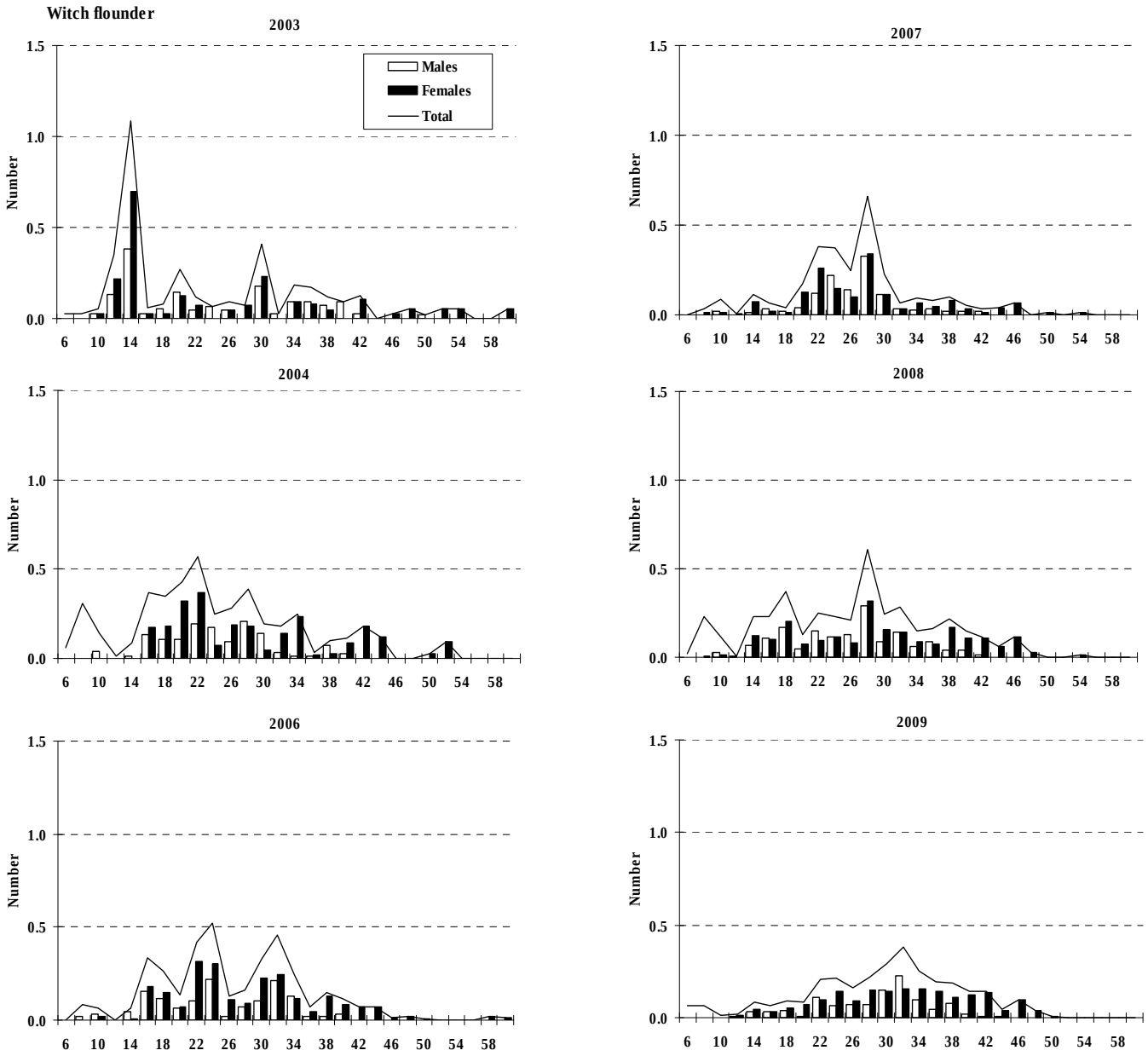


FIGURE 9.- Witch flounder length distribution (cm) in NAFO 3L: 2003-2009. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

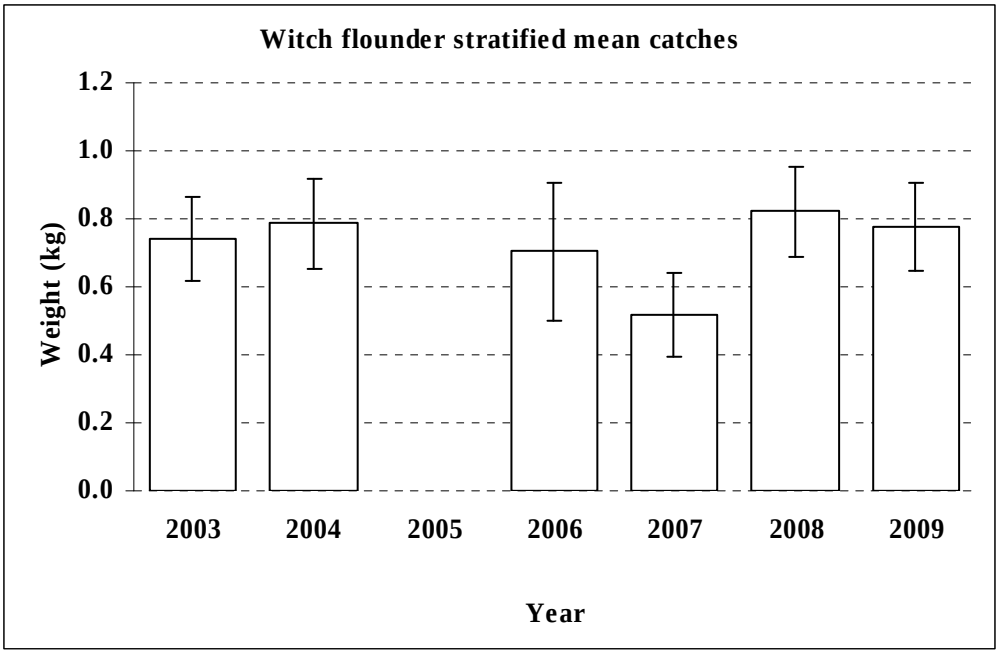


FIGURE 10.- Witch flounder stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2009 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2009.

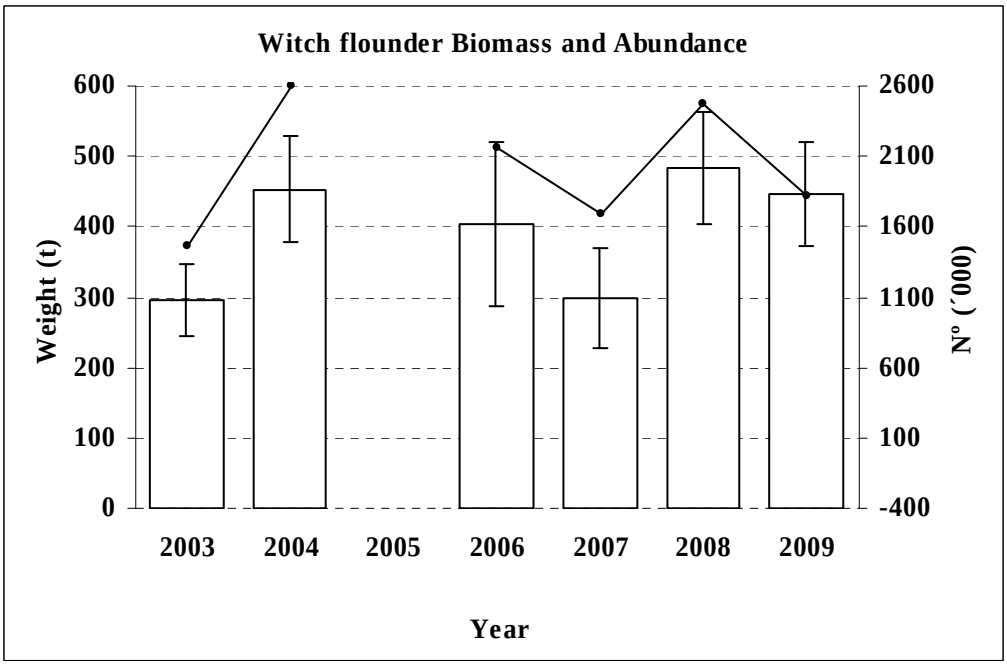


FIGURE 11.- Witch flounder abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2009 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2009.